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Symposia

S3- THE MUSCULOSKELETAL SYSTEM AS THE KEY REGULATOR OF INTRINSIC CAPACITY.

G. Duque[1], B. Hernandez[2], I. Baltasar-Fernandez[3], J. Pasco[4], R.A. Kenny[5] *((1) Mcgill University - Montreal (Canada), (2) Trinity College Dublin - Dublin (Ireland), (3) Universidad De Castilla La Mancha - Toledo (Spain), (4) Deakin University - Geelong (Australia), (5) Deakin University - Dublin (Ireland))*

Communication 1: *Investigating the Musculoskeletal Determinants of Intrinsic Capacity in Older Adults: Insights from The Irish Longitudinal Study on Ageing (TILDA)*

As the global population ages, promoting healthy aging has become a critical public health objective. The World Health Organization's (WHO) framework of intrinsic capacity (IC) — defined as the composite of all the physical and mental capacities that an individual can draw upon — offers a holistic approach to understanding aging-related functional decline. Using data from The Irish Longitudinal Study on Ageing (TILDA), this talk will discuss the key musculoskeletal determinants of intrinsic capacity in older Irish adults, providing insights into potential interventions that support healthier aging. Leveraging longitudinal data from over 8,000 participants aged 50 years and older, we examined the associations between intrinsic capacity, musculoskeletal variables (muscle and bone mass and function) and various factors, including cognitive function, mental health, mood, and sensory impairments. By employing the WHO's five-domain framework for intrinsic capacity—cognition, vitality, sensory function, locomotion, and psychological well-being—we mapped out how musculoskeletal conditions (sarcopenia, osteoporosis and osteosarcopenia) predict overall IC trajectories over time. Preliminary findings show that declines in intrinsic capacity are strongly associated with musculoskeletal conditions (particularly osteosarcopenia) and that the presence of osteosarcopenia is also associated with cognitive impairment and depressive symptoms.

Communication 2: *Musculoskeletal Determinants of Intrinsic Capacity in Older Adults: Insights from The Toledo Aging Study (TAS)*

Musculoskeletal health is pivotal in maintaining functional independence and quality of life in older adults. This talk will present longitudinal data from the Toledo Aging Study (TAS) evaluating the correlation between musculoskeletal variables—such as muscle strength, bone density, and mobility—and intrinsic capacity in older adults. Using data from a cohort of community-dwelling older adults, we assessed musculoskeletal health through grip strength, gait speed, and physical performance. These variables were then correlated with intrinsic capacity across its five domains: locomotion, cognition, vitality, psychological well-being, and sensory function. The goal was to explore how musculoskeletal health predicts overall IC, as well as individual IC domains, and to determine whether declines in musculoskeletal function (sarcopenia, osteoporosis and osteosarcopenia) are early indicators of reduced capacity. Our results show that decreases in muscle strength, particularly grip strength and sit-to-stand test, are significantly associated with declines in intrinsic capacity's locomotion and vitality domains. Moreover, musculoskeletal impairments were closely tied to reduced psychological well-being and increased depressive symptoms, highlighting the complex interplay between physical and mental health in aging. These findings emphasize the importance of musculoskeletal health in maintaining intrinsic capacity and suggest that early interventions targeting muscle strength and bone health may have protective effects on overall capacity. By identifying key musculoskeletal predictors of IC decline, this research provides actionable insights into strategies for promoting healthy aging and preventing functional deterioration in older populations.

Communication 3: *Musculoskeletal Determinants of Intrinsic Capacity in Older Adults: Insights from The Geelong Osteoporosis Study*

Sarcopenia, characterized by the loss of muscle mass and function, and osteosarcopenia, the combined condition of sarcopenia and osteoporosis, are increasingly recognized as critical factors impacting functional decline in older adults. Intrinsic capacity (IC) offers a comprehensive framework for evaluating the health status of aging individuals. In this session, we will present data from the Geelong Osteoporosis Study (GOS) assessing the correlation between sarcopenia, osteosarcopenia, and intrinsic capacity in older adults, aiming to explore the broader implications for healthy aging. The Geelong Osteoporosis Study participants were assessed for muscle strength, muscle mass, and bone density and classified into sarcopenia and osteosarcopenia groups. Intrinsic capacity was evaluated using a five-domain model, including locomotion, vitality, cognition, sensory function, and psychological well-being. This study focuses on understanding how sarcopenia and osteosarcopenia influence overall intrinsic capacity, with particular attention to the physical domains (locomotion and vitality) and the potential spillover effects into cognitive and psychological well-being. Sarcopenia is significantly associated with reductions in intrinsic capacity, particularly in locomotion and vitality. Participants with osteosarcopenia exhibited more pronounced declines in both physical and cognitive domains, suggesting that the combined condition has a more detrimental impact on IC than sarcopenia or osteoporosis alone. Additionally, individuals with osteosarcopenia showed increased rates of depressive symptoms, highlighting the role of musculoskeletal health in psychological well-being. These findings suggest early detection and management of sarcopenia and osteosarcopenia

may help preserve intrinsic capacity and delay functional decline in aging populations. This research underscores the importance of integrating musculoskeletal assessments into routine evaluations of older adults. It highlights the potential benefits of targeted interventions to improve muscle strength and bone health to maintain IC and promote healthier aging.

S4- UNRAVELING PHYSICAL RESILIENCE: PSYCHOSOCIAL DETERMINANTS, STRESS-RESPONSE PHYSIOLOGY, AND THE MEDIATING ROLE OF FRAILTY IN SHAPING CLINICAL PHENOTYPES AND OUTCOMES. Q.L. Xue[1], K. Bandeen-Roche[2], M. Hladek[2] *((1) Johns Hopkins School Of Medicine - Baltimore (United States), (2) Johns Hopkins Bloomberg School Of Public Health - Baltimore (United States))*

Communication 1: *Stimulus-response measures of multi-system dynamic adaptation to stressors enhance discrimination of resilient responses by frailty and self-report of health*

Background: Resilience has emerged as a major gerontological concept aiming to promote more consistently positive outcomes following stressors. Achieving this aim relies on determining mechanisms underlying capacity to respond resiliently. For physical stressors, a US National Institute on Aging workshop asserted that this capacity arises in major part from the fitness of one's physiology governing stress response [1]. In the literature there is disagreement on the role of frailty [2-3]. This paper addresses the roles of stress-response physiology, frailty and self-report of health in resilience by leveraging data from stimulus-response experiments to assess physiological fitness. **Methods:** We leverage the Study of Physical Resilience and Aging ("SPRING"), which characterized physiological fitness in older adults scheduled for major stressors of total knee replacement (TKR; n=112), incident hemodialysis (n=48), or bone marrow transplant for hematological cancers (n=83) [4]. We report on physiologic resilience capacity measures developed using time series from Holter monitor assessment, cortisol response to adrenocorticotropic hormone stimulation (ACTH), and repeated diurnal salivary cortisol assessment, by principal component analysis (PCA). Associations of these with the study's resilience phenotype were assessed using logistic regression, focusing on potential mediating or moderating roles vis a vis the physical frailty phenotype and self-report of health in the TKR substudy. **Results:** PCA produced three dimensions of variation in physiologic response: One consistent with adaptive functioning, a second consistent with steady state functioning, and a third emphasizing the cortisol response to ACTH stimulation. The first two recapitulated components derived in a prior, independent pilot study. After adjusting for age, gender, race, obese status, and Charlson comorbidity index categories, estimated odds of non-resilient recovery were less by 60% per each SD increase in the adaptive physiological fitness component (OR=0.4, 95% CI 24% to 79%). This association was not appreciably altered when further adjusting for frailty or self-reported health; associations with both of these covariates were strong and little altered by inclusion of the physiologic component. Internally cross-validated predictive accuracy (ROC AUC) for a model including adjustment variables only was 0.67; this was unchanged by adding frailty, increased to 0.74 upon adding self-report of health, and increased to 0.80 upon further adding the adaptive component. Neither the steady state nor the ACTH-related component was associated with the resilience outcome. No effect modification was evidenced. **Conclusion:** Physiologic data on heart rate variability, ACTH cortisol response, and diurnal salivary cortisol demonstrate signal consistent with steady state regulation and adaptive response. Adaptive response discriminates resilient/non-resilient recovery following TKR independently of frailty and self-report of health. Our study evidences value-added utility of stimulus-response assessment for characterizing resilience in older adults experiencing stressors. **Keywords:** Principal components, Physiology, Adaptation, Resilience. **Disclosures:** None. **References**: 1. Hadley EC, et al. J Gerontol A Biol Sci Med Sci 2017; 72(7):980-990. doi: 10.1093/gerona/glx015. 2. Whitson HE, et al. Physical Resilience: Not Simply the Opposite of Frailty. J Am Geriatr Soc 2018; 66(8):1459-1461. doi: 10.1111/jgs.15233. 3. Varadhan R, et al. J Am Geriatr Soc 2018; 66(8):1455-1458. doi:10.1111/jgs.15409. 4. Walston J, Varadhan R, Xue QL, et al. A Study of Physical Resilience and Aging (SPRING): Conceptual framework, rationale, and study design. J Am Geriatr Soc. 2023 Aug;71(8):2393-2405. doi: 10.1111/jgs.18483.

Communication 2: *The Role of Psychosocial Distress and Physical Frailty in Predicting Physical Resilience Among Older Adults Undergoing Surgery*

Background: Physical resilience refers to an individual's ability to recover after a physical stressor [1]. In an aging society, physical resilience becomes increasingly important for managing age-associated conditions by enabling coping with illness, adaptation to stress and injury prevention and recovery. This concept can be understood through a person's physiologic resilience capacity and the resulting resilience phenotypes after a stressor [2]. However, how to practically operationalize these concepts and identify the factors that influence resilience capacity remains less clear. Psychosocial factors, such as perceived stress, depressive symptoms and loneliness, are also hypothesized to contribute to resilience capacity as each has been linked to adverse physical and mental health outcomes [3-5]. This study aimed to test the association of these variables with our physical resilience phenotype, while also examining whether physical frailty, our proxy for physical resilience capacity, alters this association. **Methods:** This study used observational data from one of the three substudies of the Study of Physical Resilience and Aging (SPRING) - RESilience in TOtal knee REplacement (RESTORE) [6]. RESTORE focused on characterizing older adults undergoing elective total knee replacement (TKR) surgery. A multivariate resilience phenotype (high vs. low resilience) was derived from physical function trajectories assessed before surgery and at 1, 6, and 12 months post-surgery using the Short Physical Performance

Battery, the Pittsburgh Fatigability Scale-Physical Subscale, the Knee Injury and Osteoarthritis Score (KOOS), and the Short Form (SF)36-Physical Component Score [7]. To test the external validity of this phenotype and our broader concept of physical resilience, we developed a Distress measure via factor analysis using the 10-item perceived stress scale [8], 8-item patient health questionnaire scale [9] and the 3-item UCLA loneliness scale [10] to represent a domain of psychosocial resilience (or its absence). Physical resilience capacity was operationalized using Fried's physical frailty phenotype [1]. We evaluated the association between Distress and our resilience phenotype measure, and the mediating role of physical frailty. **Results:** 111 adults aged 60 years and older and undergoing knee replacement surgery were included in this analysis. Factor analysis of the 3 related psychosocial constructs- depressive symptoms, perceived stress and perceived loneliness- revealed a one-factor solution that explained 73% of shared variance. Logistic regression indicated that for every standard deviation increase in Distress, the odds of having high resilience vs. low resilience were reduced by 54% (95% CI=31%-69%), after adjusting for age, sex, education, obesity, and disease burden. When physical frailty was added to the model, the association between Distress and resilience remained largely unchanged, with a 51% reduction in the odds of high resilience (95% CI=26%-67%), after adjustment. **Conclusion:** The small difference between the total effect of Distress (54%) and the direct effect after adjusting for frailty (51%) suggests that most of the impact of Distress on resilience was not mediated by frailty, indicating that psychosocial factors play a significant role in physical resilience, independent of physical frailty. These findings underscore the importance of addressing psychosocial factors such as Distress in interventions aimed at enhancing physical resilience in aging populations. **Keywords:** Physical resilience capacity, physical resilience phenotype, aging, distress, frailty. **Disclosures:** The authors report no disclosures. **References**: 1. Fried LP, Tangen CM, Walston J, Newman AB, Hirsch C, Gottdiener J, et al. Frailty in Older Adults: Evidence for a Phenotype. The Journals of Gerontology: Series A. 2001/03/01;56(3). 2. Varadhan R, Walston JD, Bandeen-Roche K. Can a Link Be Found Between Physical Resilience and Frailty in Older Adults by Studying Dynamical Systems? - PubMed. Journal of the American Geriatrics Society. 2018 Aug;66(8). 3. Mariotti A. The effects of chronic stress on health: new insights into the molecular mechanisms of brain–body communication. Future Science OA. 2015/11;1(3). 4. Nersesian PV, Han H-R, Yenokyan G, Blumenthal RS, Nolan MT, Hladek MD, et al. Loneliness in middle age and biomarkers of systemic inflammation: Findings from Midlife in the United States - PubMed. Social science & medicine (1982). 2018 Jul;209. 5. Cassano P, Fava M. Depression and public health: An overview. Journal of Psychosomatic Research. 2002/10/01;53(4). 6. Walston J, Varadhan R, Xue Q-L, Buta B, Sieber F, Oni J, et al. A Study of Physical Resilience and Aging (SPRING): Conceptual framework, rationale, and study design - PubMed. Journal of the American Geriatrics Society. 2023 Aug;71(8). 7. Xue Q-L, Laskow T, Alzahrani MK, Varadhan R, Walston JD, Schrack JA, et al. Multivariate Profiling of Physical Resilience in Older Adults After Total Knee Replacement Surgery. medRxiv doi: 10.1101/2024.10.03.24314863. 8. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. J Health Soc Behav. 1983;24(4):385-96. 9. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure - PubMed. Journal of general internal medicine. 2001 Sep;16(9). 10. Hughes ME, Waite LJ, Hawkley LC, Cacioppo JT. A short scale for measuring loneliness in large surveys: Results from two population-based studies. Research on Aging. 2004:655-72.

Communication 3: *Physical Resilience Phenotype and Clinical Outcomes: Results from the RESilience in TOtal knee REplacement (RESTORE) Study*

Background: Predicting which patients will experience better or worse outcomes after surgery remains a challenge in clinical care. While preoperative predictors of recovery are ideal, in their absence, it is valuable to identify measures that can be monitored in the early months post-surgery to predict longer-term clinical outcomes. **Methods:** This study included 101 individuals aged 60+ who underwent elective total knee replacement (TKR) for degenerative joint disease. [1]. Physical function was evaluated at baseline, 1 month, and 6 months post-TKR using the Short Physical Performance Battery, Pittsburgh Fatigability Scale-Physical Subscale, KOOS Quality of Life, and the SF36-Physical Component Score. A multivariate physical resilience phenotype was developed using latent variable modeling based on individual recovery dynamics of these measures [2]. Resilience outcomes, including KOOS ADL function and pain, were assessed at 12 months. Frailty as a surrogate of resilience capacity was defined by meeting three or more of the five criteria in the physical frailty phenotype [3]. The analysis linking the resilience phenotype to outcomes was conducted in two phases. First, logistic regression was applied to the full sample to predict the likelihood of achieving a perfect score in the 12-month outcomes, adjusting for covariates: age, race, sex, BMI, and stressor magnitude (anesthesia dose). Second, for participants not achieving perfect scores, generalized linear models were used to evaluate the extent of recovery, adjusting for age. **Results:** The multivariate resilience phenotype categorized the sample into: low resilience (n=41, 41%) and high resilience (n=60, 59%) groups. The low resilience group was more likely to be Black, frail, in fair or poor health (all $p<0.05$). At 12 months post-TKR, two-thirds reported perfect KOOS ADL function, and 59% reported no pain. After adjusting for covariates, high resilience was associated with nearly three times the odds of perfect function and no pain compared to low resilience (OR 2.85, 95% CI 1.16, 7.01, p=0.022; OR 3.28, 95% CI 1.27, 8.46, p=0.014, respectively). Among those who did not achieve a perfect score, high resilience was associated with a 72% reduction in ADL difficulty (95% CI: 57%, 82%, $p<0.001$) and a 60% reduction in pain (95% CI: 36%, 75%, $p<0.001$) compared to low resilience. Adjusting for baseline frailty slightly attenuated the association with perfect ADL function (OR 2.31, 95%

CI 0.90, 5.90, p=0.081), but the association with no pain remained unchanged (OR 3.29, 95% CI 1.22, 8.87, p=0.018). The associations for those with less than perfect outcomes were unaffected by baseline frailty. Frailty was not significantly associated with recovery. **Conclusion:** This study demonstrated a robust association between greater physical resilience and better clinical outcomes in older adults undergoing TKR. These findings underscore the clinical importance of monitoring physical function trajectories during the first six months post-surgery, as early recovery patterns can serve as valuable indicators of long-term outcomes. The independence of this association from frailty suggests that factors beyond physical health may play a role in recovery. Future research into these contributing factors could help identify interventions to boost resilience capacity before stressors occur, potentially improving surgical outcomes and long-term well-being. **Keywords:** Frailty, Latent variable model, Multivariate trajectory, Resilience capacity. **Disclosures:** None. **References:** 1. Walston J, Varadhan R, Xue Q-L, Buta B, Sieber F, Oni J, et al. A Study of Physical Resilience and Aging (SPRING): Conceptual framework, rationale, and study design - PubMed. Journal of the American Geriatrics Society. 2023 Aug;71(8). 2. Xue Q-L, Laskow T, Alzahrani MK, Varadhan R, Walston JD, Schrack JA, et al. Multivariate Profiling of Physical Resilience in Older Adults After Total Knee Replacement Surgery. medRxiv doi: 10.1101/2024.10.03.24314863. 3. Fried LP, Tangen CM, Walston J, Newman AB, Hirsch C, Gottdiener J, et al. Frailty in Older Adults: Evidence for a Phenotype. The Journals of Gerontology: Series A. 2001/03/01;56(3).

S5- MOLECULAR AND METABOLOMIC CHARACTERISTICS OF FRAILTY AND SARCOPENIA AND FRAILTY IMPACT ON AGING IMMUNITY.

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Communication 1: *Stable-Isotope Resolved Metabolomics Reveals Altered Energy Metabolite Fluxes in Frail Older Adults*

Background: Dysregulated energy metabolism, including altered glucose-insulin dynamics and elevations in glycolytic and TCA cycle intermediates, is a characteristic feature of frail older adults [1-3]. A limitation in understanding the dynamics of altered energy metabolism in frail older adults is a reliance on concentration measurements from subjects with arbitrary nutritional status. **Methods:** Here we have utilized isotope-tracer methods and mass spectrometry to measure glucose metabolite fluxes after a fasted 13C6-glucose challenge, in a cohort of frail (n=14) and non-frail (n=26) older adults. Male and female subjects were categorized as frail using the Fried frailty criteria. **Results:** Compared to the non-frail controls, there were significant elevations in M+1 (p=0.007) and M+2 (p=0.01) glucose and M+2 glucose 6-phosphate (p=0.0003) in frail older adults during the three hours post-glucose challenge. Frail older adults synthesized significantly less M+1 lactate (p=0.03), while having significantly elevated M+0 (p=0.01), M+1 (p=0.006), and M+3 (p=0.009) pyruvate levels over the three-hour period. Frail older adults also had significantly elevated M+3 citrate levels (p=0.005). Frail older adults also had significant changes in some kynurenines and amino acids in the fasted state. **Conclusion:** These results indicate that elevated levels of circulating energy-related metabolites seen in frail older adults, in part, result from increased rates of synthesis. These findings improve our understanding of altered energy metabolism in frailty as well as identifies frailty-related energetic signatures that can be useful as biomarkers and for developing therapeutics. **Keywords:** Glucose metabolism, fluxomics, isotope tracing, metabolomics of frailty. **Disclosures:** The authors declared no competing interests. **References:** 1. Kalyani RR, Varadhan R, Weiss CO, Fried LP, Cappola AR. Frailty status and altered glucose-insulin dynamics. J Gerontol A Biol Sci Med Sci. 2012;67(12):1300-1306. 2. Westbrook R, Zhang C, Yang H, et al. Metabolomics-based identification of metabolic dysfunction in frailty. J Gerontol A Biol Sci Med Sci. 2021:glab315. https://doi.org/10.1093/gerona/glab315. doi: 10.1093/gerona/glab315. 3. Pan Y, Li Y, Liu P, et al. Metabolomics-based frailty biomarkers in older chinese adults. Front Med (Lausanne). 2022;8:830723. doi: 10.3389/fmed.2021.830723.

Communication 2: *Chronic CaMKII Activation Drives Sarcopenia Through Inflammation and Anabolic Resistance*

Background: CaMKII is a multifunctional signaling protein expressed in skeletal muscles, activated by increased cytosolic Ca2+ and reactive oxygen species (ROS). Transient CaMKII activation during exercise enhances muscle performance and promotes adaptive inflammation, contributing to the beneficial effects of exercise [1]. However, chronic CaMKII activation is associated with reduced muscle health and function in C. elegans, Drosophila melanogaster, and mouse models of muscular dystrophy, cancer cachexia, and denervation. Notably, Ca2+ and ROS levels are elevated in aging muscles, suggesting that CaMKII may be chronically activated in older animals, contributing to sarcopenia through inflammation and other anabolic resistance pathways. **Methods:** We measured CaMKII activity in young (4 months) and old (20 months) mice using Western blot detection of autophosphorylated CaMKII. To modulate CaMKII activity, we used Adeno-Associated Virus 9 (AAV9) to express either a CaMKII inhibitor (CN19o) or constitutively active CaMKII (CaMKIICA) under a muscle-specific tMCK promoter in the tibialis anterior (TA) muscles. AAV9-tMCK-EGFP was used as a control and injected into the contralateral TA muscles. Muscle performance was assessed using in vivo contractility assays, electromyography, and in vitro Ca2+ imaging. Muscle pathology was examined using H&E and Gomori's Trichrome staining. RNA sequencing was performed to analyze transcriptomic changes associated with CaMKII inhibition or activation. **Results:** CaMKII activity was elevated in the muscles of old mice. CN19o significantly suppressed CaMKII activity and improved muscle contractile force in mice aged 24-26 months. In contrast, CaMKIICA expression in young mice led to marked reductions in muscle contractility, accompanied by a slightly decreased compound

muscle action potential (CMAP) in electromyography, although action potential-evoked Ca2+ release was unaffected. CaMKIICA expression caused significant muscle atrophy and disrupted the intermyofibrillar network, as evidenced by reduced muscle mass and histological analysis. RNA sequencing revealed that CaMKII inhibition suppressed the NF-κB pathway, reducing inflammation in old muscles. In contrast, CaMKII activation in young muscles activated NF-κB-mediated pro-inflammatory pathways and suppressed anabolic mTOR signaling. **Conclusion:** Chronic CaMKII activation in skeletal muscle promotes chronic inflammation via NF-κB activation and impairs anabolic signaling by inhibiting the mTOR pathway, contributing to sarcopenia. While acute CaMKII activation supports muscle performance and adaptation, chronic activation drives inflammation, muscle wasting, and poor muscle function. CaMKII inhibition represents a promising therapeutic strategy to counteract sarcopenia, warranting further investigation in clinical settings. **Keywords:** CaMKII, chronic inflammation, mTOR signaling, sarcopenia. **Disclosures:** QW is supported by the American Federation For Aging Research Grants for Junior Faculty, Karen and Ethan Leder CIM Human Aging Project Scholarship, Johns Hopkins Older Americans Independence Center Research Education Core grant, 2024 Nathan Shock Scholarship, and Johns Hopkins Center For AIDS Research (CFAR) Scholar Grants for Faculty Development. **References:** 1. Wang Q, et al. Nat. Commun 2021; 12: 3175. 10.1038/s41467-021-23549-3.

Communication 3: *Impact of Physical Frailty on Homotypic and Heterotypic Hemagglutination Inhibition (HAI) Antibody Responses to Influenza Vaccination Across Multiple Influenza Seasons*

Background: Influenza infection is an important cause of worldwide hospitalizations and deaths among older adults. Annual influenza vaccination is recommended to mitigate these severe complications though it is estimated that less than half of older adults demonstrate an antibody response deemed to be protective. To understand host factors that impact vaccine response among older adults, prior studies have evaluated associations between physical frailty and impaired vaccination HAI titer response with contradictory results. Most prior studies have addressed a single influenza season and have focused only on titers against current season vaccine strains. Studies examining HAI titers across multiple seasons and additional influenza strains could elucidate impact of frailty on vaccine-induced humoral immunity. **Methods:** Participants were older adults (>=75 years) enrolled in a longitudinal cohort study evaluating annual influenza vaccination response. The current analysis includes years 2015 through 2017 of the ongoing study and takes advantage of pre-vaccination and post-vaccination HAI titers obtained not only against current season vaccine strains but also prior season vaccine strains, 'heterotypic' (in cases when vaccine strain was reformulated between seasons). Frailty was measured by Fried Frailty Phenotype. Regression analysis was performed using a generalized linear model with a gamma distribution and log-link in which pre-vaccination natural log transformed HAI titer was regressed on the post-vaccination HAI titer. We evaluated a model adjusted for pre-vaccination log HAI titer and demographic covariates (age, sex, race, and education) and frailty status (nonfrail, prefrail, frail). **Results:** Demographic characteristics for cohort across 2015 (n=114), 2016 (n=92), and 2017 (n=172) seasons were similar with mean age between 82.2 years (SD=5.6) and 82.8 years (SD=5.1), female 55.3%-60.5%, white 85.9%-87.6%, high school education or less 20.7%-29.4%. Across the frailty spectrum, participants were nonfrail (23.7% in 2015, 34.8%, 34.9%), prefrail (50.9% in 2015, 47.8% in 2016, and 46.5% in 2017), and frail (7.6% in 2015, 9.8% in 2016, 7% in 2017). Compared to nonfrail participants, frailty was associated with lower post-vaccination log HAI titer against prior season influenza B antigen in 2016 (0.56 [95% confidence interval (CI) 0.38-0.82], p=0.005) and higher titer for current season influenza H1N1 antigen in 2017 (3.73 [95% CI 1.99-7.01], p=<0.001). For 2016 current season H3N2 antigen, frailty trended toward association with a higher post-vaccination titer, though not statistically significant (2.90 [95% CI 1.01-8.34], p=0.062). **Conclusion:** Within a population of community-dwelling older adults, frailty associated with both a statistically significant higher post-vaccination HAI titer and lower post-vaccination HAI titer depending on the year and strain of influenza antigen. These results highlight the challenges of understanding the impact of physical frailty on influenza vaccine response and prompt caution when comparing across different seasons and strains. Small sample size and low racial and educational diversity are important limitations to this study. Future studies with more diverse cohorts that measure a broader landscape of influenza vaccine antibody responses are needed to clarify the relationship between physical frailty and influenza-specific vaccine response. **Keywords:** Frailty, Influenza, vaccination, hemagglutination-inhibition antibody titers. **Disclosures:** This study was supported in part by NIH grant U01AI165826 as well as funding from Paul and Irma Milstein Foundation Program at Johns Hopkins Center on Aging and Immune Remodeling and from Milstein Medical Asian American Partnership (MMAAP) Foundation. Annual high-dose influenza vaccine and HAI titer measures were provided by Sanofi.

S6- UPDATE OF THE ASIAN CONSENSUS ON SARCOPENIA AND FRAILTY.

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Communication 1: *The Evolving Landscape of Sarcopenia in Asia: A Systematic review and meta-analysis following the 2019 AWGS diagnostic criteria and the future*

Background: Sarcopenia, characterized by age-related loss of muscle mass and function, poses a significant public health concern, particularly in Asia's rapidly aging population. This

systematic review and meta-analysis aimed to evaluate the current epidemiology of sarcopenia in Asia using the 2019 Asian Working Group for Sarcopenia (AWGS) diagnostic criteria. **Methods:** Databases including PubMed, Embase, Web of Science, and Cochrane were systematically searched for studies published until December 7, 2023, involving older adults aged ≥ 60 years diagnosed with sarcopenia using the 2019 AWGS criteria in Asia. Study quality was assessed, and meta-analyses were conducted to estimate the pooled prevalence of sarcopenia, possible sarcopenia, and severe sarcopenia. **Results:** A total of 140 studies, collectively involving 156,325 participants (67.1 % community-dwelling older adults with the minimum age for participant inclusion ranging from 60 to 80 years) from various Asian countries, were included. The overall prevalence of sarcopenia among community-dwelling older adults was 16.5 % (95 % CI: 14.7%-18.4 %). Notably, the prevalence of possible sarcopenia was higher at 28.7 % (95 % CI: 22.0 %-36.5 %), while severe sarcopenia had a lower prevalence of 4.4 % (95 % CI: 3.3%-5.8 %). Subgroup analyses revealed variations in sarcopenia prevalence based on diagnostic modalities, ranging from 7.5% (95 % CI: 6.0 %-9.4 %) for assessments using bioelectrical impedance analysis, handgrip strength, gait speed, chair stand and short physical performance battery, to 20.8 % (95 % CI: 18.9 %-23.0 %) when using dual-energy X-ray absorptiometry coupled with muscle strength and physical performance measures. **Conclusion:** This comprehensive systematic review and meta-analysis highlight the substantial burden of sarcopenia among older adults in Asia, underscoring the need for early identification and intervention strategies to mitigate its adverse consequences on public health.

Communication 2: *The Effectiveness of ICT Interventions in Preventing and Managing Frailty: Insights from the Japanese Guidelines*

Background: Information and communication technology (ICT) interventions, including smartphone applications and wearable devices, have demonstrated significant potential in enhancing self-management and health monitoring. These technologies offer innovative ways to support older adults and at-risk populations in maintaining their health. However, the actual effectiveness of ICT interventions in preventing and improving frailty remains uncertain. This study aimed to synthesize the current evidence on ICT's role in frailty prevention and management and develop corresponding guidelines. **Methods:** The guideline was developed using the Minds framework, the Japanese adaptation of the GRADE system. A systematic review was conducted to evaluate the impact of digital health services on frailty-related outcomes, focusing on three key populations: older adults, at-risk non-older populations, and individuals already diagnosed with frailty. Comprehensive literature searches were performed in databases including MEDLINE, Embase, and Cochrane, and a limited number of studies met the eligibility criteria. The primary outcomes of interest included frailty incidence, physical function (e.g., chair stand test, walking speed), and quality of life. Meta-analyses were conducted where appropriate. **Results:** The results from the meta-analysis were mixed. In older adults, ICT interventions did not significantly reduce frailty incidence or improve quality of life, though modest improvements were observed in physical activity levels and chair stand test performance. For at-risk populations, ICT interventions showed promise in improving physical activity measures, but the evidence was insufficient for strong recommendations. In individuals already diagnosed with frailty, the evidence was weak, and no significant improvements were observed. Importantly, no adverse effects were reported, suggesting the safety of ICT interventions, though their effectiveness remains inconclusive. **Conclusion:** ICT interventions show potential in the prevention and management of frailty. However, the current body of evidence is insufficient to make strong recommendations. The limited number of studies and small sample sizes emphasize the need for more robust, large-scale research. Future studies should aim to better understand the role of ICT in frailty prevention and management, particularly in older and at-risk populations. **Keywords:** Frailty, ICT interventions, digital health, Japanese guideline, prevention, older adults. **Disclosures:** There are no conflicts of interest to declare. This study was funded by the Japan Agency for Medical Research and Development (Grant number: 22rea522005h0001).

Communication 3: *Nutrition Management Guidelines for Sarcopenia and Frailty 2024 in Japan*

Background: Evidence has been accumulating regarding the usefulness of nutritional intervention for patients with frailty or sarcopenia, focusing on the intake of adequate calories and sufficient protein in older people. However, there have not been many reports based on systematic reviews of the effectiveness of nutritional interventions on the prevention and treatment of frailty or sarcopenia complicated with chronic noncommunicable diseases, as well as on poor outcomes mediated by these diseases. **Methods:** A systematic review was conducted to evaluate the impact of nutritional interventions on frailty- and sarcopenia-related outcomes, focusing on older adults with comorbidities, such as kidney disease, liver cirrhosis, heart failure, respiratory failure, diabetes, and others. Comprehensive literature searches were performed using databases including MEDLINE and Cochrane. The primary outcomes of interest included frailty and sarcopenia incidence, disability, and mortality. **Results:** Although we found medium-level evidence indicating the effect of protein supplementation in older people with sarcopenia or frailty, evidence was not always sufficient in patients with comorbidities. For example, medium-level evidence was found for the amino acid (BCAA) and vitamin D supplementation in liver cirrhosis patients and for protein supplementation in patients with heart failure or diabetes mellitus, along with the provision of appropriate physical exercise programs. However, low to very low-level evidence was available for nutritional interventions for patients with kidney failure and respiratory failure. These findings were published as a joint guideline by the Japanese Association on

Sarcopenia and Frailty and the Japanese Society of Clinical Nutrition. **Conclusion:** In clinical practice, healthcare professionals need to take care of more and more patients with frailty or sarcopenia complicated by comorbidities. More evidence accumulation is required in patients with kidney disease and respiratory disease.

Conferences

CONF1- SPACE TRAVEL AND ACCELERATED AGING: EVIDENCE OF A 14-DAY BED REST STUDY ON FRAILTY. O. Theou[1], J. Blodgett[2], J. Godin[1], D.S. Kehler[1], S. Howlett[1], K. Rockwood[1] *((1) Dalhousie University - Halifax (Canada), (2) University College London - London (United Kingdom))*

Background: On Earth, prolonged bed rest cause deleterious effects in multiple physiological systems that appear to hasten aging processes. Intriguingly, many such changes are similar to those seen with microgravity in space. Investigating the biological mechanisms that underlie the accelerated aging seen with prolonged bed rest can thereby allow insights into changes that occur with spaceflight. In this study, we investigated the effects of 14 days of bed rest and subsequent recovery, and an exercise countermeasure, on frailty outcomes. **Methods:** We conducted a two-arm randomized controlled trial with 22 participants. After a 5-day acclimatisation period, participants spent 14 days in complete head-down tilt position, followed by 7 days of recovery and assessments at 4-weeks and 4-months. The exercise group (n=11) underwent three daily exercise sessions (~60-75min total), incorporating strength training, high intensity interval training, and aerobic activity, and the control group engaged in passive stretching. Frailty was measured using a 62-item frailty index at baseline and 4 months and a 36-item frailty index at 10 timepoints throughout the study. Statistical analyses included repeated measures ANOVA and piecewise random-effects models. **Results:** Participants (mean age: 58.4±3.9 years; 50% female) had low frailty at baseline (85th and 96th percentile compared to age and sex norms in exercise and control group, respectively). There was an increase in frailty from baseline (0.017±0.02) to 4-month follow-up (0.033±0.03), although no difference in increase between groups. Frailty also increased linearly during bed rest (0.005 increase/day), with no group differences. Frailty decreased nonlinearly during recovery, with lower levels in the exercise group. **Conclusion:** Findings indicate that bedrest has an adverse impact on frailty levels, with neither control nor exercise group returning back to baseline even after 4-month period. There appeared to be some protective effects of exercise during recovery. **Keywords:** Frailty index, bed rest, hospitalisation, exercise, intervention. **Disclosures:** Dr. Olga Theou and Dr. Kenneth Rockwood have asserted copyright of the Pictorial Fit-Frail Scale, which is made freely available for education, research, and not-for-profit health care. Licenses for commercial use are facilitated through the Dalhousie Office of Commercialization and Industry Engagement.

CONF2- HEALTHY LONGEVITY ACTIONS: FROM RESEARCH TO IMPLEMENTATION. L.K. Chen[1], R. Merchant[2], H. Arai[3] *((1) National Yang Ming Chiao Tng University - Taipei (Taiwan, Republic of China), (2) National University Of Singapore - Singapore (Singapore), (3) National Center For Geriatrics And Gerontology - Obu (Japan))*

Taiwan, one of the fastest-aging countries in the world, has launched a comprehensive initiative to address the challenges of an aging population and promote healthy longevity. The Gan-Dau Healthy Longevity Plan is a pioneering, community-based program designed to support older adults in maintaining physical, cognitive, and social well-being. The Plan emphasizes multidomain interventions to prevent frailty, disability, and dementia, drawing on the success of the Taiwan Integrated Geriatric Care (TIGER) Study. By incorporating cutting-edge technologies such as AI and smart medical devices, the Plan not only enhances the quality of care but also facilitates better integration of data from hospitals, communities, and homes. This digital transformation aims to maximize healthy life expectancy, creating a sustainable ecosystem for aging in place. Preliminary data indicate an increased likelihood of disability- and dementia-free survival over the next 5 to 10 years, aligning with the overarching objective of promoting healthy aging. Moreover, international collaborations with Japan and Singapore underscore the global significance of Taiwan's approach to healthy aging, contributing valuable insights for global healthy aging efforts. Through the Gan-Dau Healthy Longevity Plan, Taiwan is setting a benchmark in how communities can foster the well-being and independence of older adults, while addressing the challenges of rapid demographic change. Building on the success of the Gan-Dau Healthy Longevity Plan, a larger national initiative has been launched: the VA Integrated Care with Technology for Active Living and Healthy Longevity (VITALITY). This program collaborates with 12 community hospitals within the VA system and involves the full implementation of Steps 1-5 of the WHO's Integrated Care for Older People (ICOPE) framework. Additionally, it integrates digital health technologies at the community level through TIGER centers, providing comprehensive care services across outpatient, inpatient, post-acute, and long-term care settings. The program also includes community brain health centers to support residents with cognitive impairments.

CONF3- BLOOD FLOW RESTRICTION TRAINING IN OLDER ADULTS WITH OR SUSCEPTIBLE TO SARCOPENIA. L. Cahalin[1], L. Hughes[2], A. Franz[3] *((1) University Of Miami Miller School Of Medicine - Coral Gables (United States), (2) Northumbria University - Newcastle Upon Tyne (United Kingdom), (3) University Hospital Bonn - Bonn (Germany))*

Background: Sarcopenia is a progressive and generalized skeletal muscle disorder found in older adults in whom there is loss of muscle strength and size which impairs functional performance (FP) and increases the likelihood of adverse

outcomes including falls, fractures, physical disability, and mortality.1-6 Although resistance training (RT) is recommended as first-line treatment to improve skeletal muscle strength and size in sarcopenia, we have found it difficult to perform RT at the suggested higher intensities [70-85% of 1-repetition max (1RM)] which we believe may also be unsafe [1-7]. However, a recent systematic review and meta-analysis of 50 randomized controlled trials found that vigorous intensity RT at 70-84% of 1RM had greater benefits on muscle mass, lower extremity strength, and FP compared to moderate intensity RT at 50-69% of 1RM.7 In view of this finding and difficulty administering RT with potential safety concerns at higher intensities in older adults, we challenge the current paradigm of RT for sarcopenia by using a novel method of restricting blood flow during low-intensity RT (20% of 1RM) via auto-regulated cuffs placed on the limbs with reperfusion of blood flow during rest periods. The purpose of this study was to review the literature of blood flow restriction (BFR) RT in older individuals with or susceptible to sarcopenia. **Methods:** A systematic review of available literature related to RT with and without BFR. **Results:** A substantial amount of compelling evidence shows that BFR-RT significantly improves skeletal muscle strength via increased physiological stress and activation of several mechanisms leading to positive muscle adaptation including muscle cell swelling, activation of intracellular anabolic pathways, and recruitment of fast twitch muscle [1-7]. Improved skeletal muscle strength has been shown to significantly improve FP in older adults with sarcopenia [1-7]. In fact, a recent systematic review of chronic BFR-RT in older adults susceptible to sarcopenia found that data from 13 studies with a total of 332 participants improved a variety of FP measures including the timed-up-and-go, 30-second sit-to-stand (30sSTS), and knee extension strength with the greatest effect on 30sSTS (effect size of 2.78) [6]. Various mechanisms have been proposed to be responsible for the improvements in FP from BFR-RT in non-sarcopenic older adults such as increased skeletal muscle strength and endurance as well as improvements in cardiopulmonary performance (CPP) and vascular health [1-10]. In fact, significant increases in circulating vascular endothelial growth factor, stromal-derived factor-1α, CD34+ hematopoietic stem/progenitor cells, and angiotensin-converting enzyme-2 activity were observed after an acute bout of low-intensity BFR-RT highlighting the potential of BFR-RT to stimulate vascular regeneration and attenuate the progressive nature of sarcopenia while improving FP [8-10]. We have also found that BFR-RT produced substantial improvements in skeletal muscle performance, FP, CPP, quality of life, and surrogate measures of vascular health in a 72-year-old male with severe sarcopenia all of which were likely responsible for the subject meeting fewer established criteria for sarcopenia [11, 12]. Similar findings have also been observed in several other case reports [13, 14]. **Conclusion:** BFR-RT appears to have substantial potential in decreasing the pathophysiological manifestations of sarcopenia while improving FP in older adults. **Keywords:** Aging, sarcopenia, skeletal muscle, blood flow restriction, vasculature, function, mobility, rehabilitation, exercise. **Disclosures:** The authors have no conflicts of interest nor competing interests. **References:** 1. Cruz-Jentoft AJ, Bahat G, Bauer J, et al. Sarcopenia: revised European consensus on definition and diagnosis. Age and Ageing 2019;48:16-31. 2. Negm AM, Lee J, Hamidian R, Jones CA, Khadaroo RG. Management of Sarcopenia: A Network Meta-Analysis of Randomized Controlled Trials. J Am Med Dir Assoc. 2022 Feb 18:S1525-8610(22)00097-4. doi: 10.1016/j.jamda.2022.01.057. Online ahead of print. 3. Burton LA, Sumukadas D. Optimal management of sarcopenia. Clin Interv Aging. 2010; 5: 217–228. 4. Beckwee D, Delaere A, Aelbrecht S, et al. Exercise interventions for the prevention and treatment of sarcopenia. a systematic umbrella review. J Nutr Health Aging 2019;23(6):494-502. 5. Hughes L, et al. Blood flow restriction training in clinical musculoskeletal rehabilitation: a systematic review and meta-analysis. Br J Sports Med. 2017. PMID: 28259850 Review. 6. Cahalin LP, Formiga, MF, Anderson B, Cipriano G, Hernandez ED, Owens J, Hughes L. A call to action for blood flow restriction training in older adults with or susceptible to sarcopenia: a systematic review and meta-analysis. Frontiers in Physiology 2022 Aug 15;13:924614. doi: 10.3389/fphys.2022.924614. 7. Chen YC, Chen WC, Liu CW, Huang WY, Lu IC, Lin CW, Huang RY, Chen JS, Huang CH. Is moderate resistance training adequate for older adults with sarcopenia? A systematic review and network meta-analysis of RCTs. Eur Rev Aging and Phys Activity 2023;20:22. 8. Joshi S, Wollenzien H, Leclerc E, Jarajapu YP. Hypoxic regulation of angiotensin-converting enzyme 2 and Mas receptor in human CD34+ cells. Journal of Cellular Physiology. 2019;234(11):20420-31. 9. Joshi S, Mahoney S, Jahan J, Pitts L, Hackney KJ, Jarajapu YP. Blood flow restriction exercise stimulates mobilization of hematopoietic stem/progenitor cells and increases the circulating ACE2 levels in healthy adults. Journal of applied physiology (Bethesda, Md: 1985). 2020 May 1;128(5):1423-31. 10. Jarajapu YP. Targeting Angiotensin-Converting Enzyme-2/Angiotensin-(1-7)/ Mas Receptor Axis in the Vascular Progenitor Cells for Cardiovascular Diseases. Mol Pharmacol. 2021 Jan;99(1):29-38. doi: 10.1124/mol.119.117580. 11. Ravelo D, Yair D, Wiese P, Perez N, Burnett K, Currie J, Owens J, Cahalin LP. Blood Flow Restriction Training Improves Pulmonary Function in a Patient with COPD and Sarcopenia. Cardiopulm. Phys. Ther. J. 2023;34(1):a13. 12. Yair D, Ravelo D, Wiese P, Perez N, Burnett K, Currie J, Owens J, Hartley G, Cahalin LP. Blood Flow Restriction Versus High Load Resistance Training in a Patient with COPD and Sarcopenia. J Geriatric Phys Ther 2023;46(1):E1-E59. 13. Kohlbrenner D, Aregger C, Osswald M, Sievi NA, Clarenbach CF. Blood-flow-restricted strength training combined with high-load strength and endurance training in pulmonary rehabilitation for COPD: A case report. Phys Ther J 2021;101:1-6. 14. Lopes KG, Bottino DA, Farinatti P et al. Strength training with blood flow restriction – A novel therapeutic approach for older adults with sarcopenia? A case report. Clin Intervent Aging 2019;14:1461-1469.

Oral Communications

OC1- A NOVEL DNA METHYLATION PREDICTOR FOR FRAILTY INDEX AND FRAILTY RESILIENCE: TRANSFORMING FRAILTY ASSESSMENT.

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Background: Frailty serves as a key indicator of health and aging, reflecting a state of increased vulnerability to adverse health outcomes such as diseases, disability, and mortality. As individuals age, understanding and quantifying frailty becomes essential for improving quality of life and promoting healthy aging. Recently, the Frailty Resilience Score (FRS) has emerged as a promising metric to quantify individual resistance to frailty in the presence of traditional risk factors including age, female sex, and genetic predisposition. By calculating the difference between the observed Frailty Index (FI) and an expected FI based on these factors, the FRS reveals insights into why some individuals remain robust despite higher frailty risks. FRS has proved to be a reliable predictor of mortality, showing its potential utility in identifying individuals who age more healthily and providing insights into the biological and lifestyle factors that contribute to resilience. DNA methylation (DNAm) data has been shown to capture distinct aspects of the aging process, with system specific DNAm scores and rate of aging DNAm metrics even showing strong associations with FI and FRS. Despite its potential, a robust predictive model leveraging DNAm data specifically for FI and FRS has yet to be established. Developing such a model could transform our approach to frailty assessment, enabling more precise predictions and targeted interventions that could enhance resilience to frailty. **Methods:** In response to this need, we developed blood-based DNA methylation (DNAm) biomarkers for both the FI and FRS through an advanced multi-step pipeline. This process involved removing unreliable methylation probes, conducting Epigenome-Wide Association Studies (EWAS), and using stability selection – a technique that combines subsampling with selection algorithms – to identify CpG sites stably predictive of frailty and frailty resilience. We subsequently employed elastic net models on these selected CpG sites to effectively predict FI and FRS. **Results:** Our findings revealed strong associations between DNAm-based scores and FI and FRS across four independent population-based datasets: the LonGenity study, the Health and Retirement Study (HRS), the Swedish Twin Study of Aging (SATSA), the Baltimore Longitudinal Study of Aging (BLSA). Additionally, we established correlations between DNAm FI and FRS scores with over 25 aging phenotypes, demonstrating their predictive power for various future disease events and functional outcomes. **Conclusion:** The development of these novel DNAm biomarkers presents a transformative approach for predicting frailty and resilience to frailty, potentially guiding more tailored and effective health interventions for aging populations. By illuminating the biological and lifestyle factors that contribute to resilience, the FRS offers new research avenues in geroscience and public health strategies aimed at promoting healthy aging. **Keywords:** Frailty, aging, DNA methylation, resilience, biomarkers.

OC2- A METABOLITE-WIDE ASSOCIATION STUDY OF AGE AND FRAILTY IN OVER 200,000 ADULTS.

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Background: Frailty is an age-related medical syndrome associated with increased mortality risk. Identifying metabolomic profiles linked to frailty may provide insights into its biological causes and consequences. **Methods:** The UK Biobank is a multi-centre observational health study that recruited over half a million middle-aged and older adults between 2006 and 2010. The Nightingale Health platform was used to quantify circulating plasma metabolites at the baseline assessment. We derived the two most common measures of frailty: the frailty phenotype and the frailty index. **Results:** The analytical sample included over 200,000 participants (mean age = 56.44 years, SD = 8.12). Most metabolite levels (163 out of 168) varied with chronological age, showing considerable evidence of non-linear relationships. Of the metabolites statistically significantly associated with age ($P < 0.05/168$), 95% were also associated with the frailty index and 89% with the frailty phenotype. A metabolite-predicted age (MileAge) older than one's chronological age was associated with higher frailty index scores ($\beta = 0.023$, 95% CI 0.021–0.024, $P < 0.001$, comparing individuals with a MileAge delta at least one standard deviation above and below the mean). This group difference was comparable to an 18.3-year chronological age difference in frailty index scores. Individuals with a metabolite-predicted age older than their chronological age were also more likely to be physically frail (OR = 1.29, 95% CI 1.23–1.35, $P < 0.001$). **Conclusion:** These findings highlight a considerable overlap in the metabolites associated with age and frailty. Metabolite-based age predictions are correlated with both the frailty index and the frailty phenotype, suggesting they have potential for identifying individuals at risk of developing frailty. **Keywords:** Frailty, metabolomics, ageing, biobank. **Disclosures:** JM is supported by the King's Prize Fellowship. The author declares no competing interests.

OC3- MULTIOMICS REVEALS MECHANISMS OF REJUVENATION IN AGED MICE BY LOSARTAN.

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Background: Losartan is one of the most prescribed medications for older adults in the US. Emerging evidence suggests losartan, and its metabolites, may improve measures of strength and frailty in older adults. It is therefore of critical importance to elucidate the mechanisms by which losartan may act and identify possible tissue specific impacts.

Losartan is primarily known for its inhibition of angiotensin II receptor type 1, however other mechanisms such as targeting mitochondria through Peroxisome proliferator-activated receptor gamma agonism or indirect effects on angiotensin II receptor type 2 may contribute to its effects. **Methods:** To uncover the molecular effects of losartan, we performed targeted metabolomics and proteomics on serum and heart tissue from wild-type young (4 months) and aged (24-27 months) male mice, as well as aged mice treated with losartan for 6 weeks. Additionally, metabolomics were conducted on angiotensin II receptor type 1 or type 2 knockout mice, treated or untreated with losartan. Integrated multi-omics pathway analysis was used to identify key biological pathways impacted by losartan. The effects of losartan on cardiac function were assessed in aged (34 months) and young (6 weeks) male mice using magnetic resonance spectroscopy (MRS) and positron emission tomography (PET) with carbon-11 acetate. **Results:** Metabolomic and proteomic profiling revealed that losartan induced a global shift towards a more youthful metabolome in aged mice (serum metabolome ϱ = -0.22, p = 0.01; heart metabolome ϱ= -0.49, p =3.6e-8; heart proteome ϱ = -0.49, p = 3.6e-8). Key rejuvenating effects were observed in oxidative phosphorylation pathways, where proteins from complex I and cytochrome complexes showed significant upregulation in untreated aged hearts but were downregulated after losartan treatment. Interestingly, losartan's rejuvenation of the serum metabolome was found to be independent of angiotensin II receptor type 1, suggesting distinct receptor mechanisms in different tissues. These molecular changes translated to functional improvements. Losartan-treated aged mice exhibited normalized heart mass (99 mg in treated aged vs. 106 mg in young, P = 0.3) and restored phosphocreatine to adenosine triphosphate (PCr/ATP) ratios (1.75 in treated aged vs. 1.74 young, P < 0.9), indicating improved cardiac bioenergetics. Furthermore, myocardial oxygen consumption, as measured by PET, was reduced in losartan-treated aged mice. These physiological improvements were additionally accompanied by better survival rates (log-rank, p = 0.015). **Conclusion:** Losartan rejuvenated both molecular and functional phenotypes in aged mice. It normalized heart bioenergetics and reduced oxidative stress, highlighting mitochondrial dysfunction as a key target of losartan. The serum rejuvenation effect appears to act independently of the angiotensin II receptor type 1, emphasizing potential tissue-specific mechanisms. This study provides compelling evidence for the continued investigation of losartan as a clinical intervention for aging-related dysfunction, particularly in addressing mitochondrial and metabolic health in older adults. **Keywords:** Geroscience, aging, interventions, multi-Omics. **Disclosures:** This Research was supported by 2T32AG058527-06A1 and 5T32AR048522-20 to M.R.B.

OC4- GLUCAGON-LIKE-PEPTIDE-1 RECEPTOR AGONISTS AND MUSCULOSKELETAL HEALTH IN OLDER ADULTS: RESULTS FROM A PILOT RANDOMIZED CONTROLLED TRIAL.

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Background: The impact of Glucagon-like peptide-1 receptor agonist (GLP1-Ra)- based therapies are well known for their glycemic control and chronic weight management success. Their impact on the content of weight being lost and associated physical function changes are understudied, particularly in older adults who are at risk for sarcopenia and frailty. The purpose of this project was to explore the impact of semaglutide, a GLP1-Ra, on musculoskeletal health in older adults. **Methods:** We conducted a 20-week open label, randomized trial with older adults with prediabetes or diabetes (hemoglobin A1c ≥ 5.7%) and overweight or obese (body mass index ≥ 27 kg/m2). Participants were allocated to a combination semaglutide 1.0mg weekly and lifestyle counseling (n=10, "intervention") or lifestyle counseling alone (n=10, "control"). Total body weight, DXA-acquired body composition measures (bone mineral density, fat mass, lean mass), and physical function (6-minute walk, short physical performance battery, grip strength) were measured at baseline and 20-weeks. Paired t-tests were performed to assess changes from baseline to 20 weeks within groups, and between-group difference were evaluated using independent t-tests. **Results:** At baseline, participants were 72.7 ± 4.9 years of age, 50% women, 45% Hispanic, and living with obesity (BMI= 32.9 ± 3.9 kg/m2). After 20-weeks intervention, the intervention group experienced greater weight loss than control group [-5.3 kg (95% CI -7.3, -3.3) vs -0.7 kg (95% CI -2.1, 0.8), p<0.001]. Although the intervention group had a decline in lean body mass, there was no significant between group difference [-1.8kg (95% CI -2.9, -0.6) vs -0.4 kg (95% CI -1.9, 1.2), p=.12]. There was no significant change from baseline or between-group difference in bone mineral density [0.01 g/cm2 (95% CI -0.003, 0.03) vs 0.003 g/cm2 (95% CI -0.02, 0.02), p=0.47], 6 minute walk [3.3m (95% CI -31.8, 38.5) vs -6.3 (95%CI -32.3, 19.7), p=0.63], dominant hand grip strength [-1.9 kg (95% CI -4.3, 0.3) vs -2.2 (95% CI -4.7, 0.3), p=0.85], or short physical function battery [0.6 (95% CI -0.6, 1.8) vs 0.3 (-0.4, 0.9), p=0.63] for intervention group vs control group, respectively. **Conclusion:** Pilot data show that older adults allocated to semaglutide+lifestyle intervention lost significantly more weight that resulted in a decline of lean mass, which was not significantly different compared to lifestyle alone. There were no significant changes from baseline or between groups for bone mineral density or physical function measures. **Clinical Trail Registry:** NCT05786521. **Disclosures:** The authors declared no competing interest.

OC5- ASSOCIATION BETWEEN ACCELERATED EPIGENETIC AND INFLAMMATORY AGING AND COGNITIVE FUNCTION IN MEN AND WOMEN: A CROSS-SECTIONAL ANALYSIS FROM THE INSPIRE-T COHORT. S. Thuriot[1], J. Shourick[1], M. Strumia[1], V. Bongard[1], D. Furman[2], J.M. Lemaitre[3], S. Guyonnet[1], H. Bischoff-Ferrari[1], S. Andrieu[1], L. Rouch[1], B. Vellas[1]
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Background: Biological age has been increasingly recognized as outperforming chronological age in determining age-related outcomes. Epigenetic alterations, specifically DNA methylation patterns, have been employed to develop epigenetic aging clocks as a measure of biological aging. Likewise, an inflammatory aging clock has recently been developed by Furman and colleagues, based on patterns of systemic age-related inflammation, another biomarker of biological aging. To what extent biological aging is associated with cognition is unclear. Also, gender differences have not been explored, which may be relevant as men may experience faster epigenetic aging. Further, there is limited data on the interplay between epigenetic and inflammatory aging. We therefore aimed to assess the associations between accelerated epigenetic and inflammatory aging, cognition, and potential interactions with sex or between both aging patterns. **Methods:** We included 586 participants (median age 51 [37-61] years, women 66%) from the INSPIRE-T human translational research cohort. At baseline, five measures of epigenetic (DNAm) age accelerations were considered, based on first (Horvath's pan tissue clock [1], Horvath's skin and blood clock [2] and Hannum's clock [3]) and second generation (PhenoAge [4] and GrimAge [5]) epigenetic aging clocks. Inflammatory age acceleration was estimated from Furman iAge clock. Epigenetic age acceleration was the residual from a linear regression model regressing DNAm age on chronological age. A similar method was used to compute inflammatory age acceleration. Baseline global cognition was calculated as a composite measure using the average of Z scores for the Mini Mental State Examination (MMSE) orientation items (orientation), Free and Cued Selective Reminding Test (FCSRT) (episodic memory), Digit Symbol Substitution Test (DSST) (processing speed), Category Naming Test (CNT) (verbal fluency). Each domain was also assessed separately. Linear regressions were used to examine the association between accelerated epigenetic and inflammatory aging and cognition. **Results:** In unadjusted models, only accelerated epigenetic aging based on skin and blood Horvath's and GrimAge clocks was associated with lower global cognition (β = -0.03, 95% CI [-0.04; -0.01], $p<0.001$). Accelerated inflammatory aging was not associated with global cognition ($p=0.13$). Skin and blood Horvath's accelerated epigenetic aging was consistently associated with lower cognition on FCSRT (β = - 0.33, 95% CI [-0.53; -0.14], $p<0.001$) and DSST (β = -0.54, 95% CI [-0.82; -0.27], $p<0.001$). GrimAge accelerated epigenetic aging was also significantly ($p<0.001$) associated with lower processing speed. After adjustment for chronological age and sex, only GrimAge accelerated epigenetic aging was associated with lower global cognitive function (β = -0.02, 95% CI [-0.03; -0.01], $p=0.02$). Additional adjustment for education and ApoE4 status led to non-significant results. Similar findings were obtained on processing speed. Accelerated inflammatory aging was not associated with cognition after adjustment. Interactions with sex or between epigenetic and inflammatory aging were not significant. **Conclusions:** In our cross-sectional study, after adjusting for chronological age, sex, education and ApoE4, accelerated epigenetic and inflammatory aging were no longer associated with cognition. Longitudinal studies are needed to investigate how accelerated epigenetic, inflammatory aging and their interplay can affect cognitive trajectories, as well as their added predictive value over chronological age on cognitive impairment. **Keywords:** Epigenetic aging clocks, inflammatory aging clock, biological aging, cognition, translational research. **Disclosures:** The authors have no conflicts of interest to declare relevant to the present research. **References:** 1. Horvath S. DNA methylation age of human tissues and cell types. Genome Biol. 2013;14(10):R115. doi: 10.1186/gb-2013-14-10-r115. Erratum in: Genome Biol. 2015;16:96. PMID: 24138928; PMCID: PMC4015143. 2. Horvath S, Oshima J, Martin GM, Lu AT, Quach A, Cohen H, Felton S, Matsuyama M, Lowe D, Kabacik S, Wilson JG, Reiner AP, Maierhofer A, Flunkert J, Aviv A, Hou L, Baccarelli AA, Li Y, Stewart JD, Whitsel EA, Ferrucci L, Matsuyama S, Raj K. Epigenetic clock for skin and blood cells applied to Hutchinson Gilford Progeria Syndrome and ex vivo studies. Aging (Albany NY). 2018 Jul 26;10(7):1758-1775. doi: 10.18632/aging.101508. PMID: 30048243; PMCID: PMC6075434. 3. Hannum G, Guinney J, Zhao L, Zhang L, Hughes G, Sadda S, Klotzle B, Bibikova M, Fan JB, Gao Y, Deconde R, Chen M, Rajapakse I, Friend S, Ideker T, Zhang K. Genome-wide methylation profiles reveal quantitative views of human aging rates. Mol Cell. 2013 Jan 24;49(2):359-367. doi: 10.1016/j.molcel.2012.10.016. Epub 2012 Nov 21. PMID: 23177740; PMCID: PMC3780611. 4. Levine ME, Lu AT, Quach A, Chen BH, Assimes TL, Bandinelli S, Hou L, Baccarelli AA, Stewart JD, Li Y, Whitsel EA, Wilson JG, Reiner AP, Aviv A, Lohman K, Liu Y, Ferrucci L, Horvath S. An epigenetic biomarker of aging for lifespan and healthspan.

OC6- ASSOCIATIONS OF MUSCLE MITOCHONDRIAL BIOENERGETICS AND DEPRESSIVE SYMPTOMS WITH MUSCULOSKELETAL PAIN: THE STUDY OF MUSCLE, MOBILITY AND AGING. M. Hetherington-Rauth[1], P. Cawthon[2], E. Strotmeyer[3], H. Barnes[1], D. Marcinek[4], S. Bauer[5], N. Lane[6], S. Cummings[2], T. Mau[2] *((1) San Francisco Coordinating Center, California Pacific Medical Center Research Institute - San Francisco (United States), (2) San Francisco Coordinating Center, California Pacific Medical Center Research Institute; Department Of Epidemiology And Biostatistics, University Of California San Francisco; - San Francisco (United States), (3) Department Of Epidemiology, School Of Public Health, University Of Pittsburgh - Pittsburgh (United States), (4) Department Of Radiology, University Of Washington - Seattle (United States), (5) Department Of Epidemiology And Biostatistics, University Of California San Francisco; Department Of Medicine And Urology, University Of California San Francisco; San Francisco Va Healthcare System - San Francisco (United States), (6) Department Of Medicine And Rheumatology, University Of California Davis - Sacramento (United States))*

Background: Frailty affects 25-50% of those aged ≥ 85 and is defined as an impaired ability to respond to adverse events, including surgery. Recovery is also impaired with capacity remaining lower than baseline following a stressor event. An essential sign of frailty is reduced ability to perform daily activities (APDA). **Objectives:** The objective of this study was to calculate a Rockwood Frailty Index (FI) and correlate degree of frailty against breast cancer treatment decision making and outcomes. **Methods:** This unplanned secondary analysis of 3460 women over age 70 with early breast cancer uses a validated FI derived for each patient using data from a baseline comprehensive geriatric assessment. A multivariate Cox's proportional hazards model was developed to determine risk factors for overall and non-breast cancer specific mortality, including frailty. The role of frailty as a predictor of treatment allocation and the recovery from surgery was also assessed. **Results:** The median age of the cohort was 77 (range 70-102). Frailty was identified in 1176/3275 (37%) of patients, prefrailty in 1668/3275 (50%) and 431/3275 (13%) were robust, aligning with reported literature. The FI correlated with age (univariate) (R = 0.29, 95%CI 0.26-0.32). A multivariate Cox's proportional hazards model identified frailty as an independent predictor of overall (HR=2.71, 95%CI 1.60-4.62, P<0.001) and non-breast cancer specific survival (HR=4.37, 95%CI 2.00-9.53, P<0.001). Robust patients were significantly more likely to receive surgery (HR 1.33, 95%CI 1.275-1.393) than frail patients. Of the patients who received major surgery (mastectomy/axillary clearance) between baseline and 6 weeks, 42/129 (35%) of robust patients, 247/447 (55%) of prefrail, and 213/268 (79%) frail experienced limitations at the 6 week follow up. By 12 months post-surgery, majority of robust patients had made a full recovery, with only 17/101 (17%) having limitations, while 172/394 (44%) of prefrail and 153/189 (81%) of frail patients still had limitations. **Conclusion:** These data suggest that the degree of frailty impacts the choice of treatment for early breast cancer and also impacts on treatment outcomes and resilience. As cellular senescence is a driver of frailty, work is ongoing to determine whether levels of tissue senescence correlate with frailty and the development of post-surgical limitations. **Disclosures:** Patents on senolytic drugs and their uses are held by Mayo Clinic. This research has been reviewed by the Mayo Clinic Conflict of Interest Review Board and was conducted in compliance with Mayo Clinic Conflict of Interest policies.

OC7- EFFECT OF WEIGHTED VEST USE OR RESISTANCE EXERCISE DURING CALORIC RESTRICTION ON SECONDARY CT-DERIVED BONE OUTCOMES: RESULTS FROM THE INVEST IN BONE HEALTH RANDOMIZED CLINICAL TRIAL. A. Weaver[1], L. Lenchik[1], B. Nicklas[1], M. Howard[1], S.D. Lynch[1], D. Beavers[2], K. Beavers[2] *((1) Wake Forest University School Of Medicine - Winston-Salem, NC (United States), (2) Wake Forest University - Winston-Salem, NC (United States))*

Background: While intentional weight loss (WL) effectively reduces fat mass and obesity-related risk factors, it remains controversial in older adults due to the potential musculoskeletal health risks, such as loss of bone mineral density (BMD). In a population already prone to skeletal compromise, BMD loss significantly heightens fracture risk. Computed tomography (CT) offers an advanced approach for evaluating WL-associated changes in bone at the compartmental level. **Methods:** 150 older (66.4±4.6 years) adults (75% women; 69% White) living with overweight or obesity (BMI: 33.6±3.3 kg/m^2) were randomized into the INVEST in Bone Health Trial (NCT04076618). Participants were randomized into three treatment groups (n=50/group): WL only (caloric restriction targeting 10% WL with adequate calcium, vitamin D, and protein); WL plus weighted vest use (WL+VEST; 8 hours/day, weight replacement titrated up to 10% total WL); or, WL plus progressive RT (WL+RT; supervised 3 sessions/week). At baseline, six and 12 months, participants underwent CT scans of the lumbar spine through mid-femur. Each scan included a Mindways phantom to assess trabecular and cortical volumetric BMD (vBMD) at the spine and hip (g/cm^3). This analysis focuses on treatment effects for secondary CT bone measures, which were estimated using a mixed model adjusted for visit (six or 12 months), visit by treatment interaction, sex, and baseline value of the outcome. **Results:** 133 (89%) participants completed the study. Significant and similar WL, ranging from 9.7-11.2%, was achieved in all groups. Over 12 months, self-reported weighted vest wear-time was 7.1±1.5 hours/day, with 78.0±29.9% of lost weight replaced in the vest; participants assigned to WL+RT attended 71.4±19.1% of sessions. At baseline, total hip (TH) and femoral neck (FN) cortical vBMD were 0.704±0.03 g/cm^3 and 0.697±0.04 g/cm^3, respectively. FN trabecular vBMD was 0.127±0.03 g/cm^3, similar to average L1-L4 trabecular vBMD of 0.121±0.04 g/cm^3. TH cortical vBMD increased modestly across all groups at both six and 12 months (+0.8–1.3%). Similarly, FN cortical vBMD increased at 6 months

(+1.0–1.4%) and 12 months (+1.3–1.9%) across all groups. In contrast, FN trabecular vBMD decreased over time, with the largest 12-month declines observed in the WL group (-3.3%), followed by WL+RT (-2.1%), and WL+VEST (-1.3%). However, treatment effects for all hip vBMD outcomes were not statistically significant (all $p > 0.146$). At the spine, L1-L4 trabecular vBMD increased from baseline to six months in all groups (WL:+3.9%, WL+RT:+3.7%, WL+VEST:+1.2%), but treatment effects were not significant (p=0.170). By 12 months, a significant treatment effect was observed (p=0.049), with the WL+RT group showing a slight increase (+2.3%) in L1-L4 trabecular vBMD [Δ:+0.003 g/cm^3] compared to the WL [Δ:+0.000 g/cm^3] and WL+VEST [Δ:-0.000 g/cm^3] groups. **Conclusion:** In the INVEST in Bone Health Trial, most secondary CT bone measures showed no significant interventional effects, except for a modest impact of resistance training on the 12 month increase in L1-L4 trabecular vBMD. Notably, WL was associated with increased vBMD across most regions and compartments, but we did observe a decline in FN trabecular vBMD, indicating this site may be more vulnerable to WL-associated changes.

OC8- ASSOCIATION OF EPIGENETIC AGE ACCELERATION WITH SARCOPENIA CLASSIFICATION CRITERION: A CROSS-SECTIONAL ANALYSIS OF THE INSPIRE-T BASELINE DATA.

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Background: Biological age (BA) reflects the cumulative biological changes in the body, serving as a more precise indicator of overall health while also being a stronger predictor of comorbidities and mortality compared to chronological age. Various methods have been explored to assess BA, including DNA methylation patterns, which have been incorporated into several epigenetic clocks. However, the relationship between these clocks and specific age-related diseases, such as sarcopenia, remains under investigation. **Methods:** The present analysis utilized baseline data from the INSPIRE-T cohort to examine cross-sectional associations between standardized epigenetic age acceleration (AA) - calculated as the residuals from the regression of epigenetic age on chronological age - and the muscular components of sarcopenia: handgrip strength (HGS), DXA-measured appendicular lean mass (ALM), and gait speed (GS). Four epigenetic clocks (Horvath, Hannum, PhenoAge, and GrimAge) were used to assess AA. Linear regression models were employed, adjusting for age, sex, weight or height, physical activity, education level, and comorbidities. Stratified analyses were also performed for participants under and over 60 years of age. **Results:** A total of 1014 participants were included in the analysis, with 62.8% female. The age range spanned from 20 to 102 years, with a mean age of 61.5. HGS exhibited negative associations with AA measured by the Horvath (β -0.46, $p = 0.036$), PhenoAge (β -0.48, $p = 0.024$), and GrimAge (β -0.85, $p < 0.001$) clocks. ALM showed a negative association with AA measured by the Hannum clock (β -0.16, $p = 0.047$) and a positive association with GrimAge AA (β 0.21, $p = 0.009$). GS presented a weak negative association with GrimAge AA (β -0.014, $p = 0.038$). In the subpopulation under 60 years, both HGS and GS were negatively associated with PhenoAge AA (β -0.74, $p = 0.028$ and β -0.02, $p = 0.034$, respectively), while ALM was positively associated with GrimAge AA (β 0.34, $p = 0.01$). Among older individuals, HGS, ALM, and GS were associated with GrimAge AA (β -0.71, $p = 0.021$; β 0.23, $p = 0.042$; β -0.022, $p = 0.031$, respectively). **Conclusion:** HGS presented a negative association with AA measured by most tested epigenetic clocks, suggesting that lower HGS is linked to accelerated aging. GS presented a weak negative association only with GrimAge AA. On the other hand, contradictory correlation data were found between ALM and AA. In individuals under 60, both HGS and GS were negatively correlated with PhenoAge AA, whereas in older individuals, all three markers - HGS, ALM, and GS - were associated with GrimAge AA. In conclusion, findings presented in this abstract suggest that the associations between sarcopenia muscular parameters and AA were heterogeneous. However, it was possible to demonstrate the GrimAge epigenetic clock to be consistently associated with distinct muscular aging criterion. **Keywords:** Sarcopenia, muscle parameters, biological age, epigenetic clocks. **Disclosures:** All authors declare that they have no conflicts of interest or financial disclosures to report related to this study.

OC9- GDF5 AS A REJUVENATING TREATMENT FOR AGE-RELATED NEUROMUSCULAR FAILURE.

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Background: Sarcopenia involves a progressive loss of skeletal muscle force, quality and mass during ageing, which results in increased inability and death; however, no cure has been established thus far. Growth differentiation factor 5 (GDF5) has been described to modulate muscle mass maintenance in various contexts. **Methods:** For our proof of concept, we overexpressed GDF5 by AAV vector injection in tibialis anterior muscle of adult aged (20 months) mice and performed molecular and functional analysis of skeletal muscle. We analysed human vastus lateralis muscle biopsies from adult young (21–42 years) and aged (77–80 years) donors, quantifying the molecular markers modified by GDF5

overexpression in mouse muscle. We validated the major effects of GDF5 overexpression using human immortalized myotubes and Schwann cells. We established a preclinical study by treating chronically (for 4 months) aged mice using recombinant GDF5 protein (rGDF5) in systemic administration and evaluated the long-term effect of this treatment on muscle mass and function. **Results:** Here, we demonstrated that GDF5 overexpression in the old tibialis anterior muscle promoted an increase of 16.5% of muscle weight (P = 0.0471) associated with a higher percentage of 5000–6000 μm2 large fibres (P = 0.0211), without the induction of muscle regeneration. Muscle mass gain was associated with an amelioration of 26.8% of rate of force generation (P = 0.0330) and better neuromuscular connectivity (P = 0.0098). Moreover, GDF5 overexpression preserved neuromuscular junction morphology (38.5% of nerve terminal area increase, P < 0.0001) and stimulated the expression of reinnervation-related genes, in particular markers of Schwann cells (fold-change 3.19 for S100b gene expression, P = 0.0101). To characterize the molecular events induced by GDF5 overexpression during ageing, we performed a genome-wide transcriptomic analysis of treated muscles and showed that this factor leads to a 'rejuvenating' transcriptomic signature in aged mice, as 42% of the transcripts dysregulated by ageing reverted to youthful expression levels upon GDF5 overexpression (P < 0.05). Towards a preclinical approach, we performed a long-term systemic treatment using rGDF5 and showed its effectiveness in counteracting age-related muscle wasting, improving muscle function (17.8% of absolute maximal force increase, P = 0.0079), ensuring neuromuscular connectivity and preventing neuromuscular junction degeneration (7.96% of AchR area increase, P = 0.0125). In addition, in human muscle biopsies, we found the same age-related alterations than those observed in mice and improved by GDF5 and reproduced its major effects on human cells, suggesting this treatment as efficient in humans. **Conclusion:** Overall, these data provide a foundation to examine the curative potential of GDF5 drug in clinical trials for sarcopenia and, eventually, other neuromuscular diseases. **Disclosures:** This work has been funded by Institut de Myologie and Association Française contre les myopathies. The authors declared no competing interests. **Reference:** https://doi.org/10.1093/brain/awae107.

OC10- ADVERSE MUSCLE COMPOSITION IN CHRONIC KIDNEY DISEASE PREDICTS ALL-CAUSE MORTALITY IN THE UK BIOBANK IMAGING STUDY.

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Background: Sarcopenia and muscle wasting is common in chronic kidney disease (CKD) and associates with higher mortality. Adverse muscle composition (AMC), measured by magnetic resonance imaging (MRI), has previously been associated with mortality in metabolic disorders, and general population. We aimed to investigate muscle composition as predictor of all-cause mortality within participants with CKD in the UK Biobank imaging study (UKB). **Methods:** UKB participants with CKD (eGFRCystatinC<60 ml/min/1.73m2) were identified. Cystatin C was analyzed based on blood samples taken 7-9 years before MRI, at study enrollment. Each participant underwent an MRI scan and AMRA® Researcher was used to measure thigh fat free muscle volume and muscle fat infiltration (MFI) and calculate a sex- and BMI invariant muscle volume z-score [1]. Four muscle composition (MC) groups were created: Normal MC, Only low muscle volume (z-score<25th percentile; population wide), Only high MFI (>75th percentile; population wide, sex-specific) and AMC (low muscle volume and high MFI). The mortality data were obtained through the UKB´s linkage to national death registries. All-cause mortality was investigated using Kaplan-Meier curves and Cox regression. Models were adjusted for sex, age, BMI, proteinuria, low hand grip strength, physical activity, smoking, alcohol, and previous diagnosis of cancer, prevalent CHD and type 2 diabetes. **Results:** 894 participants with CKD and available mortality data were included (66% male, mean±SD age 71.5±4.2 years, BMI 29.6±5.5 kg/m^2, eGFR 51.9± 8.0 ml/min/1,73m^2). Prevalence of the MC groups were Normal MC: 27%; Only low muscle volume: 14%; Only high MFI: 27%; AMC: 32.3%. During a mean follow-up of 4.0 years, 50 participants died. In the crude model, AMC (hazard ratio [95% CI] 6.17 [2.36-16.15], p<0.001), Only low muscle volume (3.43 [1.09-10.81], p=0.036), and Only high MFI (2.94 [1.05-8.25], p=0.040) were significantly associated with all-cause mortality. In the fully adjusted model, only AMC remained significant (4.21 [1.49-11.84], p=0.007). **Conclusion:** MRI-identified adverse muscle composition was prevalent in CKD and a strong predictor of all-cause mortality. The study results indicate that CKD patients with poor muscle health have a significantly higher mortality risk. This vulnerable group would potentially benefit from targeted interventions and is also of specific interest when evaluating new treatments for CKD. **Keywords:** Chronic Kidney Disease, Magnetic Resonance Imaging. **References:** 1. Linge J, et al. J Gerontol A Biol Sci Med Sc 2020; 75(7): 1309-1316. https://doi.org/10.1093/gerona/glz229. **Disclosures:** MK, JL, and ODL are employees and shareholders in AMRA Medical AB.

OC11- EXERCISE PROTECTS AGAINST SEMAGLUTIDE-INDUCED MUSCLE LOSS IN OBESE LDLR-/-.LEIDEN MICE.

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Background: Semaglutide, a glucagon-like peptide-1 receptor agonist, is an antidiabetic medication that has recently been approved for treatment of obesity as well.

While the benefits of semaglutide for weight management are encouraging, concomitant muscle loss can be a potential drawback. Here, we evaluated the metabolic effects of semaglutide, exercise and the combination thereof in a translational model of obesity and associated complications, including obese muscle atrophy. **Methods:** Ldlr-/-.Leiden mice received a high fat diet (HFD) for 20 weeks to induce obesity, insulin resistance and hyperlipidemia. Mice were subsequently left untreated (control) or were treated for 14 weeks with semaglutide, exercise (running-wheel) or the combination thereof. Body weight, lean body mass (EchoMRI) and plasma parameters were evaluated during the study and liver, muscles, adipose tissue depots, hearts and brain were collected at end-point for future histological analysis and transcriptomics. **Results:** Already after 2 weeks of treatment, semaglutide either alone (-21%), or in combination with exercise (-23%) significantly decreased body weight, while exercise monotreatment tended to slightly reduce body weight (with -3%, p=0.056). Semaglutide monotreatment significantly reduced both fat mass (-43%) and lean body mass (-11%), while in combination with exercise fat mass was significantly decreased (-50%), but loss of lean body mass could be prevented. Semaglutide treatment either alone, or in combination with exercise significantly improved blood glucose, plasma insulin, cholesterol and triglyceride levels as well. All these changes remained until the end of the study. Tissue analyses are currently ongoing. **Conclusion:** Using a translational model of obesity and the Metabolic Syndrome, we demonstrated that semaglutide has beneficial metabolic effects, but combination with exercise is required to prevent muscle loss.

OC12- ASSOCIATION BETWEEN A PLANETARY HEALTH DIET AND CHANGES IN INTRINSIC CAPACITY IN OLDER ADULTS: THE SENIORS-ENRICA COHORTS.

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Background and aims: The EAT-Lancet Commission defined a Planetary Health Diet (PHD) that benefits both health and the environment. However, its impact on healthy ageing, as estimated by intrinsic capacity (IC), remains unexplored. Thus, this study examined the association between adherence to a PHD Index (PHDI) and changes over time in IC in community-dwelling older adults. **Methods:** Data were collected from 2519 adults aged ≥60y from the Seniors-ENRICA-1 cohort (follow-up, 2012-2013 to 2015) and 3273 aged ≥65y from the Seniors ENRICA-2 cohort (2015-2017 to 2019[J1]) in Spain [1, 2]. Food consumption was collected at baseline with a validated dietary history, which served to estimate the PHDI-based 15-food groups [3, 4]. IC was measured across six domains: cognition, psychology, vitality, hearing, vision, and locomotion, with the score ranging from 0 to 18 (highest to lowest capacity). Multinomial logistic regression adjusted for potential confounders were used for analysis. Data from both cohorts were pooled because no statistically significant interaction by cohort was observed. **Results:** Over a 2.6-year median follow-up (2015-2017 to 2019), IC worsened (>1-point increase–considered as relevant) for 32.0% participants, improved (>1-point decrease) for 27.7%, and remained stable for 40.3%. Compared to participants in the lowest tertile of adherence to the PHDI in the pooled cohort, those in the highest tertile were more likely to improve vs. worsen the IC (adjusted relative risk ratio [RRR] 1.36; 95% CI 1.05 to 1.77; P-trend= 0.021). A higher PHDI showed some indication of an association with more frequent improvement than worsening in each IC domain except vision capacity, and the association was significantly stronger for the hearing domain (1.37; 95% CI 1.04 to 1.82; P-trend= 0.025). Higher adherence to most food groups showed some tendency to improvement vs. worsening of IC, which was significant for nuts (RRR 1.05; 95% CI 1.01 to 1.09) and starchy vegetables (RRR 1.09; 95% CI 1.01 to 1.17). **Conclusion:** In an older-adult cohort, higher adherence to the PHDI was associated with improvement in overall IC, being stronger in its hearing domain. Starchy vegetables and nuts were particularly beneficial. Future studies should explore the underlying mechanisms and the long-term effects of PHDI on the different domains of IC. **Keywords:** Planetary Health Diet, intrinsic capacity, older adults, cohort study. **References:**
1. Rodríguez-Artalejo F, Graciani A, Guallar-Castillón P, León-Muñoz LM, Zuluaga MC, López-García E, et al. Rationale and Methods of the Study on Nutrition and Cardiovascular Risk in Spain (ENRICA). Rev Esp Cardiol. 2011 Oct 1;64(10):876–82. 2. Ortolá R, García-Esquinas E, Sotos-Prieto M, Struijk EA, Caballero FF, Lopez-Garcia E, et al. Mediterranean Diet and Changes in Frequency, Severity, and Localization of Pain in Older Adults: The Seniors-ENRICA Cohorts. J Gerontol A Biol Sci Med Sci. 2022 Jan 7;77(1):122–30. 3. Guallar-Castillón P, Sagardui-Villamor J, Balboa-Castillo T, Sala-Vila A, Ariza Astolfi MJ, Sarrión Pelous MD, et al. Validity and reproducibility of a Spanish dietary history. PLoS One. 2014;9(1):e86074. 4. Bui LP, Pham TT, Wang F, Chai B, Sun Q, Hu FB, et al. Planetary Health Diet Index and risk of total and cause-specific mortality in three prospective cohorts. Am J Clin Nutr. 2024 Jul;120(1):80–91. **Disclosures:** This work was supported by the Carlos III Health Institute, the Secretary of R+D+I; the European Regional Development Fund/European Social Fund (FIS grants 20/00896; 23/00079 to MSP); National Agency of Research (CNS2022-135623 to MSP); Ministry of Science and Innovation (RYC 2018-02069I to MSP); Comunidad de Madrid, European Regional Development Fund ("FACINGLCOVID-CM" project. Funding REACT EU Program). The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

OC13- SARCOPENIA, OBESITY OR BOTH. WHAT IS THE CULPRIT OF THE ASSOCIATED RISKS OF SARCOPENIC OBESITY?

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Background: Sarcopenic obesity (SO), obesity and sarcopenia has been related with adverse events in older adults, raising the question about the role of each component in the risk associated to SO. The objective of this manuscript is to evaluate the role of sarcopenia, obesity, and its interaction in the risks (frailty, disability, mortality) associated to sarcopenic obesity. **Methods:** Data from the Toledo Study of Healthy Aging (TSHA) [1] were used. This is a cohort-based study composed on community-dwelling adults ≥65 years. Obesity (BMI≥30) and sarcopenia (the Foundation for the National Institutes of Health-FNIH criteria, standardized to our population) were assessed at baseline [2]. Frailty, through the Frailty Phenotype (FP) [1, 3] and the Frailty Trait Scale-5 (FTS5) [4], and disability (Katz Index [5]) were evaluated at baseline. Mortality, frailty and disability were assessed at follow-up. Logistic and Cox regression models were computed to assess the associations. **Results:** 1538 (74.73 years, 45.51% men) individuals were included. Cross-sectionally, SO, sarcopenia and obesity were significantly associated with the risk of frailty and disability. Longitudinally, Sarcopenia was associated with all the adverse events (ORs/HRs ranged from 1.41 to 4.14, p-value<0.05); while SO [FP: 4.27 (2.05, 8.93); FTS5: 6.14 (3.58, 10.51), p-value<0.001] and obesity [FP: 3.10 (1.95, 4.94), p-value<0.001; FTS5: 2.26 (1.17, 4.35), p-value 0.015] was only associated with incident frailty. Sarcopenia added risk to obesity for frailty (FP and FTS5) while obesity only did for frailty (FTS5) in sarcopenic individuals. The interaction between sarcopenia and obesity was not associated with any outcome. **Conclusion:** Sarcopenia and obesity provide each other an additive risk for frailty, but not a multiplicative (i.e. interaction) one, in sarcopenic obesity. Sarcopenia is the mean factor accounting for the associated risk. **Keywords:** Sarcopenic obesity, sarcopenia, obesity, frailty, disability. **Disclosures:** The authors declare no competing interests. **Data deposition:** Data will be available upon reasonable request after consultation with Prof. Francisco José García García and Prof. Leocadio Rodríguez Mañas. **Acknowledgments:** We would like to thank the participants, cohort members and team researcher members. **References:** 1. Garcia-Garcia FJ, Gutierrez Avila G, Alfaro-Acha A, et al. The prevalence of frailty syndrome in an older population from Spain. the Toledo study for healthy aging. Journal of Nutrition, Health and Aging. 2011;15(10):852-856. doi:10.1007/s12603-011-0075-8. 2. Davies B, García F, Ara I, Artalejo FR, Rodriguez-Mañas L, Walter S. Relationship Between Sarcopenia and Frailty in the Toledo Study of Healthy Aging: A Population Based Cross-Sectional Study. J Am Med Dir Assoc. 2018;19(4):282-286. doi:10.1016/j.jamda.2017.09.014. 3. Fried LP, Tangen CM, Walston J, et al. Frailty in older adults: evidence for a phenotype. J Gerontol A Biol Sci Med Sci. 2001;56(3):M146-156. 4. García-García FJ, Carnicero JA, Losa-Reyna J, et al. Frailty Trait Scale-Short Form: A Frailty Instrument for Clinical Practice. J Am Med Dir Assoc. 2020;21(9):1260-1266.e2. doi:10.1016/j.jamda.2019.12.008. 5. Katz S, Downs T, Cash H. Progress in Development of the Index of ADL - PubMed. Gerontologist. 1970;10(1):20-30. doi:https://dx.doi.org/10.1093/geront/10.1_Part_1.20.

OC14- SEX HORMONE BINDING GLOBULIN AND INCIDENT FRAILTY IN WOMEN WITH HIV.

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Background: Older women with HIV (WWH) have a higher prevalence of frailty than women without HIV, but the underlying mechanisms are unclear. Sex hormone-binding globulin (SHBG) is a glycoprotein that regulates bioavailability of sex hormones and is higher in people with HIV. We recently found in a cross-sectional study that higher SHBG was associated with frailty among WWH [1]. Therefore, we hypothesized that higher circulating SHBG concentrations contribute to the development of frailty in WWH. **Methods:** Baseline circulating SHBG concentration was measured in 616 WWH (274 robust and 342 prefrail) enrolled in the MACS/WIHS combined cohort who completed at least one frailty assessment. Frailty was defined by Fried Frailty Phenotype: Outcome: frail ≥two assessments. Marginal structural models were used and adjusted for covariates: age, race, education, comorbidity burden, liver disease, body mass index, smoking status, alcohol use, HIV parameters (viral load, nadir and current CD4, antiretroviral use). Menopause status was determined using Anti-Mullerian Hormone, a biomarker of ovarian reserve, based on AMH<1.84 measured by FDA approved AMH assay kit. **Results:** At baseline, median age 52 years, Q1=48, Q3=57, 74% self-identified as Black, 67% were postmenopausal and mean follow-up time of frailty assessment was 5.1 (SD:1.8) years. Among WWH, higher circulating SHBG (≥65 nmol/L) was associated with a (HR:1.77

(95%CI:1.00, 3.12); p-value=0.06 to become frail compared to WWH with low SHBG<65 nmol/L. Among postmenopausal WWH, higher circulating SHBG predicted incident frailty compared to postmenopausal WWH with low SHBG, (HR: 2.19 (95%CI:1.07, 4.47); p-value=0.03). **Conclusion:** Higher SHBG circulating concentrations predicted incident frailty, especially in postmenopausal women with HIV. This study provides justification to further investigate the role of sex hormones and frailty among women with HIV. **Reference:** 1. Dias et al., JCEM, 2022; 107(7):e2971-e2981.doi: 10.1210/clinem/dgac144.

OC15- ASU TEAM HEALTHSPAN'S APPROACH TO AI-POWERED PERSONALIZED INTERVENTION FOR REDUCING BIOLOGICAL AGE AND IMPROVING SARCOPENIA OUTCOMES. J. Klein-Seetharaman[1], S. Racette[1], P. Jasbi[1], J. Gunning[1], S. Sarkar[1], N. Goh[1], M. Converse[1], V. Movsesyan[2], N. Dahdal[2] *((1) Arizona State University - Phoenix (United States), (2) Youth Renewal Science - Phoenix (United States))*

Background: Sarcopenia and frailty are critical hallmarks of aging, significantly impacting quality of life and increasing the risk of adverse health outcomes such as falls, hospitalization, and mortality. Both conditions are closely tied to metabolic dysregulation, which exacerbates the decline in muscle mass, strength, and overall functionality. Emerging evidence suggests that metabolic disorders, including impaired glucose metabolism, mitochondrial dysfunction, and chronic low-grade inflammation, may play a causative role in the progression of sarcopenia and frailty. By understanding these metabolic underpinnings, we can explore targeted interventions to mitigate these outcomes. This study proposes that metabolomics, the comprehensive analysis of metabolites within a biological system, may provide critical insights into age-related declines and facilitate the development of personalized intervention protocols aimed at restoring musculoskeletal function and overall health. **Methods:** In this study, we analyzed 126 metabolites using gas chromatography–mass spectrometry (GC-MS) in a cohort of 759 participants, alongside self-reported disease diagnoses. The measured metabolites were converted into an overall health score through a neural network analysis that integrates scientific literature associating specific metabolites with health outcomes. Based on these scores, personalized intervention protocols were developed, including dietary modifications, targeted supplementation, and lifestyle adjustments, aimed at normalizing the metabolomic profiles and addressing the metabolic drivers of sarcopenia and frailty. To evaluate the efficacy of these interventions, a single-group clinical trial with a pre-post design was conducted involving 20 participants. The intervention spanned 8 to 16 weeks, during which adherence was monitored, and functional outcomes were assessed. Key functional metrics included muscle strength, physical performance, and mobility assessments. **Results:** The personalized intervention protocols significantly improved participants' health scores, with a strong positive correlation (R^2 = 0.92) between percent adherence and the degree of health score improvement. Analysis of metabolomic profiles in the broader cohort of 759 participants identified nine metabolites that were highly age-dependent and served as robust biomarkers of biological aging. These included caffeine, fumaric acid, inosine, and niacinamide, which demonstrated significant associations with musculoskeletal health outcomes. Participants with reported musculoskeletal health issues exhibited notable alterations in these metabolites, underscoring their relevance as therapeutic targets. The intervention protocols successfully shifted metabolite levels towards normal ranges, correlating with improvements in sarcopenia-related outcomes such as muscle strength and physical performance. These findings suggest that addressing metabolic dysregulation through personalized, metabolomics-guided strategies can effectively counteract the progression of sarcopenia and frailty. **Conclusion:** This study identifies several key metabolites as candidate biomarkers for sarcopenia and highlights the potential of metabolomics-guided, personalized interventions in mitigating age-related musculoskeletal decline. By addressing metabolic dysfunction through targeted supplementation, dietary modifications, and lifestyle changes, it is possible to improve these biomarkers and enhance functional outcomes in older adults. Future research should focus on validating these findings in larger, more diverse populations and further elucidating the causal pathways linking metabolic dysregulation to sarcopenia and frailty. **Keywords:** Metabolomics, healthspan, biological aging, biomarkers. **Clinical Trial Registry:** Registered at clinicaltrials.gov NCT06734468 "Personalized Approach to Promote Healthy Aging". **Disclosures:** JKS received a service agreement from Theriome. The authors declared no competing interest. **References:** Morley JE, Anker SD, von Haehling S. Sarcopenia: Diagnosis and mechanisms. Nat Rev Endocrinol. 2014;10(12):738-749. doi:10.1038/nrendo.2014.159. Cesari M, Landi F, Vellas B, et al. Sarcopenia and frailty: From theoretical approach into clinical practice. Lancet Diabetes Endocrinol. 2017;5(5):367-375. doi:10.1016/S2213-8587(16)30050-3. Lustgarten MS, Fielding RA. Metabolites associated with circulating interleukin-6 in older adults. J Gerontol A Biol Sci Med Sci. 2017;72(9):1277-1283. doi:10.1093/gerona/glx022. Calvani R, Joseph AM, Adhihetty PJ, et al. Mitochondrial pathways in sarcopenia of aging and disuse muscle atrophy. Biol Chem. 2013;394(3):393-414. doi:10.1515/hsz-2012-0247. Short KR, Bigelow ML, Kahl J, et al. Decline in skeletal muscle mitochondrial function with aging in humans. Proc Natl Acad Sci U S A. 2005;102(15):5618-5623. doi:10.1073/pnas.0501559102.

OC16- THE IMPACT OF FRAILTY ON 42,989 OLDER ADULTS NEWLY DISCHARGED FROM AN EMERGENCY DEPARTMENT VISIT FOR HEART FAILURE: A NATIONWIDE RETROSPECTIVE COHORT STUDY. H.Y. Lai[1,2], W.J. Liao[3,4], L.Y. Lin[1,2], F.Y. Hsiao[1,2], L.K. Chen[5,6] *((1) Graduate Institute Of Clinical Pharmacy, College Of Medicine, National Taiwan University, Taipei (Taiwan, Republic of China); School Of Pharmacy, College Of Medicine, National Taiwan University,Taipei (Taiwan, Republic of China), (2) School Of Pharmacy, College Of Medicine, National Taiwan University, Taipei (Taiwan, Republic of China), (3) Department Of Emergency Medicine, Taipei Veterans General Hospital,Taipei (Taiwan, Republic of China), (4) Department Of Emergency Medicine, College Of Medicine, National Yang Ming Chiao Tung University,Taipei (Taiwan, Republic of China), (5) Center For Healthy Longevity And Aging Sciences, National Yang Ming Chiao Tung University, Taipei (Taiwan, Republic of China), (6) Center For Geriatrics And Gerontology, Taipei Veterans General Hospital, Taipei (Taiwan, Republic of China))*

Background: Frailty is prevalent among older adults with heart failure (HF) and is closely linked with higher risks for emergency department (ED) visits and mortality [1-3]. However, frailty is often overlooked in those who were discharged back to the community following ED visits, potentially predisposing to adverse outcomes. This study aims at quantifying the impacts of frailty on clinical outcomes among older adults who discharged from an ED visit due to HF. **Methods:** A retrospective cohort study was conducted. Older adults (aged 65 years old and older) discharged from an ED visit due to HF were identified from Taiwan's National Health Insurance (NHI) database between 2017 to 2021. The index date was defined as the discharge date from the ED visit. Those who died during their ED visit on the same day were excluded. Furthermore, we excluded from our analysis any patients who were transferred to inpatient wards within a week of their initial emergency department presentation, as these individuals likely required more comprehensive care within the hospital setting. Frailty was assessed using the 38-item multimorbidity frailty index (mFI-v10) developed from ICD-10-CM codes using the cumulative deficit approach [4]. Patients were classified into fit, mildly frail, and severely frail groups based on tertiles of their mFI-v10 scores. The outcomes of interest included all-cause mortality, all-cause readmissions, and HF-related readmissions. Cox regression models and the Fine and Gray subdistribution hazard model were applied to estimate the impact of frailty on these outcomes. **Results:** Among the cohort of 42,989 heart failure patients identified (mean age 80.7 ± 8.2 years, 55.5% female), 57.8% met the criteria for frailty, with 46.4% classified as mildly frail and 11.4% as severely frail. The all-cause mortality rates exhibited a positive correlation with frailty severity, with 6-month mortality rates of 12.0%, 16.0%, and 19.4% for the fit, mildly frail, and severely frail subgroups, respectively. Similar trends were observed for all-cause readmissions and HF-related readmissions. The 6-month all-cause readmission rates were 40.2%, 48.8%, and 59.5% for the fit, mildly frail, and severely frail groups, while the 6-month HF-related readmission rates were 14.9%, 19.5%, and 23.0%, respectively. Patients in the severely frail group had a higher risk of mortality (adjusted hazard ratio (aHR) 1.44, 95% confidence interval (CI) 1.33-1.55), all-cause readmissions (subdistribution hazard ratio (sHR) 1.69, 95% CI 1.62-1.76), and HF-related readmissions (sHR 1.59, 95% CI 1.48-1.71). **Conclusion:** Frailty is highly prevalent among older adults discharged from ED due to HF and significantly increases the risk of adverse outcomes, including mortality and readmissions. These results underscore the critical importance of incorporating frailty assessment into routine ED care for HF patients. By doing so, healthcare providers can better identify high-risk individuals, tailor discharge planning, and potentially implement targeted interventions to improve outcomes in this vulnerable population. **Keywords:** Frailty, heart failure, emergency department visits, mortality, readmission. **Disclosures:** The authors declare no conflicts of interests. **References:** 1. Lai, H. Y., Huang, S. T., Anker, S. D., von Haehling, S., Akishita, M., Arai, H., Chen, L. K., & Hsiao, F. Y. (2024). The burden of frailty in heart failure: Prevalence, impacts on clinical outcomes and the role of heart failure medications. Journal of cachexia, sarcopenia and muscle, 15(2), 660–670. https://doi.org/10.1002/jcsm.13412. 2. Sokhal, B. S., Matetić, A., Abhishek, A., Banerjee, A., Partington, R., Roddy, E., Rashid, M., Mallen, C. D., & Mamas, M. A. (2023). Impact of Frailty on Emergency Department Encounters for Cardiovascular Disease: A Retrospective Cohort Study. The American journal of cardiology, 206, 210–218. https://doi.org/10.1016/j.amjcard.2023.08.138. 3. Zhang, X., Qiu, P., Prushinskaya, A., Jiang, Y., Fan, H., & Yang, S. (2022). Characteristics of emergency department admissions with congestive heart failure in the United States: a Nationwide cross-sectional study. BMC emergency medicine, 22(1), 16. https://doi.org/10.1186/s12873-021-00564-7. 4. Lai, H. Y., Huang, S. T., Chen, L. K., & Hsiao, F. Y. (2022). Development of frailty index using ICD-10 codes to predict mortality and rehospitalization of older adults: An update of the multimorbidity frailty index. Archives of gerontology and geriatrics, 100, 104646. https://doi.org/10.1016/j.archger.2022.104646.

OC17- LONGITUDINAL IMPACTS OF TRAJECTORIES IN DIFFERENT DOMAINS OF PHYSICAL EXERCISE AND CLINICAL OUTCOMES IN COMMUNITY MIDDLE-AGED AND OLDER ADULTS: A 20-YEAR MULTI-TRAJECTORY ANALYSIS. Y.Y. Yu[1], H.Y. Lai[2], C.H. Loh[3,4], F.Y. Hsiao[1,2], L.K. Chen[5,6] *((1) School Of Pharmacy, College Of Medicine, National Taiwan University - Taipei (Taiwan, Republic of China), (2) Graduate Institute Of Clinical Pharmacy, College Of Medicine, National Taiwan University - Taipei (Taiwan, Republic of China), (3) Department Of Family Medicine, Hualien Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation - Hualien (Taiwan, Republic of China), (4) Department Of Family Medicine, College Of Medicine, Tzu Chi University - Hualien (Taiwan, Republic of China), (5) Center For Healthy Longevity And Aging Sciences, National Yang Ming Chiao Tung University - Taipei (Taiwan, Republic of China), (6) Center For Geriatrics And Gerontology, Taipei Veterans General Hospital - Taipei (Taiwan, Republic of China))*

Background: While extant research has demonstrated the clinical efficacy of physical exercise, there remains a paucity of studies elucidating the longitudinal and dynamic aspects of such activity that engender these health outcomes. We aimed to examine the longitudinal association between trajectories of distinct subtypes of various domains of physical activity and clinical outcomes at 4- and 8-year follow-ups among community-dwelling middle-aged and older adults. **Methods:** The cohort enrolled 1,914 community-dwelling middle-aged and older adults from the 3rd wave (year 1996, baseline wave) of the Taiwan Longitudinal Study on Ageing (TLSA) [1], and stratified them by their physical activity at baseline as with and without any physical activity. Data from the 3rd (year 1996) wave to the 6th wave (year 2007) of TLSA were analyzed using group-based multi-trajectory modeling (GBMTM) [2] to identify distinct trajectory subtypes within four aspects of physical activity: frequency, duration, intensity of sweating, and intensity of breathlessness. Cox proportional hazard models were then applied to examine the associations between the identified subtypes and clinical outcomes (mortality and functional disability assessed using the Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL) scale) at 4- (7th wave, 2011) and 8-year (8th wave, 2015) follow-ups. **Results:** Among those with physical activity at baseline, GBMTM identified three distinct trajectory subtypes: "Gradually decreasing intensity" (Group1, n=177) , "Initially decreasing but increasing intensity" (Group2, n=200), and "Consistently high intensity" (Group3, n=622). Additionally, two subtypes were identified from those without physical activity at baseline: "Consistently low intensity" (Group 4, n=278) and "Gradually increasing" (Group 5, n=637), based on exercise frequency, duration, intensity of sweating, and breathlessness. At the 4-year follow-up, compared to Group1, both Group 2 (HR=0.61, 95%CI [0.39-0.95]) and Group 3 (HR=0.59, 95%CI [0.42-0.84]) showed significantly lower risk of mortality. However, after adjusting for age, sex, education, employment, alcohol use, and self-reported health, only Group 3 (HR=0.64, 95%CI [0.44-0.93]) retained this significant difference. Among those without physical activity at baseline, Group 5 (HR=0.68, 95%CI [0.48-0.98]) had a significantly lower risk of mortality than Group 4, and this remained significant after adjustments (HR=0.62, 95%CI [0.43-0.90]). No significant differences were found in IADL and ADL impairments across groups. Over the 8-year follow-up, only Group 3 (HR=0.67, 95%CI [0.50-0.90]) showed significantly lower mortality risk than Group 1. Similar results were found in Group 5 (HR=0.70, 95%CI [0.53-0.93]) as compared to Group 4. In addition, Group 2 had a significantly lower risk of ADL impairment compared to Group 1 (HR=0.45, 95%CI [0.22-0.87]). **Conclusion:** This study demonstrates that maintaining consistently high-intensity physical activity or increasing intensity over time is associated with lower mortality risk in older adults. Moreover, for individuals initially inactive, gradually increasing physical activity also confers survival benefits. Additionally, individuals who initially decreased but then increased their exercise intensity had a significantly lower risk of ADL impairment, suggesting that it's never too late to improve physical activity for functional health benefits. These findings underscore the importance of promoting and sustaining regular physical activity in older adults to enhance longevity and potentially preserve functional independence. **Keywords:** Physical activity, IADL, ADL, mortality, group-based multi-trajectory modeling (GBMTM). **Disclosures:** The author declared no competing interests. **References:** 1. Health Promotion Administration. Taiwan Longitudinal Study on Aging (TLSA). (2015). Available online at: https://www.hpa.gov.tw/Pages/Detail.aspx?nodeid=1077&pid=6197 (accessed October 6, 2024). 2. Nagin DS, et al. Group-based multi-trajectory modeling. Stat Methods Med Res 2018; 27:2015-2023.

OC18- PEROXISOME PROLIFERATOR-ACTIVATED RECEPTOR Γ COACTIVATOR A (PGC-1A) INDUCER, AMC#9005, PREVENTS MUSCLE WASTING IN AGED MICE VIA RESTORING MITOCHONDRIAL FUNCTION. C.L. You[1], J.H. Bae[1], Y. Jeong[2], J. Kim[1], G.U. Bae[2,3], J.S. Kang[1,2] *((1) Department Of Molecular Cell Biology, Sungkyunkwan University School Of Medicine - Suwon (Korea, Republic of), (2) Research Institute Of Aging Related Disease, Animuscure Inc. - Suwon (Korea, Republic of), (3) Drug Information Research Institute, Muscle Physiome Research Center, College Of Pharmacy, Sookmyung Women's University - Seoul (Korea, Republic of))*

Background: Aging-related loss of muscle mass and function, called sarcopenia represents a serious public health issue associated with increased morbidity and mortality. Among diverse mechanisms, mitochondrial malfunction seems to be a key mechanism underlying muscular and metabolic disorders attributable to impaired energy metabolism and oxidative stress. Thus enhancing mitochondrial homeostasis is a promising strategy to prevent muscle wasting in aging or other pathological conditions. In this study, we have identified a PGC-1α/mitochondrial enhancer, #AMC9005, exerting a

protective effect against sarcopenia. **Methods:** The effects of AMC#9005 were examined by using young (2-months), old (20-months), and dexamethasone (DEX)-induced muscle atrophy mice by administering AMC#9005 (40ng/kg body weight) by gavage. Muscle function was examined using grip strength and a treadmill test. To analyze muscle phenotype, we have conducted histology, immunostaining, and protein analysis. Neuromuscular junction and mitochondrial organization and function were examined by immunostaining analyses using isolated single myofibers from EDL muscles. We also performed RNA-seq with muscles and molecular signaling analysis in muscles and muscle cells. **Results:** Long-term AMC#9005 administration in young mice enhanced muscle mass and function concurrent with reduced fat mass. In addition, it also prevented DEX-induced muscle atrophy accompanied by AKT activation and suppression of the expression of muscle-specific E3 ubiquitin ligases, Muscle-specific Ring-finger 1 (MuRF1), and Atrogin-1. Furthermore, AMC#9005 treatment prevented aging-related muscle loss and weakness in aged mice. AMC#9005 treated aged muscles exhibited alterations in genes related to metabolic pathways and immune responses, likely contributing to improved muscle function. In addition, AMC#9005 treatment improved mitochondrial function and muscle metabolism via modulation of signaling related to mitochondrial remodeling and anabolic pathways. **Conclusion:** We demonstrate the protective effects of AMC#9005 on muscle wasting in aging or DEX-treated mice. This protective effect of AMC#9005 is mediated by restoring mitochondrial function and health. Thus, AMC#9005 is a potential therapeutic to treat muscle wasting related to aging or other pathological conditions. **Keywords:** Sarcopenia, muscle wasting, PGC-1a, mitochondria. **Disclosures:** J.-S.K. G.-U.B. are founders of AniMusCure Inc. and hold an ownership equity interest in the company. These arrangements have been reviewed and approved by the Sungkyunkwan University and Sookmyung Women's University in accordance with its conflict of interest policies. **References:** 1. Kim, et al. J Cachexia Sarcopenia Muscle. 2020 Aug;11(4):1070-1088. doi: 10.1002/jcsm.12558. Epub 2020 Feb 25. 2. You, et al. Int J Biol Sci. 2023; 19(15): 4898–4914. Published online 2023 Sep 11. doi: 10.7150/ijbs.84970. 3. Bae, et al. Sci Transl Med. 2023 Aug 30;15(711):eabh3489. doi: 10.1126/scitranslmed.abh3489. Epub 2023 Aug 30.

OC19- ASSOCIATIONS BETWEEN HAVING A CHILD DURING ADOLESCENCE AND INTRINSIC CAPACITY IN LATER LIFE AMONG PARTICIPANTS IN THE INTERNATIONAL MOBILITY IN AGING STUDY (IMIAS). Z. Smith[1], S. Câmara[2], L. Cortez Corrêa[2], R. Guerra[2], P. De Souto Barreto[3], C. Pirkle[1] *((1) University Of Hawaii At Manoa - Honolulu (United States), (2) Federal University Of Rio Grande Do Norte - Natal (Brazil), (3) Université Paul Sabatier Toulouse III - Toulouse (France))*

Background: Extensive research links having had a child during adolescence to adverse health outcomes among older women: increased risk of cardiovascular disease, mobility disability, and premature mortality. Similar findings have been reported among men who fathered a child during adolescence, but there is less research on them overall. Research relating age at first child to intrinsic capacity (IC) is absent. IC is the combination of all physical and mental capabilities of an individual. This study assessed associations between age at first child and IC using data from a multisite study of older adults, the International Mobility is Aging Study. **Methods:** This is a cross-sectional analysis of data from 1322 older adults, ages 66-80 years, from five sites in four countries (Tirana, Albania; Natal, Brazil; Kingston and St. Hyacinthe, Canada; and Manizales, Colombia). First child during adolescence was defined for women as 19 years or younger and for men, 22 years or younger. IC was measured using a four domain methodology: Locomotion [Short Physical Performance Battery], Vitality [handgrip strength], Cognitive [Leganes Cognitive Test], Psychological [Center for Epidemiologic Studies Depression]) and sex-specific scores (0-100, higher is better) were calculated. Multiple linear regression models for the whole sample, and by sex, tested the associations between first child during adolescence and IC, adjusted for study site, age, and early adversity experiences. **Results:** First child during adolescence was reported by 18.9% (n=252) of participants (men=16.5%, women=21.0%), and was more common among those from the Latin American sites than elsewhere. The mean IC was lower among participants who had a child during adolescence compared to adulthood (73.4 vs 75.4, $p<0.01$). By sex, the respective mean scores were 70.7 and 72.9 among women ($p = 0.01$) and 77.2 and 78.0 among men ($p = 0.37$). Linear regression adjusting for study site and age showed that those who had a child during adolescence had lower IC scores (-1.19, $p=0.05$). Effect estimates were similar in the analyses including childhood economic and childhood social adversity, but not statistically significant (-1.04, $p=0.09$). By sex, the association between having a first child during adolescence and a lower IC was stronger in women than men. Associations were driven by the locomotion domain. Accounting for study site and age, the scores of those who had a child during adolescence were -3.67 lower than adult parents ($p<0.01$) and by sex, scores were -1.43 ($p=0.48$) and -4.62 ($p=0.01$) for adolescent men and women, respectively. Coefficients for the cognition and psychological domains were negative for adolescent versus adult parents, but not statistically significant. **Conclusion:** Having a child during adolescence may negatively affect functional and mental capabilities in adulthood, especially locomotion. When separated by sex, associations were stronger among women. This could be due to the physiological stress pregnancy and childbirth has on the female body, pressures of motherhood, challenges in performing health promoting activities, and other factors.

OC20- IDEAL CARDIOVASCULAR HEALTH IS ASSOCIATED WITH REDUCED EPIGENETIC AGING: CROSS-SECTIONAL FINDINGS FROM THE INSPIRE-T COHORT. M. Strumia[1], V. Bongard[1], S. Thuriot[1], P. Cestac[1], B. Sallerin[2], J.M. Lemaitre[3], S. Guyonnet[1], B. Vellas[1], S. Andrieu[1], L. Rouch[1] *((1) IHU HealthAge, Cerpop UMR 1295 Aging Team - Toulouse (France), (2) Restore Umr 1301, Inserm 5070, CNRS, EFS, Équipe Flames, Université Paul Sabatier - Toulouse (France), (3) Inserm 1183 Institute Of Regenerative Medicine And Biotherapies - Montpellier (France))*

Introduction: Ageing is a physiological process, but it is highly heterogeneous within the population. Chronological age is the main non-modifiable risk factor for morbidity, but it cannot be the only factor responsible for these age-related changes. Several teams have taken an interest in the biological mechanisms underlying ageing and have developed biological clocks, in particular epigenetic clocks such as DNAm GrimAge [1] or inflammatory clocks. These clocks could help to identify factors protecting against accelerated ageing and associated diseases. In this context, our aim was to assess the association between ideal cardiovascular health and reduced epigenetic ageing. **Method:** Our cross-sectional study included participants from the INSPIRE-T human lifespan translational cohort [2]. Cardiovascular health (CVH) was assessed using the Life's Essential 8 composite score [3] (0 to 100 points, higher means better) and calculated as the average of 8 component metric scores (healthy diet, physical activity, avoidance of nicotine, healthy sleep, healthy weight, and healthy levels of blood lipids, glucose and blood pressure). Overall CVH scores of 80-100 points were considered high CVH, 50-79 points, moderate CVH; 0 to 49, low CVH. Epigenetic aging was derived from the residuals of a linear regression of epigenetic age calculated using the GrimAge epigenetic clock and chronological age. Linear regression models were used in the analyses. **Results:** We included 937 subjects (age range 20-100, mean age 60.3 years, 62.6% women). On average, the subjects had an LE8 score of 68.2 points (+/- 9.7) and 11.7% had a high CVH (n = 110). After adjustment for chronological age and sex, compared to those with low to moderate CVH, subjects with high CVH had reduced epigenetic aging (β = -1.1 ± 0.4, p =0.002). Among LE8 components and per 1-unit increase in scoring, greater physical activity levels (β = -0.9 ± 0.4, p =0.02) optimal BMI (β = -1.3 ± 0.2, p <0.001), glucose (β = -0.4 ± 0.1, p =0.001) and blood pressure levels (β = -0.9 ± 0.3, p =0.004) as well as nicotine avoidance (β = -3.6 ± 0.3, p <0.001) were significantly associated with reduced epigenetic aging. This association was not found for dietary score, lipid levels or sleep. **Discussion:** Our study reported an association between ideal global CVH and optimal levels of multiple health behaviors and health factors with reduced epigenetic aging after adjustment for chronological age and sex. This suggests that epigenetic aging is potentially modifiable by healthy lifestyle and control of cardiovascular risk factors although a potential underlying causal relationship remains to be established. Further longitudinal studies are needed to evaluate this hypothesis and investigate the bidirectional association between cardiovascular morbidity and epigenetic ageing. **References:** 1. Lu AT, Quach A, Wilson JG, Reiner AP, Aviv A, Raj K, Hou L, Baccarelli AA, Li Y, Stewart JD, Whitsel EA, Assimes TL, Ferrucci L, Horvath S. DNA methylation GrimAge strongly predicts lifespan and healthspan. Aging (Albany NY). 2019 Jan 21;11(2):303-327. doi: 10.18632/aging.101684. PMID: 30669119; PMCID: PMC6366976. 2. Guyonnet S, Rolland Y, Takeda C, Ousset PJ, Ader I, Davezac N, Dray C, Fazilleau N, Gourdy P, Liblau R, Parini A, Payoux P, Pénicaud L, Rampon C, Valet P, Vergnolle N, Andrieu S, de Souto Barreto P, Casteilla L, Vellas B. The INSPIRE Bio-Resource Research Platform for Healthy Aging and Geroscience: Focus on the Human Translational Research Cohort (The INSPIRE-T Cohort). J Frailty Aging. 2021;10(2):110-120. doi: 10.14283/jfa.2020.38. PMID: 33575699; PMCID: PMC7352084. 3. Lloyd-Jones DM, Allen NB, Anderson CAM, Black T, Brewer LC, Foraker RE, Grandner MA, Lavretsky H, Perak AM, Sharma G, Rosamond W; American Heart Association. Life's Essential 8: Updating and Enhancing the American Heart Association's Construct of Cardiovascular Health: A Presidential Advisory From the American Heart Association. Circulation. 2022 Aug 2;146(5):e18-e43. doi: 10.1161/CIR.0000000000001078. Epub 2022 Jun 29. PMID: 35766027; PMCID: PMC10503546.

OC21- SEX DEPENDENT SENOTHERAPEUTIC EFFECTS IS PREDICTED BY VISCERAL ADIPOSE TISSUE RESPONSE IN AGING AND ALZHEIMER'S MODELS. Y. Fang[1], M. Peck[1], K. Quinn[1], J. Chapman[1], T. Hill[1], A. Bartke[1], E.R. Hascup[1], K.N. Hascup[1] *((1) Southern Illinois University School Of Medicine - Springfield (United States))*

Background: Senescent cell accumulation causes aberrant physiological signaling that contributes to aging and neurodegenerative disorders such as Alzheimer's disease (AD). The APPNL-F amyloidogenic mouse model has increased markers of senescent cells and the senescence-associated secretory phenotype (SASP) in visceral white adipose tissue (vWAT) and the hippocampus by four months of age [1], prior to the onset of plaque accumulation and cognitive deficits. We hypothesized that prodromal senolytic treatment would reduce central and peripheral senescence thereby improving their spatial memory. **Methods:** Starting at four months of age, male and female APPNL-F and C57BL/6 (genetic littermate controls) were treated once monthly with vehicle, 5 mg/kg Dasatinib plus 50 mg/kg Quercetin (D+Q) or 100 mg/kg fisetin until 13 months of age. Blood glucose levels, energy metabolism, spatial memory, amyloid burden, and senescent cell and SASP markers were assayed in the hippocampus and vWAT. **Results:** Sexually dimorphic treatment effects were observed that were in opposition between the aging and AD models with respect to vehicle treatment. During physiological aging in male C57BL/6 mice [2], fisetin treatment reduced SASP, enhanced glucose and energy metabolism, improved cognitive performance, and increased mRNA expression of adiponectin receptor 1 and glucose transporter

4. D+Q treatment had minimal effects in male C57BL/6 mice, but was detrimental to females causing increased SASP expression along with accumulation of WAT depots. In APPNL-F mice prone to pathological disease progression, D+Q treated females increased their oxygen consumption and energy expenditure resulting in lower body mass attributed to smaller vWAT. Along with this were reductions in blood glucose, plasma insulin and triglycerides, vWAT and hippocampal senescence and SASP markers, as well as soluble and insoluble hippocampal amyloid-β42. This led to improved spatial memory in D+Q treated female APPNL-F mice. Fisetin treatment had negligible effects in females while neither senolytic intervention altered these parameters in male APPNL-F mice. **Conclusion:** The dichotomous responses to senolytic interventions observed between physiological and pathological aging models is attributed to sex-specific differences. The slower rate of biological aging observed in female C57BL/6 mice may cause senolytics to have negligible or detrimental effects when administered before senescent cell accumulation passes a critical threshold. In APPNL-F mice, females pass this critical threshold at an earlier age compared to males allowing senolytics to provide therapeutic benefits. Together, a better understanding of the critical threshold of senescent cell accumulation is warranted in order to improve senotherapeutic potential. **Keywords:** Dasatinib and Quercetin, Fisetin, cell senescence, cognitive performance. **Disclosures:** This work was supported by the National Institutes of Health NIA R01-AG057767 and NIA R01-AG061937, Kenneth Stark Endowment, Dale and Deborah Smith Center for Alzheimer's Research and Treatment (YF, MRP, KQ, JEC, TH, AB, KNH, ERH), and Geriatrics Initiative (AB). The authors declare no competing financial interests. **References:** 1. Fang Y, et al. Geroscience 2024: 1-16. DOI: 10.1007/s11357-024-01308-8. 2. Fang Y, et al. Geroscience 2023; 45 (5): 2835-2850. DOI: 10.1007/s11357-023-00843-0.

OC23- TRANSCRIPTION PROFILING OF HUMAN MUSCLE TISSUE IDENTIFIED IL-6/IL-11 PATHWAY AS POTENTIAL TARGETS FOR SARCOPENIA.

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Background: Sarcopenia is a progressive, age-related disease characterized by the loss of skeletal muscle mass and function, affecting a significant portion of the elderly population worldwide. Despite its prevalence, sarcopenia often goes unrecognized in its early stages due to challenges in diagnosis and low public awareness [1]. As the aging population grows, the prevalence of sarcopenia is expected to rise, highlighting an urgent need for better diagnostic tools and effective therapeutic strategies. Most of our current understanding of sarcopenia mechanisms is derived from studies in animal models [2], which may not fully replicate the human disease. There is a critical gap in the availability of human-specific models to study sarcopenia's mechanisms and distinguish it from other aging-related muscle-wasting diseases. **Methods:** Since August 2020, Sengkang General Hospital established a research recruitment workflow to initiate biological specimens to be collected and banked in a biorepository specifically phenotyped for sarcopenia. For this study, inclusion criteria include patients undergoing curative elective colorectal surgery for colorectal cancer without metastasis (cTNM Stage 1-3) and able to give informed consent. Exclusion criteria include vulnerable patients, patients with stage 4 cancers, those who cannot be assessed for sarcopenia based on the AWGS 2019 diagnostic criteria, those who fulfilled the clinical criteria for cachexia and those who decline to provide written informed consent. A total of 217 muscle tissues from individuals with varying degrees of sarcopenia were used to perform RNA sequencing analysis. RNA was extracted using the Trizol/Chloroform method. Stranded Total RNA kit was used to prepare RNA libraries from 1 μg of total RNA. Paired-end 150bp sequencing was performed using a Novaseq600 sequencer with the paired-end 150bp read option. Unsupervised hierarchical clustering of ssGSEA scores categorized the sarcopenia samples into four groups, G1 to G4, to molecularly classify the patients. In addition, gender-specific molecular changes were identified by comparing male and female patients within the same group (G1 to G4) or sarcopenia stages based on the AWGS2019 criteria (NS: non-sarcopenia, SA: sarcopenia, and SS: severe sarcopenia). **Results:** Samples were initially grouped according to their sarcopenic status based on the AWGS 2019 criteria; however, AWGS grading was unable to discriminate for trends in differential pathways comparing NS, SA and SS. Therefore, unsupervised clustering featured on Hallmark pathways, including inflammatory, metabolic pathways and others, was adopted and yielded 4 unique groups (G1-4). The heatmap demonstrated increasing upregulation in inflammation from G1 to G4. There was also a gradual elevation in metabolic pathways such as glycolysis, fatty acid, and oxidative phosphorylation, especially in G3 compared with G2. These differential pathways were similar when the chart was split based on gender. Furthermore, analysis of specific genes showed an increasing trend of genes involved in interleukin-6 (IL-6) signaling pathways, including IL6R, IL6ST, and STAT3. **Conclusion:** IL-6/IL-11 could be a potential target for pathway perturbation in treating sarcopenia. Corresponding to our findings, a recent study demonstrated inhibition of IL-11 can improve health and lifespan in mice by regulating the ERK–AMPK–mTORC1 axis [3]. This study also supports the translatability of our muscle repository from basic research to therapy through identification of targetable genes and pathways. **Keywords:** Aging, sarcopenia, interleukin-6, RNA-seq, transcription profiling. **References:** 1. W.J. Evans, J. Guralnik, P. Cawthon, et al., Sarcopenia: no consensus, no diagnostic criteria, and no approved indication-How did we get here?, Geroscience 46(1) (2024) 183-190. 2. C.J. Christian, G.M. Benian, Animal models of sarcopenia, Aging Cell 19(10) (2020) e13223. 3. A.A. Widjaja, W.-W. Lim, S. Viswanathan, et al., Inhibition of IL-11 signalling extends mammalian healthspan and lifespan, Nature 632(8023) (2024) 157-165.

OC24- PRECLINICAL STUDY OF HUMAN WHARTON'S JELLY-DERIVED MESENCHYMAL STEM CELLS: A POTENTIAL THERAPEUTIC CANDIDATE FOR SARCOPENIA. H. Kim[1], J.B. Jeong[1], S.E. Park[1], H.B. Jeon[1], J.W. Chang[1] *((1) Encell Co. Ltd. - Seoul (Korea, Republic of))*

Background: Sarcopenia is a musculoskeletal disorder characterized by the progressive loss of muscle mass, strength, and performance, which is closely associated with aging. The prevalence of sarcopenia is estimated at approximately 25 % of individuals aged 65 and older and 60% of those aged 80 and older. The underlying major cause of sarcopenia is aging, and potential risk factors include obesity, malnutrition, rheumatoid arthritis, and a decrease in physical activity. As the population aged 65 and over continues to increase, sarcopenia is increasingly recognized as a significant public health concern. Various therapeutic approaches have been proposed, including the development of myostatin and Activin 2 inhibitors aimed at increasing muscle mass; however, these treatments have shown limited efficacy. Consequently, there is growing interest in drug repositioning and regenerative medicine. This preclinical study aims to assess the potential therapeutic efficacy of human Wharton's jelly-derived mesenchymal stem cells (WJ-MSCs) in the treatment of sarcopenia. **Methods:** Wild-type (C57BL/6) mice were allowed to age naturally until reached 20–24 months of age, establishing an in vivo model of sarcopenia. A total of 5 × 103 human WJ-MSCs were administered intravenously either once or repeatedly at four-week intervals. The safety and therapeutic efficacy of WJ-MSCs were evaluated for 4 weeks. Therapeutic efficacy was assessed using a grip strength behavior test, protein expression analysis of muscle-specific atrophy markers (MuRF1 and Atrogin-1), and histological examinations of muscle fibers. **Results:** Aged mice (20–24 months) exhibited muscle atrophy and reduced muscle strength with these sarcopenic phenotypes worsening with age. The intravenous administration of WJ-MSCs significantly decreased protein expression of MuRF1 and Atrogin-1 by 60 % ($p < 0.05$), indicating inhibition of muscle-related protein degradation. An increase in myosin heavy chain (MyHC) expression and cross-sectional area of muscle fibers was also observed, suggesting that WJ-MSCs promoted muscle regeneration. Additionally, grip strength improved following WJ-MSCs administration, with the most pronounced therapeutic effects occurring 4 weeks post-administration. Notably, the repeated administration of WJ-MSCs enhanced therapeutic efficacy compared to a single administration, leading to gradual increases in skeletal muscle mass and strength. **Conclusion:** Intravenous administration of WJ-MSCs in sarcopenia mice resulted in increased muscle mass and strength, as well as a reduction in muscle-related protein degradation. The therapeutic effects were amplified with repeated administration of WJ-MSCs. These findings suggest that WJ-MSCs may serve as a potential therapeutic option for sarcopenia. While the expected mechanism of action is a paracrine activity, further preclinical studies are necessary to identify specific paracrine factors and their roles in muscle regeneration associated with sarcopenia. **Keywords:** Sarcopenia, mesenchymal stem cell, Stem cell therapy, Regenerative medicine, Translational research. **Disclosures:** The authors declared no competing interests.

OC25- INTRINSIC CAPACITY DECLINING TRAJECTORIES: INSIGHTS FROM A NATIONWIDE SURVEY IN CHINA. Y. Pan[1], Y. Zhou[1], W. Yu[1], X. Li[1], L. Ma[2] *((1) Xuanwu Hospital Capital Medical University - Beijing (China), (2) Xuanwu Hospital Capital Medical University, National Clinical Research Center For Geriatric Medicine - Beijing (China))*

Background: Intrinsic capacity (IC) is a concept which provides a way to monitor the functional trajectories of individuals. However, IC declining trajectories in Chinese older adults are unknown. We aimed to analyze the longitudinal changes of IC and its related factors in Chinese community-dwelling older adults based on a nationwide survey. **Methods:** Data were from China Health and Retirement Longitudinal Study. A total of 2002 older adults who completed the survey in wave 1 (2011), wave 2 (2013), and wave 3 (2015) were included. Five sit-and-stand tests, episodic memory and mental status, the Center for Epidemiologic Studies Depression Scale, self-reported hearing and vision, and body mass index were used to assess locomotion, cognition, psychology, sensory, and vitality domains, respectively. Group-based trajectory modeling was applied to construct the trajectory of IC scores changing with age. Logistic regression was used to evaluate the impact of covariates related to demographic characteristics, socioeconomic factors (education, living areas, social activity, intellectual activity, household consumption level and working status), lifestyle (smoking, drinking and night sleep) and health status (multimorbidity) at baseline on IC trajectory. **Results:** According to the Bayesian and Akaike information criteria, two IC trajectories were obtained: good IC trajectory and poor IC trajectory. In both trajectories, the degree of IC impairment increases with age, but age is not the only factor causing the deterioration of IC trajectory. Logistic regression showed that individuals who were female, lived in rural areas, lacked intellectual activities, had low household consumption levels, had smoking history, lacked night sleep, and had multimorbidity were at higher risk of poor trajectory. **Conclusion:** There are two IC trajectories in Chinese older adults. Intervention and management should be targeted at the risk factors of poor IC trajectory. **Keywords:** Intrinsic capacity, trajectory, function ability, older adults. **Disclosures:** None. **References:** 1. Philipe, d. S. B. et al. Real-life intrinsic capacity screening data from the ICOPE-Care program. Nat Aging (2024). 2. Lina, M. et al. Cross-sectional study examining the status of intrinsic capacity decline in community-dwelling older adults in China: prevalence, associated factors and implications for clinical care. BMJ Open 11 (2021). 3. Yiming, P. et al. Declined intrinsic capacity predicts long-term mortality in Chinese older adults: Beijing Longitudinal Study of Aging. Maturitas 188 (2024). 4. Yaru, Z. et al. Trajectory of intrinsic capacity among community-dwelling older adults in China:

The China health and retirement longitudinal study. Arch Gerontol Geriatr 124 (2024). 5. Wan-Hsuan, L., Yves, R., Sophie, G., Philipe, d. S. B. & Bruno, V. Reference centiles for intrinsic capacity throughout adulthood and their association with clinical outcomes: a cross-sectional analysis from the INSPIRE-T cohort. Nat Aging 3 (2023).

OC26- THE ASSOCIATION BETWEEN LONELINESS, SOCIAL ACTIVITY AND FRAILTY: EVIDENCE FROM CHARLS AND MENDELIAN RANDOMIZATION.

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Background: With the global population aging, older adults are increasingly facing insufficient social participation and family support, leading to social isolation and loneliness. Nearly one-third of the elderly worldwide suffer from loneliness, which is linked to significant morbidity, mortality, and functional decline. Frailty, a syndrome of increased vulnerability due to age-related decline across multiple organ systems, is prevalent among older adults and exacerbated by factors such as inactivity and poor nutrition. **Method:** This study leverages data from the China Health and Retirement Longitudinal Study (CHARLS) to explore the effects of loneliness on frailty risk among Chinese older adults. A longitudinal study design was employed, involving 2073 participants aged 60 and above who were non-frail at baseline. Loneliness trajectories were identified over a seven-year period using group-based trajectory modeling (GBTM). Additionally, Mendelian randomization (MR) analysis was conducted to elucidate the causal relationships between loneliness, social activities, and frailty in a European population. **Result:** Five distinct loneliness trajectories were identified: stable low loneliness, increasing loneliness, decreasing loneliness, fluctuating loneliness, and stable high loneliness. Participants with increasing, fluctuating, and stable high loneliness trajectories exhibited significantly higher odds of developing frailty compared to those with stable low loneliness. MR analysis confirmed a causal relationship between loneliness and increased frailty index, while social interactions like the ability to confide in others and engagement in sports clubs were found to be protective factors against frailty. **Conclusion:** Loneliness significantly contributes to the development of frailty among older adults. Effective interventions to reduce loneliness and promote social interactions are crucial in mitigating frailty risk. This study highlights the importance of addressing social determinants of health in the aging population to improve their quality of life and health outcomes.

OC27- VIRTUAL REHABILITATION IMPROVES FRAILTY INDEX: A FEASIBILITY RANDOMIZED CONTROLLED TRIAL OF VIRTUAL GERAS DANCE.

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Background: Frailty is a multidimensional state of increased vulnerability that impacts older adults' intrinsic capacity and functional independence. Virtual rehabilitation offers an innovative approach to delivering interventions targeting physical and cognitive functions remotely, potentially improving frailty outcomes. This study explored the effect of virtual GERAS DANCE, a remotely delivered rehabilitation program designed with geriatric medicine and rehabilitation expertise, on frailty in older adults (aged 60+). **Methods:** A single-center, prospective, parallel-group randomized controlled trial (RCT) was conducted to assess the impact of a 6-week virtual GERAS DANCE program compared to usual care. The trial was registered on ClinicalTrials.gov (ID: NCT05202522). Fifty older adults were randomized to the intervention group, receiving twice-weekly 1-hour virtual GERAS DANCE sessions or a control group receiving usual care. Frailty was measured using the Fit-Frailty App, a comprehensive frailty assessment tool that applies the Rockwood Frailty Index method. The index is based on a cumulative deficit approach, with scores ranging from 0 (full health) to 0.7 (maximal frailty). Data were analyzed using an intention-to-treat (ITT) approach with between-group analysis of variance (ANOVA). **Results:** Fifty participants (mean age 75.02 ± 5.89 years, range 63–92, 92% female) completed the study. Average class attendance was 77%, with high program fidelity and adherence to the standardized curriculum. The frailty index showed a significant interaction between time and group ($p = 0.028$), indicating greater improvement in frailty scores for the intervention group compared to the control group. Frailty scores for the intervention group decreased from baseline (0.24 ± 0.99) to 6 weeks (0.23 ± 0.07), while scores in the control group increased from baseline (0.25 ± 0.11) to 6 weeks (0.27 ± 0.12). One adverse event was reported unrelated to the study intervention. **Conclusion:** Our results suggest that the virtual GERAS DANCE may improve the frailty index in older adults through remote rehabilitation. This approach offers an accessible, scalable solution to address frailty in aging populations, particularly for individuals with limited access to in-person care. **Keywords:** Frailty index, rehabilitation, virtual, geriatrics. **Clinical Trial Registry:** ID: NCT05202522; ClinicalTrials.gov. **Disclosures:** PH received a grant from the Hamilton Health Sciences New Investigator Fund. PH, CK, GI, and AP are co-developers of the GERAS DANCE intervention with McMaster University with a registered Canadian Copyright # 1156625 and Trademark # 0925640.

OC28- ACUTE RESISTANCE EXERCISE ELEVATES REGULATORS OF COLLAGEN BREAKDOWN IN HEALTHY HUMAN SKELETAL MUSCLE IRRESPECTIVE OF AGE. A. Schweitzer[1], M. Fliss[1], C. Mitchell[1] *((1) School Of Kinesiology, University Of British Columbia - Vancouver (Canada))*

Background: Skeletal muscle mass and strength decline with age, increasing risk of functional disability. Collagen accumulation between myofibres (muscle fibrosis) is linked to ageing and may impair muscle function. A sedentary lifestyle and comorbidities including type 2 diabetes exacerbate this fibrotic phenotype. Reduced collagen breakdown rather than elevated synthesis is suggested to drive muscle fibrosis, yet protein content and activity of regulators of collagen breakdown have never been investigated in aged human skeletal muscle. Specific regulators included matrix metalloproteinases (MMPs), proteins involved in collagen breakdown, and their inhibitors (TIMPs). Collagen turnover (breakdown and synthesis) is negligible at rest but increases after exercise. The primary aim of the present study was to compare protein activity of these regulators following acute resistance exercise between young and older adults matched on aerobic fitness. We hypothesized that compared to young adults, older adults would show more muscle fibrosis and a blunted expression of regulators of collagen breakdown in response to resistance exercise. **Methods:** 12 young (19-30 years) and 13 older (65-85 years) males and females were recruited from the Vancouver, Canada area. Participants were healthy and participated in less than two hours of lower-body exercise per week. To match fitness between age groups, participants were required to fall within the 25th-75th age and sex-adjusted aerobic fitness percentile. Biopsies of the vastus lateralis muscle were taken at baseline (before resistance exercise), 6h post-exercise and 72h post-exercise. The acute resistance exercise session consisted of four sets of leg press and knee extension to exhaustion at 70% of the individual's maximal workload. Total intramuscular collagen content, gene expression, protein content and protein activity of collagen breakdown regulators were quantified in the muscle samples. Data are shown as mean ± standard deviation. **Results:** Intramuscular collagen content was similar in young (3.4±2.1%) and older muscle (3.1±3.1%, p=0.779). Compared to baseline, MMP2 (p=0.005), MMP9 (p=<0.001), MMP14 (p=0.008) and TIMP1 (p=<0.0001) gene expression increased 72h post-exercise, with no age effect. MMP14 proenzyme content (16.9±43.4-fold, p=0.016), MMP2 (1.3±0.5-fold, p=0.016) and MMP9 (1.5±0.7-fold, p=0.007) protein content increased 72h after exercise, with no age effect. MMP14 enzyme content increased 72h post-exercise (95.2±362.7-fold, p=0.009). Older adults (156±469.5-fold) had greater expression than young adults at this timepoint (7.4±9.5-fold, p=0.019). **Conclusion:** This study investigated the effects of acute resistance exercise on regulators of collagen breakdown in aged muscle. Contrary to our hypothesis, muscle fibrosis was absent in healthy aged muscle and regulators of collagen breakdown increased after resistance exercise similarly between age groups. The older adults' mean aerobic fitness was in the 60th percentile and may represent a more fit subset of the ageing population that does not have muscle fibrosis. Our findings suggest that collagen turnover after resistance exercise remains a dynamic process unaffected by ageing per se. Further investigation of regulators of collagen breakdown is warranted in human models of skeletal muscle fibrosis where inactivity and comorbidities may dysregulate collagen turnover. **Disclosures:** This study was funded by the Natural Sciences and Engineering Research Council of Canada. The authors declared no competing interests.

OC29- NOVEL GEROTHERAPEUTIC PEPTIDES ALLEVIATE SARCOPENIA AND FRAILTY IN NATURALLY AGED MICE BY DUAL MECHANISMS ACTING THROUGH A SINGLE AGING-SELECTIVE TARGET. D. Jasinski[1], M. Balakrishnan[1], K. Courtney[1], S. Moreno[1], S. Shaw[1], K. Slawin[1] *((1) EOS Senolytix, Inc. - Houston (United States))*

Background: Sarcopenia, characterized by the age-related loss of muscle mass and function, significantly contributes to frailty. Recent studies suggest that the accumulation of senescent cells with age plays a crucial role in the progression of sarcopenia. Senolytic agents, which selectively eliminate senescent cells, offer a promising therapeutic approach. **Objective:** This study aims to evaluate the efficacy of PTC-2101 and PTC-2105, novel gerotherapeutic peptides that exhibit senolytic activity, in reducing sarcopenia in aged mice. **Methods:** C57BL/6 mice (75 weeks old) were randomly assigned to either a treatment group receiving the senolytic peptides PTC-2101 or PTC-2105 (n=4 or 8 per peptide) or a negative control group receiving saline (n=4 or 8). The peptides and saline control were administered intraperitoneally at a dose of 1.5 nMoles/kg body weight, three times per week, at the same volume per dose for all groups, for 8 weeks. Senescent cell burden was monitored in inguinal white adipose tissue (iWAT) and gastrocnemius tissues by immunohistochemical analysis of p16 and uPAR, two common senescent cell histological markers, and H&E staining was used to monitor tissue morphology. Body weights were monitored weekly. **Results:** Senescent cell burden was reduced by PTC-2101 in iWAT and gastrocnemius tissue by 43.7% (P<0.01) and 50.2% (P<0.0001) as analyzed by uPAR and p16 histology, respectively. Senescent cell burden was reduced by PTC-2105 in iWAT and gastrocnemius tissue by 67.8% (P<0.0001) and 53.8% (P<0.0001) as analyzed by uPAR and p16 histology, respectively. Furthermore, PTC-2101 and PTC-2105 reduced intermyocyte space in the gastrocnemius by 23.0% and 14.4%, respectively. This reduction in senescent cell burden in iWAT and gastrocnemius tissue resulted in weight gains of 1.01% and 3.5% for PTC-2101 and PTC-2105 (P<0.05), respectively, compared to an as expected loss of 2.8% body weight in saline-treated controls. Compared to saline-treated mice, animals treated with PTC-2101 and PTC-2105 increased in body weight by 4.4% and 6.5%, respectively. There was no demonstrable toxicity noted after 8 weeks of treatment with PTC-2101 and PTC-2105. **Conclusion:** These findings suggest

that our gerotherapeutic peptides that exhibit senolytic activity, PTC-2101 and PTC-2105, effectively reduce sarcopenia and frailty in aged mice by mechanisms that include targeting and eliminating senescent cells in fat and muscle tissue, resulting in body composition reshaping towards a higher lean muscle to fat ratio, as indicated by increased body weights compared to saline treated controls. Confirmatory studies incorporating DEXA scanning are ongoing. These results highlight the potential of our gerotherapeutic peptides in mitigating age-related muscle decline and improving overall healthspan. **Keywords:** Sarcopenia, senolytic, peptides, senescent cells, pre-clinical study, muscle mass, aged mice, frailty.

OC30- SKELETAL MUSCLE ENERGETICS AND LOWER URINARY TRACT SYMPTOMS: THE STUDY OF MUSCLE, MOBILITY AND AGING. S.R. Bauer[1,2,3], I.M. Al-Naggar[4,5], K. Lu[3], T. Mau[6], J.C. Newman[7,8], G.A. Kuchel[4], W.J. Boscardin[3,8], S.B. Kritchevsky[9], D. Marcinek[10], R.T. Hopple[11], A.J.A. Molina[12], S.R. Cummings[2,6], P.M. Cawthon[2,6]
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Background: Lower urinary tract symptoms (LUTS) include urinary incontinence and other symptoms that occur during urine storage and voiding. LUTS increase with age [1] and are consistently associated with risk of mobility impairment in older women and men [2, 3]. We evaluated whether skeletal muscle mitochondrial energetics, a major determinant of mobility [4], was associated with overall and individual LUTS severity. **Methods:** This cross-sectional analysis was conducted among 630 adults aged 70-89 years in the Study of Muscle, Mobility and Aging (SOMMA) Study. LUTS was assessed via the 10-item LURN Symptom Index (LURN SI-10); at least weekly urinary incontinence (any type) and individual LUTS were assessed separately. Vastus lateralis (thigh) muscle biopsies were collected and in vitro high-resolution respirometry of permeabilized muscle fibers was conducted to measure Max OXPHOSCI+CII (maximal complex I and II supported state 3 respiration) and Max OXPHOSCI+CII+FAO(maximal complex I, II, and FAO-supported supported respiration). ATPmax (maximal production of adenosine triphosphate) was determined in vivo by 31P magnetic resonance spectroscopy. Given important sex differences in LUTS pathophysiology, all models were sex-stratified and effect sizes were reported per 1 sex-specific standard deviation in each predictor. Linear regression models were used to evaluate associations with LURN SI-10 total score. Logistic regression models were used to evaluate associations with at least weekly urinary incontinence and individual LUTS. Multivariable models were adjusted for age, site/technician, height, weight, height*weight, race, education, smoking, alcohol use, comorbidity count, number of medications, and physical activity (self-reported and step count) and, for women, obstetric history and hormone replacement therapy. **Results:** Skeletal muscle energetics measures were not associated with LURN SI-10 total scores in women nor men. Among women, Max OXPHOSCI+CII and Max OXPHOSCI+CII+FAO were not associated with urinary incontinence or individual LUTS in unadjusted or multivariable adjusted models. Among men, each 20 pmol/s*mg increment in Max OXPHOSCI+CII was associated with a 54% (95%CI 30-71%) lower odds of at least weekly urinary incontinence after multivariable adjustment. Similarly, each 19 pmol/s*mg increment in Max OXPHOSCI+CII+FAO was associated with a 54% (95%CI 24-72%) lower odds of urinary incontinence. These associations were both predominantly driven by urgency urinary incontinence since stress urinary incontinence was rare among men (<5%). Max OXPHOSCI+CII and Max OXPHOSCI+CII+FAO were similarly associated with urinary urgency without incontinence in older men, although confidence intervals were wider and included 1.0 for Max OXPHOSCI+CII+FAO. ATPmax was not associated with overall or individual LUTS severity in older women and men. **Conclusion:** Greater in vitro maximal skeletal muscle energetics are associated with lower odds of urinary urgency with and without urinary incontinence in older men, but not older women. Skeletal muscle energetics are not associated with other LUTS in older adults. Mitochondrial dysfunction in skeletal muscle represents a novel risk factor for overactive bladder in older men, although sex differences and potential causality must be further examined. **Keywords:** Urinary incontinence, overactive bladder, geriatric syndromes, mitochondria. **Data Deposition:** https://sommaonline.ucsf.edu. **Disclosures:** The authors report no conflicts of interest. **References:** 1. Coyne KS, Sexton CC, Thompson CL, et al. The prevalence of lower urinary tract symptoms (LUTS) in the USA, the UK and Sweden: results from the Epidemiology of LUTS (EpiLUTS) study. BJU Int. Aug 2009;104(3):352-60. doi:10.1111/j.1464-410X.2009.08427.x. 2. Erekson EA, Ciarleglio MM, Hanissian PD, Strohbehn K, Bynum JP, Fried TR. Functional disability and compromised mobility

among older women with urinary incontinence. Female pelvic medicine & reconstructive surgery. May-Jun 2015;21(3):170-5. doi:10.1097/spv.0000000000000136. 3. Bauer SR, Cawthon PM, Ensrud KE, et al. Lower urinary tract symptoms and incident functional limitations among older community-dwelling men. Journal of the American Geriatrics Society. Apr 2022;70(4):1082-1094. doi:10.1111/jgs.17633. 4. Cummings SR, Lui LY, Glynn NW, et al. Energetics and clinical factors for the time required to walk 400 m: The Study of Muscle, Mobility and Aging (SOMMA). Journal of the American Geriatrics Society. Jan 19 2024;doi:10.1111/jgs.18763.

OC31- PREDICTING DISCHARGE HOME IN PEOPLE ADMITTED TO HOSPITAL WITH FRAILTY USING ARTIFICIAL INTELLIGENCE: PRELIMINARY FINDINGS OF AN OBSERVATIONAL COHORT STUDY.

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Background: People living with frailty have more frequent and longer hospitalisations than non-frail peers, and often ask "When can I go home?". The answer is challenging due to the complexity of ageing and frailty; there are over 40 factors that influence likelihood of discharge home. Prediction models that use artificial intelligence may be of great clinical utility in predicting discharge home for people in hospital with frailty. **Methods:** An observational study was performed from 1 January 2021 to 31 August 2023. People admitted to the acute hospital at Austin Health in Melbourne, Australia with at least two Physiotherapy Early Rehabilitation Service treatments and a Clinical Frailty Score recorded in the electronic medical record were eligible for inclusion. Statistical modelling, with artificial intelligence using machine learning, was undertaken for predicting if patients will be discharged directly home from the acute hospital (primary outcome). Candidate predictors (features) included: frailty using the Clinical Frailty Scale, age, sex, socioeconomic status, prior residence, ambulance case, admitted via emergency department, admitting medical speciality (e.g. orthopaedics), and physical function assessed with the modified Iowa Level of Assistance Scale and patient priority status at commencement of the Physiotherapy Early Rehabilitation program. For feature selection three approaches were tested: 1) the full model, 2) exhaustive feature selection (maximum of five features), and 3) stepwise backward feature selection (begin with all features then remove least relevant features one at a time). Model metrics included area under the curve and accuracy. Steps were taken to ensure zero data leakage between the training and testing datasets. The logistic regression model was regularized using both L1 and L2 penalty to mitigate overfitting. **Results:** There were 2510 patients included in study and 31% (n = 770) were discharged directly home from acute hospital. The median (IQR) Clinical Frailty Scale score was four (3, 5). The logistic regression full model had an area under the curve of 0.88, indicating good discrimination between people who were and were not discharged directly home from acute hospital. The accuracy of the full model was 82%, meaning the model correctly predicted discharge home for every four out of five patients. For both the exhaustive feature selection and stepwise backward feature selection models the best performing features were admitted via emergency department, admitting medical specialty, age, and physical function at commencement of the Physiotherapy Early Rehabilitation Program, giving an area under the curve of 0.88 and an accuracy of 84%. **Conclusion:** Prediction of discharge home with artificial intelligence for people with frailty receiving an Early Rehabilitation Program was feasible using structured data from the hospital electronic medical record with good discrimination where four out of five people were correctly predicted to discharge directly home or not following acute hospitalisation. The preliminary findings of our prediction model show promise in using artificial intelligence to rapidly synthesise information to improve the efficiency of care for people in hospital with frailty. Further research to refine the model predictions and rigorous testing and evaluation in the clinical setting is needed before adoption in practice. **Keywords:** Frailty, hospital, prediction. **Disclosures:** JJ received an Early Career Researcher Grant from The University of Melbourne to fund this research.

OC32- ASSOCIATION OF PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR WITH CHANGES IN INTRINSIC CAPACITY IN SPANISH OLDER ADULTS: A PROSPECTIVE POPULATION-BASED STUDY.

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Background: Intrinsic capacity (IC)—the composite of all the physical and mental capacities of an individual—has been proposed by the World Health Organization as a marker of healthy ageing. However, the association of physical behaviours (physical activity [PA] and sedentary behaviour [SB]) with IC remains largely unexplored. We aimed to prospectively analyse the association of physical behaviours and IC in older adults. **Methods:** This was a population-based prospective study (ENRICA Seniors-2 cohort, 2015-2023) including Spanish community-dwelling older adults (≥60 years). Accelerometer-based levels of SB, and low-intensity (LPA) and moderate-vigorous PA (MVPA) were assessed at baseline. An IC composite score (the higher the score, the higher the IC) was calculated at baseline and during follow-up with six domains: vitality (handgrip strength, appetite, and weight loss), cognition (Mini-Mental State Examination), psychological (Geriatric Depression Scale), locomotion (Short Physical Performance

Battery), vision, and hearing. **Results:** 2,477 participants were included (53.1% female, 71.7±4.3 years). During a median follow-up of 5.5 years (interquartile range=0.8), MVPA—but not LPA—was positively associated with the change in IC (mean percentage change [MPC] per 15-minute = 1.01%; 95% confidence interval, 0.5% to 2.02%) whereas an inverse association was found for SB (MPC= -0.40%; -0.60% to -0.20%). When dividing by tertiles, both the intermediate (MPC= 9.03%; 4.00% to 14.30%) and the highest tertiles of MVPA (MPC= 9.31%; 4.42% to 14.43%) were associated with improvements of IC compared to the lowest tertile regardless of SB levels. By contrast, whereas the highest tertile of SB was inversely associated with IC changes regardless of MVPA levels, no such association was found for intermediate SB levels except for those individuals in the highest MVPA tertile. **Conclusion:** SB and MVPA—but not LPA—are associated with IC reductions and improvements in older adults, respectively. These findings support the importance of promoting PA and reducing SB for healthy ageing. **Keywords:** Intrinsic capacity, physical activity, sedentary behavior, healthy aging. **Disclosures:** Authors declare the absence of conflicts of interest.

OC33- THERE IS MORE TO TARGETING GDF15 THAN TREATING CANCER CACHEXIA: ACTIVATION OF THE GDF15-GFRAL AXIS MEDIATES FATIGUE AND COGNITIVE IMPAIRMENT INDUCED BY CELLULAR STRESS. B. Chelette[1], L. Abe[1], C. Chidomere[1], A. Singh[1], R. Mahalingam[1], R. Dantzer[1] *((1) UT Md Anderson Cancer Center - Houston (United States))*

Background: Although the mitokin Growth Differentiation Factor 15 (GDF15) has been associated with frailty and sarcopenia in aging, it has gained notoriety mainly because of its causal involvement in cancer cachexia, with multiple clinical trials underway to confirm the efficacy of biologics blocking GDF15 or its receptor, GDNF Family Receptor Alpha-Like (GFRAL) to treat this condition. As GDF15 and other mitokines are produced by cells undergoing endoplasmic reticulum (ER) stress and mitochondrial stress, we initiated a series of studies to determine whether GDF15 mediates the main symptoms that are associated with cellular stress and are represented by fatigue and cognitive impairment. **Methods:** We used the chemotherapeutic agent cisplatin, which does not enter the brain, and the inhibitor of N-linked glycosylation tunicamycin to induce mitochondrial and ER stress, respectively. Fatigue-like behavior was measured by decreased wheel running in mice and cognitive impairment by performance deficit in the puzzle box, a test of executive function that presents mice with tasks of increasing difficulty to move from a brightly lit compartment to a dark compartment. To determine whether GDF15 acts in the brain beyond activating its receptor located in the area postrema-nucleus tractus solitarius complex, we measured Gdf15 mRNA by qRT-PCR in the brain parenchyma, meninges, and choroid plexus, determined the cellular origin of Gdf15 in the meninges by single nucleus-RNA seq, and assessed the effects of GFRALna on brain mitochondrial dysfunction by measuring oxygen consumption rates of synaptosomes via Seahorse XF Analyzer Mito Stress Test. **Results:** Administration of a neutralizing monoclonal antibody against GFRAL (GFRALna) blocked the development of fatigue-like behavior induced by cisplatin or tunicamycin. GFRALna also facilitated the recovery of fatigue-like behavior when administered after the completion of cisplatin treatment. The impairing effects of cisplatin on performance in the hard task component of the puzzle box test were blocked by GFRALna administration. Cisplatin did not induce Gdf15 mRNA in the brain parenchyma but increased its expression in the meninges and choroid plexus. Single-nucleus-RNA seq showed that mast cells were the primary source of Gdf15 in the meninges. GFRALn blocked the decrease in the maximal oxygen consumption rate of mitochondria in synaptosomes from cisplatin-treated mice. **Conclusion and perspectives:** These findings indicate that GDF15 transmits peripheral cellular stress to the brain borders, which could represent another form of communication for coordinating the organism's response to this form of stress. Although the role of the brain borders in the effects of cellular stress remains to be determined, the present data set can be interpreted to suggest that there is more to the GDF15-GFRAL axis than cachexia. **Funding:** Supported by NIH R01CA193522 and R21NS130712.

OC34- WHICH PERCENTILE VARIATION IN HANDGRIP STRENGTH IN OLDER PEOPLE DETERMINES THE GAIT SPEED DECLINE OVER TWELVE YEARS OF FOLLOW-UP? EVIDENCE FROM THE ELSA STUDY. Y. Machado[1], M. Luiz[2], R. Máximo[3], S. Lima[2], A. Steptoe[4], C. De Oliveira[5], T. Alexandre[1] *((1) Gerontology Department, Federal University Of Sao Carlos - Sao Carlos (Brazil), (2) Post-Graduate Program In Physical Therapy, Federal University Of Sao Carlos - Sao Carlos (Brazil), (3) Post-Graduate Program In Gerontology, Federal University Of Sao Carlos - Sao Carlos (Brazil), (4) Department Of Behavioural Science And Health, University College London - London (United Kingdom), (5) Department Of Epidemiology And Public Health, University College London - London (United Kingdom))*

Background: Reduced handgrip strength (HGS) indicates the risk of gait speed decline in older people. Although there are several cutoff points in the literature to define muscle weakness, using these static thresholds for HGS does not allow the capture of individual variation in strength over time. Therefore, this study aimed to investigate which percentile variation in HGS is associated with the long-term decline in gait speed in older people. **Methodology:** This longitudinal study involves 4,541 individuals aged 60 or older who participated in the English Longitudinal Study of Aging (ELSA). The variation in HGS over four, eight, and twelve years compared to baseline was classified into nine groups: maintained HGS at ± 5% (reference group), gained HGS between 5% and 10%, between 10% and 15%, between 15% and 20%, or greater than 20%, as well

as reduced HGS by these same percentiles. The trajectories of gait speed in meters per second (m/s) as a function of HGS variations were assessed using generalized linear mixed models adjusted for sociodemographic, behavioral, and clinical characteristics. **Results:** A significant gait speed decline was identified in participants who presented a reduction in HGS between 15% and 20% (-0.007 m/s per year, 95% CI: -0.013 to -0.002) and greater than 20% (-0.004 m/s per year, 95% CI: -0.007 to -0.001) compared to those whose HGS remained stable (± 5%). For those who presented a reduction in HGS between 15% and 20% and greater than 20%, this corresponded to a decline over twelve years of -0.189 m/s and -0.144 m/s, respectively. **Conclusion:** A loss of 15% or more of HGS is associated with reduced gait speed. Therefore, monitoring percentile variation in HGS over time can detect the critical period of decline in muscle strength early and prevent the damage to gait speed in older people. **Keywords:** Handgrip strength, gait speed, mobility decline, muscle weakness. **Disclosures:** The authors declared no competing interests.

OC35- DISABILITY AND PHYSICAL PERFORMANCE ACROSS SOCIAL AND ECONOMIC DEVELOPMENT.

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Background: (Instrumental) Activities of Daily Living [(I) ADLs] are key measures disability and are associated health and physical performance for older adults. These tasks may differ in needed performance by context, potentially altering their meaning and resources needed to provide care. We studied variation in the association between grip strength and (I)ADL disability by development indicators. **Methods:** We used data from CHARLS, HRS, LASI, MHAS, and SHARE. We first estimated within-country odds ratios (ORs) of (I)ADL disability by grip strength with adjustment for age, sex, BMI, and wealth deciles using logistic regression. Then, using linear regression we regressed ORs on GDP per capita (GDP), Human Development Index (HDI), and infant mortality rate (IMR). **Results:** Greater GDP per capita and HDI and lower IMR were associated with stronger grip strength/(I)ADL disability association. Specifically, ORs became smaller with greater GDP per capita and HDI and lower IMR. **Conclusion:** We find that physical performance becomes more protective against (I)ADL disability with improved development indicators. It is possible that these tasks may become more complex with greater social and economic development. Simplifying (I)ADL tasks may preserve older adults' independence.

OC36- ASSOCIATION BETWEEN INTRINSIC CAPACITY AND SARCOPENIA, OSTEOPENIA/ OSTEOPOROSIS, AND OSTEOSARCOPENIA: RESULTS FROM THE IRISH LONGITUDINAL STUDY ON AGEING (TILDA).

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Background: In 2015, the World Health Organization (WHO) introduced the concept of intrinsic capacity (IC) as the composite of all the individual-level attributes that include their physical and mental capabilities on which they can draw at any point in time. Emerging evidence suggests the coexistence of sarcopenia and osteoporosis (i.e. osteosarcopenia) leads to increased adverse outcomes in older adults. While impairment in IC has been linked to a greater risk of sarcopenia, its relationship with osteoporosis and osteosarcopenia has not yet been studied. **Methods:** Cross-sectional analysis was conducted among participants who were 50 years or older at wave 1 of the TILDA cohort. We developed an IC model using five different domains: Cognition (Montreal Cognitive Assessment MoCA), locomotion (Timed Up and Go), vitality (self-reported weight loss), sensory (self-reported hearing and vision) and psychological (modified 8-item version of the Center of Epidemiologic Studies Depression Scale and/or use of an antidepressant). IC composite score (0-5) was calculated, with lower scores representing worse IC. Sarcopenia was defined as low grip strength and/or low gait speed according to the Sarcopenia Definition Outcomes Consortium (SDOC), and osteopenia/osteoporosis was defined as heel-ultrasound T score below -1 SD. Osteosarcopenia was defined as the coexistence of osteopenia/osteoporosis and sarcopenia. **Results:** The sample of 2124 participants from wave 3 of TILDA had a mean age (SD) of (64.36 (8.2)). The prevalence and median IC score (mean difference from reference; p-value) for each group were as follows: Neither osteopenia/osteoporosis nor sarcopenia (reference group) was present in 72.9% with median IC score = 5, osteopenia/osteoporosis in 10.5% with median IC score = 4.5 (-0.28, p=<0.001), sarcopenia in 13.1% with median IC score = 4 (-0.52 ; $p < 0.001$), and osteosarcopenia in 10.4% with a median IC score of = 4 (-0.81; $p < 0.001$). **Conclusion:** In our model, a lower (worse) IC score, was associated with a higher risk of sarcopenia and osteosarcopenia. A dose response relationship was noted between osteosarcopenia and IC score. **Keywords:** Intrinsic capacity, sarcopenia, osteopenia, osteoporosis, osteosarcopenia. **Disclosures:** The authors declared no competing interests.

OC37- NADMED: NOVEL REDOX PROFILING TO ENABLE AWARENESS OF CLINICAL RELEVANCE OF NAD+ AND ITS DERIVATIVES. R. Aanismaa[1], S. Jansson[1,2], J. Buzkova[1,2], L. Euro[1,2], A. Suomalainen[1,4] *((1) Nadmed Ltd - Helsinki (Finland), (2) Stemm, Faculty Of Medicine, University Of Helsinki - Helsinki (Finland), (3) HUS Diagnostic Center - Helsinki (Finland))*

Background: Nicotinamide adenine dinucleotide (NAD) and its derivatives play crucial roles in cellular metabolism, energy production, and various physiological processes. Accurate measurement and understanding of these metabolites are essential for elucidating their clinical relevance in health and disease. **Methods:** We have developed a highly accurate method to measure NAD+, NADH, NADP+, NADPH, and both oxidized and reduced glutathiones (GSH and GSSG) from any biological samples including fresh or frozen whole blood, tissues and cells. The method relies on a novel non-destructive extraction step that allows a rapid release of all these metabolites from proteins and structures after which the metabolites are stabilized in specific conditions for oxidized and reduced forms. Moreover, the same method has recently been modified to capture a specific NADP derivative, NAADP, which is a Ca2+-mobilizing secondary messenger affecting multiple cellular processes. **Results:** Using our NADMED technology, we measured 300 blood biobank samples and determined reference levels on (limited) population level for NAD+ 20 to 36 μM, and for NADH 0.6 to 1.8 μM. For clinical indications, the value of measuring NADs as biomarkers of the pathology and as a follow-up readout to specific treatment has already been published, e.g., for neurodegenerative diseases such as Parkinson's disease, and for neuromuscular diseases such as mitochondrial myopathy and ALS. For NAADP, the ongoing method development seems feasible as the low amounts of this metabolite in biological samples can indeed be detected. Optimization of the workflow with several different biological samples is currently ongoing. **Conclusion:** We present a novel technology for measuring REDOX metabolites in a single sample that can be utilized in clinical laboratories. Further modification of the method seems feasible and may allow for the detection of other clinically relevant metabolites that have been challenging to measure with the currently available methodology. **Keywords:** NAD, liquid biomarker, clinical relevance, metabolism. **Disclosures:** The poster presenter and co-authors are all affiliated with NADMED Ltd. **References:** Euro et al. XXXX Manuscript being prepared.

OC38- EVALUATING SINGLE-SLICE (2D) AND VOLUMETRIC (3D) MRI TECHNIQUES FOR MUSCLE AND ADIPOSE TISSUE ASSESSMENT IN A POPULATION-SCALE UK BIOBANK STUDY. M. Nowak[1], L. Núñez[1], C. Hill[1], T. Nguyen[1], P. Pandya[1], T. Kailayanathan[1], H. Thomaides Brears[1] *((1) Perspectum Ltd - Oxford (United Kingdom))*

Background: Accurate body composition tools have become increasingly important for assessing adipose and muscle tissue in both clinical and research settings, including obesity management and sarcopenia assessment. While volumetric MRI (3D) is considered the gold standard, single-slice (2D) MRI measurements have emerged as a useful alternative due to lower costs and reduced data processing requirements. This study had two objectives. Firstly, we aimed to evaluate the correlations between 2D and 3D visceral adipose tissue (VAT), subcutaneous adipose tissue (SAT), and muscle tissue. Secondly, we compared VAT, SAT, and muscle volumes obtained using two different processing methods of 3D MRI body composition data. **Methods:** We analyzed data from a subset of 4,604 individuals in the UK Biobank (50% male, mean age 62 years [SD 7], BMI 27 [4] kg/m2). A single axial slice (2D) was extracted from the whole-body Dixon MRI scan at the centre of the L3 vertebra, and cross-sectional area of VAT, SAT, and skeletal muscle were measured from semi-automatic segmentations. These 2D measurements (Perspectum) were compared with 3D measurements from two different providers (Perspectum and AMRA). Processing method A (Perspectum) was used to generate 3D VAT, SAT, and abdominal skeletal muscle volume. Processing method B (AMRA) was used to generate VAT, SAT, total lean tissue volume, and thigh fat free muscle volume. Correlation coefficients were used to assess relationships: a) between body composition metrics obtained using 2D and 3D methods, as well as b) between two different 3D processing methods. **Results:** With 100% data available, very strong correlations were observed between 2D and 3D (method A) abdominal skeletal muscle (rho=0.9, $p<0.001$). For method B, there were 93% missing data for total lean tissue and 5% missing data for total thigh fat-free muscle volume. Both 3D processing methods correlated for SAT (rho=1, $p<0.001$) and VAT (rho=0.99, $p<0.001$). The 2D measurements of SAT and VAT showed very strong correlations with 3D SAT and VAT (SAT: rho=0.93, $p<0.001$; VAT: rho=0.97, $p<0.001$, respectively), independent of sex, age, BMI, waist circumference, diabetes status, and liver tissue characteristics (SAT: median rho 0.93, VAT: median rho 0.96, all $p<0.001$). **Conclusion:** The results showed that Perspectum method for skeletal muscle (whether 2D or 3D) yields complete data and demonstrate robust correlations across individuals with diverse cardiometabolic risk profiles. For the same individuals, the AMRA processing method returned only ~7% data for total lean tissue volume. **Keywords:** Body composition, MRI, VAT, SAT, muscle, L3.

OC39- FATTY YELLOW MARROW OF THE ANKLE PREDICTS ACCELERATED FRAILTY AND IS A RISK FACTOR FOR DIABETES IN POSTMENOPAUSAL WOMEN. A.K. Wong[1,2], S. Reitsma[3], S. Costa[1], R. Yan[4], A. Papaioannou[3,5], J.D. Adachi[3] *((1) University Health Network - Toronto (Canada), (2) University Of Toronto - Toronto (Canada), (3) McMaster University - Hamilton (Canada), (4) University Of Waterloo - Waterloo (Canada), (5) Hamilton Health Sciences - Hamilton (Canada))*

Background: Bone marrow plays a key role in energy metabolism, with its composition shifting between hematopoietic (red) and adipose (yellow) cells. Lower marrow density (MwD) is a surrogate for greater fat content, reflecting differences in bioenergetics and potentially affecting energy metabolism. Fatty marrow has been linked to impaired metabolic functions, but its role in frailty remains underexplored. **Rationale:** Central bone marrow density may serve as a sensitive marker for shifts in marrow bioenergetics. Lower central MwD, indicative of higher fat infiltration, could reflect marrow's incapacity to support systemic energy demands, accelerating the onset and progression of frailty, especially among postmenopausal women. Understanding this relationship could provide insight into metabolic underpinnings of frailty and inform targeted interventions. **Aim:** To investigate the association between central distal tibia marrow density and frailty progression, with a focus on how variations in MwD relate to frailty and metabolic conditions affecting energy metabolism. **Methods:** In this 7-year longitudinal study, women aged 60-85 from the AMBERS cohort completed peripheral quantitative computed tomography (pQCT) of the 4% distal tibia to assess MwD at baseline. Central MwD was calculated using a conservative method that isolated the central region of the marrow, minimizing effects like beam hardening. Frailty was assessed over six subsequent years using a Frailty Index (FI), with group-based trajectory modeling identifying distinct patterns of frailty progression. **Statistical analyses:** The relationship between MwD metrics and FI trajectory patterns was analyzed using binary logistic regression, with time interactions verified through linear mixed models. Additionally, the associations between MwD and self-reported diabetes and hypertension were examined. Frailty models were adjusted for bone tissue mineral density (bone mass/bone volume), age, BMI, diabetes status, physical activity levels, hypertension, and chair stand performance. **Results:** Among 312 women (mean age: 75.4(6.0)yrs, BMI: 29.46(5.80)kg/m^2), each standard deviation decrease in central MwD was associated with higher odds of accelerated or moderately-progressing frailty (OR: 1.30(0.91,1.85)). A significant time interaction was observed, indicating that changes in frailty over time were linked to baseline central MwD (p=0.040). Lower central MwD was significantly associated with diabetes (OR: 1.62(1.05,2.51)), aligning with the role of fat-rich marrow in altered metabolic regulation. In sensitivity analyses, when diabetes and non-overweight individuals were excluded from models, the effect size between central MwD and accelerated frailty strengthened (OR: 1.45(0.99,2.12)). Having hypertension was also an independent correlate of accelerated frailty (OR: 5.49(2.81,10.73)). Fully-adjusted models had a concordance of 0.83 suggesting a composite assessment of MwD, diabetes, hypertension, and BMI could readily predict individuals who progress in frailty more rapidly. **Conclusion:** Lower central distal tibia marrow density may signal shifts in marrow bioenergetics that contribute to frailty in postmenopausal women. The association between central MwD and frailty progression underscores the importance of considering marrow composition when evaluating conditions that impact energy metabolism. Geriatric assessments should consider a combination marrow adiposity assessment on top of diabetes and hypertension workup to flag individuals likely to become dangerously frail. **Keywords:** Bone marrow adiposity, yellow marrow, frailty, diabetes, hypertension, longitudinal cohort study. **Disclosures:** None.

OC40- DOG AS A MODEL FOR HUMAN AGING STUDIES. P. Zemko[1], T. Banzato[1], F. Bonsembiante[1], M. Canevelli[2] *((1) Department Of Animal Medicine, Production And Health, University Of Padua - Padua (Italy), (2)Department Of Neurological Sciences, University Of Rome «la Sapienza» - Rome (Italy))*

Background: Dogs are promising models for human aging studies due to several shared characteristics. Both species exhibit significant phenotypic variability, a relationship between body size and lifespan, and receive comparable healthcare. Importantly, unlike laboratory animals, dogs live alongside humans, sharing the same environment and lifestyle while having a much shorter lifespan. Despite these advantages, the similarities in age-related changes in blood tests, cognitive function, and physical performance between dogs and humans remain largely unexplored. **Methods:** This prospective longitudinal study of the duration of 18 months involved 209 privately owned, clinically healthy dogs, above 5 years of age presented at the Veterinary Teaching Hospital of the University of Padua. Owners completed a questionnaire covering lifestyle, health status, and cognitive function. Cognitive function was assessed by evaluating behavioral patterns and social interactions, which were found to be highly sensitive in predicting Canine Cognitive Dysfunction, the canine equivalent of Alzheimer's disease in humans [1]. Each dog then underwent a physical capability test (time taken to complete a 10-meter on-leash trail) [2], along with a comprehensive clinical examination and routine blood tests. **Results:** Seventeen standard biochemical and hematological parameters were found to show statistically significant linear variations with age (p values <0.01) with determination coefficients varying from 0.08 to 0.12. Key variations, including changes in red blood cell count, hematocrit, hemoglobin, mean corpuscular hemoglobin, platelet count, and globulins, can be explained by the presence of low-grade chronic inflammation, a hallmark of «inflammaging», a phenomenon well-documented in human aging [3]. We developed a method to quantify these age-related changes in each dog, calculating a coefficient termed

the «biological age score» (BAS). The BAS was calculated by summing the normalized differences between actual laboratory values and those predicted by linear regression. Dogs with higher BAS demonstrated slightly lower cognitive function (51±8 in the group with high BAS, 54±4 in the group with normal BAS and 56±2 in the group with low BAS) and poorer performance in the physical capability test compared to dogs with lower BAS (5.1 s ± 2.7 s in the group with high BAS, 4.1 s ± 2.1 s in the group with normal BAS and 3.7 s ± 2.9 s in the group with low BAS). **Conclusion:** We found indirect indications of the presence of low-grade chronic inflammation in dogs that could be a counterpart of the widely described human inflammaging. Additionally, a potential link between the degree of inflammation and cognitive decline in dogs was identified. These findings suggest that dogs may serve as valuable models for studying inflammaging and evaluating anti-aging interventions in humans. **Keywords:** Dogs, inflammaging, biological age. **References:** 1. Rofina, J. E., van Ederen, A. M., Toussaint, M. J. M., Secreve, M., van der Spek, A., van der Meer, I., et al. (2006). Cognitive disturbances in old dogs suffering from the canine counterpart of alzheimer's disease. Brain Res. 1069, 216–226. 2. Morgan, E. M., Heseltine, J. C., Levine, G. J., Promislow, D. E. L., and Creevy, K. E. (2019). Evaluation of a low-technology system to obtain morphological and mobility trial measurements in dogs and investigation of potential predictors of canine mobility. Am. J. Vet. Res. 80, 670–67. 3. Fulop, T., Dupuis, G., Witkowski, J. M., and Larbi, A. (2016). The role of immunosenescence in the development of age-related diseases. Rev. Invest. Clin. 68, 84–91.

OC41- ASSOCIATION BETWEEN RELATIVE MUSCLE POWER AS A PROXY OF FRAILTY AND COGNITIVE PERFORMANCE IN COMMUNITY-DWELLING ADULTS.

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Background: Cognitive frailty, a heterogeneous condition characterized by the simultaneous presence of both physical frailty and cognitive impairment [1], poses a significant public health challenge. On one hand, the association between physical frailty and cognitive decline is well-established [2]. On the other hand, low Relative Muscle Power (RMP, muscle power calculated with the 5-repetition sit-to-stand normalized to body mass) has been associated with a more than fourfold increase in the risk of frailty [3]. Thus, identifying the specific cognitive domains most affected by RMP, as a proxy of physical frailty, would be relevant for the design of targeted interventions aimed at mitigating cognitive decline in older adults. This study aims to analyse the association of RMP with cognitive performance (CP) using a broad range of cognitive domains. **Methods:** This cross-sectional study includes 524 participants (59.4±7.4 years, 59.4 women) from InLifeAGING study in Cadiz, Spain. The CP was evaluated using a variety of cognitive tests to explore different cognitive domains: Mini-Mental State Examination (MMSE) and Montreal Cognitive Assessment (MOCA) for general cognitive functioning; STROOP Word (STROOP_W) for automatic reading, STROOP Colors (STROOP_C) for visual processing speed, accuracy and selective attention, and STROOP Word&Color (STROOP_WC) for inhibition of automatic answer, and also Controlled Oral Word Association Test (COWAT phonemic and semantic fluency) for executive functions and verbal fluency; Trail Making Test (TMT A-B) for attention; Rey Auditory Verbal Learning Test (RAVLT) and Digit Span for memory; Boston Naming Test (BNT) for language and Clock Drawing Test (CDT) for visual perception. RMP was calculated (3) as a potential indicator of frailty

condition. Pearson´s Correlations were performed between RMP and CP, then, multiple linear regressions were applied for associations between RMP and significant correlated CP variables, introducing age, sex and educational years as covariates. **Results:** Student t-tests show that men have higher RMP levels (4.7±1.2 WKg-1 vs 3.6±0.9 WKg-1 in women), higher education (14.7±4.6 years vs 13.3±4.6 in women) and performed better in working memory, attention, executive function and language (all p<0.01) than females. Significant direct relationships were observed between RMP and all CP variables (r 0.142-0.347, p<0.001). Multiple linear regression models reported associations of RMP with COWAT (semantic fluency) (adjR2=0.373, beta=0.099, p=0.025), STROOP_W (adjR2=0.217, beta=0.110, p=0.025) and STROOP_C (adjR2=0.182, beta=0.104, p=0.039), independently of sex, age and years of education. **Conclusion:** Our findings indicate that RMP emerges as a relevant indicator of cognitive performance, especially executive function, independently of sex, age and educational level, highlighting the crucial role of muscle strength in cognitive health. These findings are aligned with the growing body of evidence linking physical frailty to cognitive decline. These results have profound clinical implications, suggesting that assessing RMP as a proxy of physical frailty could serve as an early marker for cognitive decline. Furthermore, interventions targeting muscular power and function in older adults may offer additional cognitive benefits. Further research should investigate the underlying biological mechanisms and explore the optimal timing and intensity of such interventions to maximize cognitive benefits. **Keywords:** Cognitive frailty, relative mechanical power, muscle strength, sit-to-stand test, cognitive performance. **Ethics Commitee:** Cadiz Investigation Ethics Committee (registered number: 0653-N-20). **Disclosures:** The authors declared no competing interests. Co-financed by the European Unión-2014-2020 ERDF Operational Programme and by the Department of Economic Transformation, Industry, Knowledge, and Universities of the Regional Government of Andalusia: FEDER-UCA18-107040. **References:** 1. Panza F et al. Rejuvenation Res. 2015; 18(5):389-412. doi: 10.1089/rej.2014.1637. 2. Chen S et al. J Nutr Health Aging 2018; 22(1):82-88. doi: 10.1007/s12603-017-0924-1. 3. Losa-Reyna J et al. Exp Gerontol. 2020;142:111141. doi: 10.1016/j.exger.2020.111141.

OC42- GERIATRIC CACHEXIA, INTRINSIC CAPACITY AND MORTALITY: POOLING DATA FROM FIVE COHORTS IN TAIWAN.

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Background: Cachexia is associated with poor health outcomes in older adults, but its relationship with intrinsic capacity (IC) decline and mortality remains unclear. This study aimed to investigate the association between cachexia and IC decline across multiple domains, as well as its impact on mortality risk. **Methods:** Data were obtained from five cohorts [1, 2] in Taiwan, with a sample size of 4752 study participants aged 50 years and older. Cachexia was defined based on the Asian Working Group for Cachexia (AWGC) criteria [3] (algorithm 1: either having weight loss or low body mass index (BMI), and one of the following: subjective anorexia or decreased grip strength; algorithm 2: either having weight loss or low body mass index (BMI), and one of the following: subjective anorexia, decreased grip strength or elevated C-reactive protein (CRP) levels). IC was operationalized using the World Health Organization's Integrated Care for Older People (ICOPE) framework (step 1 and step 2) [4], encompassing six domains: locomotion, vitality, vision, hearing, cognition, and psychological well-being. Logistic regression was used to investigate the associations between cachexia and IC impairment (overall and each domain). Cox proportional hazard model was utilized to examine the effects of cachexia on all-cause mortality. **Results:** Among 4,752 (median age 68.7 years, 44.4% male) participants from five cohorts, the prevalence of cachexia was 5.5% using Algorithm 1 and 5.6% using Algorithm 2. Cachexia was significantly associated with declines in multiple IC domains. For Algorithm 1, significant associations were found for locomotion (Step 1: aOR 1.41 [95% CI 1.06-1.87], p=0.019), vitality (Step 2: aOR 8.92 [6.71-11.87], p<0.001), visual impairment (Step 2: aOR 1.62 [1.13-2.32], p=0.008), cognition (Step 2: aOR 1.44 [1.05-1.97], p=0.023), and psychological aspects (Step 2: aOR 2.24 [1.52-3.29], p<0.001). Similar patterns were observed for Algorithm 2, with the strongest associations in vitality (Step 2: aOR 12.38 [8.94-17.14], p<0.001). Individuals with cachexia had a significantly higher risk of mortality compared

to the robust group (aHR 2.33 [95% CI 1.64-3.30], p<0.001), after adjusting for confounders including age, sex, and chronic conditions. **Conclusion:** Cachexia is associated with an increased risk of IC decline across multiple domains and higher mortality in older adults. These findings highlight the importance of early identification and management of cachexia to prevent functional decline and improve survival in this population. **Keywords:** Cachexia, intrinsic capacity, mortality. **Disclosures:** The authors declared no competing interests. **References:** 1. Hsu PS et al. J Nutr Health Aging. 2024 Jun;28(6):100268. doi: 10.1016/j.jnha.2024.100268. 2. Huang ST et al. J Frailty Aging. 2024;13(2):139-148. doi: 10.14283/jfa.2024.8. 3. Hidenori A et al. J Cachexia Sarcopenia Muscle. 2023 Oct;14(5):1949-1958. http://doi: 10.1002/jcsm.13323. 4. Tavassoli N et al. Lancet Healthy Longev. 2022; 3:e394-e404. http://doi: 10.1016/S2666-7568(22)00097-6.

OC43- CARDIOVASCULAR HEALTH AND IMPAIRED LOWER-EXTREMITY FUNCTION IN OLDER ADULTS.

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Background: Cardiovascular health (CVH) is a broad construct that encompasses multiple behavioral and biological factors [1]. A decline in CVH has been associated with various adverse health outcomes. Still, there is little information about its association with impaired lower-extremity function (ILEF), a major contributor to diminished quality of life in the older adult [2]. Therefore, we aimed to examine the cross-sectional and prospective association between CVH and lower-extremity function. **Methods:** Using data from 2,487 participants aged 65 and older from the Seniors-ENRICA-2 cohort [3], we calculated CVH using the American Heart Association's Life's Essential 8 (LE8) score and identified participants with ILEF using the Short Physical Performance Battery (SPPB). The association between the two metrics was assessed by logistic regression at baseline, 2.4-year follow-up, and 5.2-year follow-up. **Results:** ILEF was present in 26.8% of the participants at baseline. Having better CVH at baseline was associated with lower risk of having ILEF (SPPB ≤9) at baseline (odds ratio [OR] 0.75, 95% confidence interval [CI]: 0.69-0.80), and lower risk of incident ILEF over 2.4 years (OR 0.77, 95% CI: 0.68-0.87) and 5.2 years (OR 0.76, 95% CI: 0.65-0.89). Physical activity, glucose levels, BMI and nicotine exposure stood out as major contributors to the lower risk of incident ILEF with an incremental CVH score. **Conclusion:** A higher CVH score was associated with both a lower prevalence and incidence of ILEF in older adults. Comprehensive evaluation of CVH offers insight into older adults' current lower-extremity function and how it may progress over time, identifying opportunities for early intervention. CVH could also serve as a valuable prognostic tool for assessing the risk of ILEF. **Keywords:** Life's essential 8, short physical performance battery, cohort study, aging. **Disclosures:** This work was supported by Instituto de Salud Carlos III, State Secretary of R+D+I and FEDER/FSE (FIS grants 19/00319, 20/00896, 22/01111, 23/00079), Agencia Estatal de Investigación (CNS2022-135623), ISCIII and the European Union "NextGenerationEU (PMP21/00093), and Comunidad de Madrid, European Regional Development Fund "FACINGLCOVIDCM" project (Funding REACT EU Program). Mercedes Sotos-Prieto holds a Ramón y Cajal contract (RYC-2018-025069-I) from the Ministry of Science, Innovation and Universities. The funding agencies had no role in study design, data collection and analysis, interpretation of results, manuscript preparation or the decision to submit this manuscript for publication. **References:** 1. Lloyd-Jones DM, Allen NB, Anderson CAM, Black T, Brewer LC, Foraker RE, et al. Life's Essential 8: Updating and Enhancing the American Heart Association's Construct of Cardiovascular Health: A Presidential Advisory From the American Heart Association. Circulation. 2022 Aug 2;146(5):e18–43. 2. de Fátima Ribeiro Silva C, Ohara DG, Matos AP, Pinto ACPN, Pegorari MS. Short Physical Performance Battery as a Measure of Physical Performance and Mortality Predictor in Older Adults: A Comprehensive Literature Review. Int J Environ Res Public Health. 2021 Jan;18(20):10612. 3. Sotos Prieto M, Maroto-Rodriguez J, Ortolá R, Martinez-Gomez D, Garcia-Esquinas E, Buño A, et al. Association Between a Mediterranean Lifestyle and Growth Differentiation Factor 15: The Seniors ENRICA-2 Cohort. 2023 Feb 1;195:192–8.

OC44- SINGLE NUCLEAR TRANSCRIPTOMIC SEQUENCING OF SKELETAL MUSCLE TISSUE FROM OLDER ADULTS WITH AND WITHOUT SARCOPENIA IDENTIFIES CELL POPULATION SPECIFIC DIFFERENTIAL EXPRESSION PATTERNS IN KEY MUSCLE HEALTH MARKERS.

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Background: The contributions of individual cell populations in driving the accentuated decline in muscle strength, function and mass that characterise sarcopenia are incompletely understood. Skeletal muscle is composed of multinucleated fibres and mononuclear cells, including immune cells, satellite cells, and fibroadipogenic progenitors (FAPs), involved in muscle homeostasis, regeneration, and repair. Understanding cellular and molecular changes within different intramuscular cell populations is critical for identifying mechanisms driving sarcopenia. This study aimed to establish a single nuclear transcriptomic handprint of sarcopenia in older adults and deconvolute gene and regulatory network contributions of intramuscular cell populations modulated in sarcopenia. **Methods:** Nuclei were extracted from vastus lateralis biopsies from 8 community-dwelling older females aged 76-83 (4 sarcopenic by EWGSOP2 criteria, 4 healthy) and processed (~7000 targeted/sample; Chromium Next-GEM Single-Cell 3' dual-index reagent kit V3.1 pipeline (10x Genomics)). Pooled libraries were sequenced (NovaSeq-6000 PE-150, Novagene) and demultiplexed files aligned to reference genome GRCh38 (Cell Ranger). Data processing/quality control (Seurat in R), differential expression analysis (Loupe Browser, 10x Genomics) and pathway enrichment analysis (Metascape) were performed. **Results:** Uniform Manifold Approximation and Projection identified 13 nuclei clusters which corresponded to unique cell populations based on marker gene expression, including skeletal muscle fibre-type 1 (slow-twitch), fibre-type 2 (fast-twitch), satellite cells, FAPs, FAP/satellite, adipocytes, smooth muscle, endothelial, macrophages and immune cells. Slow-twitch and fast-twitch fibres were split across 3 and 2 clusters, respectively, demonstrating the presence of intramuscular multinucleated fibre subtypes. Differential gene expression ($p<0.05$) was identified in slow-twitch and fast-twitch fibres, satellite cells, FAPs, adipocytes, endothelial cells, and macrophages. Within clusters, top upregulated genes in sarcopenia were KCNJ3, PPP1R1C and RD5A2 (slow-twitch), SH3BP5 (fast-twitch), KAZN-AS1 (satellite), CSMD3 (FAPs), TSC22D2 (adipocytes), ITGA4 (endothelial) and AC245060 (macrophages). Top downregulated genes in sarcopenia were EIF4EBP1, KCNQ5, FBXO32 (slow-twitch), EIF4EBP1 (fast-twitch), SNED1 (satellite), NEGR1 (adipocytes), FMO2 (endothelial) and STXBP6 (macrophages). Gene enrichment analysis identified differential regulation in pathways linked with muscle health markers, including muscle system process (slow-twitch), insulin signalling and muscle cell cytoskeleton (fast-twitch), muscle tissue development (satellite), cell differentiation (FAPs) and extracellular matrix regulation (adipocytes/endothelial/macrophages). **Conclusion:** These findings identify distinct transcriptomic changes in skeletal muscle multinucleated fibres and mononuclear cells in older adults with sarcopenia. This provides high-resolution insight into contributions of individual cell populations in muscle dysregulation and identifies putative gene targets for future therapeutic interventions. **Keywords:** Skeletal muscle, sarcopenia, transcriptomics, single nuclei, ageing. **Disclosures:** M Burton and E Garratt are Joint First Authors. K Lillycrop, K Godfrey and H Patel are Joint Senior Authors. K.M. Godfrey and H.P. Patel have received reimbursement for speaking at conferences sponsored by companies selling nutritional products. C. Cooper has received consultancy fees and honoraria from Amgen, Danone, Eli Lilly, GlaxoSmithKline, Medtronic, Merck, Nestlé, Novartis, Pfizer, Roche, Servier, Shire, Takeda, and UCB. N. Harvey has received consultancy/lecture fees/honoraria/grant funding from Alliance for Better Bone Health, Amgen, MSD, Eli Lilly, Radius Health, Servier, Shire, UCB, Consilient Healthcare, Kyowa Kirin, Theramex and Internis Pharma. M.A. Burton, E.S. Garratt, K.M. Godfrey, and K.A. Lillycrop are part of academic research programmes that have received research funding from BenevolentAI Bio Ltd., Nestec, and Danone. M.A. Burton received conference attendance and travel support for ICFSR through the NIHR funded BRC Education, Training and Career Development Fund. This work was supporrted by a MyAge research network proof of concept grant awarded to M.A. Burton. The other authors declare that they have no conflicts of interest.

OC45- COMPARISON OF ROBUSTNESS, RESILIENCE AND INTRINSIC CAPACITY INCLUDING PREDICTION OF LONG-TERM ADVERSE HEALTH OUTCOMES: THE KORA-AGE STUDY. M. Rippl[1], M.T. Huemer[2], L. Schwettmann[3], E. Grill[4], A. Peters[2], M. Drey[1], B. Thorand[2] *((1) LMU University Hospital, LMU Munich - Munich (Germany), (2) Helmholtz Zentrum - Munich (Germany), (3) Carl Von Ossietzky University Of Oldenburg - Oldenburg (Germany), (4) Institute For Medical Information Processing, Biometry, And Epidemiology-Ibe, LMU - Munich (Germany))*

Background: Frailty, resilience and intrinsic capacity (IC) are concepts to evaluate an older person`s health status but no comparison of their associations with adverse health outcomes yet exists. We therefore aimed to assess which concept is most useful for determining long-term health of older adults. **Methods:** Analyses were based on the KORA (Cooperative Health Research in the Region of Augsburg)-Age study (n = 915, 65-93 years). Frailty was evaluated based on the physical frailty-phenotype by Fried et al. For comparability to resilience and IC, we choose the protective concept, robustness. Resilience was measured by the 11-item resilience-scale. The IC-score was based on the 5 established domains (locomotion, cognition, vitality, psychiatric and sensory capacities). The concept`s overlaps were illustrated by a Venn-diagram. Associations with falls, disability, and hospitalization at a 3-year and 7-year follow-up and with mortality were evaluated by covariate-adjusted logistic and Cox regression, respectively. **Results:** Approximately 41% of the participants met the criteria for robustness and high IC and approximately 20% met those for resilience and either robustness or IC. Robustness showed significant inverse associations with falls (7-year follow-up: OR (95%CI): 0.455 (0.284-0.729)), hospitalization (0.547 (0.350-0.854) and all-cause mortality (0.637 (0.488-0.907)). Resilience and IC showed significant inverse associations with disability (7-year-follow-up: resilience: 0.489 (0.318-0.752), IC: 0.576 (0.362-0.917)). **Conclusion:** Robustness was the most useful concept with the strongest protective effect for most adverse health outcomes. High IC and resilience showed their main strengths in capturing protective effects for disabilities. Resilience largely overlapped with robustness and IC, supporting the concept of mind-body-interaction. **Keywords:** Non-frailty, frailty, adverse health outcomes. **Disclosures:** The KORA study was initiated and financed by the Helmholtz Zentrum München – German Research Center for Environmental Health, which is funded by the German Federal Ministry of Education and Research (BMBF) and by the State of Bavaria. Data collection in the KORA study is done in cooperation with the University Hospital of Augsburg. The KORA-Age project was financed by the German Federal Ministry of Education and Research (BMBF FKZ 01ET0713 and 01ET1003A) as part of the 'Health in old age' program. The authors declare no conflict of interest.

OC46- METFORMIN AND TIME-RESTRICTED FEEDING COMBINATION IMPROVES NON-ALCOHOLIC STEATOHEPATITIS, LIVER FIBROSIS AND SARCOPENIA IN DIET-INDUCED OBESE INSULIN RESISTANT MICE. F. Briand[1], C. Bigot[1], A. Dortignac[1], E. Grasset[1], N. Breyner[1], T. Sulpice[1] *((1) Physiogenex - Escalquens (France))*

Background: Metformin (MET) and time-restricted feeding (TRF) both have metabolic benefits and may have anti-aging effects in human. **Methods:** We tested whether MET and TRF alone or in combination (MET+TRF) for 8 weeks would improve non-alcoholic steatohepatitis (NASH) and sarcopenia in 1-year old diet-induced obese mice. Male, 8 week old, C57BL6/J mice were fed a 60% high fat/ 2% cholesterol diet with 10% fructose supplemented drinking water (HFCF diet) for 1 year to induce obesity, insulin resistance, NASH, and liver fibrosis After the 1 year diet induction period, mice were either kept on the same HFCF diet ad libitum (control group), placed on a daily TRF from the last 3 hours of the dark cycle till the end of the light cycle, without access to the HFCF diet but free access to normal drinking water (i.e without fructose) every day, treated with metformin 100 mg/kg p.o QD alone or in combination with TRF, for 8 weeks. After 8 weeks of treatment, a grip strength test was performed before blood and liver were collected for biochemistry and histology analysis. **Results:** Compared with vehicle, MET, TRF and MET+TRF significantly reduced body weight, plasma ALT and triglycerides levels and tended to reduce HOMA-IR index of insulin resistance. Only MET+TRF reduced NAFLD activity score and liver fibrosis (both $p<0.05$). MET, TRF and MET+TRF all showed benefits on sarcopenia with significantly improved grip strength. **Conclusion:** In conclusion, our mouse data suggest that MET+TRF combination has metabolic benefits that should be further investigated in the clinical setting. **Keywords:** Obesity, NASH, metformin, time-restricted feeding, sarcopenia. **Disclosures:** C. Bigot, A. Dortignac, E.Grasset and N. Breyner are employees of Physiogenex. F. Briand and T. Sulpice have shares in the company.

OC47- THE DOSE-RESPONSE EFFECT OF PHYSICAL ACTIVITY PRESCRIPTION ON PHYSICAL PERFORMANCE IN GERIATRIC OUTPATIENTS: THE PACE STUDY. M. Aubertin-Leheudre[1] *((1) UQAM-CRIUGM - Montréal (Canada))*

Background: Physical activity (PA) is a recognized promising healthy aging strategy but not well integrated as a usual geriatric care. To facilitate the integration of PA intervention as a routine care knowing the specific dose-response relationship to prevent functional declines in frail older adults is essential. Objective: To explore the dose-response effect of a PA prescription (PACE) on physical performance in geriatric outpatients. **Methods:** Fifty geriatric outpatient were included. Based on the mobility decisional tree score obtained, one of 35 adapted physical activity programs was prescribed for 12 weeks. Physical performance

was assessed using validated tests such as Short Physical Performance Battery (SPPB; x/12), 4-m walking speed (m/sec), 30 sec sit-to-stand test (n), as well as functional reach test (cm) before and after the intervention. PA dose metrics (weekly volume, intensity and training load) were tracked through logbooks and follow-up calls. Pearson's r and Spearman's rho coefficients were used to identify associations between PA outcomes and changes in physical performance. An elastic net regression was performed to establish a robust prediction model. **Results:** A weekly volume of PACE exercise ranging from 119-165 minutes, depending on age, shows a significant clinical change in walking speed (+0.1 m.s-1). Additionally, 145 minutes per week of PACE exercise led to a 1-point increase in SPPB total score. **Conclusion:** PACE exercise performed on average 145 minutes significantly improves physical performance in older adults. RCTs are mandatory to confirm the recommended PACE thresholds and facilitate its implementation in outpatient geriatric clinics.

OC48- MULTI-STATE ANALYSIS OF TRANSITIONS IN FRAILTY STATES IN THE ITALIAN LONGITUDINAL STUDY ON AGING COHORT. L. Galluzzo[1], M. Noale[2], S. Maggi[2], M. Silano[1] *((1) Department Of Cardiovascular, Endocrine-Metabolic Diseases And Aging, Istituto Superiore Di Sanità - Rome (Italy), (2) Neuroscience Institute, Aging Branch, National Research Council - Padua (Italy))*

Background: Frailty is characterized by increased vulnerability to endogenous and exogenous stressors. Because of its dynamic nature with possibility of remission, it offers ample potential for interventions. Nevertheless, studies on frailty progression in large population cohorts are sporadic, and scarcely focused on patterns of improvements and sex differences. **Methods:** As part of the Italian Longitudinal Study on Aging (ILSA) population-based cohort (n=5632, 65-84), frailty status according to the Fried phenotype criteria (non-frail, pre-frail, frail) [1] was retrospectively detected in 2239 participants with available information from one or more ILSA waves (T0 1992-93 n=1992; T1 1995-96 n=1279; T2 2000-01 n=1094) [2]. Changes in frailty status between consecutive assessments (T0-T1, T1-T2) were examined also in terms of worsening (nonFrail-preFrail; nonFrail-Frail; preFrail-Frail), improvement (preFrail-nonFrail; Frail-preFrail; Frail-nonFrail) and stability. Transition probability at short, medium and long term (1- 3- and 5-year) was estimated using non-hidden continuous-time Markov models, with death as an absorbing state. Variables significantly associated with frailty at bivariate analysis were introduced as covariates in the multistate model, to identify characteristics associated with transitions over time. **Results:** Out of 2239 ILSA participants with frailty assessment, 1177 experienced 1931 transitions between frailty states during T0-T1 (n=1114) and/or T1-T2 (n=817), while 241 individuals transitioned to death between T0 and T2. At descriptive analysis: about 50% of participants remained in the same frailty state over time (especially non-frail or pre-frail); more than 10% experienced a positive transition; worsening transitions were more common among women and mainly represented by nonFrail-preFrail changes; transitions to death were more than double among men. According to multistate analysis, the probability of remaining stable decreased considerably over time and was mainly attributable to pre-frailty for females and non-frailty for males. The chance of improvement almost doubled at 3-year compared to 1-year estimation, and was higher (around 20% at 3-year) for Frail-preFrail transitions among women and preFrail-nonFrail among men. The chance of worsening increased steeply with time, was mainly attributable to frailty onset from pre-frailty or non-frailty states and was higher among women (estimated transition probability preFrail-Frail at 1- 3- and 5-year: Women 18.6%, 37.3%, 43.2% vs. Men 13.3%, 26.9%, 31.3%). The strongest predictors of worsening transitions was the presence of depressive symptoms (GDS ≥10) [3], associated to a four times higher probability of nonFrail-Frail transition (Women Hazard Ratio [HR] 3.63, 95% Confidence Interval [95%CI] 1.45-9.1; Men HR 3.78, 95%CI 2.0-7.13) and to a 40% increased risk of preFrail-Frail changes (Women HR 1.43 95%CI 1.04-2.18; Men HR 1.44 95%CI 1.03-2.0). No significant association was detected for Frail-preFrail changes, while being married or living with a partner was associated with 50% increased probability of pre-frailty remission. **Conclusion:** Our findings confirm the fluctuating nature of frailty and identify sex-specific targets of interventions. In brief, depressive symptoms resulted the major predictor of frailty onset and worsening over time, while living with a partner appears associated with pre-frailty remission. Further research on clusters of individuals with similar characteristics and trajectories of frailty over time are recommended. **Keywords:** Frailty, transitions, aging, epidemiology. **Disclosures:** The authors declare no competing interests. References: 1. Fried LP, et al. J Gerontol A Biol Sci Med Sci 2001;56(3):M146-M156. http://doi:10.1093/gerona/56.3.m1. 2. Galluzzo L, et al. Gerontology 2023;69(3):249-260. http://doi.org/10.1159/000525581. 3. Brink TL, et al. Clinical Gerontologist 1982;1(1):37-43. http://doi: 10.1300/J018v01n01_06

OC49- TOTAL BODY PROTEIN AS A MEASURE OF FUNCTIONAL MUSCLE MASS: DATA FROM THE GEELONG OSTEOPOROSIS STUDY. J.A. Pasco[1,2], K.B. Anderson[1], A.L. Stuart[1], L.J. Williams[1], B.J.G. Strauss[3,4], G. Wilcox[4], A.G. Morse[1], K.L. Holloway-Kew[1] *((1) Deakin University - Geelong (Australia), (2) The University Of Melbourne - St Albans (Australia), (3) Monash University - Melbourne (Australia), (4) The University Of Manchester - Manchester (United Kingdom))*

Background: Body composition is a key foundation of health throughout life and its importance does not diminish in older age. As most protein is in muscle, loss of functional muscle mass in ageing-related conditions such as frailty and sarcopenia could arguably be monitored by decreases in total body protein (TBPro). However, few studies have explored this relationship. The aim of this cross-sectional study was to describe TBPro in association with age and muscle function in older women. **Methods:** Participants were the first 193

women aged 60-90 years assessed for the current 25-year follow-up of the Geelong Osteoporosis Study during the period 2022-2024; most participants (98%) were white. Using a 4-component body density model proposed by Wilson et al [1], TBPro was determined using bone mass and body volume measured by whole body dual-energy X-ray absorptiometry (DXA; Lunar Prodigy-Pro) in conjunction with total body water from bioimpedance analysis (BIA; Tanita BCM Pro MC-780). TBPro was expressed as a percentage of body weight in statistical analyses to account for variations in body size. Low muscle function included (i) poor mobility: self-reported as limited or inactive; and (ii) two tests of slowness: gait speed (over 4m distance) <0.8m/s and Timed Up-&-Go test (TUG; over 3m) <10s; (iii) muscle weakness: handgrip strength (maximum of 3 trials each hand) <16kg (Jamar dynamometer). ANOVA was used to identify inter-agegroup differences in mean TBPro, and Pearson correlation coefficients were used to assess associations between TBPro(%) and indices of muscle function. Binary logistic modelling was used to determine the association of TBPro(%) with low muscle function after adjusting for age and height. **Results:** Participant characteristics expressed as mean±SD were age 70.9±6.8y, body mass index 29.3±6.1kg/m^2, gait speed 1.12±0.26m/s, TUG 10.4±2.8s and TBPro 7.15±0.61kg. Mean TBPro decreased with increasing age (7.30±0.56kg for ages 60-69y vs 7.07±0.64kg for ages 70-79y vs 6.75±0.56kg for ages 80+y; p<0.001), however this pattern was not evident for TBPro(%) (9.96±2.01 vs 9.67±2.02 vs 10.47±2.26 %, respectively; p=0.277). Significant correlations were observed between TBPro(%) and gait speed r = 0.21, p=0.003, and TUG r = -0.21, p=0.004; the correlation with handgrip strength was somewhat weaker and of borderline significance r = 0.14, p=0.058. In multivariable models, age was identified as an effect modifier and height did not contribute to the models. For n=173 women aged 60-79y, age-adjusted models indicated that TBPro(%) was protective against limited mobility (OR 0.64, 95%CI 0.45, 0.91), slow TUG (OR 0.81, 95%CI 0.68, 0.97), slow gait speed (OR 0.69, 95%CI 0.46, 1.03) and muscle weakness (OR 0.60, 95%CI 0.37-0.99). No associations were detected among n=20 women aged 80+y, where small numbers limited meaningful analyses. **Conclusion:** We report that total body protein levels were negatively associated with poor mobility, slowness and muscle weakness in women aged 60-79y, independent of age. While acknowledging potential but small inaccuracies associated with fasting and hydration states of participants, our results suggest that this in vivo method of using DXA and BIA in combination to measure total body protein may be clinically useful for monitoring functional muscle mass. **Keywords:** Body composition, muscle strength, physical function, body protein. **Disclosures:** The authors declared no competing interests. **References:** 1. Wilson J, et al. Am J Clin Nutr 2013; 97(3): 497-504. http://doi.org/10.3945/ajcn.112.048074.

Late Breaking Communications

LB01- DEVELOPMENT OF A NOVEL FUSION PROTEIN, JUV-161, THAT ENHANCES MUSCLE REGENERATION FOR TREATMENT OF SARCOPENIA.

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Background: Juvena Therapeutics developed JUV-161 as a recombinant fusion protein to agonistically target MAPK/ERK and PI3K/AKT cascades. These pathways are the major signaling mediators in skeletal muscle to health and are dysregulated in the progression of accelerated muscle wasting diseases such as sarcopenia and the progeroid disease, myotonic dystrophy type 1. **Methods:** JUV-161 was tested in a naturally aged mouse model of sarcopenia (21-24mo). Furthermore, to advance the preclinical development of JUV-161 for myotonic dystrophy type 1 (DM1), Juvena Therapeutics developed a pan-inducible, TREDT960I transgenic mouse model expressing a human genomic segment containing exons 11-15 of DMPK gene with 960 interrupted CTG repeats (CUG960) driven by the tetO (tet-responsive element) promoter. This CUG960/+ murine model encompasses the key aspects of DM1 muscle deterioration, as shown using both functional and histological testing to confirm distal muscle wasting and RNA foci accumulation in impacted tissue. The efficacy of chronic subcutaneous administration of JUV-161 in improving muscle mass, strength and function was evaluated in the sarcopenic aging model and the myotonic dystrophic mouse model. **Results:** Administration of JUV-161 in DM1 mouse model and in an aged sarcopenic rodent model resulted in significant improvements in grip strength, coinciding with significantly increased tibialis anterior cross-sectional area and an increased density of fast-twitch type-2X/B muscle fibers in the soleus in both male and female mice. Binding assays and receptor sequence homology across species (BLASTP), reflected potential clinical translatability of the preclinical results obtained in a DM1 mouse model. Additionally, receptor binding along with evaluation of receptor sequence homology (>94% across all species evaluated) allowed selection of the pharmacologically relevant species (rat, dog and monkey) for the PK/PD and nonclinical safety studies. **Conclusion:** Based on the results from these studies and the promising activity of JUV-161 in preclinical and nonclinical studies using multiple rodent models, Juvena Therapeutics is planning to evaluate the potential therapeutic benefit of JUV-161 in adult-onset DM1 patients in 2025. JUV-161 treatment could improve muscle strength, endurance, mass, and glucose regulation, leading to reduced atrophy together with faster walk speeds and reduced fall rates, in adult-onset DM1 patients. **Disclosures:** All the authors are employees of Juvena Therapeutics. The authors declared no competing interests. **Keywords:** JUV-161, myotonic dystrophy, sarcopenia, aged, muscle strength, muscle mass, myogenesis, glucose regulation. **Funding:**

California Institute of Regenerative Medicine (CIRM TRAN1-12890); National Institute of Aging (NIA R43AG071181). **Acknowledgments:** The TREDT960I transgenic mouse model was licensed from the Baylor College of Medicine, and crossed with R26-M2rtTA(+/+) mice containing the reverse tetracycline transactivator knock-in. The authors acknowledge scientific advice on DM1 model breeding and validation from Dr. Thomas Cooper, Baylor College of Medicine.

LB02- EXERCISE IN OLDER INDIVIDUALS – IS THERE A 'TOO SICK' TO REVERSE SARCOPENIA?

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Background: Older adults with sarcopenia – a loss of muscle strength, muscle mass, and physical performance [1] – have multiple comorbidities [2]. Exercise training is challenging in older adults, particularly in those with multimorbidity [3]. Therefore, we analysed: 1) the association between the number of comorbidities and sarcopenia severity, and 2) how comorbidities influence the efficacy of an exercise intervention in a large cohort. **Methods:** The cluster-randomised controlled bestform-trial (NCT04207307) examined the effects of six months of progressive, multimodal, machine-based exercise (twice/week for 45–60 minutes) versus usual care in older adults living in senior care facilities. Assessments were conducted at baseline, three months, and six months. Sarcopenia severity was classified according to the EWGSOP2 criteria [1]: probable sarcopenia (low muscle strength: Chair-Stand-Test >15 seconds, Handgrip Strength Test <16 kg for females, <27 kg for males), sarcopenia (low muscle strength and low muscle mass: Appendicular Skeletal Muscle Mass (ASM) or ASM/height^2 via Bioimpedance Analysis: <15 kg or <5.5 kg/m^2 for females, <20 kg or <7.0 kg/m^2 for males); and severe sarcopenia (low muscle strength, low muscle mass, and impaired physical performance: Short Physical Performance Battery ≤ 8 points). Comorbidities were documented by a physician. For statistical analysis, baseline data were analysed using Spearman's rank correlation. Post-exercise changes in sarcopenia severity were assessed with a sign test, and the Chi-square test was used to examine associations between sarcopenia severity and the number of comorbidities. **Results:** Out of 404 participants, 260 subjects with completed sarcopenia assessments were analysed (intervention group: n=151, mean age 85.3 years, 90% female vs. control group: n=109, mean age 85.5 years, 75% female). At baseline, 28% (n=73) had no sarcopenia, 57% (n=148) had probable sarcopenia, 3% (n=9) had sarcopenia, and 12% (n=30) had severe sarcopenia. Participants had a mean of 3.3±1.6 comorbidities. Sarcopenia severity was significantly correlated with the number of comorbidities (Spearman's rs=0.23, p<0.001). After six months of exercise, sarcopenia severity significantly improved (p=0.0002), and examining the association between changes in sarcopenia severity and the number of comorbidities (low: 0-2 comorbidities vs. high: ≥3 comorbidities) showed no significant difference (p=0.189). **Conclusion:** The number of comorbidities is correlated with sarcopenia severity in older adults. However, exercise training improved sarcopenia severity, even in older individuals with multiple comorbidities. Irrespective of multimorbidity, exercise training is effective in reversing sarcopenia. **Keywords:** Ageing, senior care facilities, multimorbidity, skeletal muscle, physical performance. **Clinical Trial Registry:** NCT04207307; https://clinicaltrials.gov. **Disclosures:** The authors declare no conflicts of interest related to this study. The research was funded by Beisheim Stiftung, Maximilianstraße 35 C, 80539 Munich, Germany. The funders play no role in the development of the design of the study, in data collection, data analysis, and interpretation of data and in writing the abstract. **References:** 1. Cruz-Jentoft, A. J., Bahat, G., Bauer, J., Boirie, Y., Bruyère, O., Cederholm, T., Cooper, C., Landi, F., Rolland, Y., Sayer, A. A., Schneider, S. M., Sieber, C. C., Topinkova, E., Vandewoude, M., Visser, M. & Zamboni, M. 2019. Sarcopenia: revised European consensus on definition and diagnosis. Age Ageing, 48, 16-31. 2. Chowdhury, S. R., Chandra Das, D., Sunna, T. C., Beyene, J. & Hossain, A. 2023. Global and regional prevalence of multimorbidity in the adult population in community settings: a systematic review and meta-analysis. EClinicalMedicine, 57, 101860. 3. Shen, Y., Shi, Q., Nong, K., Li, S., Yue, J., Huang, J., Dong, B., Beauchamp, M. & Hao, Q. 2023. Exercise for sarcopenia in older people: A systematic review and network meta-analysis. J Cachexia Sarcopenia Muscle, 14, 1199-1211. 4. Papadopoulou, S. K., Tsintavis, P., Potsaki, P. & Papandreou, D. 2020. Differences in the Prevalence of Sarcopenia in Community-Dwelling, Nursing Home and Hospitalized Individuals. A Systematic Review and Meta-Analysis. J Nutr Health Aging, 24, 83-90.

LB03- CLINICAL DEVELOPMENT OF RJX-01 AS A NOVEL COMBINATION DRUG FOR THE TREATMENT OF SARCOPENIA IN OLDER PERSONS.

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Background: The novel candidate combination drug RJx-01 was shown in preclinical studies to exert beneficial synergistic effects on muscle strength and physical performance [1]. It was proposed to evaluate the potential of RJx-01 in human clinical trials as therapeutic intervention for sarcopenia. Today, no drugs have been approved for the treatment of sarcopenia. **Methods:** A phase 1 study was conducted in 42 healthy men during and after 2 weeks of muscle disuse (immobilization by leg casting) to assess tolerability, safety and efficacy (muscle strength) of 6 weeks treatment with RJx-01. Subjects received a daily low dose of RJx-01 for 1 week followed by 5 weeks at

regular daily dosing. Following the results of this phase 1 study, we designed a phase 2 clinical study that will evaluate the safety and effects of 6 months treatment with RJx-01 on muscle integrity during and after hospitalization in older persons with severe acute exacerbation of COPD. **Results:** In healthy older volunteers (65-75 years old), 6 weeks of RJx-01 treatment was found safe and well tolerated. Compared to placebo-treated subjects (n=21), RJx-01 treatment (n=21) induced faster and improved recovery of muscle strength in the leg after 2 weeks of immobilization (Biodex, isometric analysis). During isokinetic measurements, RJx-01 treatment was shown to significantly improve muscle function (rate of velocity development) and resistance to muscle fatigue in the leg that had been casted. Encouraged by these results, we subsequently designed a phase 2 clinical study to assess safety and effects of longer term (6 months) treatment with RJx-01 or placebo on muscle integrity in older COPD patients. Unscheduled hospitalization due to severe acute exacerbation is a major event for patients with COPD and can result in significant functional decline because of hospital-associated disability. The skeletal muscle dysfunction seen in COPD is part of the spectrum seen in sarcopenia. It is hypothesized that treatment with RJx-01 may induce a beneficial effect on functional performance of COPD patients. The clinical study will evaluate changes in muscle mass and strength, physical performance, as well as patient reported outcome measures. **Conclusion:** Following a phase 1 study that demonstrated first evidence of safety and efficacy of RJx-01 treatment in a model of acute sarcopenia, a planned phase 2 study will evaluate the response to longer-term RJx-01 treatment in COPD patients hospitalized with severe acute exacerbations and at risk for developing chronic sarcopenia. **Keywords:** Sarcopenia, COPD, RJx-01, muscle strength. **Disclosures:** JA, EM, LM, LH, SH, DK, SC, DB and AB were employed or funded by Rejuvenate Biomed. **References:** 1. Tezze C, et al. JCI Insight 2023; 8(15):e168787. https://doi.org/10.1172/jci.insight.168787.

LB04- ISOMYOSAMINE FOR THE TREATMENT OF SARCOPENIA IN ELDERLY PATIENTS. M. Glass[1], D. Mazzucco[1], A. Bellezza[1] *((1) TNF Pharmaceuticals, Inc. Baltimore, MD (United States))*

Background: Sarcopenia, a condition characterized by loss of muscle mass and function, significantly impacts the elderly population, contributing to frailty and reduced quality of life. Current treatment options are limited. Isomyosamine, a small molecule derived from a tobacco alkaloid, has shown potential for regulating pro-inflammatory cytokines associated with sarcopenia. **Methods:** A Phase II clinical trial was conducted with elderly participants diagnosed with sarcopenia. Subjects were administered daily oral doses of Isomyosamine for 28 days. The primary endpoints included pharmacokinetic profiles, while secondary endpoints assessed safety, tolerability, and inflammatory marker reduction. A subsequent Phase II study is being recruited to evaluate Isomyosamine's effect on cellular inflammation and recovery of ambulation speed in elderly patients post-hip fracture. **Results:** The Phase II study demonstrated a significant reduction in chronic inflammatory markers, such as TNF-α, IL-6, and IL-17. All primary pharmacokinetic and secondary safety endpoints were met. **Conclusion:** The Phase II study of Isomyosamine demonstrated its safety and tolerability in elderly patients with sarcopenia, with significant reductions in inflammatory biomarkers such as TNF-α, IL-6, and soluble TNF receptor 1 (sTNFR1). Although a single daily dose showed promise in reducing these biomarkers, the rapid absorption and elimination of the drug suggest that once-daily dosing may not be sufficient for optimal therapeutic effect. A follow-up clinical trial, featuring more frequent dosing, is underway to better evaluate the drug's clinical benefits. The upcoming prospective, double-blind, multi-center trial aims to assess the impact of Isomyosamine on the recovery of mobility and independence in elderly patients suffering from sarcopenia and who have sustained a hip or femur fracture. This trial will test the hypothesis that more frequent dosing of Isomyosamine can enhance recovery speed and improve functional outcomes, measured using the Short Physical Performance Battery (SPPB), among other tests. Additionally, the study will continue to monitor biomarkers associated with TNF-α-mediated inflammation as secondary endpoints. With an increased sample size and more frequent dosing, this new trial should provide a clearer understanding of Isomyosamine's potential to improve both clinical and biochemical outcomes in sarcopenic patients. **Keywords:** Sarcopenia, isomyosamine, elderly, inflammation, cytokines. **Disclosures:** TNF Pharma is a publicly traded company.

LB05- MAPPING THE RESPONSIVENESS OF 100+ EPIGENETIC BIOMARKERS ACROSS 50 ANTI-AGING INTERVENTIONS IN HUMAN CLINICAL TRIALS. R. Sehgal[1] *((1) Program In Computational Biology And Bioinformatics, Yale University, New Haven (United States))*

Background: Aging biomarkers, particularly epigenetic clocks based on DNA methylation (DNAm), are promising tools for predicting biological age and health outcomes. Despite their potential, the responsiveness of these biomarkers to anti-aging interventions remains underexplored. This study examines the responsiveness of DNAm aging biomarkers to various interventions, including lifestyle changes, pharmacological treatments, supplements, and medical procedures, in human clinical trials. It further evaluates the relative effectiveness of these interventions, identifying those with the most significant impact on system-specific biomarkers for musculoskeletal, cardiac, and neurological health, as well as epigenetic proxies for proteins and metabolites mapped to biological systems. The end goal is to identify biomarkers that could serve as surrogate endpoints in clinical trials. **Methods:** Data were curated and harmonized from 51 longitudinal interventional clinical studies with whole blood DNAm profiles. Sixteen prominent epigenetic clocks and 95 additional DNAm biomarkers were calculated using the MethylCIPHER package. Age-residualized scores were standardized relative to the Health and Retirement Study. Pre- and post-intervention differences were assessed using paired t-tests, and effect sizes

were visualized to detect patterns of biomarker responsiveness. A meta-analysis across studies was conducted to evaluate intervention effects on biomarkers. **Results:** Pharmacological interventions, particularly anti-TNF therapies and metformin, elicited the most robust responses from epigenetic clocks, followed by lifestyle interventions such as dietary changes, which consistently reduced biological age across cardiac, musculoskeletal, and inflammatory systems. Supplements and medical procedures showed limited or non-significant effects. Generation 2+ reliable clocks, including DunedinPACE, demonstrated the highest responsiveness across interventions. Biomarker responsiveness varied by the health status of study populations, with greater effects observed in diseased groups. **Conclusion:** DNAm aging biomarkers, particularly Generation 2+ clocks, are responsive to targeted anti-aging interventions, with pharmacological treatments showing the strongest impact. These findings underscore the utility of DNAm biomarkers as surrogate endpoints in clinical trials and support their broader application in geroscience. Future research should focus on validating these findings and investigating long-term biomarker changes to refine intervention strategies. **Keywords:** DNA methylation, epigenetic clocks, aging biomarkers, anti-aging interventions, surrogate endpoints. **Clinical Trial Registry:** N/A. **Data Deposition:** https://doi.org/10.1101/2024.10.22.619522v1. **Disclosures:** R. Sehgal and A. Higgins-Chen are co-inventors of Systems Age, patented and licensed to TruDiagnostic. A. Higgins-Chen has received consulting fees from Zymo Research. R. Smith, N. Carreras, and V. B. Dwaraka are employees of TruDiagnostic. The authors declared no other competing interests. **References:** Lu AT, et al. DNA methylation GrimAge strongly predicts lifespan and healthspan. Aging (Albany NY). 2019;11(2):303-327. https://doi.org/10.18632/aging.101684. Levine ME, et al. An epigenetic biomarker of aging for lifespan and healthspan. Aging (Albany NY). 2018;10(4):573-591. https://doi.org/10.18632/aging.101414. Belsky DW, et al. DunedinPACE, a DNA methylation biomarker of the pace of aging. Elife. 2022;11:e73420. https://doi.org/10.7554/eLife.73420. Higgins-Chen AT, et al. A computational solution for bolstering reliability of epigenetic clocks: Implications for clinical trials and longitudinal tracking. Nat Aging. 2022;2(7):644-661. https://doi.org/10.1038/s43587-022-00231-w. Waziry R, et al. Effect of long-term caloric restriction on DNA methylation measures of biological aging in healthy adults from the CALERIE trial. Nat Aging. 2023;3(3):248-257. https://doi.org/10.1038/s43587-023-00288-2. **Note:** This abstract is based on the preprint titled «DNAm aging biomarkers are responsive: Insights from 51 longevity interventional studies in humans» available at https://doi.org/10.1101/2024.10.22.619522v1.

LB06- ASSESSING THE REDUCTION OF GLP1-RA-INDUCED MUSCLE MASS OR FUNCTION LOSS IN PATIENTS WITH OBESITY USING THE DRUG CANDIDATE BIO101 (20E). R. Van Maanen[1], C. Ferreira[1], M. Latil[1], S. Camelo[1], S. Rabut[1], S. Veillet[1], P. Dilda[1], C. Tourette[1], W. Dioh[1], M.A. Cornier[2] *((1) Biophytis, Paris (France), (2) Med Univ South Carolina, Charlston (United States))*

Background: GLP-1 receptor agonist (GLP-1RAs) based therapies are effective at reducing body weight; however, up to 40% of the weight loss is lean body mass, which includes loss of skeletal muscle mass. Combining skeletal muscle-targeted drug candidates with GLP-1RAs may preserve skeletal muscle mass and function. BIO101 (20-hydroxyecdysone; 20E), an oral MAS receptor activator, could be a promising treatment to prevent the loss of muscle mass or strength in patients with obesity or overweight treated with GLP-1RAs. **Methods:** Preclinical studies of 20E-treated myoblasts and high fat diet (HFD) obese mice were completed to characterize the metabolic, muscular and weight loss properties of 20E. In addition, a 12-week double-blind placebo-controlled study (6-week hypocaloric intervention phase followed by 6-week weight loss maintenance phase) with 37.5mg 20E was conducted in 58 participants with overweight or obesity (BMI ≥ 27 kg/m² and ≤ 38 kg/m²) aged 20-65 years. **Results:** In preclinical studies, 20E had pro-differentiating effects in vitro in murine and human myocytes, increasing myotube diameter. In vivo, 20E improved muscle function and physical capacity. In HFD mice, 20E significantly prevented increase in adipose tissue by limiting adipocyte size, adipokines and inflammatory markers (leptin, MCP-1), insulin resistance (osteopontin) and decreased genes involved in lipid storage (lipoprotein lipase). In patients with overweight or obesity, 37.5mg 20E significantly decreased android fat mass (p=0.039). From adipose tissue biopsies, a statistically significant reduction in adipocyte diameter was also observed over the entire trial period. Compared to placebo, a trend for improvement in handgrip strength occurred in the subpopulation who lost more than 5% of their initial weight during the weight loss phase. Biophytis, thus, designed OBA, an interventional, randomized, double-blind, placebo-controlled clinical phase 2 trial targeting adults with obesity (BMI≥30) and overweight (BMI≥27) with one or more weight-related sequalae (e.g., hypertension, dyslipidemia, obstructive sleep apnea or cardiovascular disease) treated with semaglutide. Planned primary endpoint is knee extension strength. Other main secondary endpoints include knee flexion and handgrip strength, physical performance, body composition parameters, Quality of Life (SF-36 and WQOL-Lite-CT) and diet and exercise questionnaires. Subgroup analyses will be conducted on subpopulations based on gender, BMI, age, physical performance thresholds. **Conclusion:** Supported by preliminary animal and clinical data, a phase 2 Proof-of-Concept study combining BIO101 treatment with a GLP-1 RA was approved by competent authorities in USA and will be initiated shortly. While interactions are still ongoing with ethics committees, the protocol may still be amended

with the expansion to other countries in Europe and/or rest of the world. **Keywords:** Obesity, weight loss, muscle, BIO101, 20-hydroxyecdysone, GLP-1. **Disclosures:** RvM, CF, ML, SC, SR, SV, PJD, CT, WD are employees of Biophytis S.A. MAC reports serving as a paid consultant for Biophytis, serving as a paid advisory board member of Biophytis, Keros, Wave, Zyversa, serving as DSMB member for Advarra, and having received grants for clinical trials from Novartis, Ionis, Cleary, Amgen and Kanika.

LB07- CIRCULATING GDF-15 LEVELS ARE STRONGLY RELATED WITH FRAILTY SEVERITY IN MOBILITY-LIMITED OLDER ADULTS – RESULTS FROM THE BIOFRAIL STUDY. P. Hansen[1,2], H. Nygaard[1,3], L. Praeger-Jahnsen[4], M. Schultz[5], F. Dela[6,7], P. Aagaard[8], J. Ryg[9], C. Suetta[1] *((1) Geriatric Research Unit, Department Of Geriatric And Palliative Medicine, Copenhagen University Hospital, Bispebjerg And Frederiksberg - Copenhagen (Denmark), (2) Geriatric Research Unit, Department Of Medicine, Copenhagen University Hospital, Herlev And Gentofte - Copenhagen (Denmark), (3) Department Of Emergency Medicine, Copenhagen University Hospital, Bispebjerg And Frederiksberg - Copenhagen (Denmark), (4) Copenhagen Center For Translational Research, Copenhagen University Hospital. Bispebjerg And Frederiksberg - Copenhagen (Denmark), (5) Department Of Geriatric Medicine, Copenhagen University Hospital, Amager And Hvidovre - Copenhagen (Denmark), (6) Xlab, Department Of Biomedical Sciences, Faculty Of Health And Medical Sciences, University Of Copenhagen - Copenhagen (Denmark), (7) Department Of Human Physiology And Biochemistry, Riga Stradiņš University - Riga (Latvia), (8) Department Of Sports Sciences And Clinical Biomechanics, University Of Southern Denmark - Odense (Denmark), (9) Department Of Geriatric Medicine, Odense University Hospital - Odense (Denmark))*

Background: Frailty is a clinical syndrome associated with increased vulnerability to adverse health outcomes, including falls, hospitalisation, and mortality. Identifying reliable biomarkers for frailty is crucial for early detection and improving its clinical applicability in managing and supporting older patients. Growth Differentiation Factor-15 (GDF-15), a stress-responsive cytokine, has been proposed as a biomarker of aging and frailty, but its clinical applicability remains underexplored. This study investigated the association between circulating GDF-15 levels and frailty severity in a cohort of mobility-limited older adults referred for fall assessment. **Methods:** The analysis was based on 454 patients (≥65 years) from a geriatric outpatient clinic for fall assessment. Frailty was assessed using the Clinical Frailty Scale (CFS) and categorized into three groups: non-frail (CFS 1-3), frail (CFS 4-5) and severe frail (CFS≥6). Plasma GDF-15 levels were measured using electrochemiluminescence assays (Meso Scale Discovery, Rockville, MD, USA). Differences in GDF-15 levels across frailty groups were analysed using the Kruskal Wallis test for independent samples. The prognostic accuracy of GDF-15 for identifying frailty dichotomously (CFS≥5) was assessed using receiver operating characteristic (ROC) analysis, with the area under the curve (AUROC) reported. Youdens Index was applied to define the optimal predicted probability cut-off for GDF-15 for frailty. **Results:** The included patients had a mean age 79.8±6.2 (64.1% female). Among these, 41.6% (n=189) were classified as non-frail, 49.1% (n=223) as frail, and 9.3% (n=42) categorised as severely frail. The Kruskal-Wallis test demonstrated a significant difference ($p<0.001$) in GDF-15 levels between the three frailty groups, with a median concentration of GDF-15 for the non-frail 1321.4 pg/mL, frail 1865.6 pg/mL, and severely frail 2712.1 pg/mL. The prognostic accuracy of GDF-15 for frailty, as determined by AUROC, was 67.4% (95% CI: 61.2-73.5), and the optimum cut-off for frailty, estimated by Youden's Index was 2046 pg/ml. **Conclusion:** Circulating GDF-15 levels appear to be strongly related with frailty severity in mobility-limited older adults and may be a potential biomarker to identify frailty in this population. While the moderate level of AUROC (67%) suggest clinical utility and feasibility, additional research is needed to validate these findings. The optimal cut-off threshold for frailty was 2046 pg/ml, which complies closely with earlier findings in acutely admitted older patients (2166pg/ml) [1]. **Keywords:** Frailty, GDF15, mobility-limited patients, old age, inflammation. Clinical Trial Registry: Clinicaltrials.gov ID: NCT05795556. **Disclosures:** All authors declare that they have no conflict of interest. **References:** 1. Kamper RS, Nygaard H, Praeger-Jahnsen L, Ekmann A, Ditlev SB, Schultz M, et al. GDF-15 is associated with sarcopenia and frailty in acutely admitted older medical patients. J Cachexia Sarcopenia Muscle 2024;15:1–9. https://doi.org/10.1002/jcsm.13513.

LB08- THE EFFECT OF LOW-DOSE ASPIRIN ON INTRINSIC CAPACITY IN OLDER INDIVIDUALS. J. Ryan[1], A.Z.Z. Phyo[1], R. Woods[1], S. Ekram[1], S. Espinoza[2], A. Murray[3], H. Bischoff-Ferrari[4] *((1) Monash University - Melbourne (Australia), (2) Cedars-Sinai Medical Center - Los Angeles (United States), (3) University Of Minnesota - Minneapolis (United States), (4) University Of Zurich - Zurich (Switzerland))*

Background: Chronic low-grade inflammation (inflammaging) accompanies aging, and is thought to be a key driver of age-related disease. Whether anti-inflammatory medications could be beneficial in helping to prolong healthspan is unclear. We have previously shown that low-dose aspirin was not effective in reducing the incidence of frailty in older individuals. Whether aspirin could benefit intrinsic capacity (IC), the preservation of functional abilities crucial for heathy aging, has not been investigated previously. The aim of this study was to determine the effect of aspirin on IC in a large clinical trial of older individuals. **Methods:** The ASPirin in Reducing Events in the Elderly (ASPREE) trial recruited 19,114 community-dwelling individuals aged predominantly ≥70 years in Australia and the United States. Individuals without dementia, cardiovascular disease or persistent activities of daily living disabilities were randomized to daily low-dose aspirin (100mg) or placebo over five years. The Integrated

Care for Older People (ICOPE) stage 2 guidelines were followed to assess IC, with four domains assessed regularly over the trial period: cognition (composite score across four tests), locomotion (gait speed), vitality (grip strength) and psychological well-being (CESD-10). IC was calculated as the arithmetic mean of four normalized and rescaled IC domains scores, and ranged from 0 to 100. The sensory domain, calculated by averaging the scores of self-reported vision and hearing was measured at two time-points. **Results:** At baseline, being older and a woman (56.4% of the sample) was associated with lower IC ($p<0.001$ for both). IC was negatively correlated with the frailty deficit accumulation index ($r = -0.57$, $p<0.001$). Over a median 4.7-year follow-up period, IC declined to a similar extent in both men and women. Compared with placebo, aspirin treatment was associated with a faster decline in IC among women (β -0.06, 95% CI: -0.10, -0.01). For men, aspirin had no effect on IC (β -0.01, 95% CI: -0.05, 0.04). Further adjustment for age, country, ethnicity and race did not modify these findings. There was no effect of aspirin on the sensory domain over a three-year period ($p>0.20$), in either men or women. **Conclusion:** In this large trial of relatively healthy older individuals, women had lower IC at baseline compared with men, and women randomized to low-dose aspirin had significantly faster decline in intrinsic capacity than those randomized to placebo. Further work is needed to determine the mechanisms underpinning these associations. **Keywords:** Intrinsic capacity, aspirin, RCT, health aging. **Clinical Trial Registry:** NCT01038583; https://clinicaltrials.gov. **Data Deposition:** https://ams.aspree.org/public/request-data/access-aspree-data/.

LB09- EFFICACY AND SAFETY OF NORDIC WALKING IN OLDER ADULTS AT RISK OF FRACTURE: A RANDOMIZED CONTROLLED TRIAL. S. Kontulainen[1], E. Warrington[2], J. Giles[2], H. Giles[2], K. Willison[3], K. Levesque[3], J. Basran[3], P. Chilibeck[1], K. Spink[1], S. Milosavljevic[1], J.D. Johnston[1] *((1) University Of Saskatchewan - Saskatoon (Canada), (2) Partner - Saskatoon (Canada), (3) Saskatchewan Health Authority - Saskatoon (Canada))*

Background: Nordic walking (NW) with poles is recommended by healthcare practitioners as a safe form of exercise therapy for older adults at risk of fracture. However, the benefits and safety of NW for this demographic are unknown. Thus, our patient-oriented, randomized controlled trial investigated the efficacy of an NW intervention on functional outcomes, quality of life, and posture, and recorded adverse events in community-dwelling, inactive individuals with osteoporosis, hyperkyphosis, or a history of vertebral fracture. **Methods:** In this parallel group trial, 110 eligible participants (94 females, 16 males, mean age 72, SD 11 years) were randomized into either the NW group (N=53) or the waiting-list control group (N=57) after baseline testing. Trained peer or student volunteers led progressive, tailored exercise sessions (including NW, balance, posture, and leg muscle strengthening exercises and stretches) three times per week for 12 weeks. Wait-list controls began training after their 12-week inactive control period. Patient-partners led the decision on primary outcomes, including: health-related quality of life (QoL, SF-36); functional balance (TUG); and posture (kyphometer). Secondary outcomes included: fear of falling (fall efficacy); exercise efficacy; muscle strength (30CST); mobility (6MWT); and body composition from DXA and pQCT scans. We log-transformed non-normal outcomes and used multiple imputation to handle missing data for the intent-to-treat analysis of all participants, irrespective of adherence or compliance to the intervention. For between-group comparisons of changes, we compared follow-up outcomes with baseline values as covariates using ANCOVA. For within-group changes, we used paired t-tests. Significance was set at an alpha level of <5%. **Results:** The NW intervention improved the QoL energy/fatigue score (between-group difference: 7.5, 95% confidence interval 1.7-13.3). This was due to an increase (9.1, 4.7-13.5) in the NW group (no change in controls). The NW intervention increased fear of falling (1.7, 0.07-3.0) due to an increase (3.2, 0.6-5.4) in the NW group (no change in controls). In the NW group, the QoL scores improved for pain (6.2,1.0-11.3), social functioning (7.9, 1.8-14.0), physical functioning (6.6, 1.7-11.5) and role limitations physical (13.1, 2.4-23.9). In the control group, role limitations physical (13.8, 4.0-23.6) and general health (3.9, 1.1-6.7) scores improved. There were two adverse events in the NW group: one not related to the intervention; and one non-injurious fall when a participant performed lunges for leg muscle strengthening. The participant continued the session and intervention. **Conclusion:** The 12-week NW intervention improved QoL in terms of vitality but slightly increased the already high fear of falling in community-dwelling individuals with osteoporosis, hyperkyphosis, or a history of vertebral fracture. Overall, these findings suggest that NW is a safe form of exercise therapy with benefits for QoL for older adults at risk of fracture. Our patient-oriented approach, in collaboration with health authority, supports the current implementation of the NW intervention in retirement care homes and plans for a future scale-up of a longer NW intervention for individuals at risk of falls and fractures. **Clinical Trials Identifier:** NCT03885466. **Keywords:** Walking with poles, physical activity, patient-oriented, fracture prevention, quality of life. **Disclosures:** The authors declared no competing interests.

LB10- REVERSING FRAILTY: DIET AND EXERCISE ENHANCE FUNCTIONALITY AND SLOW EPIGENETIC AGING IN OLDER ADULTS.
G. Olaso-Gonzalez[1], F. Millán-Domingo[1,2], F.J. Tarazona-Santabalbina[3,4], L. García-Fernández[3], E. Garcia-Tercero[3], M. Cebrian[3], C. Garcia-Dominguez[5], J. Gambini[1], J.A. Carbonell[6], G. Casabó[7], J.L. García-Giménez[7,8], J. Viña[1], M.C. Gomez-Cabrea[1] *((1) Department Of Physiology, Faculty Of Medicine, University Of Valencia, Ciberfes, Incliva Health Research Institute, Incliva - Valencia (Spain), (2) Sports Science And Innovation Research Group (giced), Laboratory Of Applied Sciences Of Sport, Unidades Tecnológicas De Santander (uts), Bucaramanga - Santander (Colombia), (3) Department Of Geriatric Medicine, Hospital Universitario De La Ribera - Valencia (Spain), (4) Medical School, Universidad Católica De Valencia San Vicente Mártir - Valencia (Spain), (5) Hospital Universitario Royo Villanova - Zaragoza (Spain), (6) Incliva Health Research Institute, Incliva - Valencia (Spain), (7) Epidisease S.l., Scientific Park, University Of Valencia - Paterna (Spain), (8) Department Of Physiology, Faculty Of Medicine, University Of Valencia, Ciberer, Incliva Health Research Institute, Incliva - Valencia (Spain))*

Background: The aging of Western populations has shifted healthcare needs due to a rise in chronic diseases and frailty among older adults [1]. Frailty, characterized by reduced physiological reserves, is linked to adverse outcomes such as disability and mortality [2]. Early detection and interventions targeting frailty are critical, yet research gaps persist in understanding its molecular mechanisms. Epigenetic aging, particularly DNA methylation (DNAm), offers a promising approach for identifying biomarkers and predictors of intervention success [3]. This study aimed to evaluate the effects of a multidomain intervention combining dietary supplementation and personalized exercise on frailty and associated molecular changes in community-dwelling elderly individuals. **Methods:** We conducted a 24-week intervention study involving frail older adults at risk of malnutrition. Participants consumed two daily 200-mL bottles of a nutritional supplement (16 g protein, 25 g carbohydrates, 3.6 g fats, enriched with vitamins and minerals) and followed a supervised multicomponent exercise program three times per week. Functional assessments and a multi-omic analysis of whole blood were performed to characterize transcriptomic and methylomic changes pre- and post-intervention. Differentially methylated regions (DMRs) and transcriptomic shifts were analyzed to identify potential molecular signatures of frailty and response to intervention. **Results:** Our multimodal intervention reduced frailty, improving grip strength, gait speed, balance, and activities of daily living, while the control group showed deterioration in these measurements. Improvements were also observed in quality of life (EQ-5D) and depression (Yesavage). Falls and primary care visits decreased in the intervention group. FAMD analysis highlighted how anthropometric, functional, cognitive, and socio-emotional variables distinguished the groups after the intervention. Differential expression analysis identified 1,532 genes significantly altered by the intervention, including key inflammation-related genes, immune response, and proteasome function. Enriched pathways included protein polyubiquitination, histone modification, and Golgi vesicle transport, which are crucial for cellular maintenance and aging. Changes in these genes and pathways underscore the intervention's impact on biological processes linked to aging and exercise. Using an mCSA approach, we identified 206 differentially methylated regions (DMRs) in promoters and 145 in gene bodies after the intervention, with genes linked to aging processes such as immune response, muscle function, cellular senescence, and frailty. We also estimated biological age using epigenetic clocks. Horvath's clock did not reflect epigenetic age changes after 6 months, while Hannum's DNAm age showed a reduction in the intervention group. Biological age prediction using DNAm PhenoAge revealed that subjects in the intervention group did not show an increase in biological age, unlike the control group. Finally, telomere length (TL) significantly shortened in the control group but increased in the intervention group. **Conclusion:** This study demonstrates that a multidomain intervention can reverse frailty-associated phenotypes and induce molecular changes indicative of improved physiological resilience. Identifying specific DMRs and transcriptomic shifts provides insight into the biological mechanisms underlying frailty and its reversibility. These findings support combining dietary and exercise interventions in promoting healthy aging and highlight the potential of multi-omic approaches for developing precision strategies to address frailty. **Keywords:** Frailty, multimodal intervention, multi-omic analysis, epigenetic clock.
Disclosures: This work was supported by Instituto de Salud Carlos III CB16/10/00435 (CIBERFES) and the following grants: PID2022-142470OB-100 funded by MICIU/AEI/10.13039/501100011033; PROMETEO (CIPROM/2022/56) de "Consellería de Educación, Universidades, y Empleo de la Generalitat Valenciana"; Red EXERNET-RED DE EJERCICIO FISICO Y SALUD (RED2022-134800-T) Agencia Estatal de Investigación (Ministerio de Ciencias e Innovación). The authors declare no competing interests. **References:** 1. McKeown, R. E. Am J Lifestyle Med 2009; 3 (1 Suppl), 19S-26S. https://doi.org/10.1177/1559827609335350. 2. Rodriguez-Mañas, L.; Fried, L. P Lancet 2015; 385 (9968), e7–e9. https://doi.org/10.1016/S0140-6736(14)61595-6. 3. Seale, K. et al. Nat Rev Genet 2022; 23 (10), 585–605. https://doi.org/10.1038/s41576-022-00477-6.

LB11- FRAILTY ASSESSMENT TOOLS AND BIOLOGICAL FRAILTY MARKERS IN FEMALE MICE.
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Background: Frailty is a complex condition characterized by a decline in multiple physiological systems, compromising an individual's ability to maintain homeostasis. To better understand frailty mechanisms, animal models have become valuable due to their accessibility to critical tissues and the

ability to control variables. **Methods:** This study investigates frailty in female mice by comparing the two most widely accepted frailty assessment tools in preclinical research—the Physical Phenotype (PP) and the Frailty Index (FI). To address the limitations of both assessment tools, we propose a new combined assessment tool, the Vitality Phenotype (VP), which integrates physical performance and health deficits into a more comprehensive evaluation. To better understand how some of the frailty-related biological markers associated with frailty criteria, we investigated associations between measurements of glycemia during oral glucose tolerance test (oGTT), inflammation, bone mineral density (BMD), and heart rate versus several positive frailty criteria. **Results:** Our results suggest that these two tools are complementary rather than interchangeable, each targeting distinct markers of frailty. The correlations between frailty criteria and biological markers revealed that bone mineral density was the only marker significantly associated with multiple frailty criteria. **Conclusion:** This study provides valuable insights into the assessment of frailty in female mice using different tools and approaches. The comparison between the Frailty Index (FI) and Physical Phenotype (PP) revealed significant differences in frailty classification, highlighting the complementary nature of these tools rather than their interchangeability. The newly proposed Vitality Phenotype (VP), which combines elements from both FI and PP, offers a more comprehensive evaluation of frailty status. The study emphasizes the importance of defining appropriate cutoff values for frailty criteria, particularly in cross-sectional studies. The use of a reference group at 17 months of age, where frailty onset is likely to occur, is suggested as an effective approach for establishing these cutoffs, which would allow for better identification of prefrail animals, a critical stage for potential interventions.

LB12- OMICS AGING BIOMARKERS FOR CLINICAL TRIALS USING THE TRANSLAGE KNOWLEDGEBASE. A. Higgins-Chen[1], R. Sehgal[1], D. Borrus[1], J. Armstrong[1], J. Kasamoto[1], Y.M. Yaroslav[1], G. John[1] *((1) Yale University - New Haven, CT (United States))*

Early human clinical trials have found that interventions cause changes in omics aging biomarkers, such as DNA methylation-based epigenetic clocks. Eventually, the goal is to determine if any these omics biomarkers may serve as surrogate endpoints, where short-term biomarker changes correspond to long-term reductions in disease, frailty and mortality. However, these trials will be lengthy and expensive, and it will be important to optimize omics biomarkers specifically for clinical trials prior to testing them. We propose that such biomarkers must be optimized for the 3 RPS metrics: 1) Responsive to aging interventions, 2) Predictive for various aging outcomes, and 3) Stable on repeated tests in the absence of interventions. Here, to systematically benchmark biomarkers on the RPS metrics, we curate the TranslAGE knowledgebase, which is currently focused on DNA methylation due to availability of longitudinal data, but is planned to expand to other omics types. TranslAGE currently contains longitudinal DNA methylation data before and after 51 putative aging interventions (N = 1,561 individuals), 18 pro-aging events (N = 670), and 17 control datasets (n = 1,509), and this continues to grow. These datasets include a wide variety of interventions and events, including metformin, exercise, senolytics, surgery, military trauma, psychosocial stress, etc. In these datasets we calculate a consistent set of 16 prominent epigenetic clocks for each study, along with 95 other DNAm biomarkers that help explain changes in each clock. We find that aging interventions generally reduce epigenetic age, while pro-aging events increase epigenetic age and there is no change in control datasets. Clocks trained to predict mortality or pace of aging have the strongest response across all interventions, show consistent agreement with each other, and continue to show effects after correction for cell composition. In contrast, clocks predicting chronological age often show sporadic changes that are not corroborated by other clocks and are likely false positives. Only a small subset of clocks satisfy all 3 RPS metrics. We plan to release all results from TranslAGE as a publicly available webtool for planning clinical trials, where users can access results for all omics biomarkers across all trials, select a specific subset of biomarkers for their study to minimize multiple testing, and perform data-driven power analyses for their particular intervention, study duration, and study population.

LB13- BIOMARKERS FOR SARCOPENIA: PREDICTING MUSCLE MASS AND FUNCTION DECLINE THROUGH GDF-15, FGF21, SRAGE, AND NEUROFILAMENTS. A. Merolla[1], S. Damanti[1], R. De Lorenzo[1], C. Lanzani[1], P. Rovere-Querini[1] *((1) Vita-Salute San Raffaele University - Milan (Italy))*

Background: Sarcopenia is characterized by the progressive loss of muscle function and mass, significantly impacting older adults' health and quality of life. Current diagnostic methods, relying on clinical and imaging assessments, often detect sarcopenia after functional impairment and muscle loss occurred. Identifying reliable biomarkers could be revolutionizing by enabling early diagnosis, risk stratification, disease monitoring and therapy management. This highlights the urgent need to validate novel biomarkers to enhance diagnostic accuracy and improve clinical outcomes for individuals at risk of sarcopenia. **Methods:** We utilized data from the FRASNET study, a network assessing renal ageing and sarcopenia in individuals ≥ 65 years [1, 2]. Enrolment took place between April, 2017, and July, 2019. In 2023-2024 follow-up were performed in 250 participants. In addition, 58 neurologic patients with cognitive decline were evaluated. Individuals underwent comprehensive geriatric evaluations collecting demographics, psychosocial data, comorbidities, medications, anthropometrics and recent clinical history. Body composition was determined thought the Full Body Sensor Body Composition Monitor and Scale balance. Muscle performance, usual physical activity and Frailty were assessed with the Short Physical Performance Battery (SPPB), the

Physical Activity Scale for the Elderly (PASE) and the frailty index (FI), respectively. Blood samples were collected and bio-banked. Analyses on potential biomarkers of sarcopenia and frailty (Nfl, s-RAGE, GDF15, FGF21) were performed through ELLA method. Study cohort excluded participants who were institutionalized or lacked data on body composition or FI. Spearman's correlation test was used to examine the relationships between biomarkers measured in 2017 and muscle mass and function outcomes assessed in 2023-2024. Additionally, cross-sectional correlations were performed using biomarkers measured in 2024. **Results:** The 2017-2019 study sample included 1114 individuals. Median(IQR) age was 72(69,77) years; 440 (39.5%) were males. We observed significant correlations between biomarker levels measured both in 2017 and 2023-2024 and our outcomes. Specifically, Nfl-2017 showed a significant negative correlation with PASE (ϱ -0.28, p=0.045), Nfl-2024 was correlated to SBBP (ϱ -0.29, p=0.002), muscle thickness (ϱ -0.21, p=0.02) and gait speed (ϱ -0.27, p=0.003). GDF15-2017 was correlated with PASE (ϱ -0.58, p<0.001), GDF15-2024 with muscle thickness (ϱ -0.19, p=0.03), gait speed (ϱ -0.24, p=0.009) and FI (ϱ 0.27, p=0.004). A negative correlation also emerged between s-RAGE-2017 and calf circumference (ϱ -0.41, p=0.002). FGF21-2017 was correlated with PASE (ϱ -0.31, p=0.03), FGF21-2024 with SBBP (ϱ -0.20, p=0.03), PASE (ϱ -0.3, p=0.001), and muscle mass (ϱ -0.19, p=0.04). Among neurologic patients, Nfl2024 confirmed a significant correlation with gait speed (ϱ -0.46, p=0.02) and SPPB (ϱ -0.47, p=0.016); s-RAGE was correlated to FI (ϱ -0.49, p=0.012), Fried (ϱ -0.41, p=0.039) and SPPB (ϱ 0.39, p=0.046); FGF21 with PASE (ϱ -0.38, p=0.048). **Conclusion:** The lack of validated biomarkers for the diagnosis of sarcopenia remains a significant challenge in clinical practice and research. Our identification of innovative biomarkers—Nfl, GDF15, FGF21 and s-RAGE—, whose levels were strongly correlated with both current and future muscle mass and functional outcomes, represents a promising advancement in this context. They may serve as early predictors for sarcopenia, identifying individuals at risk before muscle decline is detectable. **Keywords:** Biomarker, sarcopenia, frailty, prediction, muscle. **Disclosures:** We acknowledge co-funding from Next Generation EU, in the context of the National Recovery and Resilience Plan, Investment PE8 – Project Age-It: "Ageing Well in an Ageing Society". This resource was co-financed by the Next Generation EU [DM 1557 11.10.2022]. The views and opinions expressed are only those of the authors and do not necessarily reflect those of the European Union or the European Commission. Neither the European Union nor the European Commission can be held responsible for them. The authors declared no competing interests. **References:** 1. Brioni E, et al. G Ital Nefrol. 2022;39(3):2022-vol3. PMID: 35819041. 2. Damanti S, et al. BMC Geriatr. 2024;24(1):638. doi: 10.1186/s12877-024-05216-6. PMID: 39085777; PMCID: PMC11290298.

LB14- ICOPE SCREENING TOOL ACCURACY: A SCOPING REVIEW OF DIAGNOSTIC STUDIES AND PRESENTATION OF A MULTICENTER LONGITUDINAL STUDY ON INTRINSIC CAPACITY AND AGING TRENDS IN BRAZIL.

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Background: The Integrated Care for Older People (ICOPE) program, developed by the World Health Organization (WHO), focuses on monitoring and improving intrinsic capacity (IC) in older adults [1]. The ICOPE Screening Tool (ICOPE-ST) is a quick, low-cost method to assess six IC domains: cognition, mobility, vitality, vision, hearing, and psychological health. While designed for primary care settings, evidence of its diagnostic accuracy is heterogeneous [2]. To address this, a scoping review evaluated ICOPE-ST's diagnostic properties. Simultaneously, the ICOPE-BR longitudinal study investigates Brazil's aging trajectories and IC trends to advance evidence-based aging care [3]. **Methods:** Scoping Review: A systematic search of PubMed, Cochrane, Scielo, and Embase (2017–2022) identified studies reporting ICOPE-ST's diagnostic accuracy using validated Step 2 reference tests. Studies were assessed using the JBI Critical Appraisal Checklist. An updated search (2022–2024) included two additional studies. ICOPE-BR Study: This nationwide, multicenter cohort study aims to evaluate IC in 3,838 older Brazilians over 36 months. Participants aged 60+ will be randomly selected from primary healthcare units, with IC assessed using ICOPE-ST and validated reference tools. Follow-ups occur biannually by phone and annually in person. A pilot feasibility study of 794 participants across seven centers has been completed. **Results:** Scoping Review: Seven studies provided diagnostic data, with sensitivity and specificity varying widely across IC domains. Sensitivity ranged from 71.9–100% (cognition) to 26.4– 100% (vision), while specificity ranged from 55.0–92.1% (cognition) to 2.7–86.2% (vision). Heterogeneity arose from differences in populations and reference instruments, with most studies using convenience sampling. ICOPE-BR Study: The objectives of this study include estimating the prevalence of losses in IC (LIC), examining IC trajectories over the follow-up period, identifying risk factors for LIC, and evaluating the role of LIC in predicting disabilities and frailty. Additionally, it aims to provide insights into the diagnostic and psychometric properties of the ICOPE Screening Tool (ICOPEST) and explore health and aging trends among Brazilian older adults based on their baseline IC status. A pilot feasibility study among 794 participants (mean age 69.6 years, 65.5% female) showed 43.5% of participants had cognitive and 52.8% mobility impairment. Vision and hearing impairments were detected in 62.3% and 44.2%, respectively. Psychological symptoms (GDS ≥5) were present in 29.6%, and 28.3% were at risk of malnutrition. 47.5% were pre-frail and 7.2% frail. These pilot results demonstrate the feasibility of the ICOPE-BR protocol and provide baseline data for aging trends.

Conclusion: The ICOPE-ST shows potential for screening IC losses but exhibits variability in diagnostic accuracy across studies. Standardized sampling and further validation studies are needed to strengthen evidence for its use in primary care. Meanwhile, the ICOPE-BR study offers a unique opportunity to explore IC trajectories and aging trends in Brazil, leveraging random sampling and comprehensive evaluations. Findings will contribute to refining IC measurement and inform public health strategies for healthy aging. **Keywords:** ICOPE, screening tool, intrinsic capacity, aging, diagnostic accuracy, longitudinal study. **Disclosures:** The authors report no conflicts of interest. Funding was provided by CAPES and the Brazilian National Council for Scientific and Technological Development (CNPq). **References:** 1. WHO, ICOPE Guidelines 2017. ISBN: 9789241550109. Available from https://www.who.int/publications/i/item/9789241550109. 2. de Oliveira VP, et al. Maturitas. 2023; 177:107818. doi:10.1016/j.maturitas.2023.107818. Epub 2023 Jul 28. PMID: 37542782. 3. Ferriolli E, et al. Geriatr Gerontol Aging. 2024;18:e0000166. DOI: 10.53886/gga.e0000166_EN.

LB15- TOWARDS A CORE OUTCOME SET (COS) FOR SARCOPENIA INTERVENTION STUDIES: A SYSTEMATIC REVIEW IDENTIFYING THE MOST REPORTED OUTCOMES ACROSS RANDOMIZED CONTROLLED TRIALS IN SARCOPENIA.

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Background: In recent years, there has been a growing focus on clinical research into sarcopenia due to its recognized potential for reversibility. The development of effective interventions has been hampered by the lack of standardized outcome measures, known as Core Outcome Sets (COS). COSs provide a harmonized framework for assessing key outcomes, enabling consistent and comparable evaluations across diverse studies. Our team has recently registered a protocol to develop a COS for sarcopenia in the COMET database. Among the various methodological steps essential for the project's successful conduct, the first is to identify the most frequently reported outcomes in sarcopenia clinical trials through a systematic literature review. **Methods:** A systematic review of the literature was conducted using MEDLINE (via Ovid), Embase, and the Cochrane Central Register of Controlled Trials (via Ovid). The review adhered to the PRISMA guidelines, and the protocol was registered on PROSPERO (CRD42024525506). Eligible studies were randomized controlled trials (RCTs), published up to March 2024, aiming at the treatment of sarcopenia patients. A consensual definition of sarcopenia was required for inclusion in the review. Reported outcomes were extracted and categorized into predefined subgroups. Analyses focused on identifying the most frequently reported outcomes, with a particular focus on primary outcomes. **Results:** From 3985 reviewed references, 147 were assessed for eligibility based on full-text assessment and 58 RCTs finally met the inclusion criteria. These 58 RCTs reported 255 different outcomes, of which 216 were related to efficacy and 39 to safety. The most commonly assessed outcomes, with all associated terms, were muscle mass (reported in 50 RCTs; 86.2%), muscle strength (RCTs=50; 86.2%), physical performance (RCTs=47; 81%), nutritional outcomes (RCTs=41; 70.7%) and physical status (RCTs=39; 67.2%). When analyses were focused on primary outcome alone, change in muscle mass was most frequently reported (RCTs=23; 39.6%). Within this "muscle mass" category, appendicular muscle mass index and fat-free mass were the most commonly used measures (RCTs=4; 6.9%). Change in muscle strength was the second most frequently assessed primary outcome (RCTs=16; 27.6%), with handgrip strength as the predominant measure (RCTs=12; 20.7%). Change in physical performance was the third most frequently reported primary outcome (RCTs=15; 25.9%). Gait speed (RCTs=7; 12.1%) and lower extremity physical function (RCTs=4; 6,9%) were the most commonly used measures in this subgroup. Other secondary outcomes were identified across studies such as: biomarkers, fat mass, quality of life, activities of daily living, cognitive function, psychological status, bone mass, and unclassified outcomes (classification by frequency of occurrence). **Conclusion:** This systematic review highlights the considerable heterogeneity in outcome reporting across sarcopenia clinical trials. Muscle mass, muscle strength, and physical performance were the most frequently reported primary outcome. The lack of a standardized approach underscores the urgent need for a sarcopenia-specific COS to unify outcome reporting, improve comparability, and enhance the quality of evidence supporting effective interventions. The development of such COS would be a pivotal step toward advancing both sarcopenia research and clinical practice, ensuring consistent and impactful progress in the treatment of this disease. **Keywords:** Sarcopenia, trials, COS, outcomes, interventional. **Disclosures:** The authors have no conflicts of interest to declare.

LB16- MUSCLE SIZE, STRENGTH, AND WALKING SPEED AS DETERMINANTS OF INCIDENT HOSPITALIZATION OVER TWO YEARS IN OLDER ADULTS. P.C. Peggy[1], L.Y. Lui[1], M.H. Hetherington-Rauth[1], S.K. Stephen[2], C.S. Charles[2], A.N. Anne[2], S.C. Steven[1], S.B. Scott[3], P.C. Paul[4], W.E. William[5] *((1) California Pacific Medical Center Research Institute - San Francisco (United States), (2) Wake Forest University School Of Medicine - Winston-Salem (United States), (3) University Of California, San Francisco - San Francisco (United States), (4) Advent Health - Orlando (United States), (5) University Of California, Berkeley - Berkeley (United States))*

Background: Slow walking speed predicts incident hospitalization amongst older adults, while associations of muscle size and strength have been inconsistent; however, most previous data relied on inaccurate approximations of muscle size, such as lean mass assessed by dual energy x-ray absorptiometry. We tested the hypothesis that low muscle size (total thigh muscle volume by magnetic resonance imaging, MRI; or D3Cr muscle mass by d3-creatine dilution), slow walking speed (measured over 400 meters), lower leg extention strength (1RM) are associated with an increased risk of hospitalization among older men and women participating in the Study of Muscle, Mobility and Aging. **Methods:** Incident hospitalizations in 871 participants (356 men, 515 women) between study enrollment and the 2nd annual follow up visit were centrally reviewed. Mean age was 76.3 +/- 5.0 years). Joint "hurdle" models stratified by sex were used to simultaneously estimate the odds of hospitalization and the rate ratio of days hospitalized amongst those with a hospitalization across tertiles of each muscle/performance parameter, with the highest tertile as the referent group. Traditional logistic regression models were used to assess the likelihood of experiencing 2 or more days of hospitalization (versus 0-1). Models were adjusted for age, clinic site, height, weight, smoking status, alcohol use, total activity count from wrist-worn actigraphy, and presence of comorbidity. **Results:** 62 (17.4%) men and 112 (21.7%) women experienced a hospitalization during 2 years of follow up. Among those hospitalized, the median number of days hospitalized was 4 for men (range 1-45) and 3 for women (range 1-50). Muscle size (either D3Cr muscle mass or MRI total thigh muscle volume) was largely unrelated to incident hospitalization for both men and women. In men only, lower leg extension strength was related to a higher likelihood of any hospitalization (odds ratio (OR): 2.5, 95% CI: 1.1, 5.8 for tertile 1 (low) compared to tertile 3 (high)), but not days of hospitalization amongst those hospitalized. In both women and men, those in the slowest walking speed tertile had roughly twice the likelihood of any hospitalization and a greater number of days hospitalized compared to those in the fastest walking speed tertile, although not all associations reached statistical significance. Both men and women with the slowest walking speed were 2-3 times more likely to have 2+ days of hospitalization compared to those with the fastest walking speed: OR tertile 1 vs 3, for men: 3.2 (95% CI: 1.1, 9.2); for women: 2.3 (1.1, 4.9). Neither muscle size or muscle strength were associated with 2+ days of hospitalization in men or women. **Conclusion:** Our results confirm that slow walking speed is a stronger predictor of health care utilization than measures of muscle size or function in community dwelling older adults. **Keywords:** Muscle size, strength, walking speed, hospitalization. **Disclosures:** PMC is a consultant to and owns stock in Myocorps. WJE owns Myocorps and stock in the company.

LB17- DEVELOPMENT OF THE SCREENING INDEX OF FRAILTY CALCULATOR (SIF-C) AND ASSESSMENT OF ITS VALIDITY IN PREDICTING DEATH, HOSPITALIZATION AND INSTITUTIONALIZATION. A POPULATION-BASED STUDY WITH 1.4 MILLION PEOPLE AGED ≥65. M. Serra-Prat[1], M. Cabré[1], À. Lavado[1], E. Burdoy[1] *((1) Consorci Sanitari Del Maresme - Mataró (Spain))*

Background: the electronic-screening index of frailty (e-SIF) is an electronic tool for automatic and massive classification of frailty status in aged population. Its implementation in electronic clinical notes require identifying data sources and designing a process for automatic data extraction, transformation and loading. Another way to implement this electronic tool in clinical practice is with the creation of a calculator located on a web page for use at individual level (at the medical consultation). Aim: to develop and validate a manual calculator of the e-SIF (named SIF-c) to establish frailty status and predict one- and two-year mortality, non-planned hospitalizations and institutionalization in population aged ≥65. **Methods:** observational longitudinal 2-year study (2018-2019) of all population aged ≥65 years in Catalonia, Spain (1,415,643 people), using data retrospectively collected from different health databases (electronic primary care and hospital clinical notes, and pharmacy and laboratory databases). Population was randomly divided into two subsamples: (a) one with 70% population (n=990,950 people) to build, adjust and define the logistic regression models to predict one- and two-year mortality, non-planned hospitalization and institutionalization, and (b) the other with 30% population (n=424,693 people) to test the fit of these models (validation in predicting mentioned outcome measures, with area under the ROC curve -AUC-). Multivariate logistic models included age, sex and the rest of 40 e-SIF clinical conditions. **Results:** SIF-c is a 42-item tool that estimates a frailty index that classifies individuals in one of the following four frailty status categories: robust (0-4), pre-frail (5-8), moderately frail (9-11) and severely frail (≥12). The calculator also shows the person's risk of dying, entering a hospital or being institutionalized in a socio-sanitary center in the next 1 or 2 years, as well as the average risk of the population of the same age and sex group (as reference values). The SIF-c showed an AUC of 0.855 and 0.847 in predicting 1- and 2-year mortality, an AUC of 0.750 and 0.737 in predicting 1- and 2-year hospitalization, and an AUC of 0.823 and 0.806 in predicting 1- and 2-year institutionalization, respectively. **Conclusion:** SIF-c allows estimating with high precision an

individual's frailty status and risk of death, hospitalization or institutionalization in approximately one minute. This tool can be a useful help in clinical decision-making. **Key words:** Frailty, frailty index, frailty calculator, screening, validity, mortality, hospitalization, institutionalization. **Disclosures:** The authors declare no conflict of interest in relation with this study.

LB18- TARGETING AGING. M. Scheibye-Knudsen[1]
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Chronic obstructive pulmonary disease (COPD) is a progressive incurable disease associated with smoking and advanced age, ranking as the third leading cause of death worldwide. DNA damage and loss of the central metabolite nicotinamide adenine dinucleotide (NAD) may contribute to both aging and COPD, presenting a potential avenue for interventions. In this randomized, double-blinded, placebo-controlled clinical trial, we treated patients with stable COPD (n = 40) with the NAD precursor nicotinamide riboside (NR) for 6 weeks and followed up 12 weeks after. The primary outcome was change in sputum interleukin-8 (IL-8) from baseline to week 6. The estimated treatment difference between NR and placebo in IL-8 after 6 weeks was -52.6% (95% confidence interval (CI), -75.7 to -7.6%; P= 0.030). This effect persisted until the follow-up twelve weeks after the end of treatment (-63.7%: 95% CI, -85.7 to -7.8%; P = 0.034). For secondary outcomes, NR treatment increased NAD levels by more than two-fold in whole-blood while IL-6 levels in plasma remained unchanged. In exploratory analyses, treatment with NR showed indications of upregulated gene pathways related to genomic integrity in the airways and reduced epigenetic aging–possibly through a reduction in cellular senescence. These exploratory analyses need to be confirmed in future trials. ClinicalTrials.gov identifier NCT04990869.

LB19- EFFECTS OF VITAMIN D, OMEGA-3 FATTY ACIDS, AND A SIMPLE HOME STRENGTH EXERCISE PROGRAM ON INTRINSIC CAPACITY: THE DO-HEALTH RANDOMIZED CONTROLLED TRIAL. M. Wieczorek[1,2], J. Ryan[3], E. J. Orav[4], W. Willett[5], B. Dawson-Hughes[6], T. Wyss-Coray[7,8,9], H. A. Bischoff-Ferrari[1,2], for the "Global Health Span Extension Consortium"[2]
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Objective: We aimed to assess the effects of daily supplemental vitamin D, daily supplemental omega-3, and a simple home exercise program—alone or in combination—on intrinsic capacity change over three years in a large sample of generally healthy older adults living in the community. **Methods:** We used data from DO-HEALTH, a 2×2×2 factorial-design randomized controlled trial involving 2,157 community-dwelling adults aged ≥70 years from Switzerland, Germany, Austria, France, and Portugal. Participants had no major health events in the five years prior to enrollment and were randomized to receive vitamin D_3 (2,000 IU/day) and/or marine omega-3s (1 g/day), and/or a simple home exercise program, or corresponding placebos/controls for three years. Intrinsic capacity was assessed based on the World Health Organization framework, comprising five domains: cognition (Montreal Cognitive Assessment orientation subscale), mobility (five-times sit-to-stand test), mental health (Geriatric Depression Scale-15), vitality (grip strength), and vision (Landolt rings). For each domain, the change from baseline at each follow-up time point was standardized and averaged to derive the intrinsic capacity z-score change. Changes in intrinsic capacity z-scores from baseline were analyzed using linear mixed-effects models, adjusting for study site, sex, age, history of falls, baseline body mass index, and baseline intrinsic capacity z-score. Predefined subgroup analyses were conducted by sex, age (70–74 vs. ≥75), baseline vitamin D deficiency (<20 vs. ≥20 ng/mL), and median baseline polyunsaturated fatty acid (PUFA) levels (<100 vs. ≥100 μg/mL). **Results:** A total of 2,115 participants had available intrinsic capacity z-scores at baseline (61.4% women; mean [SD] age: 74.9 [4.4] years). Over three years, neither vitamin D supplementation

nor the home exercise program improved intrinsic capacity. However, participants receiving omega-3 supplementation had a significant increase in intrinsic capacity z-scores compared to placebo (difference: 0.066, 95% CI: 0.008–0.124; p = 0.03). In subgroup analyses, omega-3 supplementation (vs. placebo) had consistent benefits among participants aged 70–74 years (difference: 0.073, 95% CI: 0.000–0.145), women (difference: 0.081, 95% CI: 0.006–0.155), those without vitamin D deficiency at baseline (difference: 0.086, 95% CI: 0.012–0.160) and those with higher baseline PUFA levels (difference: 0.113, 95% CI: 0.027–0.199). **Conclusion:** Among generally healthy older adults, omega-3 supplementation increased intrinsic capacity over three years, with stronger effects observed among women, participants age 70-74 years, those without vitamin D deficiency and those with higher PUFA levels at baseline.

LB22- THE IMPACT OF MULTIMORBIDITY AND PHYSICAL ACTIVITY ON INTRINSIC CAPACITY: A SECONDARY ANALYSIS OF THE MEXICAN HEALTH AND AGING STUDY. L.M. Gutiérrez-Robledo[1], R.E. García-Chanes[1], M.U. Pérez-Zepeda[1,2] *((1) Instituto Nacional De Geriatria - Mexico City (Mexico), (2) Centro De Investigación En Ciencias De La Salud (cicsa), Facultad De Ciencias De La Salud, Universidad Anáhuac México - State Of Mexico (Mexico))*

Background: Physical activity can impact positively health into older age [1]; it is thought that this will be the case with intrinsic capacity [2]. Notwithstanding, there is a potential moderate effect of different individual chronic diseases or multimorbidity over this positive impact of physical activity. Objetive: To examine the moderating effect of physical activity on the incidence of alterations in intrinsic capacity screening in Mexican older adults aged 50 and over. **Methods:** Using data from the last waves of the Mexican Health and Aging Study (MHAS) (2012, 2015, and 2018), changes in intrinsic capacity were measured between 2012 and 2018. A continuous variable (0-6) was constructed to assess the degree of deterioration in intrinsic capacity, which was categorized into three levels for each wave: 1 (0-1), 2 (2-3), and 3 (4-6) [3]. For physical activity, a robust measure was developed using data from the three waves (2012, 2015, and 2018), defining two trajectories: 'Persistent Inactive' and 'Persistent Active.' To establish the effect of the socioeconomic, demographic, health factors and PA Trajectories on the IC impairment groups ordinary regressions were adjusted. **Results:** A total of 9,934 individuals 50 years and over, including cases with complete information to construct the physical activity trajectories for 2012, 2015 and 2018. In general, it is worth highlighting a greater physical activity in less urbanized areas and in the male population (41.9%) associated with gender roles. Considering all the potential confounding variables the probabilities of having low-constant or worse IC increase in people with trajectories of physical inactivity. **Conclusion:** Self-reported physical activity (or performing other extenuating physical activity) at least three times a week in the last five years is independently associated with improvement in IC score or a sustained high score. Intensive physical activity has been described as a progression of whole-body improvement throughout life, providing adequate functional capacity throughout all life stages, decreasing or improving according to different life experiences **Keywords:** Physical activity, intrinsic capacity, healthy aging, lifestyle behaviors. **Disclosures:** The authors declared no competing interests. **References:** 1. Gerst K, Michaels-Obregon A, Wong R. The Impact of Physical Activity on Disability Incidence among Older Adults in Mexico and the United States. J Aging Res. 2011;2011:420714. doi: 10.4061/2011/420714. 2. Beard JR, Jotheeswaran AT, Cesari M, Araujo de Carvalho I. The structure and predictive value of intrinsic capacity in a longitudinal study of ageing. BMJ open. 2019;9(11):e026119. doi: 10.1136/bmjopen-2018-026119. 3. Gutiérrez-Robledo LM, García-Chanes RE, Pérez-Zepeda MU. Screening intrinsic capacity and its epidemiological characterization: a secondary analysis of the Mexican Health and Aging Study. Rev Panam Salud Publica. 2021 Sep 13;45:e121. doi: 10.26633/RPSP.2021.121. PMID: 34531905; PMCID: PMC8437155.

LB23- SARCOPENIC OBESITY, A NOVEL DEFINITION AT WORK. E. Poggiogalle[1], S. Susanna[2], M. Aubertin-Leheudre[3], G. Gianluca[2], L.M. Donini[1] *((1) Sapienza University - Rome (Italy), (2) Bluecompanion - London (United Kingdom), (3) Université Du Québec - Montréal (Canada))*

Background: Sarcopenic obesity (SO) is characterized by the combination of obesity, defined by high body fat percentage, and low skeletal muscle mass, namely, sarcopenia, accompanied by low muscle function. The Sarcopenic Obesity Global Leadership Initiative (SOGLI), supported by the European Society for Clinical Nutrition and Metabolism (ESPEN) and the European Association for the Study of Obesity (EASO), was launched to reach an expert consensus on the definition and diagnostic criteria for Sarcopenic Obesity (SO) [1]. The consensus group considered that robust data from prospective studies plus secondary analysis of existing datasets, are necessary steps to assess the predictive value, treatments' efficacy, and clinical impact of the EASO definition of SO. The present study titled « Validation of ESPEN-EASO algorithm for the diagnosis of Sarcopenic obesity (SO) « aims at assessing and validating the effectiveness of diagnostic criteria related to sarcopenic obesity. **Methods:** Recruitment: 75 subjects with SO versus 75 control subjects with non-sarcopenic obesity (n-SO). Study participants will be matched for sex and age. Inclusion criteria: age ≥ 18 years, body mass index ≥30 Kg/m^2, ethnicity: Caucasian. Exclusion criteria: any diseases or medications that significantly affecting body composition (e.g. malignant diseases in the last 5 years, autoimmune diseases, neurological diseases, syndromic obesity), level of physica lactivity >3 METS, alcohol intake >140g/wk for M and 70g/wk for F, participation in a weight-reducing program (last 3 months), impossibility to perform DXA exam, pregnancy and breast-feeding. The SO e-Registry has been developed for data collection and management (Sapienza University in partnership with Bluecompanion), the database, which collects

demographic and comprehensive clinical data on patients with SO, is operationalised into a dedicated digital platform based on the paradigm of interoperability and integration as previously applied in seminal international projects [2, 3]. **Results:** Current progress will be presented. **Conclusion:** Investigations and analyses will be conducted to evaluate the association among the proposed diagnostic criteria and circulating biomarkers, as well as physical functional outcomes, in order to enhance the reliability of the outlined diagnostic process. Findings from the present study will enable the validation of the novel ESPEN/EASO criteria and algorithm on the field to verify their applicability and effectiveness and potentially refine the current algorithm. The SO e-registry will be also implemented to monitor the effectiveness of available treatments, e.g. physical activity/exercise, GLP1-RA, and novel incoming therapeutic strategies. Finally, regulatory quality data collection will feed the dialogue with regulatory bodies on a factual basis. **Key words:** Sarcopenic Obesity (SO), Sarcopenic obesity (SO) algorithm validation, SO e-registry. **Clinical Trial Registry:** Clinicaltrials.gov, in-progress. **Data Deposition**: in-progress. **Disclosures:** Sapienza and LMD received a grant Research Project of National Interest (PRIN 202229ET3S). No competing interests. Bluecompanion is a private profit SME, they concurred in-kind and as subcontractor of Sapienza in the frame of PRIN 202229ET3S. MAL declares no competing interests. **References:** 1. Donini LM et al., Definition and diagnostic criteria for sarcopenic obesity: ESPEN and EASO consensus statement. Clinical Nutrition. Volume 41 Issue 4 Pages 990-1000 (April 2022) DOI: 10.1016/j.clnu.2021.11.014. 2. Bernabei et al. Multicomponent intervention to prevent mobility disability in frail older adults: randomised controlled trial (SPRINTT project). BMJ. 2022 May 11;377:e068788. doi: 10.1136/bmj-2021-068788. PMID: 35545258. 3. Abbatecola AM et al, Monitoring COVID-19 vaccine use in Italian long term care centers: The GeroCovid VAX study. Vaccine. 2022 Apr 1;40(15):2324-2330. doi: 10.1016/j.vaccine.2022.02.064. Epub 2022 Feb 22. PMID: 35248424.

LB24- ACUTE CLINICAL EVENTS AND FRAILTY TRAJECTORIES AFTER AGE 60: A POPULATION-BASED COHORT STUDY. C. Tazzeo[1], C. Gregorio[1], D. Rizzuto[1,2], L. Fratiglioni[1,2], S. Maggi[3], A.K. Welmer[1,2], A. Zucchelli[1,4], A. Calderón-Larrañaga[1,2], D.L. Vetrano[1,2] *((1) Aging Research Center, Department Of Neurobiology, Care Sciences And Society, Karolinska Institutet And Stockholm University - Stockholm (Sweden), (2) Stockholm Gerontology Research Center - Stockholm (Sweden), (3) Neuroscience Institute, National Research Council - Padua (Italy), (4) Department Of Clinical And Experimental Sciences, University Of Brescia - Brescia (Italy))*

Background: Frailty is characterized by vulnerability to stressors and reduced quality of life. Acute clinical events including myocardial infarctions (MIs), lower respiratory tract infections (LRTIs), and injurious falls become more common with age and pose as considerable stressors for older adults; however, little is known regarding their impact on frailty progression. This study aims to examine the relationship between acute clinical events and frailty trajectories and to investigate whether this association differs by type of event. **Methods:** We included 3146 participants, aged 60+, from the Swedish National study on Aging and Care in Kungsholmen (SNAC-K). We identified inpatient hospitalizations for acute clinical events (MIs, LRTIs, and falls) occurring five years before SNAC-K baseline (2001-2004) and up to wave 5 of SNAC-K (2014-2016). Frailty was operationalized using a 40-deficit frailty index (FI) for the first five waves of SNAC-K. We used linear quantile mixed models to examine the relationship between number of acute clinical events (0, 1, 2, 3+) and frailty trajectories over a median follow-up of 11 years. We also ran event-specific analyses for MIs, LRTIs, and falls, which were included as separate variables in the same model. **Results:** There were statistically significant differences in frailty trajectories based on the number of acute events between ages 75-95, with more acute events being associated with higher frailty levels over time. At age 80, the median frailty level for individuals who had experienced one acute event was 0.04 FI units higher (95% confidence interval [CI]=0.03-0.05) than for those who had not experienced any events, with additional increases of 0.08 (95% CI=0.05-0.11) and 0.09 (95% CI=0.05-0.13) FI units for those individuals who had experienced two and three or more events, respectively. The event-specific analyses showed similar trends: significantly higher frailty levels after age 80 by number of falls, and between ages 70 and 85 by LRTI count. Additionally, the frailty trajectory between ages 75 and 90 was significantly higher among those who had experienced one MI compared to those who had not experienced any events. **Conclusion:** Individuals who experience acute clinical events are more likely to encounter unfavourable frailty trajectories. The difference in frailty progression by event count was more evident for falls than LRTIs and MIs, however, this is probably because individuals with MIs and LRTIs are more likely to die before their frailty level can be assessed. MIs, LRTIs, and falls should be prevented and properly cared for in older adults to avoid frailty progression and death. **Keywords:** Frailty, myocardial infarction, lower respiratory tract infections, falls. **Disclosures:** All authors declare no conflicts of interest.

LB25- EFFECT OF GUT MICROBIOTA-ALTERING INTERVENTIONS ON SARCOPENIA OR ITS DEFINING PARAMETERS IN OLDER ADULTS: A SYSTEMATIC REVIEW AND META-ANALYSIS.
L. Lapauw[1], N. Amini[1], E. Switsers[2], J. Dupont[1,3], L. Vercauteren[1], M. Derrien[4,5], J. Raes[4,5], E. Gielen[1,3] *((1) KU Leuven, Department Of Public Health And Primary Care, Division Of Gerontology And Geriatrics - Leuven (Belgium), (2) KU Leuven, Faculty Of Medicine - Leuven (Belgium), (3) Division Of Gerontology And Geriatrics, University Hospitals - Leuven (Belgium), (4) KU Leuven, Department Of Microbiology, Immunology And Transplantation - Leuven (Belgium), (5)VIB, Center For Microbiology - Leuven (Belgium) - Leuven (Belgium))*

Background: Several mechanisms drive sarcopenia, the age-related loss of muscle mass and function. Among these contributing mechanisms are anabolic resistance and a less rich, diverse gut microbiota (GM) composition with higher abundance of pathobionts [1]. Current treatment strategies for sarcopenia emphasize non-pharmacological anabolic interventions, such as (protein-enriched) diets, which in turn may affect GM composition. However, effect of these anabolic interventions on GM are heterogeneous. We investigated effects of several diets, non-digestible foods promoting bacterial growth (prebiotics), supplementation with live bacteria (probiotics) and a combination (synbiotics) [2] on muscle mass, strength, physical performance and sarcopenia in older adults. **Methods:** This systematic review and meta-analysis was pre-registered on PROSPERO (CRD42022347363). Six databases (PubMed, Web of Science, Scopus, Embase, CINAHL, and CENTRAL) and one registry (ClinicalTrials) were searched until January 5th, 2024. Interventional studies including monotherapies reporting on the effect of diet and intake of pre-, pro-, or synbiotics on sarcopenia-defining parameters were included. Populations of included studies were of mean age ≥ 50 years. Standardized mean differences (SMD) and 95% confidence intervals (CI) were computed using a random-effects model if heterogeneity was >50%. **Results:** Fifty-one studies with 4205 participants, 58% women, were included in the qualitative analysis. Eleven studies assessed prebiotics, nine probiotics, one synbiotics and 30 studies assessed diet. Diets included energy-restricted (n=7), high-energy (n=3), fermented foods (n=3), high-protein (n=6), increased fruits and vegetable intake (n=3), energy-restricted protein-enriched (n=5), vegan (n=1), Mediterranean (n=1) diets and Dietary Approaches to Stop Hypertension (n=1). The quantitative analysis included thirty-three studies. Probiotics (SMD: 0.65; 95%CI[0.13; 1.17]) and diets enriched in fruits and vegetables (SMD: 0.88; 95% CI [0.38; 1.37]) improved muscle strength. Additionally, energy-restricted protein-enriched diets improved physical performance estimated using various tools (SMD: 0.77; 95% C I[0.01; 1.52]). However, we found that significance of the latter result, was influence by the tool used to estimate physical performance. Effect of an energy-restricted protein-enriched diet on muscle strength, showed a trend in favor of the intervention as compared to the controls (SMD: 0.26; 95%CI [-0.09; 0.61]). **Conclusion:** GM altering interventions significantly impacted the sarcpenia-defining parameters muscle strength and physical performance, but not muscle mass or the construct of sarcopenia. Probiotics and increased fruits and vegetable intake had small, yet significantly positive effects on muscle strength and energy-restricted protein-enriched diets on physical performance. However, the latter finding was influenced by the measurement tool used to estimate the outcome. Additionally, included studies were heterogeneous in terms of design, included populations and tools used to estimate sarcopenia-defining parameters. Therefore, further investigation in more uniformly designed longitudinal studies is warranted to estimate the effect of GM-altering interventions on sarcopenia. **Keywords:** Sarcopenia, muscle mass, strength, physical performance, diet, prebiotics, probiotics, synbiotics, randomized-controlled-trials. **Disclosures:** The authors declared no competing interests. **References:** 1. Gj G, Ra F, Ms L. Gut Microbiota Contribute to Age-Related Changes in Skeletal Muscle Size, Composition, and Function: Biological Basis for a Gut-Muscle Axis. Calcified tissue international. 2018;102(4):433-42. 2. Whelan K, Alexander M, Gaiani C, Lunken G, Holmes A, Staudacher HM, et al. Design and reporting of prebiotic and probiotic clinical trials in the context of diet and the gut microbiome. Nat Microbiol. 2024;9(11):2785-94.

LB26- CREATININE AND CYSTATIN C-BASED DIAGNOSTIC INDICES OF SARCOPENIA IN PREDICTING FRAILTY AND DISABILITY IN OLDER COMMUNITY ADULTS.
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Background: The diagnostic value of the serum creatinine/cystatin C ratio (CCR) and sarcopenia index (SI) for sarcopenia, and their potential to predict incident frailty and disability in activities of daily living (ADL) among Chinese community-dwelling older adults remains unclear. **Methods:** Data were collected from the baseline survey (2011–2012) and the third wave (2014–2015) of the China Health and Retirement Longitudinal Study (CHARLS), a nationally representative cohort of community-dwelling adults aged 45 years or older in China. Serum creatinine and cystatin C levels were measured to calculate CCR and SI. Receiver operating characteristic (ROC) curves were used to determine cutoff values and evaluate the diagnostic accuracy for sarcopenia. Multivariate logistic regression models were employed to examine the associations of SI, CCR, and sarcopenia with incident frailty and ADL disability. **Results:** CCR and SI exhibited significant correlations with age, muscle mass indicators, and handgrip strength, with area under the curve (AUC) ranging from 0.59 (95% CI: 0.56-0.62) for CCR to 0.63 (95% CI: 0.58-0.67) for SI. No significant difference was found in AUC between CCR and SI ($P > 0.05$). Participants in the highest quartile of SI or CCR had reduced odds of incident frailty (SI: OR = 0.24, 95% CI 0.11-0.52; CCR: OR = 0.24, 95% CI 0.11-0.51) and ADL disability (SI: OR = 0.71, 95% CI 0.54-0.94;

CCR: OR = 0.69, 95% CI 0.52-0.91) compared to those in the lowest quartile. Sarcopenia defined by either CCR or SI was independently associated with increased risks of incident frailty (CCR: OR = 1.84, 95% CI: 1.20-2.83; SI: OR = 1.70, 95% CI: 1.12-2.58) and ADL disability after adjusting for confounders. **Conclusion**: CCR and SI demonstrate moderate and comparable diagnostic accuracy for sarcopenia and are independently associated with the risk of incident frailty and ADL disability, suggesting their potential as biomarkers for identifying at-risk community-dwelling older adults.

LB27- THE GENETICS OF FRAILTY. J. Flint[1,2], I. Foote[3], J. Fisk[4], A. Rutenberg[4], N. Martin[5], T. Karakach[4], D. Llewellyn[6], R. Janice[6], S. Cox[2], M. Lupton[5], K. Rockwood[4], A. Grotzinger[3], L. Michelle[2] *((1) QIMR Berghofer Medical Research Institute - Brisbane (Australia), (2) University of Edinburgh - Edinburgh (United Kingdom), (3) University of Colorado - Boulder, Colorado (United States), (4) Dalhousie University - Halifax (Canada), (5) Qimr Berghofer - Brisbane (Australia), (6) University of Exeter - Exeter (United Kingdom))*

Research on the genetics of frailty highlights its complex and multifactorial nature. Heritability estimates from twin studies suggest that 30-50% of frailty is attributable to genetic factors, with evidence of shared genetic influences on other aging-related traits, such as physical decline and cognitive impairment. However, genome-wide association studies (GWAS) indicate more modest heritability estimates, around 11%, likely reflecting the polygenic nature of frailty, where many genes contribute small individual effects. Key genetic pathways include those involved in inflammation, mitochondrial function, and oxidative stress. These findings emphasize the intricate interplay between genetic predispositions and environmental or lifestyle factors, such as diet, exercise, and exposure to stress, which collectively shape frailty risk. This research uses advanced techniques such as multivariate GWAS, Mendelian randomization, and polygenic prediction models to further investigate the genetic architecture of frailty and its association with adverse health outcomes, including disability and mortality, and Alzheimer's disease. The analyses leverage data from large-scale, well-characterized cohorts, including the UK Biobank, the English Longitudinal Study of Ageing, the Lothian Birth Cohort 1936, and the Prospective Imaging Study of Ageing. These studies encompass diverse populations from the UK and Australia. Additionally, the research explores connections between genetic findings, neuroimaging biomarkers, and medication data from healthrecords, providing insights into the biological pathways underlying frailty.

LB28- MULTIDISCIPLINARY MANAGEMENT IN FRAIL HOSPITALIZED OLDER PERSONS WITH INTRINSIC CAPACITY LOSSES MAY PREVENT FUNCTIONAL DECLINE UPON DISCHARGE. B.H. Tan[1], C.T. Ng[1], A.R. Bin Zainal Abidin[1], C. Tong[1], J. Yong[1], A. Lim[1], J. Chen[1], R. Lim[1], M. Chua1, D. Zhang[1], Y.Y. Ding[2], L. Tay[1] *((1) Sengkang General Hospital - Singapore (Singapore), (2) Geriatric Education And Research Institute - Singapore (Singapore))*

Background: Intrinsic capacity (IC) is the composite of physical and mental capacity, and reflects an individual's reserves to prevent loss of homeostasis and function during a crisis. IC losses are associated with frailty, functional decline and mortality. Integrated care for older people (ICOPE) is a screening tool developed by the World Health Organization (WHO) for IC screening of older persons in community-dwelling or primary-care settings. Few studies use IC screening for inpatients, and at present, there are no interventional studies evaluating interventions for deficits detected via IC screening. **Methods:** A pragmatic controlled trial involving 399 patients aged ≥65 years of age in acute medicine wards were recruited in a single tertiary hospital over the duration of 1 year. ICOPE was adapted for screening of the five IC domains in the inpatient setting within 48 hours of admission. Patients with at least 1 IC domain loss were discussed in weekly Multidisciplinary meetings (MDM) and individualized interventions after MDM discussion were performed. Functional status was assessed using Barthel Index (BI) for activities of daily living (ADLs) and Lawton's scale for instrumental ADLs (iADLs) at admission and discharge. Functional decline was defined as a >1-point decrement on the 20-point BI. Data collected upon recruitment included frailty status (Clinical Frailty Scale, CFS), cognitive performance, comorbidity burden (Charlson's Comorbidity Index, CCI), admission diagnoses, and severity of illness. **Results:** 399 patients (159 intervention and 240 control) were recruited. Participants in the intervention group were more likely to have been admitted in the past 1 year (61.6% versus 51.7% p= .05), had significantly higher comorbidity burden (CCI high or worse; 37.8% versus 20.4%, p <.001), and were more likely to be frail (CFS ≥4; 76.1% versus 60.4%, p=.003). Baseline functional performance in ADLs and iADLs were worse among patients in the intervention wards (both p<0.05). Despite their frailty status, patients in the intervention wards did not exhibit higher risk of functional decline (25.5% versus 23.3%, p=.626) Multiple logistic regression analyses revealed that age (p = .04) and frailty status (p = .004) are correlated with functional decline. **Conclusion:** Intervention of IC losses by individualized and coordinated care can prevent functional decline for frail older adults at discharge. This one of the first interventional studies examining the value of intervention on IC capacity losses in the inpatient setting. **Keywords:** Intrinsic capacity, inpatient, functional decline, multidisciplinary management. **Clinical Trial Registry:** Not applicable. **Data Deposition:** Not applicable. **Disclosures:** Nil disclosures to declare. **References:** 1. World Health Organization. Integrated care for older people: guidelines on

community-level interventions to manage declines in intrinsic capacity. Geneva: WHO; 2017. Available from: https://apps.who.int/iris/handle/10665/258981. 2. Tay L, Tay EL, Mah Sm, et al. Association of intrinsic capacity with frailty, physical fitness and adverse health outcomes in community-dwelling older adults. J Frailty Aging 2022 https://doi.org/10.14283/jfa.2022.28. 3. Sánchez-Sánchez JL, Lu WH, Gallardo-Gómez D, Del Pozo Cruz B, de Souto Barreto P, Lucia A, Valenzuela PL. Association of intrinsic capacity with functional decline and mortality in older adults: a systematic review and meta-analysis of longitudinal studies. Lancet Healthy Longev. 2024 Jul;5(7):e480-e492. doi: 10.1016/S2666-7568(24)00092-8. PMID: 38945130. 4. Zhu L, Zong X, Shi X, Ouyang X. Association between Intrinsic Capacity and Sarcopenia in Hospitalized Older Patients. J Nutr Health Aging. 2023;27(7):542-549. doi: 10.1007/s12603-023-1946-5. PMID: 37498101. 5. Shen S, Xie Y, Zeng X, Chen L, Guan H, Yang Y, Wu X, Chen X. Associations of intrinsic capacity, fall risk and frailty in old inpatients. Front Public Health. 2023 Oct 10;11:1177812. doi: 10.3389/fpubh.2023.1177812. PMID: 37886051; PMCID: PMC10598390. 6. Zhu L, Shen X, Shi X, Ouyang X. Factors associated with intrinsic capacity impairment in hospitalized older adults: a latent class analysis. BMC Geriatr. 2024 Jun 5;24(1):494. doi: 10.1186/s12877-024-05093-z. PMID: 38840051; PMCID: PMC11151595. 7. Nagae M, Umegaki H, Komiya H, Nakashima H, Fujisawa C, Watanabe K, Yamada Y, Miyahara S. Intrinsic capacity in acutely hospitalized older adults. Exp Gerontol. 2023 Aug;179:112247. doi: 10.1016/j.exger.2023.112247. Epub 2023 Jun 27. PMID: 37380006. 8. Zeng X, Shen S, Xu L, Wang Y, Yang Y, Chen L, Guan H, Zhang J, Chen X. The Impact of Intrinsic Capacity on Adverse Outcomes in Older Hospitalized Patients: A One-Year Follow-Up Study. Gerontology. 2021;67(3):267-275. doi: 10.1159/000512794. Epub 2021 Mar 18. PMID: 33735899.

POSTERS

FRAILTY IN CLINICAL PRACTICE AND PUBLIC HEALTH

P1- FRAILTY AND OVERALL SURVIVAL IN OLDER PATIENTS UNDERGOING RADIOTHERAPY FOR HEAD AND NECK CANCER: A PROSPECTIVE ANALYSIS.

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Introduction: As the global population ages, the incidence of head and neck squamous cell carcinoma (HNSCC) rises among older adults, necessitating tailored treatment strategies [1, 2]. Radiotherapy (RT) remains a cornerstone of HNSCC management, but data on its efficacy and toxicity in older patients are limited [3, 4]. Frailty is increasingly recognized as a key factor in predicting treatment tolerance and outcomes in older patients [5, 6], yet it is often underutilized in clinical practice, particularly in the context of RT. This study aims to assess pre-treatment frailty using Rockwood's 40-item Frailty Index (FI) and comprehensive geriatric assessment (CGA) and evaluate their effects on overall survival and acute radiation-related toxicity [7, 8]. **Methods:** Between July 2017 and November 2022, 117 older HNSCC patients (≥65 years) receiving RT were enrolled. Comprehensive geriatric assessment (CGA) and Rockwood's 40-item Frailty Index (FI) were employed to evaluate frailty. Survival and toxicity data were collected and analyzed using Cox proportional hazards models and logistic regression, adjusted for sex, age, tumor stage, concomitant chemotherapy, and comorbidities. **Results:** The study revealed a high prevalence of frailty among older HNSCC patients (25% frail, 58% pre-frail). The median age was 76 years, with 74.4% being male. During the follow-up period, 42% of patients died, with a median survival of 20.5 months. Multivariate analysis indicated that frailty (HR 1.478, $p<0.001$) and impaired functional autonomy (HR 1.451, $p=0.012$) were significant predictors of mortality. Furthermore, P16+ status in oropharyngeal cancer patients was associated with improved survival (HR 0.231, $p=0.008$). No significant correlation was found between frailty and grade 3 or higher radiation-induced toxicity. **Conclusion:** Our study underscores the critical role of assessing frailty in older patients receiving radiotherapy for HNSCC. This is one of the first studies to explore the impact of frailty in this context, highlighting the importance of tailored treatment strategies for this frail population to optimize outcomes and reduce complications. **Keywords:** Frailty, head and neck cancer, radiotherapy, geriatric oncology. **References:** 1. Grénman R, Chevalier D, Gregoire V et al. Treatment of head and neck cancer in the elderly: European Consensus. Eur Arch Otorhinolaryngol 2010; 267: 1619-1621. 2. Syrigos KN, Karapanagiotou EM et al. Head and neck cancer in the elderly: an overview. Cancer Treat Rev 2009; 35: 237-245. 3. Iqbal MS et al. Managing older patients with head and neck cancer: The non-surgical curative approach. J Geriatr Oncol 2018; 9: 411-417. 4. Fasano M et al. Role of Radiotherapy and Chemotherapy. Cancers (Basel) 2022; 14. 5. Extermann M et al. Use of comprehensive geriatric assessment in older cancer patients. Crit Rev Oncol Hematol 2005; 55: 241-252. 6. Fusco D et al. Comprehensive geriatric assessment in older adults with cancer. Eur J Clin Invest 2021; 51: e13347. 7. Pottel L et al. Serial CGA in elderly HNSCC patients undergoing RT. Eur J Cancer Care (Engl) 2014; 23: 401-412. 8. Hurria A et al. Senior adult oncology, version 2.2014. J Natl Compr Canc Netw 2014; 12: 82-126.

P3- PREVALENCE OF SARCOPENIA AND ITS ASSOCIATION WITH ORAL HYPOFUNCTION AMONG RESIDENTS IN LONG TERM CARE IN FINLAND. R. Oura[1], R. Saarela[2], K. Pitkälä[3], H. Kautiainen[4], S. Jyväkorpi[5], K. Hiltunen[1], P. Mäntylä[6] *((1) Department Of Oral And Maxillofacial Diseases, University Of Helsinki - Helsinki (Finland), (2) Department Of Social Services And Health Care, Oral Health Care, City Of Helsinki - Helsinki (Finland), (3) Department Of General Practice, University Of Helsinki, Helsinki, Finland; Unit Of Primary Health Care, Helsinki University Hospital - Helsinki (Finland), (4) Folkhälsan Research Center - Helsinki (Finland), (5) Unit Of Primary Health Care, Department Of General Practice And Primary Health Care, Faculty Of Medicine, Helsinki University Central Hospital, University Of Helsinki - Helsinki (Finland), (6) Institute Of Dentistry, University Of Eastern Finland, Kuopio, Finland; Kuopio University Hospital, Oral And Maxillofacial Diseases - Kuopio (Finland))*

Background: Nowadays sarcopenia have been found to start appearing earlier in life, yet studies have shown that the prevalence of sarcopenia increased with age, especially among those over 80 years old. [1, 2] It has also been determined that poor oral function similarly appears with age. [3] The relationship between them have been unclear. Our aim was to identify sarcopenia in residents in long term care (LTC) using EWGSOP2 criteria and find out whether it has an association with oral hypofunction (OHF) [4, 5]. **Methods:** A comprehensive clinical oral examination was conducted on 393 residents who lived permanently in LTC in Helsinki, Finland. All residents were aged 65 years and over. Individuals needing prophylactic antibiotics, and those who had major deficiencies or completely refused from the clinical examination were excluded (N=243). In the end, all needed data were available for 150 older adults. A standardized questionnaire that was used to get information on demographic factors and the assistance with oral hygiene and eating, consistency of the food and they also disclosed whether the older adult had swallowing difficulties. Medical diagnoses were obtained from the medical records. Nutrition was assessed with mini nutritional assessment (MNA). Cognition was determined using mini-mental state examination (MMSE). OHF was determined with five signs, which were mouth dryness, visible food residue on oral or denture surfaces, ability to keep the mouth open during examination, clearness of speech, and diet of pureed or soft food. Score points of 0-2 were given for each sign, and the sum was categorised as mild, moderate or severe OHF. We used EWGSOP2 criteria for sarcopenia to divide older adults into 3 categories. The relationships between OHF and sarcopenia in older adults living in LTC were examined. **Results:** Of participants (N=150), 31% had sarcopenia and 56% had severe sarcopenia. OHF based on five signs also had a strong relationship with sarcopenia and its severity. After adjusting for age and sex, a significant upward linear relationship remained between the OHF severity score and sarcopenia. Sarcopenia severity associated linearly with nutritional status, dysphagia and Barthel index and increased need for assistance in oral hygiene and eating. **Conclusion:** OHF can be used to determine the severity of sarcopenia. Sarcopenia is also common among residents in LTC and is associated with malnutrition, dysphagia and needing assistance with everyday tasks. **Keywords:** Oral hypofunction, sarcopenia, grip strength, long-term care. **Disclosures:** Grants for the comprehensive clinical oral examination were received from Päivikki ja Sakari Sohlbergin Säätiö, Suomen Hammaslääkäriseura Apollonia and The Finnish Society of Female Dentists. The authors declared no competing interests. **References:** 1. Petermann-Rocha F, et al. Global prevalence of sarcopenia and severe sarcopenia: a systematic review and meta-analysis. Journal of Cachexia, Sarcopenia and Muscle. 2022;13(1):86-99. DOI: https://doi.org/10.1002/jcsm.12783. 2. Cao M, et al. Prevalence of sarcopenia under different diagnostic criteria and the changes in muscle mass, muscle strength, and physical function with age in Chinese old adults. BMC Geriatr. 2022;22(1):889. DOI: 10.1186/s12877-022-03601-7. 3. Minakuchi S, et al. Oral hypofunction in the older population: Position paper of the Japanese Society of Gerodontology in 2016. Gerodontology. 2018;35(4):317-24. DOI: 10.1111/ger.12347. 4. Oura R, et al. Oral hypofunction and association with need for daily assistance among older adults in long-term care. Journal of Oral Rehabilitation. 2022;49(8):823-30. DOI: https://doi.org/10.1111/joor.13345. 5. Cruz-Jentoft AJ, et al. Sarcopenia: revised European consensus on definition and diagnosis. Age Ageing. 2019;48(1):16-31. DOI: 10.1093/ageing/afy169.

P4- PREVALENCE AND OUTCOMES OF FRAIL HOSPITALIZED OLDER PATIENTS WITH DYSPHAGIA. C.Y. Chen[1], H.T. Mon[2], G.S. Kaur[1], B.H. Rosario[1] *((1) Geriatric Medicine, Changi General Hospital - Singapore (Singapore), (2) Health Services Research, Changi General Hospital - Singapore (Singapore))*

Background: Problems in swallowing is an increasing health problem for older patients and is a common cause of dehydration, malnutrition, aspiration pneumonia, recurrent hospitalizations and death. Frailty is a highly prevalent condition in older adults, with numerous adverse health outcomes. Malnutrition is one of the key important factors in the pathophysiology of sarcopenia and frailty and effective interventions for frailty should encompass screening for dysphagia where appropriate interventions including oropharyngeal rehabilitation may be instituted. **Methods:** A post-implementation retrospective review of a new inpatient vaccination workflow was conducted for a cohort of 595 consecutive patients admitted to the Geriatric Department in our acute hospital between March and June 2019. We evaluated the prevalence of dysphagia and associated factors. Outcome measures were inpatient mortality, 30-day and 60-day mortality and 6-month readmissions with respiratory infections. **Results:** The prevalence of dysphagia in our cohort was high at 48.91% (n=291). Dysphagia was determined from assessments done by the Speech Therapist or the presence of a Nasogastric tube (NGT). There was a strong association of dysphagia with frailty status, where patients with dysphagia were mainly

moderately to severely frail as determined by Clinical Frailty Scale (CFS) 6-9 (84.56% n=241) as compared to mildly frail, CFS 4-5 (12.63%, n=36) and not frail, CFS 1-3 (2.81%, n=8) (p=0.001). In the multiple logistic regression analysis, presence of dysphagia and frailty status were associated with poor patient outcomes. Frailty increased the odds of 6-month readmissions with respiratory infections by 38% (OR = 1.38, p = 0.03), while dysphagia was a significant risk factor, with patients exhibiting 2.25 times higher odds (p =0.006). Dysphagia was also a significant risk factor for 30-day and 60-day mortality, with OR= 3.35, p=0.015 and OR=3.77, p=0.001 respectively. **Conclusion:** The findings of our study highlights that frailty is multi-dimensional and screening for dysphagia is important in frail patients, where both conditions have a strong association. As dysphagia in our cohort is a significant risk factor with many adverse outcomes, appropriate interventions like modification of diet consistencies and further nutritional interventions as well as oropharyngeal rehabilitation play important roles in decreasing the risk of adverse health outcomes. Future research could focus on diagnosis of sarcopenic dysphagia with a standard diagnostic algorithm, including measurements of muscle mass and physical performances to differentiate those who may benefit the most from an intensive and multidisciplinary oropharyngeal and nutritional intervention and obtaining longitudinal data on outcome measures, including impact on functional and cognitive status. **Keywords:** Dysphagia, frailty, malnutrition, readmissions, mortality, sarcopenic dysphagia. **Disclosures:** The authors declare no conflicts of interest. **References:** 1. de Sire A, Ferrillo M, Lippi L, Agostini F, de Sire R, Ferrara PE, Raguso G, Riso S, Roccuzzo A, Ronconi G, Invernizzi M, Migliario M. Sarcopenic Dysphagia, Malnutrition, and Oral Frailty in Elderly: A Comprehensive Review. Nutrients. 2022 Feb 25;14(5):982. doi: 10.3390/nu14050982. PMID: 35267957; PMCID: PMC8912303. 2. Yang RY, Yang AY, Chen YC, Lee SD, Lee SH, Chen JW. Association between Dysphagia and Frailty in Older Adults: A Systematic Review and Meta-Analysis. Nutrients. 2022 Apr 27;14(9):1812. doi: 10.3390/nu14091812. PMID: 35565784; PMCID: PMC9105461. 3. Payne M, Morley JE. Editorial: Dysphagia, Dementia and Frailty. J Nutr Health Aging. 2018;22(5):562-565. doi: 10.1007/s12603-018-1033-5. PMID: 29717753. 4. Yang RY, Yang AY, Chen YC, Lee SD, Lee SH, Chen JW. Association between Dysphagia and Frailty in Older Adults: A Systematic Review and Meta-Analysis. Nutrients. 2022 Apr 27;14(9):1812. doi: 10.3390/nu14091812. PMID: 35565784; PMCID: PMC9105461. 5. Wakabayashi H, Kishima M, Itoda M, Fujishima I, Kunieda K, Ohno T, Shigematsu T, Oshima F, Mori T, Ogawa N, Nishioka S, Yamada M, Ogawa S; Japanese Working Group on Sarcopenic Dysphagia. Diagnosis and Treatment of Sarcopenic Dysphagia: A Scoping Review. Dysphagia. 2021 Jun;36(3):523-531. doi: 10.1007/s00455-021-10266-8. Epub 2021 Feb 23. PMID: 33620563. 6. Christmas C, Rogus-Pulia N. Swallowing Disorders in the Older Population. J Am Geriatr Soc. 2019 Dec;67(12):2643-2649. doi: 10.1111/jgs.16137. Epub 2019 Aug 20. PMID: 31430395; PMCID: PMC7102894.

P5- SOCIAL FRAILTY TYPOLOGIES AND INFLUENCE OF INTRINSIC CAPACITY ON RISK OF PHYSICAL FRAILTY AT 2 YEARS: A LATENT CLASS ANALYSIS.

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Background: Social frailty is a complex construct that links social determinants to adverse health outcomes. Notwithstanding validated scales to assess social frailty, key gaps remain with the lack of clear composite patterns of social frailty and their association with activity level and intrinsic capacity (IC) that can inform future risk of adverse outcomes amongst healthy community-dwelling older persons. **Objectives:** We aim to identify distinct typologies of social frailty; describe their sociodemographic profiles; and examine their predictive validity for risk of physical frailty independent of IC and activity at 2-years. **Methods:** We assessed 230 participants (mean age:67.2±7.4 years; mean FRAIL:0.17±0.42) from GeriLABS-2 cohort study for: 1) Social frailty using validated SFS-8 scale; 2) IC using modified 4-domain Integrated Care for Older People (ICOPE) tool; and 3) Activity levels, using Frenchay Activity Index (FAI), International Physical Activity Questionnaire (IPAQ), and Life Space Mobility (LSM). Primary outcome was 2-year risk of frailty using Fried Frailty Phenotype. We performed latent class analysis to identify distinct patterns of social frailty, and logistic regression to examine the predictive validity of identified patterns with risk of frailty adjusted for covariates, followed by baseline IC composite score/domains or baseline activity levels. **Results:** We identified three social frailty typologies: Socially Non-Frail (77.4%, S1), Decreased Social Resources (11.3%, S2), and Decreased Social Need Fulfilment and Financial Resources (11.3%, S3). Compared with S1 (Non-Frail), S2 comprised older men with lower educational attainment who were less likely to have friends for advice or to confide in, whereas S3 participants tended to live alone, eat alone and have more limited financial resources for medical services. S2 and S3 had significantly lower IC composite score (7.26±0.95 vs 6.42±1.33 vs 5.96±1.28, p<.001) and activity levels (all p≤.05). Amongst 193 (83.9%) who completed 2-year follow-up, S3 predicted 3.95-fold (1.22–12.78) increased odds of 2-year frailty, but not S2 (OR:1.60, 0.38-6.73). The significant association for S3 remained when adjusted for activity levels (OR range: 3.49-4.09, all p<0.05), but not for IC composite score (OR:2.90, 0.83-10.14). Amongst the IC domains, only locomotion (OR:3.38, 0.98-11.68) rendered the association non-significant. **Conclusion:** Our study explicated the heterogeneity of social frailty typologies with distinct sociodemographic profiles and 2-year risk of physical frailty (predicated on baseline IC status, particularly the locomotion domain), highlighting the need for tailored interventions by social frailty subtypes to address the impact on IC and reduce the downstream risk of physical frailty.

P6- FACTORS INFLUENCING MULTIDIMENSIONAL FRAILTY IN OLDER ADULTS WITH EARLY-STAGE CHRONIC KIDNEY DISEASE. F.R. Yueh[1], F.W. Hu[2], M. Yen[1] *((1) National Cheng Kung University - Tainan (Taiwan, Republic of China), (2) Kaohsiung Medical University - Kaohsiung (Taiwan, Republic of China))*

Background: Frailty is a common condition among patients with chronic kidney disease (CKD), and its prevalence in elderly individuals with CKD is 2 to 3 times higher than in the general elderly population, with rates reaching as high as 73% depending on the assessment tools used. Patients with CKD who also exhibit frailty face significant substantial clinical risks, including falls, disability, hospitalization, readmission, and increased mortality. However, current clinical assessments of frailty in CKD primarily utilize the Fried frailty phenotype, which focuses mainly on physical function and lacks a comprehensive, multidimensional perspective. Additionally, these assessments often prioritize patients on dialysis, leaving those with early-stage CKD insufficiently addressed. **Objectives:** To investigate factors associated with multidimensional frailty in older patients with early-stage chronic kidney disease. **Methods:** The study employed a cross-sectional design, recruiting patients over the age of 65 with CKD stages 1, 2 and 3a from the nephrology outpatient clinics at a 1,343-bed tertiary care medical center. A structured questionnaire was used, incorporating demographic information, stages of CKD (determined by estimated Glomerular Filtration Rate), the Charlson Comorbidity Index (CCI), self-perceived health status, Modified Katz Index of Independence in Activities of Daily Living (Modified Katz ADL), the Kidney Disease Quality of Life Instrument (KDQOL), and the Kihon Checklist (KCL) for multidimensional frailty assessment. **Results:** A total of 144 patients (91 males and 53 females, mean age 75 ± 7.7 years) with complete data were included in the final analysis. According to the KCL, 11.8% of patients were classified as frail (score ≥ 8), 14.6% as pre-frail (score 4-7), and 73.6% as non-frail (score 0-3). Age, BMI, living arrangement, self-perceived health status, Modified Katz ADL, and KDQOL were associated with multidimensional frailty. Notably, KDQOL emerged as a significant predictor of multidimensional frailty (OR = 0.985, 95% CI = 0.97–0.99, p = .015). **Conclusion:** The study indicated that older age, low BMI, living alone, poorer self-perceived health status, decreased Modified Katz ADL scores, and lower KDQOL scores were significantly associated with multidimensional frailty in older adults with early-stage CKD. Additionally, KDQOL was a significant predictive factor for multidimensional frailty. Early detection of multidimensional frailty could address current issues and help develop interventions to prevent and delay the progression of frailty in early-stage CKD patients. **Keywords:** Multidimensional frailty, early-stage chronic kidney disease, older adults.

P7- PILOT SURVEY OF PHYSICAL THERAPISTS' APPROACH TO KIDNEY TRANSPLANT PREHABILITATION. P. Ahearn[1], C. Liu[1], T. Park[2], J. Tan[1] *((1) Stanford University - Stanford (United States), (2) Williams College - Williamstown (United States))*

Background: Measures of frailty are now a routine part of evaluation for transplant candidacy. Patients with end-stage kidney disease (ESKD) must have sufficient physical functioning capacity for successful transplantation, but ESKD is a known risk for poor physical function or frailty. Many candidates become too frail for kidney transplantation while on the transplant waitlist. One potentially appealing option for management is a referral to a local physical therapist for monitored pre-habilitation and exercise training. However, there is little published data on how physical therapists review, assess, and manage pre-habilitation for this high-risk, complex patient population. In this pilot study, we aimed to survey physical therapists about their approach to providing pre-habilitation for pre-transplant patients. **Methods:** Preliminary survey questions were developed after focused interviews with community and university-based physical therapists. Next, we created a 26-question survey using Stanford University's instance of Qualtrics and obtained IRB approval for distribution to community physical therapy practitioners. The survey was linked through the California Physical Therapy Association's monthly online newsletter and printed surveys were distributed to local physical therapy offices. **Results:** To date, we have received 20 completed surveys by licensed physical therapists. They average 5-25% of their practice treating patients for generalized weakness or frailty. The median therapist is somewhat comfortable working with dialysis patients; only one reports being extremely uncomfortable. They rate pre-referral frailty and physical performance assessment as moderately useful and more than ¾ equally prioritize the referring provider's goals along with their own. The two most important factors the therapists account for in a referral are 1) medical limitations to exercise and 2) recent vital signs. All but one therapist has provided pre-habilitation in the past, 75% have experience in orthopedic surgery pre-habilitation, and 45% in cardiac surgery pre-habilitation. Typical treatment length for general weakness or frailty is variable, ranging from 2-24 weeks and the therapy plan is only sometimes discussed with the referring providers before initiating. One therapist commented that they would like to discuss more, but does not "because of difficulty getting ahold of providers and/or providers who do not want that level of communication." **Discussion:** In this pilot survey, we found that physical therapists are comfortable with dialysis patients, therapy for generalized weakness or frailty, and well-versed in pre-habilitation. Kidney transplant centers, especially those with large catchment areas, may not be able to arrange pre-habilitation at the transplant center itself, but our early findings support the consideration of referrals to community-based physical therapists. **Disclosures:** The authors declare no competing interests. **Keywords:** Physical therapy, prehabilitation, end-stage kidney disease, kidney transplant.

P9- COMPARISON OF MODIFIED HOSPITAL FRAILTY RISK SCORE TO THE COMPREHENSIVE GERIATRIC ASSESSMENT AND CLINICAL FRAILTY SCALE IN A GERIATRIC UNIT. B.H. Rosario[1], G.S. Kaur[1], T. Selvaratnam[1], K.K. Htin[1], Z.T. Thant[1], H.A. Than[1], A. Lim[1], G.K Goh[1], C.Y. Chen[1] *((1) Changi General Hospital - Singapore (Singapore))*

Background: Frailty is a clinically recognisable state of vulnerability in older people, resulting from age-associated decline in physiological reserves and function across multiple organ systems. [1]. Frailty is purported as the largest global problem associated with an ageing population [2]. Frailty theories include Fried's Frailty Phenotype [3] which is based on demonstrable weakness, slowness and low physical activity and Rockwood's accumulation deficit model that culminated in the Clinical Frailty Scale (CFS) [4]. Staff require time and training to administer frailty screening but to achieve future frailty friendly hospitals [5], frailty screening may need to be simplified. The modified Hospital Frailty Risk Score (mHFRS) was adapted from HFRS methodology for use at an individual patient level, which is automated and extracted from electronic health records (EHR) without a training requirement. Our hospital incorporated mHFRS into the EHR as a part of our frailty service development and our aim is to validate the mHFRS as a frailty risk stratification tool, by comparison to Comprehensive Geriatric Assessment (CGA) and CFS. **Methods:** mHFRS is generated automatically in the EHR from 109 ICD codes and their sub-codes but clinicians have to "pull" the score to view it. Information was collected from the CGA regarding instrumental (iADL) and basic activities of daily living (bADL) and CFS where available for consecutive admissions to the geriatric unit from 22nd July to 12th August 2024. Whole hospital mHFRS scores were calculated for the same time period, using anonymised aggregated data. Compared to HFRS, mHFRS is calculated without the index admission and categorises patients into high risk (>15), intermediate risk (5-15) and low risk (<5) of frailty, using the last 2 emergency admissions within 2 years of the index admission date. **Results:** A total of 240 patients consecutively admitted to the geriatric unit were included, of whom, 57.5% were female. In those whose mHFRS score had been extracted by clinicians, 9.6% were low risk, 38.3% were intermediate risk and 52.1% were high frailty risk. Across the whole cohort, average length of stay (ALOS) was 13.4 days, range 1-74 days. 30-day emergency re-admissions were 15.4% with 2.5% not yet 30-days and 1.2% remaining in-patients. In-patient mortality was 6.3% and 30-day mortality was 7.5%. CGA was undertaken in 82% and CFS in 52%. CGA and CFS correlated well with mHFRS for intermediate and high frailty risk. ALOS was longer for those low vs high frailty risk (7.44, SD 4.75 vs 16.1 days, SD 16.1) and mortality was higher (0 vs 12.2%) but 30-day re-admissions were similar. Clinicians had extracted mHFRS for 35.4% of patients although computable scores were available for 38.2% and 4.2% were not extracted. Computable geriatric unit mHFRS was lower than computable scores across other specialties including medicine (56%), renal (82.5%), respiratory medicine (56.8%), cardiology (43%), and gastroenterology (45.9%). The likelihood of scoring improved with increasing frailty risk. **Conclusion:** mHFRS is more frequently scored in those at intermediate and higher frailty risk, in whom, ALOS and mortality are also higher. Lower than expected computable mHFRS were available for geriatric unit patients. **Key words:** Frailty, hospital frailty risk score, geriatrics, clinical frailty scale. **References:** 1. World Health Organization (WHO). WHO Clinical Consortium on Healthy Ageing. Topic focus : frailty and intrinsic capacity. 2016;(December):22. Available from: http://apps.who.int/iris/bitstream/handle/10665/272437/WHO-FWC-ALC-17.2-eng.pdf?sequence=1&isAllowed=y. 2. Frailty in emergency departments. Dent E, Hoogeendijk EO, Cardona-Morrell M, Hillmand K, Lancet volume 387, issue 10017, p434, January 30, 2016. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9761464/pdf/futurehealth-9-3-286.pdf. 3. Fried LP, Ferrucci L, Darer J, Williamson JD, Anderson G. Untangling the Concepts of Disability, Frailty, and Comorbidity: Implications for Improved Targeting and Care. Journals of Gerontology - Series A Biological Sciences and Medical Sciences. 2004;59(3):255–63. 4. Rockwood K, Song X, MacKnight C, Bergman H, Hogan DB, McDowell I, et al. A global clinical measure of fitness and frailty in elderly people. Cmaj. 2005;173(5):489–95. 5.Developing frailty friendly hospitals: the Specialised Clinical Frailty Network. Hall N, Fluck R, Imam T, Jacob T, Thompson D, Tite M, Backhouse E, Dhesi J, Conroy S. Future Healthcare Journal 2022 Vol 9, No. 3: 286-90.

P10- MODELLING FRAILTY WITH BAYESIAN GENERALISED LINEAR MODELS AND BAYESIAN MODEL AVERAGING. Z. Sun[1], M. Juarez[1], I. Bellantuono[1] *((1) The University Of Sheffield - Sheffield (United Kingdom)*

Background: Frailty is not a disease, but a clinically recognisable condition [1]. People with frailty are vulnerable to even small diseases and often struggle to recover from them. Frailty does not have an agreed definition [2] leading to various types of frailty scores, such as Frailty Index (FI), Clinical Frailty Scale (CFS), Edmonton Frailty Scale (EFS), etc, measuring frailty from different aspects. Frailty is also age-related and multi-factorial, which makes it problematic and costly to develop and test a new intervention. **Methods:** We try to find out the relationships between frailty and other health features such as age, BMI, grip strength, activity of daily living (ADL), etc, with statistical modelling methods. To do this, we fit Bayesian Generalised Linear Models (GLMs) for every domain of data and then ensemble them together with Bayesian Model Averaging (BMA). BMA, considering model uncertainty, gives every single GLM a weight, reflecting how well the model explains the data and how much it contributes to the final prediction. Having those weights, we are able to find out if a certain domain is relevant or not and these results will help accelerate the process of testing new therapies and interventions on frailty in clinical trials. **Results:** NEADL (Nottingham Extended Activity of Daily Living) is a good

indicator of frailty with the higher the value, the lower the eFI (electronic frailty index). But different sex and ethnicity groups provide different negative effects (-0.34 and -0.25 for female and male, respectively; -0.34 and -0.09 for white and non-white, respectively). Over the top 30 models compared by Bayesian Model Averaging, 100% of the models have positive estimate for falls and negative estimate for NEADL and EQ5D5L; 73% of the models have positive estimate for BMI; 70% of the models have negative estimate for grip strength. **Conclusion:** By using Bayesian Model Averaging, we are able to rank the models we assessed. The similarities found among top-ranked models can give insight to how some health features such as NEADL, BMA, grip strength, etc, relate to frailty and others are less relevant. By knowing this information, we are able to shorten the process of developing a frailty intervention in clinical trials by getting rid of those features irrelevant and focussing on those that have close relationships. **Keywords:** Frailty, Bayesian Model Averaging, Generalised Linear Models, clinical trials **Disclosure:** Ziqian's PhD project is funded by Dunhill Medical Trust and Healthy Lifespan Institute. All authors declare no competing interest. **References:** 1.Rockwood, K., Mitnitski, A., Song, X., Steen, B., and Skoog, I. Long-term risks of death and institutionalization of elderly people in relation to deficit accumulation at age 70. Journal of the American Geriatrics Society 54, 6 (2006), 975–979. 2. Fried, L. P., Tangen, C. M., Walston, J., Newman, A. B., Hirsch, C., Gottdiener, J., Seeman, T., Tracy, R., Kop, W. J., Burke, G., and McBurnie, M. A. Frailty in older adults: evidence for a phenotype. J Gerontol A Biol Sci Med Sci 56, 3 (2001), M146–56.

P11- FRAILTY DETERMINANTS IN HEART FAILURE: ANALYSIS OF INFLAMMATORY MARKERS, COGNITIVE IMPAIRMENT, AND PSYCHOSOCIAL INTERACTION. M. Wleklik[1], C.S. Lee[2], L. Lewanowski[3], M. Czapla[4], M. Jedrzejczyk[1], H. Aldossary[5], I. Uchmanowicz[6] *((1) Division Of Research Methodology, Department Of Nursing, Faculty Of Nursing And Midwifery, Wroclaw Medical University - Wroclaw (Poland), (2) Boston College William F. Connell School Of Nursing - Massachusetts (United States), (3) Wroclaw Medical University, Department Of Medical Biochemistry - Wroclaw (Poland), (4) Department Division Of Scientific Research And Innovation In Emergency Medical Service, Department Of Emergency Medical Service, Faculty Of Nursing And Midwifery - Wroclaw (Poland), (5) Prince Sultan Military College Of Health Sciences, Dhahran (Saudi Arabia), (6) Division Of Research Methodology, Department Of Nursing, Faculty Of Nursing And Midwifery, Wroclaw Medical University, - Wroclaw (Poland))*

Background: Frailty syndrome (FS) is common among patients with heart failure (HF), leading to worse clinical outcomes, including higher rates of disability, hospitalization, and mortality. Considering the complex nature of frailty and its significant impact on HF patients, this study aims to investigate the factors contributing to frailty in HF. Identifying modifiable risk factors is crucial for prevention and treatment strategies in this patient population. **Methods:** The study included 250 patients with heart failure (HF) aged 60 and older who were admitted to the cardiology department due to acute decompensated HF. We assessed frailty using the Fried criteria and examined relationships with various demographic, biochemical, and clinical factors, including CRP, NT-proBNP, hemoglobin (HGB), estimated glomerular filtration rate (eGFR), systolic blood pressure (SBP), treatment adherence and comorbid conditions such as depression and cognitive impairment. **Results:** Frailty was significantly associated with older age, elevated CRP and NT-proBNP levels, and reduced HGB, eGFR, and SBP. Frail patients had higher risks of malnutrition, depression, cognitive impairment, and diabetes compared to those at risk of frailty. Each 10% increase in CRP raised the risk of frailty by 5%, adjusted for cognitive status, BMI, or compliance. Patients with cognitive impairment had a 2.113-fold higher risk of frailty, while high compliance reduced this risk by 78.89%. Interaction analysis revealed that higher BMI mitigated cognitive impairment's impact on frailty, while the absence of depression reduced frailty risk even in cases of central obesity. **Conclusion:** Our results highlight the complexity of frailty in patients with HF. Interactions between CRP levels, cognitive impairment, BMI, depression, adherence and central obesity highlight the multidimensional nature of frailty and the importance of both physical and mental health. Identification of modifiable risk factors for frailty is essential for managing the therapeutic process. Early intervention targeting CRP levels, depression and cognitive function can significantly reduce frailty risk and improve outcomes in patients with HF. **Keywords:** Frailty, heart failure, cognitive impairment, compliance, CRP.

P12- IMPLEMENTATION AND OUTCOMES OF A STRUCTURED FRAILTY EDUCATION PROGRAM FOR HEALTHCARE PROFESSIONALS IN A TERTIARY HOSPITAL IN SINGAPORE. G.S. Kaur[1], B.H. Rosario[1], C.Y. Chen[1], F. Li[2] *((1) Department Of Geriatric Medicine, Changi General Hospital - Singapore (Singapore), (2) Department Of Nursing, Changi General Hospital - Singapore (Singapore))*

Background: Singapore has an aging population, with 1 in 4 seniors projected to be aged above 65 years old by 2030 [1]. Frailty among older people is prevalent with 30% pre-frail and 5% frail [1]. This number is expected to rise as the population ages. Frailty knowledge and awareness among healthcare professionals is lacking, as evident from our Ministry of Health Frailty Strategy Report [1]. This highlights the need for frailty education. In the literature, modes of frailty education are variable – from individual teaching to group setting, in-person mode versus virtual learning [2, 3, 4]. To address this issue, we established a dedicated team of healthcare professionals to develop online learning materials for frailty in our hospital. **Methodology:** We used blended learning as a form of education delivery for self-directed learning. Blended learning consisted of online learning as well as attending in-person frailty education talks. Content development was done with expert input from geriatricians

and a multi-disciplinary team of allied health professionals. Case studies were developed to illustrate how to practically perform frailty scoring and plan and implement appropriate frailty interventions. This content was then uploaded onto the institutional online learning portal and healthcare professionals were enrolled into the course. Pre and post course quizzes were designed to gauge the learners' knowledge acquisition. Frailty talks were also delivered in-person to an audience of clinicians and allied health professionals. Frailty education was rolled out to the following departments in phases- Geriatric Medicine, Rehabilitation Medicine, Accident & Emergency (A&E), Anesthesia (ANA), Internal Medicine (Int Med), Medical Social Workers (MSW), Speech Therapists (ST), and the Clinical Trials and Research Unit (CTRU). **Results:** To assess the need for frailty education around the hospital, we undertook a survey among hospital staff. The survey revealed that 40% of staff were unsure what frailty was and 75% of staff were unfamiliar with using the Clinical Frailty Scale (CFS) [5, 6] to score frailty. A total of 287 staff were enrolled into the online learning course from December 2022. The following data was extracted and analyzed- percentage of staff who completed the online learning, baseline knowledge of frailty and pre and post frailty education quiz scores. An average of 66% of all enrolled staff completed the online learning, with an average of 44% to 100% of staff from various departments who completed it. Based on pre-frailty education quiz scores, baseline frailty knowledge ranged between 42% to 68% amongst the different departments. All departments showed an overall significant increase in post frailty education quiz scores, with post quiz scores ranging from 77.5% to 91.8 %, achieving statistical significance (p-value <0.05). **Conclusion:** Frailty education delivery is a much-researched topic in current times. Our innovative manner of blended learning helped to deliver knowledge and awareness on frailty which was effective and scalable. Improvements in post quiz scores showed significant acquisition of frailty knowledge. There are plans underway to spread this knowledge to more clinical departments in our hospital and other hospitals within our healthcare cluster. This would support efforts to make our tertiary hospital frailty ready. **Keywords:** Frailty, older adults, education, training. **Disclosures:** None. **References:** 1. Ministry of Health Frailty Strategy Report 2023, Singapore. https://www.moh.gov.sg/docs/librariesprovider5/resources-statistics/reports/moh-frailty-strategy-policy-report.pdf?sfvrsn=2dae338b_2. 2. Warren, Nicola et al. "A systematic review of frailty education programs for health care professionals." Australasian journal on ageing vol. 41,4 (2022): e310-e319. doi:10.1111/ajag.13096. 3. Winter, R, and G M E Pearson. "Exploring the Challenges of Frailty in Medical Education." The Journal of frailty & aging vol. 12,2 (2023): 134-138. doi:10.14283/jfa.2023.12. 4. Iriana S. Hammel, Elizabeth N. Chapman. «Frailty training among healthcare professionals» The Journal of nutrition, health and aging, Volume 28, Issue 6, 2024. https://doi.org/10.1016/j.jnha.2024.100258. 5. Rockwood, Kenneth et al. "A global clinical measure of fitness and frailty in elderly people." CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne vol. 173,5 (2005): 489-95. doi:10.1503/cmaj.050051. 6. Clinical Frailty Scale: https://www.dal.ca/sites/gmr/our-tools/clinical-frailty-scale.html.

P13- SARCOPENIA. IN PURSUIT OF PROGRESS. E. Ward[1], A. Mander[2] *((1) Liberty Menopause Care - Manchester (United Kingdom), (2) Nuffield Health - Oxford (United Kingdom))*

Sarcopenia is the loss of muscle strength and muscle mass, a Greek term literally meaning "poverty of the flesh". Akin to the disease process that is osteopenia in bone, sarcopenia may be more helpfully thought of as as "thinning" of the muscles. There are multiple risk factors for this condition but the main one is something we cannot avoid - the ageing process itself. Sequelae of sarcopenia include frailty, falls, osteoporosis, increased fracture risk, loss of independence and disability in addition to increased risk of development of cardio metabolic disease diabetes and all cause mortality. Financially, the excess annual costs of sarcopenia in the UK are estimated at £2.5 billion for the provision of health and social care. Resistance exercise and adequate protein intake improve outcomes and reduce loss of muscle mass and strength in older adults. However, resistance exercise in particular is undertaken only by a minority of the general population. The challenge remains to raise awareness of its unique benefits and increase accessibility, taking both time and significant investment. Clinicians keen to improve outcomes today for their patients can be encouraged by evidence of a much more simplistic and achievable intervention; by reducing sedentary behaviour in the more accessible form of walking and increasing daily step count improves measures of sarcopenia. We argue this ought to be encouraged at every clinical opportunity, as would be done for smoking cessation. Sarcopenia is a disease process developing over a lifetime, along which are many opportunities for intervention. This is of particular importance with regards to girls and women considering reduced uptake of exercise compared to males and the sudden change in hormone levels and body composition that accompany the menopause transition. There is much to be done to raise awareness both amongst clinicians and the wider public. Timely identification, diagnosis and management of sarcopenia is imperative for retaining independence into older age and elongating healthspan. This is in addition to reducing the financial burden of this disease alongside the mounting costs of an ageing population. These interventions are essential for the health of the nation and Social Care System.

P14- PROGNOSTIC SIGNIFICANCE OF FRAILTY INDICES FOR OLDER VETERANS DISCHARGED FROM A GERIATRIC REHABILITATION AND RECUPERATIVE CARE UNIT. H. Keller[1], P. Roberson[1,2], B. Dawson[1], R. Dennis[1], L. Johnson[1,2], D. Sullivan[1,2] *((1) Central Arkansas Veterans Healthcare System - Little Rock (United States), (2) University Of Arkansas For Medical Sciences - Little Rock (United States))*

Background: Tools providing insight into a patient's prognosis can help with clinical decision making regarding

alternative therapies. The utility of such tools for patients discharged from a geriatric rehabilitation and recuperative care unit (GRU) is unclear. This project aimed to determine whether two commonly used frailty indices, the Risk Analysis Index (RAI) or VA Frailty Index (VA-FI) [1, 2], could predict relative risk of mortality in 413 older Veterans discharged from a GRU located within a Department of Veterans Affairs hospital [3]. RAI and VA-FI are both easy to calculate; the RAI uses data from a very short clinically administered questionnaire, and VA-FI can be automatically generated from administrative data extracted from the electronic health record. **Methods:** Older Veterans completed a comprehensive discharge assessment and were then tracked for at least ten years. RAI and VA-FI at discharge were retrospectively calculated for each older Veteran and then examined as predictors of survival using two Cox regressions, controlling for age. Prior to analysis, age was split into four groups (64-74, 75-79, 80-84; 85+); RAI and VA-FI were each split into two groups based on clinical cutoffs and examination of Kaplan-Meier curves. Model performance was assessed using Harrell's concordance index (C), and model equivalence was evaluated using a partial likelihood ratio test. Significance was defined as α=0.05. **Results:** At discharge from the GRU, the (n=413) older Veterans were free of metastatic cancer or other terminal illness, aged 78.6±7.6 years, and primarily white (88%) and male (98%). At time of analysis, 26 (6%) of the older Veterans were still alive. Cox regressions showed both RAI and VA-FI were significant predictors of relative risk after accounting for age. In particular, older Veterans with RAI of 16 or higher (n=250) were at greater risk (HR: 1.92; 95% CI: 1.55, 2.38) compared to those with RAI of 15 or less, and older Veterans who were classified by VA-FI as mildly to severely frail (n=271) were at greater risk (HR: 1.46; 95% CI: 1.12, 1.89) compared to those classified as non- or pre-frail. Both models demonstrated decent predictive performance, with C=0.63 for the model including RAI and C=0.58 for the model including VA-FI. A partial likelihood ratio test indicated that the model with RAI and age may be better for predicting risk compared to the model with VA-FI and age (p=0.0299). **Conclusion:** Our results indicate that RAI and VA-FI can add clinically and statistically significant information to prognosticate survival in patients discharged from a GRU. Importantly, both indices are low-cost tools as they can be easily calculated from a simple survey (RAI) or from administrative data (VA-FI). **Keywords:** Frailty index, long-term survival, geriatric rehabilitation and recuperative care. **Disclosures:** Work supported by a grant from the Veterans Affairs Health Systems Research service (VA HSR). **References:** 1. Hall DE, et al. JAMA Surg 2017; 152 (2): 175-182. https://doi.org/10.1001/jamasurg.2016.4202. 2. Orkaby AR, et al. J Gerontol A Biol Sci Med Sci 2019; 74 (8): 1257-1264. https://doi.org/10.1093/gerona/gly232. 3. Sullivan DH, et al. J Nutr Health Aging 2018; 22 (7): 759-765. https://doi.org/10.1007/s12603-018-1065-x.

P15- FRAILTY SYNDROME IDENTIFICATION THROUGH DIFFERENT FRAILTY CUT-POINTS CRITERIA, USING GPCOG COGNITIVE TEST AND BODY COMPOSITION FROM THE ULTRASONOGRAPHY AND BIOIMPEDANCE IN PRIMARY CARE SERVICE IN SOUTHERN SPAIN. A CROSS-SECTIONAL STUDY.

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Background: Older adults often experience a simultaneous decline in physical and cognitive abilities [1]. "Cognitive frailty" refers to this dual decline without dementia [2]. Assessing cognitive decline can help identify older adults at risk frailty, allowing for early interventions to improve outcomes [1]. **Methods:** This cross-sectional study involved 94 participants (75.2±2.9 years, 55% women) from primary care service San Miguel, Torremolinos, Málaga, Spain. Frailty was determined using cut-points for Short Physical Performance Battery (SPPB) [3] and Handgrip strength (HG) [4] as described in previous researches. Cognitive performance was evaluated using General Practitioner Assessment of Cognition (GPCOG). Logistic regression models were fitted to the data to predict the probability of frailty, using SPPB and HG as the outcome variable, with GPCOG as predictor in all models and combination of whole-body phase angle (WBPhA) measured with electrical bioimpedance and rectus femoris thickness measured with ultrasound (US) as second independent variable. **Results:** Frailty prevalence in total sample was higher using HG (25.5%, 41.7% women) compared to SPPB (19.2%, 61.1% women) criteria. Four logistic regressions were performed. The SPPB frailty models demonstrated a moderate fit to data (Nagelkerke R2 0.337 – GPCOG/WBPhA and 0.354 – GPCOG/US). In both models higher GPCOG (OR=0.586, 95%CI: 0.392-0.876) and WBPhA (OR=0.188, 95%CI: 0.048-0.739) scores, in the first model, and GPCOG (OR=0.622; 95%CI: 0.427-0.906) and US (OR=0.011, 95%CI: 0.001-0.217), in the second one, were significantly associated with reduced odds of frailty. Both models showed excellent discrimination (AUC: 0.822, 0.837) between frail and non-frail individuals. Both models showed strong performance in identifying negative cases (specificity: 0.972, 0.961) but limited

ability to detect all positive cases (sensitivity: 0.375, 0.389). The HG frailty models showed lower fit to the data (Nagelkerke R2 0.193 – GPCOG/WBPhA and 0.176 – GPCOG/US). In both models higher GPCOG (OR=0.708, 95%CI: 0.500-1.003) and WBPhA (OR=0.332, 95%CI: 0.115-0.959) score, in the first model, and GPCOG (OR=0.713; 95%CI: 0.518-0.980) and US (OR=0.118, 95%CI: 0.017-0.843), in the second one, were significantly associated with reduced odds of frailty. Both models showed good discrimination (AUC: 0.743, 0.713) between frail and non-frail individuals. Both models showed good performance in identifying negative cases (specificity: 0.955, 0.943) but limited ability to detect all positive cases (sensitivity: 0.238, 0.250). **Conclusion:** Results showed that cognitive performance together with rectus femoris thickness and whole-body angle are significantly associated with a lower likelihood of frailty when determined with SPPB or handgrip strength frailty criteria. The model combining GPCOG with different body composition measurement (WBPhA and US) demonstrated similar performance in discriminating between frail and non-frail individuals. However, all models exhibited limited sensitivity, suggesting that they may miss some cases of frailty. Overall, the findings indicate that a combination of these factors could improve the prediction of frailty in primary health care services, although further research is needed to confirm these results in larger and more diverse populations. **Keywords:** Frailty, cognitive frailty, body composition, health care service, prevention. **Ethics Committee:** Costa del Sol Assistential Ethics Committee (registered study number: BON22): https://www.bioetica-andalucia.es/3-comites-de-etica/3-5-comites-etica-asistenciales-ceas/3-5-4-mapa-de-los-ceas/malaga-costa-del-sol-comite-de-etica-asistencial-de-andalucia/. **Disclosures:** The authors declared no competing interests. **References:** 1. Lundgren, P et al. J. Clin. Med. 2024, 13, 2415. https://doi.org/10.3390/jcm13082415. 2. Karanth S et al. Gerontology. 2024;70(1):48-58. doi: 10.1159/000533919. 3. Ramírez-Vélez R et al. J Nutr Health Aging. 2021;25(2):209-217. doi: 10.1007/s12603-020-1484-3. 4. Sallinen J et al. J Am Geriatr Soc. 2010 Sep;58(9):1721-6. doi: 10.1111/j.1532-5415.2010.03035.x.

P16- OSTEOSARCOPENIA IN HIP FRACTURE PATIENTS – IDENTIFYING THE RISK FACTORS.

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Introduction: Hip fractures are one of the most serious forms of osteoporotic fractures. Osteosarcopenia is a growing geriatric giant characterized by osteopenia/osteoporosis with sarcopenia, which can lead to falls, fractures, disability and mortality. The aims of this study were to determine the prevalence and risk factors of osteosarcopenia amongst Chinese hip fracture patients. **Methodology:** Elderly hip fracture patients were recruited and underwent dual energy x-ray absorptiometry (DXA) to assess bone mineral density. The Asian Working Group for Sarcopenia (AWGS) 2019 consensus was used to assess for sarcopenia. Bioimpedance analysis (BIA) was used to determine appendicular skeletal muscle mass, hand dynamometer was used to determine grip strength and 5-time chair stand test was used to determine physical performance. Logistic regression was performed for risk and protective factors analysis. **Results:** As of now, 300 hip fracture patients (n=300) have been recruited. Osteosarcopenia was present in 80% of patients. The diagnosis of osteopenia/osteoporosis was present in 98.7% of patients. Sarcopenia was present in 82% of patients. Age, BMI < 23 kg/m^2 and Male gender (all p<0.05) were associated with osteosarcopenia. **Conclusion:** Our study has shown a very high prevalence of osteosarcopenia amongst hip fracture patients, and identified risk factors. Given the potential clinical implications, we would recommend the consideration of routine sarcopenia assessment and treatment to be incorporated into Fracture Liaison Services. **Keywords:** Hip fracture, osteosarcopenia, risk factors. **Funding:** Funded by the General Research Fund, Research Grants Council (Ref: 14116223). **References:** 1. Kirk B, Zanker J, Duque G. Osteosarcopenia: epidemiology, diagnosis, and treatment-facts and numbers. J Cachexia Sarcopenia Muscle. 2020 Jun;11(3):609-618. doi: 10.1002/jcsm.12567. 2. Wong RMY, Cheung WH, Chow SKH, Ng RWK, Li W, Hsu AY, Wong KK, Ho AW, Choi SH, Fang CX, Chan CF, Leung KH, Chu KK, Kwok TCY, Yang MH, Tian M, Law SW. Recommendations on the post-acute management of the osteoporotic fracture - Patients with «very-high» Re-fracture risk. J Orthop Translat. 2022 Oct 10;37:94-99.

P17- FRAILTY INDEX IS USEFUL FOR PREDICTING POSTOPERATIVE MORBIDITY IN ELDERLY PATIENTS UNDERGOING COLORECTAL SURGERY: A PROSPECTIVE COHORT STUDY.

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Background: Many assessment tools have been used to identify frail surgical patients. This study was designed to explore the prediction value of the frailty index (FI) for postoperative morbidity in elderly patients undergoing elective colorectal surgery. **Methods:** Between September 2022 and June 2024, we conducted a prospective study in our hospital, and patients aged over 65 years were enrolled. The FI assessment was conducted by two specialist nurses based on the 38-item scale [1], and patients were considered frail if the FI score was ≥0.25. The primary outcome was 30-day postoperative morbidity. Univariable and multivariable analyses were used to find the risk factors related to postoperative morbidity. **Results:** A total of 276 consecutive patients were enrolled, for whom the median age was 72.0 [interquartile range (IQR): 67.0-77.0] years old, and 197 (71.4%) were male. Of these, 53 (19.2%) were frail. Patients with frailty were associated with older age (p<0.001), higher American Society of Anesthesiologists (ASA) grade (p=0.006), lower body mass index (p=0.001), lower albumin (p=0.003) and haemoglobin

(p<0.001) levels, increased blood loss (p=0.034), increased risk of postoperative morbidity (p<0.001), increased median length of stay (p=0.017), and increased median postoperative hospital stay (p=0.003). Multivariable analysis revealed that ASA grade [odds ratio (OR): 2.59, 95% confidence interval (CI): 1.19-5.64, p=0.016], FI score (OR:7.68, 95% CI: 3.19-18.48, p<0.001) and surgical complexity (OR: 22.83, 95% CI: 5.46-95.51, p<0.001) were independent predictors of 30-day postoperative morbidity. However, for patients with low rectal cancer surgery, FI score was the only independent predictor (OR: 8.67, 95% CI: 3.23-23.25, p<0.001). **Conclusion:** Frailty was associated with adverse perioperative outcomes, and the 38-item FI scale was a useful frailty screening tool for elderly patients undergoing elective colorectal surgery. For patients with low rectal cancer surgery, frailty was a more reliable predictor of postoperative 30-day morbidity than age and ASA grade. **Keywords:** Elderly patients, frailty index, colorectal surgery, postoperative morbidity. **Disclosures:** The authors declared no competing interests. **Reference:** 1. van Munster BC, et al. Discriminative value of frailty screening instruments in end-stage renal disease. Clin Kidney J. 2016 Aug;9(4):606-10. doi: 10.1093/ckj/sfw061.

P18- CASE STUDY – MANAGEMENT OF AMIODARONE-INDUCED THYROID DYSFUNCTION IN LONG TERM CARE PATIENT WITH DEMENTIA.

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Pharmacodynamic and pharmacokinetic changes in geriatric population warrant a stepwise, patient-focused and interdisciplinary approach for management with potent, class III anti-arrhythmic Amiodarone by reviewing 1) benefits of cardiac tachyarrhythmia treatment, 2) risks of adverse drug events (ADE) i.e. pulmonary, hepatic and thyroid dysfunctions, 3) alternative treatment option(s) with consultation [1]. 81 years old African American female with history of stroke with vascular dementia, non-ST-elevation myocardial infarction (NSTEMI) and Atrial Fibrillation residing in long term care (LTC) was transferred via 911 for intractable supraventricular tachycardia (SVT) stabilized with Amiodarone treatment. The peak level of Thyroid Stimulation Hormone (TSH) 36.67 (reference range 0.35-4.0) reflexed the initiation of Levothyroxine for ADE Amiodarone-induced hypothyroidism, albeit thyrotoxicosis can also result [2]. Countering the prescribing cascade and polypharmacy, gradual uptitration of Levothyroxine and weaning of Amiodarone resulted in the nadir level of TSH 8.19 (reference range 0.35-4.0)2. Virtual consultation with Cardiology and Endocrinology Teams provided alternative management options with recommendations 1) taper off Amiodarone, 2) substitute with beta-blocker Bisoprolol for heart rate control, and 3) continue Levothyroxine trending thyroid function tests. Further interdisciplinary research in vulnerable, older patients in LTC settings is essential to align the benefits, risks and alternative management option(s) of acute and chronic disease with fundamental geroscience principles, including continuous medication reconciliation, shared decision-making, and advance life care planning. **References:** 1. Basaria S, Cooper DS. Amiodarone and the thyroid. Am J Med. 2005;118(7):706-714. doi:10.1016/j.amjmed.2004.11.028. 2. Danzi S, Klein I. Amiodarone-induced thyroid dysfunction. J Intensive Care Med. 2015;30(4):179-185. doi:10.1177/0885066613503278

P19- RELATIONSHIP BETWEEN LOWER LIMB RELATIVE MUSCLE POWER, PHYSICAL FUNCTION, BODY COMPOSITION AND CHRONIC DISEASE IN OLDER ADULTS FROM PRIMARY HEALTH CARE IN SOUTHERN OF SPAIN. A CROSS-SECTIONAL STUDY.

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Background: Frailty is a multifactor geriatric syndrome and depends on several factors like genetic, cumulative environmental impact, nutrition, lifestyle choices, physiological changes in aging, psychological factors, chronic disease [1]. Body composition parameters are used to diagnose sarcopenia and nutritional status [2]. Low Relative Muscle Power (RMP, muscle power calculated with the 5-repetition sit-to-stand (5STS) normalized to body mass) has been associated with a more than fourfold increase in the risk of frailty [3]. **Methods:** This cross-sectional study includes 94 participants (75.2±2.9 years, 55% women) from primary health care unit San Miguel, Torremolinos, Málaga, Spain. RMP was calculated as frailty indicator, using a specific algorithm (3). Rectus femoris thickness was measured with ultrasound (US) performed by one single operator. Skeletal Muscle Mass Index (SMI) was determined with electrical bioimpedance (Inbody770). Chronic diseases status was defined by the number of drugs intake (FARMA). Physical performance was determined as walking at a usual pace (WALK4m) and handgrip strength was measure. Pearson´s correlations and multiple linear regression models were analysed, and a large variety of independent variable were added in stepwise mode to define the best associations. **Results:** In total sample the 24,5% (65.2% women) were classified as frail by RMP (3). Men had higher RMP levels (3.0±0.8 WKg-1 vs 2.3±0.7 WKg-1). Strong and moderate correlations were observed between RMP and gait speed (r = 0.693), time to walk 4m distance (WALK4m) (r = 0.644), handgrip strength (r = 0.575), US (r = 0.476), WBPhA (r = 0.474), drugs intake (r = 0.452), SMI (r = 0.387), height (r = 0.374), GPCOG (r = 0.331) (all p<0.01) and weight (0.22, p=0.033). A stepwise linear regression model was analysed using all significant

covariates. Variables directly related to RMP calculation were excluded from models (SPPB and 5STS test). The strongest model (R^2 = 0.592, p<0.001) showed associations between RMP with gait speed (beta 0.505, p<0.001), handgrip (beta 0.269, p=0.001) and US (beta 0.186, p=0.022). A second linear regression model was analysed using body composition and drugs intake as main independent variables, adding all other significant variables in a stepwise way. The strongest model (R^2 = 0.574, p<0.001) showed associations between RMP and WALK4m (beta -0.423, p<0.001), SMI (beta 0.247, p=0.001), US (beta 0.240, p=0.003) and drugs intake (-0.213, p=0.009). **Conclusion:** Our findings, based on a cross-sectional study, indicate that RMP is a strong association of frailty in the elderly. Multiple factors, such as muscle mass, body composition, and medication use, significantly influence frailty. These results underscore the importance of multifaceted interventions for preventing and managing frailty. While this cross-sectional study provides valuable insights, longitudinal studies are needed to further explore the temporal relationship between these factors and the progression of frailty. **Keywords:** Frailty, body composition, chronic disease, primary health care. **Ethics Commitee:** Costa del Sol Assistential Ethics Committee (registered study number: BON22): https://www.bioetica-andalucia.es/3-comites-de-etica/3-5-comites-etica-asistenciales-ceas/3-5-4-mapa-de-los-ceas/malaga-costa-del-sol-comite-de-etica-asistencial-de-andalucia/. **Disclosures:** The authors declared no competing interests. **References:** 1. Eslami M et al. J Diabetes Metab Disord. 2023 Dec 26;23(1):967-976. doi: 10.1007/s40200-023-01373-4. 2. The professional's guide to the inbody result sheet - https://uk.inbody.com/about-inbody/result-sheet-interpretation/. 3. Losa-Reyna J et al. Exp Gerontol. 2020 ;142:111141. doi: 10.1016/j.exger.2020.111141.

P20- IDENTIFICATION OF FRAIL OLDER ADULTS USING ICOPE WHO STEP 1 SCREENING TOOL.

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Background: ICOPE program is a recommendation from the World Health Organization to prevent functional decline. It is carried out in five steps, including Step 1 screener, Step 2 comprehensive assessment in case of anomalies detected in Step 1, and Step 3, which is a prevention plan. In order to meet this evaluation, need and given the constraints of HCP, it is important to specify which older people are most at risk of decline (frail people). **Objective:** to assess if ICOPE WHO step 1 can segregate frail older adults from none frail in primary care setting. **Method:** This cross-sectional study concerned participants registered on the ICOPE MONITOR platform of the Toulouse University Hospital. The results from Step 1, which help identify participants most at risk of frailty, were selected through regression analysis followed by a Classification and Regression Trees approach. **Results:** frailty is associated with mobility alert alone (84.7%), nutrition alert alone (88.9%) and with the two associated (96.7%). For the oldest participants (over 76 years), a psychology alert was also strongly associated with frailty (63.9%). **Discussion:** This study allows HCP to prioritize participants with impaired mobility and/or nutrition at step 1 for the next steps in ICOPE program. This approach addresses the needs of participants by providing the appropriate response to the right clinical profile and facilitates the deployment of ICOPE in the community.

P21- EFFECT OF INFECTIONS AND GENETIC/EPIGENETIC FACTORS ON FRAILTY TRAJECTORIES IN HOSPITALIZED OLDER PATIENTS: PROTOCOL OF A MULTICENTER OBSERVATIONAL STUDY.

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Infectious diseases are among the most common causes of hospitalization in older adults. Recent data report that more than 15% of hospital admissions in adults aged 65 years or older are due to infections, mainly in the urinary and respiratory tracts. Frailty is a well-known geriatric syndrome characterized by reduced individual resilience and increased vulnerability to external stressors. The prevalence of frailty ranges from around 10% in the community setting to almost 50% among institutionalized individuals. Although both infectious diseases and frailty are associated with negative outcomes for older patients and the healthcare system, their interplay has not been largely explored. In particular, it is not clear whether and to which extent acute infections might fasten frailty development or hamper its reversion. The overall goal of the proposed project is to evaluate the impact of acute infections on frailty trajectories in older inpatients from the pre-admission status to 3 months after hospital discharge. Moreover, a comprehensive set of sociodemographic, clinical, functional, and genetic/epigenetic factors will be assessed as possible effect modifiers in the association between infections and frailty trajectories. To reach this aim, we will conduct a multicenter prospective observational study in four geriatric wards (Ferrara, Padova, Milano, and Napoli) involving individuals with no or mild-to-moderate frailty two weeks before hospital admission, retrospectively assessed considering a Clinical Frailty Scale score <6. The presence of infectious disease will be recorded based on the corresponding ICD-9 codes. All enrolled patients will undergo multidimensional geriatric assessment, and estimation of Frailty Index at enrolment and at hospital discharge. We expect to observe a significant worsening in status during the hospitalization and after 3 months from discharge. Moreover, we hypothesize to find genetic/epigenetic factors (e.g. global DNA methylation and telomere length) modulating the extent to which infections impact on frailty

status and other health-related outcomes (e.g. re-hospitalization, mortality) over the observation period. Indeed, the analysis of genetic and epigenetic factors will allow us to explore the complex pathophysiologic mechanisms of frailty development using a translational approach, comprising both basic science and clinical research. Moreover, to evaluate possible biological correlates of frailty, we will assess biomarkers of systemic inflammation. We expect higher circulating inflammatory markers to be associated with worse frailty trajectories over time. Overall, this study will help better identify at-risk conditions that may accelerate the course of frailty. Therefore, the project findings may promote the importance of interventions that could counteract frailty development during the hospital stay and should be addressed primarily to the categories of patients at highest risk. Clinicaltrial.gov reg. n.: NCT06430073

P22- INVESTIGATING FRAILTY AND COMORBIDITY IN OLDER ADULTS WITH CHRONIC LEG ULCERS: A CROSS-SECTIONAL STUDY. B.D. Duluklu[1], J.I. Ivory[2], A.M.E. Mcelvaney[2], A.B. Bligh[2], M.C. Cahill-Collins[3], G.G. Gethin[2], A.L. Liew[4], D.S. Sezgin[2] *((1) Faculty Of Nursing, Hacettepe University - Ankara (Turkey), (2) School Of Nursing And Midwifery, University Of Galway - Galway (Ireland), (3) Health Service Executive - Galway (Ireland), (4) School Of Medicine, University Of Galway - Galway (Ireland))*

Background: Frailty is part of the ageing process that is associated with a progressive decline in multiple systems [1, 2]. Frailty can be prevented or reversed if detected early [3, 4]. Chronic diseases such as cardiovascular diseases and diabetes contribute to the frailty severity [5-7]. Diabetes and comorbidities such as vascular diseases lead to impairment in the inflammation process and affect the wound healing process [8-11]. Chronic leg ulcers (CLUs), just like frailty, cause a decrease in the quality of life and functional capacity of older people [12, 13]. There is a need to understand the connection between CLUs, comorbidities, and frailty to inform care planning to improve the care outcomes and quality of life of older people. [13]. Therefore, the primary aim of this study was to explore the associations between frailty, pre-frailty and CLU, diabetes, and other factors considering physical and multidimensional aspects of frailty. **Methods:** This is a descriptive, cross-sectional study. One hundred and twenty-five participants aged 65 years and over were recruited from outpatient clinics of three hospitals in Ireland. Participants were recruited and categorised into three groups: those with [1] diabetes-only and no CLU; [2] CLU-only and no diabetes; [3] diabetes and CLU together. Multidimensional identification of frailty was conducted using the Groningen Frailty Indicator (GFI) while the five criteria of the Physical Frailty Phenotype (PFP) were used to assess physical frailty. The data was analysed using the SPSS. **Results:** The mean age of the 125 participants was 76.09 years (SD = 7.31). Ninety (72%) had diabetes and 89 (71.2%) had a CLU (regardless of other comorbidities) in the past six months. When the frailty status of the overall sample was analysed, 124 (99.2%) were frail according to the GFI, 122 (97.6%) were either physically frail (n=40, 32%) or pre-frail (n=82, 65.6%) according to the PFP. There was no difference between the three groups in terms of general frailty status based on both tools ($p>0.05$). The linear regression model showed that being aged 75 years or older (PFP), having a CLU (PFP), and having CLU in addition to diabetes (GFI and PFP) were associated with increased frailty severity ($p<0.05$). In terms of comorbidities and other individual factors contributing to frailty, cardiovascular diseases, vascular/lymphatic system diseases and being 75 years of age or older were associated with increased severity of frailty ($p<0.05$). It was also found that slow gait and inability to go to the toilet or dress/undress independently were the most frequent factors contributing to the frailty status in older adults who had diabetes and CLUs together. **Conclusion:** Being older, having comorbidities and CLUs are associated with frailty severity. Incorporation of frailty screening into regular outpatient wound care clinics for older adults is recommended. Supporting the individual needs of older adults with CLUs could contribute to delaying the progression of frailty and help manage comorbidities. **Keywords:** Chronic leg ulcers, comorbidities, diabetes, diabetic foot ulcers, frailty, pre-frailty. **Disclosures:** Duygu Sezgin received funding from the European Wound Management Association (EWMA) and the University of Galway School of Nursing and Midwifery to conduct this study. The authors declared no competing interest. **References:** 1. McGuigan FE, Bartosch P, Åkesson KE. Musculoskeletal Health and Frailty. Best Pract Res Clin Rheumatol 2017;31(2):145-59. 2. Liu P, Li Y, Zhang Y, Mesbah SE, Ji T, Ma L. Frailty and Hypertension in Older Adults: Current Understanding and Future Perspectives. Hypertension Research m2020;43(12):1352-60. 3. Welstead M, Jenkins ND, Russ TC, Luciano M, Muniz-Terrera G. A Systematic Review of Frailty Trajectories: Their Shape and Influencing Factors. Gerontologist 2021;61(8):463-75. 4. Sezgin D, O'Donovan M, Woo J, Bandeen-Roche K, Liotta G, Fairhall N, ... & O'Caoimh R. Early identification of frailty: Developing an international delphi consensus on pre-frailty. Arch Gerontol Geriatr 2022;99:104586. 5. Fulop T, Larbi A, Witkowski JM, McElhaney J, Loeb M, Mitnitski A, Pawelec G. Aging, frailty and age-related diseases. Biogerontology 2010;11:547-563. 6. O'Caoimh R, Sezgin D, O'Donovan M., Molloy DW, Clegg A, Rockwood K, Liew A. Prevalence of frailty in 62 countries across the world: a systematic review and meta-analysis of population-level studies. Age ageing 2021;50(1):96-104. 7. O'Donovan M, Sezgin D, O'Caoimh R, Liew A. The relationship between frailty and diabetes: an investigation of self-rated health, depression symptoms and quality of life in the Study of Health Aging and Retirement in Europe. Arch Gerontol Geriatr 2021;96:104448. 8. Michaud M, Balardy L, Moulis G, Gaudin C, Peyrot C, Vellas B, ... & Nourhashemi F. Proinflammatory cytokines, aging, and age-related diseases. JAMDA 2013;14(12):877-882. 9. Lai HY, Chang HT, Lee YL, Hwang SJ. Association between inflammatory markers and frailty in institutionalized older men. Maturitas 2014;79(3):329-33. doi: 10.1016/j.maturitas.2014.07.014. 10. Oyebode O, Houreld NN, Abrahamse H. Photobiomodulation

in Diabetic Wound Healing: A Review of Red and Near-Infrared Wavelength Applications. Cell Biochem Funct 2021;39(5):596-612. 11. Flynn K, Mahmoud NN, Sharifi S, Gould LJ, Mahmoudi M. Chronic Wound Healing Models. ACS Pharmacol Transl Sci 2023;6(5):783-801. 12. Hellström A, Nilsson C, Nilsson A, Fagerström C. Leg Ulcers in Older People: A National Study Addressing Variation in Diagnosis, Pain and Sleep Disturbance. BMC Geriatr 2016;16(1):1-9. 13. Gould LJ, Abadir PM, White-Chu EF. Age, Frailty, and Impaired Wound Healing. In: Rosenthal RA, Zenilman ME, Katlic MR eds. Principles and Practice of Geriatric Surgery. 3rd ed. Springer: Cham; 2020: 465-82.

P23- MENTAL HEALTH AND QUALITY OF LIFE OF CAREGIVERS AND PATIENTS WITH GYNECOLOGIC MALIGNANCIES UNDERGOING CHEMOTHERAPY, IN ASSOCIATION WITH PATIENT'S FRAILTY.

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Background: Patients, and their caregivers, are at high risk for mental health challenges throughout their cancer treatment journey. Depression and anxiety are among the most common comorbid conditions and negatively impact treatment progression and prognosis. Frailty has also been shown to affect treatment progression and outcomes. Mental health and frailty, although impacting prognosis, are not regularly screened for in many who are receiving chemotherapy. **Objectives:** The primary objective is to evaluate the relationship between the mental health of patients undergoing chemotherapy for a gynecologic cancer, with the mental health, quality of life, and burden of care of their caregivers. The secondary objective is to evaluate the association of frailty with mental health concerns. **Methods:** A mixed methods study was conducted to prospectively measure mental health through patient interviews and validated questionnaires. Individuals were eligible if they were aged 45 and older and receiving chemotherapy for a gynecologic malignancy. The following validated instruments were utilized: Patient Health Questionnaire-9 (PHQ-9) for general mental health, National Comprehensive Cancer Network (NCCN) distress thermometer for distress in patients, Zarit Burden Interview-12 (ZBI-12) for caregiver burden, Functional Assessment of Cancer Therapy (FACT-G7) and Short Form-12 (SF-12) for quality of life. Frailty was measured using the Frailty Phenotype and Clinical Frailty Scale. **Results:** In total there were 42 participants: 12 individual patients and 15 patient-caregiver pairs. The patient population is screening positive for mild depression, indicated by an average PHQ-9 score of 6.7, range 0-20, and the average rating of distress was 2.98, range 0-10. The caregiver population is screening negative for burden, with an average ZBI of 7.7, range 0-20. The patient's quality of life during treatments is below the national average, with an average FACT-G7 score of 17.04, range 6-28, an average PCS-12 of 39.67, range 19.96-58.82, and MCS-12 of 45.12, range 18.64-59.97. Their caregiver's quality of life is above the national average, with an average PCS-12 of 50.99, range 23.08-59.97, and MCS-12 of 49.38, range 40.75-62.14. Finally, most patients were ranked as managing well on the clinical frailty scale with 57% of the patients enrolled screening for intermediate frailty and 13% screening as frail on the frailty phenotype assessment. Of the 70% of patients enrolled who screened positive for frailty, 64% of them also screened positive for depression. This indicates that those who screen as frail, are more likely to screen positive for depression, than their counterparts who do not screen as frail. **Conclusion:** While caregiver and patient mental health showed no significant correlation to one another, a positive linear relationship was found between frailty and adverse mental health. Larger studies are required to further investigate the relationship between frailty and mental health in this high-risk patient population. **Funding Source:** Grant from McMaster University Department of Obstetrics and Gynecology.

LP001- FRAILTY IS ASSOCIATED WITH INCREASED RISK OF ADVERSE CLINICAL OUTCOMES IN PATIENTS WITH STABLE CORONARY ARTERY DISEASE.

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Objectives: The prognostic value of each frailty and its components on adverse clinical outcomes, particularly for the population with stable coronary artery disease(SCAD), is still not well studied. This study aims to investigate the prevalence of frailty in the elderly population with SCAD in community-dwelling setting and examine the influence of frailty and its different domains to the risk of adverse clinical outcomes among elders with SCAD. **Design:** Register-based retrospective longitudinal study. Setting and participants The study cohort included a total of 221 patients aged 65 years or older who were diagnosed with SCAD and continuously sought care at the Geriatrics and Cardiology Outpatient Department of PLA General Hospital between July 15, 2015, and June 30, 2016. **Methods:** After enrollment, the patients were divided into three groups according to the Fried phenotype. Health outcomes, including all-cause mortality and hospitalization, were assessed and verified by phone calls and electronic medical records (EMR) every 24 months, with a total of 2 review times per patient. The association between all-cause mortality and each of the five domains of the Fried phenotype were assessed using Cox model. Three models with progressive adjustment for potential confounders were fitted. **Results:** After adjusting for potential confounders, frailty was independently associated with all-cause mortality (frail group: aHR: 4.80; 95% CI 1.71–13.45; P = 0.003) compared to non-frailty. Slow gait speed (aHR: 6.75; 95% CI: 1.63 to 27.91; p =0.008) was significantly associated with the all-cause mortality, while weak grip strength was significantly associated with hospitalization (aHR:2.04; 95% CI:1.23 to 3.39; p = 0.006). **Conclusion and Implications:** Frailty in general and different frailty domains in particular are independently associated increased mortality among SCAD patients. Slow gait speed and weak grip strength maybe potentially increase future hospitalization and death.

Frailty and its domains especially gait speed and grip strength should be screened early in SCAD patients to reduce mortality. **Keywords:** Stable CAD, frailty, mortality, hospitalization, gait speed, grip strength.

LP002- ADVANCE CARE PLANNING PREFERENCES AND OUTCOMES AMONG FRAIL, OLDER ADULTS IN GERIATRIC MEDICINE IN A TERTIARY HOSPITAL IN SINGAPORE. K. Sigaya[1], W. Espeleta[1], S. Arroyo[1], H.J. Goh[1], H.B. Abdullah[1], I.K.Y. Ngeow[1], C.T.C. Lien[1], S.C. Lim[1], L.H. Koh[1] *((1) Changi General Hospital - Singapore (Singapore))*

Background: Advance care planning is a process of formal communication with a goal of helping patients to make decisions about their future care which will take effect once they lose capacity [1]. Data on Advance Care Planning preferences and outcomes of frail older adults are limited [2]. This review will evaluate the preferences of the frail older adults who have completed their Advance Care Planning discussions and will examine the outcomes a year later. **Methodology:** A retrospective review was done on the completed Advance Care Planning discussions among older adults admitted in Geriatric Medicine during a period of 12 months and the healthcare outcomes a year later. Data on the extent of care that they prefer, the preferred place of treatment and of death were reviewed. For patients who demised a year later, these preferences were compared to the actual care that they received. **Result:** Ninety-two frail patients have completed their Advance Care Planning discussions. The mean age was 88 years with 66.3% females and 72.8% Chinese. The average Clinical Frailty Score was 6.7. The average Charlson Comorbidity Index was 6.8 and 81.5% has dementia. Only 16.3% of the discussions involved the patient, the rest were done with the proxy decision-makers due to patient's lack of mental capacity to decide. The proxy decision-makers were individuals that know the patients well and the care preferences were based on the patients' goals and values as they know them. For the care preferences, most of the patients prefer limited treatment (55.4%) and to be treated in the hospital (51.1%) when they are sick. Majority wants to die at home (41.3%). Fifty percent of the patients died at time of review. Of the demised patients, 30% do not have accessible records for review of their care outcomes and were excluded. For the care outcomes, cardiopulmonary resuscitation was done on 15.6% of patients who preferred limited treatment or comfort care. All of them were emergency admissions and cardiopulmonary resuscitation was done in the emergency room. Majority (46.9%) of the demised patients received limited treatment. Almost 72% were treated in the hospital and 65.6% died in the hospital. For those who did not want to die in the hospital, 82.4% were already hospitalized and undergoing treatment before their demise. Over-all, majority of the patients received care in accordance with their preferences in terms of treatment (65.6%) and place of treatment (59.4%); however, only 18.7% of patients died in their place of preference. **Conclusion:** Advance Care Planning gives patients the opportunity to prepare ahead for their healthcare. These discussions should be explored early when patients have mental capacity to ensure their involvement in their future care planning. Improving availability and access to home- and community-based services that provide medical treatment at home including end-of-life care may help to support the wishes of patients who want to die at home. **Keywords:** Frailty, advance care planning, older adults, care preferences, care outcomes. **Disclosures:** None. **References:** 1. Hayhoe B, Howe A. Advance care planning under the Mental Capacity Act 2005 in primary care. Br J Gen Pract 2011; DOI: 10.3399/bjgp11x588592. 2. Hopkins SA, Bentley A, Phillips V, Barclay S. Advance care plans and hospitalized frails older adults: a systematic review. BMJ Support Palliat Care. 2020 Jun;10 (2): 164-174. Doi: 10.1136/bmjspcare-2019-002093. Epub 2020 Apr 2. PMID: 32241957; PCMID: PMC7286036.

LP003- EXPERIENCES OF PARTICIPATING IN A PREOPERATIVE COMPREHENSIVE GERIATRIC ASSESSMENT AND CARE INTERVENTION AMONG FRAIL OLDER ADULTS PRIOR TO COLORECTAL CANCER RESECTION SURGERY. K. Åhlund[1,2], L.G. Larsson[3,4], N. Ekerstad[1,5], M. Normann[6,7], M. Prytz[6,7], A. Johnsson[3] *((1) Department Of Research And Development, Nu Hospital Group - Trollhättan (Sweden), (2) Department Of Health Sciences, University West - Trollhättan (Sweden), (3)Department Of Health Sciences, University West - Trollhättan (Sweden), (4) Research, Education, Development And Innovation, Primary Health Care, Region Västra Götaland - Gothenburg (Sweden), (5) Department Of Health, Medicine, And Caring Sciences, Unit Of Health Care Analysis, Linköping University - Linköping (Sweden), (6) Department Of Surgery, Nu-Hospital Group, Region Västra Götaland, - Trollhättan (Sweden), (7) Department Of Surgery, Institute Of Clinical Sciences, Sahlgrenska Academy, University Of Gothenburg - Gothenburg (Sweden))*

Background: Research has demonstrated a strong association between frailty and adverse outcomes in acute clinical settings [1]. In relation to colorectal cancer resection surgery, it has been associated with severe postoperative complications, prolonged hospital stay, higher readmission rates, and increased short- and long-term mortality [2-4]. Although, comprehensive geriatric assessment and care (CGA), including a tailored care plan, interprofessional assessments and support, has shown benefits across various care settings for frail older adults [5, 6]. However, its integration into routine care within a surgical context remains limited. In an ongoing randomized controlled multicentre study [7] the effects of a period of preoperative optimization (up to 8 weeks) involving CGA in addition to routine care, before colorectal cancer surgery will be evaluated. To facilitate implementation, it is crucial to explore and understand the participants' perceptions of taking part in a preoperative CGA intervention. The aim of this study was to describe how frail older adults with colorectal cancer experience participation in a preoperative CGA intervention. **Methods:** This qualitative, descriptive

study was derived from a randomized controlled multi-center study. In total, 20 semi-structured interviews with frail older adults undergoing a CGA-intervention prior to colorectal cancer surgery were conducted. The data were analyzed using inductive qualitative content analysis [8]. **Results:** The analysis showed that frail older adults with colorectal cancer experienced participation in preoperative CGA as being an integral part of an intervention. They adopted an opportunity mindset when deciding to participate and felt privileged to have been part of the intervention, which meant a chance to extend life. They experienced a collaborative engagement that entailed mutual involvement of the team, the patient, and their relatives to achieve shared goals. Participants felt that they were acknowledged, their relatives were included, and the team was well-informed. However, despite their best efforts, they could find the process demanding due to transportation challenges and numerous tasks during the waiting period. Throughout the intervention, they observed the team working collaboratively and actively involving them in the optimization process, which enhanced their readiness for surgery by the end of the period. **Conclusion:** The findings indicated that frail older adults with colorectal cancer viewed the preoperative CGA- intervention as a meaningful opportunity for improvement and a chance to extend life. Their active involvement and the collaborative efforts of the care team during the intervention were crucial in enhancing their understanding, manageability, and readiness for surgery. They valued the opportunity to make active choices when appropriate and appreciated having the right to delegate decisions to healthcare professionals. From a patient perspective, team-based approaches in preoperative care, such as CGA, offer many benefits in terms of involvement and satisfaction. However, a thorough evaluation of its medical effects remains necessary. **Keywords:** Colorectal cancer surgey, comprehensive geriatric assessment, frailty, qualitative content analysis. **Clinical Trial Registry:** The main study is preregistered at ClinicalTrials.gov: NCT04358328. This specific sub-study is preregistered at OSF https://osf.io/ch49n. **Data Deposition:** not applicable. **Disclosures:** The authors declared no competing interests. **References:** 1. Falk Erhag H, et al. The Association Between the Clinical Frailty Scale and Adverse Health Outcomes in Older Adults in Acute Clinical Settings - A Systematic Review of the Literature. Clin Interv Aging. 2023;18:249-61. http://doi.org/ 10.2147/CIA.S388160. 2. Ommundsen N, et al. Frailty is an independent predictor of survival in older patients with colorectal cancer. Oncologist. 2014;19(12):1268-75. http://doi.org/ 10.1634/theoncologist.2014-0237. 3. Okabe H, et al. Frailty predicts severe postoperative complications after elective colorectal surgery. Am J Surg. 2019;217(4):677-81. http://doi.org/10.1016/j.amjsurg.2018.07.009. 4. Normann M, et al. Mortality and morbidity after colorectal cancer resection surgery in elderly patients: a retrospective population-based study in Sweden. World J Surg Oncol. 2024;22(1):23. http://doi.org/10.1186/s12957-024-03316-6. 5. Ellis G, et al. Comprehensive geriatric assessment for older adults admitted to hospital. Cochrane Database Syst Rev. 2017;9:CD006211. http://doi.org/10.1002/14651858.CD006211.pub3. 6. Pilotto A, et al. Three Decades of Comprehensive Geriatric Assessment: Evidence Coming From Different Healthcare Settings and Specific Clinical Conditions. J Am Med Dir Assoc. 2017;18(2):192 e1- e11. http://doi.org/ 10.1016/j.jamda.2016.11.004. 7. Normann M, et al. Effect of comprehensive geriatric assessment for frail elderly patients operated for colorectal cancer-the colorectal cancer frailty study: study protocol for a randomized, controlled, multicentre trial. Trials. 2022;23(1):948. http://doi.org/ 10.1186/s13063-022-06883-9. 8. Graneheim UH, et al. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. Nurse Educ Today. 2004;24(2):105-12. http://doi.org/10.1016/j.nedt.2003.10.001.

LP004- OT SERVICES FOR FRAILTY IN A PRIMARY CARE SETTING FOR DISADVANTAGED POPULATIONS.

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Background: Frailty diagnosis in the primary care setting is becoming more common. Providers struggle however, with how best to organize care for frail elders after a positive screen or diagnosis. Occupational therapy professionals have a unique skill set that makes them an ideal care partner in the primary care setting to treat frailty and its contributors. In additional to their expertise in physical rehabilitation, occupational therapists (OTs) are trained in managing medications, nutritional counseling, physical activity prescription, the management of sleep, pain, and bowel and bladder dysfunction, and mental health interventions. The purpose of this project was to describe a newly implemented OT service line designed to treat medically complex frail older adults within a primary care clinic serving a relatively poor and diverse population. **Methods:** OT services were available 1 day/week and providers used their clinical opinion to refer older adults they deemed as at risk for, or living with, frailty. We conducted a pilot retrospective review of electronic health records (EHR) of older adults ages 55 and older who were referred to the newly established OT service between May and August 2024. Records were analyzed to identify the OT indicators for treatment and the interventions provided by the OT. **Results:** N = 21 records were analyzed. Participants were on average 76 years of age (range: 58-85), 60% identified as Hispanic/Latino and spoke Spanish as their primary language, 40% had an 8th grade education, and 55% reported an annual household income of between $10-19K USD annually. Participants had an average of 8.5 chronic conditions (range 1-20), with the most prevalent being hypertension (65%), chronic pain (60%), lipidemia (50%), and obesity (40%). The OT provided 82 different interventions across the 21 participants. The most common treatment foci were exercise prescription/functional mobility, general deconditioning/fatigue, symptom management (e.g., chronic pain, edema, peripheral neuropathy), nutritional management (obesity and malnutrition), vision loss/retraining, and bowel/bladder incontinence. **Conclusion:** The results suggest patients referred for OT services had impairments across multiple domains, and those were often compounded

by social determinants of health. Having OT services available meant more time and opportunity to holistically treat multiple frailty symptoms at once. The results suggest the potential utility of OT in primary care to address the wide range of deficits experienced by patients with, or at risk for, frailty. Additional research is needed to further assess the effect of such services on health and functional outcomes. **Keywords:** Frailty, occupational therapy, primary care. **Disclosures:** None. **References:** Donnelly, C., Leclair, L., Hand, C., Wener, P. (2023). Occupational therapy services in primary care: A scoping review. Primary Health Care Research & Development, 24(7), 1-18. https://doi:10.1017/S1463423622000123. Ruiz, J. G., Dent, E., Morley, J. E., Merchant, R. A., Beilby, J., Beard, J., ... & Vellas, B. (2020). Screening for and managing the person with frailty in primary care: ICFSR consensus guidelines. The Journal of Nutrition, Health & Aging, 24, 920-927.

LP005- PRECISE EARLY SCREENING OF SARCOPENIA THROUGH EVALUATION OF MOTOR UNIT FIRING CHARACTERISTICS.

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Background: Sarcopenia is an age-related pathological condition characterized by the loss of skeletal muscle mass and function [1, 2], which significantly impacts the health of older people and leads to serious adverse effects. A growing number of epidemiological observations have highlighted the significance of muscle function, emphasizing low muscle strength is a determinant characteristic factor for diagnosing sarcopenia [3]. Given that the motor unit is a fundamental component of the neuromuscular system [4] and is crucial in coordinating muscle contractions, we hypothesize that sarcopenia could be precisely screened by evaluating motor unit firing characteristics from the perspective of muscle function. **Methods:** Vastus lateralis surface electromyography signals collected from 15 female sarcopenic participants (66.9 ±7.5 years) and 10 female non-sarcopenic individuals (68.7 ±8.0 years) collected while executing the 30-second Chair-Stand test were decomposed to yield an action potential amplitude (MUAPAMP) and mean firing rate (MFR) for each motor unit. After determining contraction's peak MFR (pMFR) and MUAPAMP, and exponential (A and B terms) pMFR-MUAPAMP relationships were subsequently analyzed. **Results:** No significant differences ($p > 0.05$) were found in MUAPAMP and pMFR among motor units between sarcopenic and non-sarcopenic groups. Specifically, the pMFR-MUAPAMP relationships were altered for female sarcopenic individuals (B terms: -3.54 ±0.05 and -3.24 ± 0.12 pps/mV for sarcopenic and non-sarcopenic individuals, respectively, $p < 0.001$). **Conclusion:** Through monitoring motor unit firing characteristics, pathological muscle functional adaptations related to sarcopenia could be precisely characterized, potentially facilitating earlier screening for identifying sarcopenia in clinical settings. **Keywords:** Sarcopenia, moto unit, 30-second Chair-Stand test. **Disclosures:** The author declared no competing interests. **References:** 1.Cruz-Jentoft AJ, et al. Age Ageing. 2019; 48(1): 16-31. doi: 10.1093/ageing/afy169. 2. Chen LK, et al. J Am Med Dir Assoc. 2020; 21(3):300-307.e2. doi: 10.1016/j.jamda.2019.12.012. 3. Monti RJ, et al. Muscle Nerve. 2001; 24(7): 848-66. doi: 10.1002/mus.1083. 4.. Kara M, et al. Eur J Appl Physiol. 2019; 119(5): 1171-1181. doi: 10.1007/s00421-019-04107-8.

LP006- LUNG FUNCTION TRAJECTORIES AND FRAILTY IN OLDER ADULTS: FINDINGS FROM A 9 YEAR FOLLOW-UP STUDY.

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Background: Below-average lung function (LF) trajectories have been associated with adverse health outcomes and premature death [1]. However, the role of LF trajectories starting in older adults remains unclear. This study aimed to investigate whether LF trajectories can predict frailty in older adults. **Methods:** A cohort study with 2,238 participants aged ≥60 years from the English Longitudinal Study of Ageing (ELSA). Frailty was assessed at waves 2 and 6 using the Fried phenotype, classifying individuals as non-frail, prefrail, or frail [2]. Participants classified as frail at wave 2 were excluded, and frailty status at wave 6 was the study outcome. LF trajectories were based on z-scores of forced expiratory volume in one second (FEV1) measured at waves 2, 4, and 6, considering multi-ethnic reference values [3]. A group-based trajectory model identified LF trajectories, and multinomial logistic regression adjusted for sociodemographic and lifestyle factors was used to assess their association with frailty, with non-frail as the reference category. **Results:** Most participants were female (54.6%) and aged 60–69 years (50.9%). Three LF trajectories were identified: low (z-scores <-1.5 and >-2.5, n = 353, 15.8%), average (z-scores <0 and >-1, n = 1,276, 57.0%), and high (z-scores >0 and <1, n = 609, 27.2%). The prevalence of frailty at wave 6 was 7.6%, with significantly higher rates in the low (11.4%; 95% CI: 8.6–15.4) and average (8.2%; 95% CI: 6.6–9.9) trajectories compared to the high trajectory group (4.6%; 95% CI: 3.3–6.6) ($p < 0.001$). Adjusted regression models showed that participants in the average trajectory had increased odds of being prefrail (OR: 1.35; 95% CI: 1.09–1.65). Those in the low (OR: 2.29; 95% CI: 1.25–4.21) and average (OR: 1.83; 95% CI: 1.13–2.95) trajectories had significantly higher odds of being frail. **Conclusion:** LF trajectories in older adults were significant predictors of frailty, with individuals in the low or average LF trajectories being at greater risk of being classified as frail. These findings highlight the importance of maintaining optimal LF over time to reduce frailty risk. **Keywords:** Lung function, frailty, aging, older adults. **Disclosures:** The authors declared no competing interests. **References:** 1. Melén E, et al. Lancet 2024; 403(10435):1494-1503. doi: 10.1016/S01406736(24)00016-3. 2. Fried LP, et al. J Gerontol A Biol Sci Med Sci. 200156(3):M146-56. doi: 10.1093/gerona/56.3.m146. 3. Quanjer PH, et al. Eur Respir J. 2012;40(6):1324-43. doi: 10.1183/09031936.00080312.

LP011- COMPARISON BETWEEN CARDIAC SURGERY CONDITIONS OF FRAILTY AND NON-FRAILTY PATIENTS. A.V. Mendes[1], I.F. Freitas Júnior[1], MDS. Souza[2], G.C. Santos[2], B.A.M. Marcolino[2], G.R. Monteiro[2], M.E.B. Vedovati[2], L. Dalbem[2], A.C. Negri[2], E.C. Negri[2] *((1) Universidade Estadual de São Paulo - Presidente Prudente (Brazil), (2) Universidade Do Oeste De São Paulo - Presidente Prudente (Brazil))*

Background: The frailty can be a condition that can affect the surgery because these patients present some poor physical, metabolic and health conditions (Silva et al. 2023; Wilhelm-Leen et al., 2014) that can become more difficult the surgical and recovery progress (Wirth et. al, 2010). **Methods:** A total of 53 frail (n=43) and non-frail (n=10) patients, classified according to the FRIED(ref) index, undergoing cardiac surgery were analyzed according to indicators of possible post-operative complications: surgery time, cardiopulmonary bypass time, length of stay (ward and intensive care unit), post-operative complications and recovery process. Comparisons between frail and non-frail patients were made using the independent t-test. The significance level was set at 5% and all analyses were carried out using the SPSS program, version 29.0. **Results:** The results indicated that frail patients showed statistically spend more time submitted to surgery, stayed more time: with extracorporeal circulation, in the intensive care unit, hospitalized, and presented more complications after hospital discharge. **Conclusion:** Our results indicate that frail patients need more attention before and after cardiac surgery in order to improve their recovery characteristic and reduce the risk of complications after hospital discharge. **Keywords:** Frailty, cardiac patient, surgery characteristics. **Clinical trial approved:** 79352924.7.0000.5515. **Disclosures:** We declare that there is no conflict of interest because we received just public fund to develop this study. **References:** Fried, Linda P., et al. «Frailty in older adults: evidence for a phenotype.» The Journals of Gerontology Series A: Biological Sciences and Medical Sciences 56.3 (2001): M146-M157. Langer RD, Ward LC, Larsen SC, Heitmann BL. Can change in phase angle predict the risk of morbidity and mortality during an 18-year follow-up period? A cohort study among adults. Front Nutr. 2023 May 2;10:1157531. doi: 10.3389/fnut.2023.1157531. Norman K., Pirlich M., Sorensen J., Christensen P., Kemps M., Schütz T., Lochs H., Kondrup J. Bioimpedance vector analysis as a measure of muscle function. Clin. Nutr. 2009;28:78–82. Silva BR, Orsso CE, Gonzalez MC, Sicchieri JMF, Mialich MS, Jordao AA, Prado CM. Phase angle and cellular health: inflammation and oxidative damage. Rev Endocr Metab Disord. 2023 Jun;24(3):543-562. doi: 10.1007/s11154-022-09775-0. Wilhelm-Leen, Emilee R., et al. «Phase angle, frailty and mortality in older adults.» Journal of general internal medicine 29 (2014): 147-154. Wirth R., Volkert D., Rosler A., Sieber C.C., Bauer J.M. Bioelectric impedance phase angle is associated with hospital mortality of geriatric patients. Arch. Gerontol. Geriatr. 2010;51:290–294.

LP012- BIOELECTRICAL IMPEDANCE ANALYSIS OF FRAILTY AND NON-FRAILTY CARDIAC PATIENTS BEFORE AND FOLLOWED AFTER SURGERY. M.C. Alves[1], E.C. Negri[1], A.V. Mendes[2], I.T.B. Ferreira[2], G.G.A.E. Lima[2], A. Stefani[3], T.L.S. Oliveira[4], B.D. Balmant[1], I.F. Freitas Junior[2] *((1) University Of Western São Paulo - Presidente Prudente (Brazil), (2) São Paulo State University - Presidente Prudente (Brazil), (3) Santa Casa Hospital - Presidente Prudente (Brazil), (4) Federal University Of Piaui - Teresina (Brazil))*

Background: It is well know that some variables of bioelectrical Impedance analysis(BIA) such phase angle(PhA), resistance (R) and reactance (Xc) are related to cellular integrity, health (Wilhelm-Leen et al., 2014) and hydration (Norman, 2009) and mortality (Langer et al. 2023) in some clinical conditions (Wirth et. al, 2010), including heart disease (Silva et al. 2023). **Methods:** A total of 55 cardiac patients of both sex were assessed and followed before and three days after cardiac surgery. Socioeconomic information, clinical condition and biochemical exams were assessed before surgery and BIA was assessed. The subjects were classified as: non-frailty and frail according FRIED index (Fried et al., 2001). The comparisons between BIA variables (R,Xc and PhA) were performed by one-way ANOVA for independent variables. The significance was set at 5% and all analyses were performed by SPSS, version 29. **Results:** Our results indicate from pre until the third day after surgery, the mean values of R, Xc and PhA decrease slowly in non-frail patients but in frail patients the R and Xc presented an abrupt decrease from pre until the second day after surgery and the PhA presented an abrupt decreasing of 35% at the second day after surgery. **Conclusion:** These results indicate that frail cardiac patients present worse results of BIA variables after surgery and suggest that a safe options should be explored for these patients to improve their recovery after surgery. **Keywords:** Frailty, cardiac patient, bioelectrical impedance analisys. **Clinical trial approved:** 79352924.7.0000.5515. **Disclosures:** We declare that there is no conflict of interest because we received just public fund to develop this study. **References:** Fried, Linda P., et al. «Frailty in older adults: evidence for a phenotype.» The Journals of Gerontology Series A: Biological Sciences and Medical Sciences 56.3 (2001): M146-M157. Langer RD, Ward LC, Larsen SC, Heitmann BL. Can change in phase angle predict the risk of morbidity and mortality during an 18-year follow-up period? A cohort study among adults. Front Nutr. 2023 May 2;10:1157531. doi: 10.3389/fnut.2023.1157531. Norman K., Pirlich M., Sorensen J., Christensen P., Kemps M., Schütz T., Lochs H., Kondrup J. Bioimpedance vector analysis as a measure of muscle function. Clin. Nutr. 2009;28:78–82. Silva BR, Orsso CE, Gonzalez MC, Sicchieri JMF, Mialich MS, Jordao AA, Prado CM. Phase angle and cellular health: inflammation and oxidative damage. Rev Endocr Metab Disord. 2023 Jun;24(3):543-562. doi: 10.1007/s11154-022-09775-0. Wilhelm-Leen, Emilee R., et al. «Phase angle, frailty and mortality in older adults.» Journal of general internal medicine 29 (2014): 147-154. Wirth R., Volkert D., Rosler A.,

Sieber C.C., Bauer J.M. Bioelectric impedance phase angle is associated with hospital mortality of geriatric patients. Arch. Gerontol. Geriatr. 2010;51:290–294.

LP013- COMPARISON BETWEEN FRAILTY CARDIAC PATIENTS WHO DIED AND SURVIVED AFTER SURGERY. A.C. Gregório[1], I. Freitas Jr[2], G. Malacrida[1], A.C. Negri[1], V.T.R. Rocha[1], A.V. Mendes[1], L.J. Costa[1], E.C. Negri[1] *((1) University Of Western São Paulo - Presidente Prudente (Brazil), (2) São Paulo State University - Presidente Prudente (Brazil))*

Background: Values of Bioelectrical Impedance Analysis(BIA) such as phase angle(PhA), resistance(R) and reactance (Xc) health status (Koh et al. 2019) and mortality (Wilhelm-Leen 2014) in some clinical conditions, including heart disease (Ringaitiene , et al. 2019). **Methods:** A total of 35 cardiac frail patients of both sexes were assessed before and three days after surgery. From this total, seven died during the internation after surgery and 28 did not die. Socioeconomic information, clinical conditions, and biochemical examinations were assessed before surgery, and BIA was assessed. The subjects were classified as non-frail or frail according to the FRIED index (Fried et al., 2001). Comparisons between BIA variables (R,Xc, and PhVincenziA) were performed using one-way ANOVA for independent variables. The significance level was set at 5%, and all analyses were performed using SPSS, version 29. **Results:** Our results indicate from pre surgery until the third day after surgery, the mean values of R, Xc and PhA decrease slowly in non-frail patients but in frail patients the R and Xc presented an abrupt decrease from pre until the second day after surgery and the PhA presented an abrupt decrease of 35% at the second day after surgery. **Conclusion:** These results indicate that frail cardiac patients present worse results of BIA variables after surgery and suggest that safe options should be explored for these patients to improve their recovery after surgery. **Keywords:** Frailty, cardiac patient, bioelectrical impedance analysis. **Clinical trial approved:** 79352924.7.0000.5515. **Disclosures:** We declare that there is no conflict of interest because we received just public fund to develop this study. **References:** Fried, Linda P., et al. «Frailty in older adults: evidence for a phenotype.» The Journals of Gerontology Series A: Biological Sciences and Medical Sciences 56.3 (2001): M146-M157. Koh, Li Ying, and Nian Chih Hwang. «Frailty in cardiac surgery.» Journal of cardiothoracic and vascular anesthesia 33.2 (2019): 521-531. Wilhelm-Leen, Emilee R., et al. «Phase angle, frailty and mortality in older adults.» Journal of general internal medicine 29 (2014): 147-154. Ringaitiene, Donata, et al. «Bioelectrical impedance phase angle—predictor of blood transfusion in cardiac surgery.» Journal of Cardiothoracic and Vascular Anesthesia 33.4 (2019): 969-975.

LP014- STEADY-STATE VERSUS ACUTE DEFICIT ACCUMULATION SURVIVAL INDEX AS PREDICTOR OF OVERALL SURVIVAL AFTER ROBOTIC-ASSISTED PULMONARY LOBECTOMY FOR LUNG CANCER. E. Toloza[1], R. Reich[1], M. Extermann[1], T. Hembree[1] *((1) Moffitt Cancer Center - Tampa (United States))*

Background: Frailty is a measure of vulnerability to stressors that can lead to adverse outcomes. Patients who develop cancer also accumulate chronic and subacute clinical deficits that increase their risk to adverse treatment outcomes and decrease their overall survival. Patients undergoing surgery incur additional acute clinical deficits that further increase their vulnerability to adverse outcomes and worse overall survival. **Methods:** We retrospectively analyzed data from 535 patients with known or suspected lung cancer and who underwent robotic-assisted pulmonary lobectomy (RAPL) over a 14-year period by one surgeon. Deficit-accumulation survival index (DASI) scores were calculated based on 24 clinical factors, including marital status, primary spoken language, body mass index, Eastern Cooperative Oncology Group (ECOG) performance status, fall risk, number of medications, healthcare utilization, complete blood count, inflammatory indices, electrolyte levels, nutritional status, tumor burden, and hospital length of stay. Test-based clinical factors were measured within 30 days of surgery (Preop), within 24 hours after surgery (Immediate Postop), and at hospital discharge (Discharge). Chi-square or Fisher's exact test was used to compare individual clinical factors between Low-DASI and High-DASI patients. Log-rank test was used to compare Kaplan-Meier survival curves. Statistical significance was set at p-values ≤ 0.05. **Results:** Patients who underwent RAPL incurred additional Immediate Postop acute deficits based on worse ECOG status and increased fall risk, increased number of medications, higher leukocyte counts, lower lymphocyte counts and hemoglobin (Hgb) levels, higher neutrophil-to-lymphocyte ratio (NLR), platelet-to-lymphocyte ratio (PLR), and systemic inflammatory index (SII), and lower prognostic nutritional index (PNI) compared to Preop values. By Discharge, leukocyte counts, NLR, and SII scores have partially returned and ECOG status, fall risk, number of medications, lymphocyte count, PLR, and PNI have essentially returned to Preop values. In contrast, decreases in Hgb levels persist and thrombocytopenia, hyponatremia, and hypoalbuminemia are worse at Discharge compared to Preop values. Patients with High DASI scores have significantly worse overall survival than those with Low DASI scores at all three time-points studied. The relatively steady-state Preop DASI scores appear to be the best predictor of overall survival ($p<0.001$), with Discharge DASI scores nearly returning to baseline Preop levels, but with deficits in some clinical factors replacing deficits in others. In contrast, Immediate Postop DASI scores, while still predictive of overall survival ($p=0.012$), are not able to differentiate between non-frail or mildly frail patients versus moderately or severely frail patients as well as either Preop or Discharge DASI scores. **Conclusion:** Steady-state (e.g. Preop) DASI scores appear to be the best predictor of

overall survival for lung cancer patients undergoing RAPL, with DASI scores after near-recovery back to baseline (e.g. Discharge) are nearly as good a predictor for overall survival, while DASI scores that include acute clinical deficits (e.g. Immediate Postop) are less able to predict overall survival after RAPL. **Keywords:** Frailty index, perioperative, deficit accumulation, overall survival. **Disclosures:** EMT has received honoraria from Intuitive Surgical Corp as a robotic thoracic surgery observation site and proctor. None of the other authors have any conflicts of interest to disclose. **References:** Negrete-Najar J et al. J Geriatr Oncol 2021; 13(2022):308-314. https://doi.org/10.1016/j.jgo.2021.10.009. Hembree T et al. Cancer Med 2021; 10:5765-5774. https://doi.org/10.1002/cam4.4107. Hembree T et al. Cancer Med 2019; 8:6503-6518. https://doi.org/10.1002/cam4.2472.

LP015- DEVELOPMENT OF A SARCOPENIA AND PHYSICAL FRAILTY SCREENING PROGRAMME FOR COMMUNITY-DWELLING OLDER PEOPLE. O. Odufuwa[1], O. Ezeokoli[1], I. Tsocheva[1], Z. Kalemo[1], N. Jeyapalan[1], G. Randhawa[1], D. Hewson[1] *((1) Institute For Health Research, University Of Bedfordshire - Luton (United Kingdom))*

Background: Screening is an established component of healthcare, with many successful screening programmes across the life course. A key element of screening programmes is to identify people with a specific condition before they are in contact with healthcare services. The International Conference on Frailty and Sarcopenia Research (ICFSR) clinical practice guidelines recommend early screening for sarcopenia and physical frailty and sarcopenia in community-dwelling older adults. In the United Kingdom, a proactive frailty screening programme using the electronic Frailty Index (eFI) is used in primary care to identify frail older people, however there is no screening programme for sarcopenia. Although a proactive approach to screening for frailty and sarcopenia is recommended by international guidelines, this can be difficult to achieve given the lack of public awareness of both conditions, and whether older people would accept proactive screening. Many older people do not routinely access primary care, while healthcare professionals in primary care also have limited time to perform opportunistic screening. The aim of this research programme is to develop a screening programme for physical frailty and sarcopenia in community dwelling older people living in Luton, UK. The programme uses a co-production approach, which will work with people from a culturally diverse population. This initial part of the programme focuses on the risk of sarcopenia in older people in with mild frailty. **Methods:** The risk of sarcopenia was evaluated in older people in Luton with mild frailty, who were identified using the eFI. A sample of 100 older people with mild frailty in participating GP practices were recruited. The SARC-F was used as a screening tool for sarcopenia using the SARC-F, following the recommendations of the European Working Group on Sarcopenia in Older People (EWGSOP). Physical frailty was also assessed using the phenotype method, while the Short Physical Performance Battery (SPPB) was used to evaluate physical function. **Results:** The eFI data for Luton showed a prevalence of frailty of 47%, with 28% of older people in Luton classified as mildly frail. The mean SARC-F score for the sample was 2.4 ± 2.2, with 31% of the groups at risk of sarcopenia. The mean score for the frailty phenotype was 1.3 ± 1.2, with 33% of participants classified as fit, 47% as pre-frail, and 20% as frail. The mean SPPB score was 8.6 ± 2.5. **Conclusion:** This preliminary study has shown that there is a high risk of sarcopenia in mildly frail older people in the sample. Future work will evaluate a larger population including community-based recruitment with a full sarcopenia diagnosis using the EWGSOP-2 method. A co-produced screening programme for physical frailty and sarcopenia will then be developed, including an evaluation in a culturally diverse population of older people. **Keywords:** Screening, sarcopenia, frailty, cultural diversity.

LP016- SIT-TO-STAND POWER VS. HANDGRIP STRENGTH: A MORE SENSITIVE TOOL FOR SCREENING PROBABLE SARCOPENIA AND ADVERSE HEALTH-RELATED OUTCOMES? M. Garcia-Aguirre[1], J.A. Carnicero[2], I. Baltasar-Fernandez[1], F.A. Quiñonez-Bareiro[3], J. Alcazar[1], L. Rodriguez-Mañas[2], I. Ara[4], F.J. Garcia-Garcia[3], L.M. Alegre[1] *((1) Genud Toledo Research Group, Faculty Of Sport Sciences, University Of Castilla-La Mancha, Toledo (Spain), (2) Centro De Investigación Biomédica En Red Fragilidad Y Envejecimiento Saludable (ciberfes), Instituto De Salud Carlos III, Madrid (Spain), (3) Centro De Investigación Biomédica En Red Fragilidad Y Envejecimiento Saludable (ciberfes), Instituto De Salud Carlos III, Madrid, (Spain), (4) Genud Toledo Research Group, Faculty Of Sport Sciences, University Of Castilla-La Mancha, Toledo (Spain))*

Background: According to the European Working Group on Sarcopenia in Older People 2 (EWGSOP2) guidelines, low muscle strength is recommended as the primary criterion to identify individuals with probable sarcopenia. Nevertheless, muscle power declines earlier and more rapidly with age and has shown stronger associations with physical performance in older adults compared to muscle strength. This suggests that muscle power may serve as a more sensitive screening tool for the early detection of sarcopenia and related functional decline. Therefore, this study aimed i) to stablish sex-specific cut-off points for low allometric sit-to-stand (STS) power to identify probable sarcopenia and ii) to compare the associations of probable and confirmed sarcopenia defined by low muscle strength or low allometric STS power with adverse health outcomes. **Methods:** A total of 1272 participants (47% men) aged over 65 years were included. STS power was evaluated using the 5-repetition STS test and the Alcazar equation. Then, allometric STS power was calculated as STS power/height2. Handgrip strength was measured with a dynamometer, while appendicular skeletal muscle index (ASMI) was obtained via DXA. Sex-specific cut-off points for low allometric STS power were determined using ROC curves. Probable sarcopenia was defined in two ways: 1) low allometric STS power, or

2) low handgrip strength based on the EWGSOP2 criteria. Sarcopenia was confirmed when participants exhibited probable sarcopenia combined with low ASMI (<7 kg/m2 for men and <5.5 kg/m2 for women). For adverse health-related outcomes, the incidence and worsening of disability in basic activities of daily living (BADL), assessed using the Katz index, were considered. Logistic regression analyses were used to evaluate the associations between both definitions of probable and confirmed sarcopenia (based on handgrip strength vs. allometric STS power) and the incidence and worsening of disability in BADL. **Results:** Sex-specific cut-off points for allometric STS power were 65.35 $W \cdot m^{-2}$ for men and 52.80 $W \cdot m^{-2}$ for women. A total of 493 (38.8%) older adults were classified with probable sarcopenia based on low allometric STS power, while 312 (24.5%) were classified with probable sarcopenia based on low handgrip strength. Sarcopenia was confirmed in 191 (15.0%) older adults with low allometric STS power, and in 134 (10.5%) older adults with low handgrip strength. A significant association was observed between probable sarcopenia assessed via low allometric STS power and both the incidence [OR (95%CI)=1.45 (1.05, 2.01)] and worsening disability in BADL [OR (95%CI)=1.47 (1.07, 2.03)]. In contrast, probable sarcopenia assessed via low handgrip strength was not significantly associated with either the incidence [OR (95%CI)=1.25 (0.88, 1.78)] or worsening of disability in BADL [OR (95%CI)=1.17 (0.83, 1.66)]. When sarcopenia was confirmed, whether defined by low allometric STS power combined or low handgrip strength, neither was associated with a higher incidence or worsening of disability in BADL (both p>0.05). **Conclusion:** Allometric STS power may serve as a more sensitive tool for screening older adults with probable sarcopenia, as it identifies a greater number of individuals at risk and demonstrates a stronger association than handgrip strength with the incidence and worsening of disability in BADL.

LP018- COMPARATIVE ANALYSIS OF SARCOPENIA IN HEMODIALYSIS AND PERITONEAL DIALYSIS PATIENTS: IMPLICATIONS FOR FRAILTY AND AGING MANAGEMENT. M. Zanini[1], L. Delbene[1], M. Simonetta[1], F. Neri[1], M. Di Nitto[1], G. Catania[1], A. Bagnasco[1] *((1) Department Of Health Sciences, University Of Genoa - Genoa (Italy))*

Background: Sarcopenia, characterized by the progressive loss of muscle mass and function, is a prevalent and often underestimated condition among patients with end-stage renal disease (ESRD) undergoing renal replacement therapy. It exacerbates frailty and increases the risk of morbidity, mortality, and diminished quality of life (QoL). Hemodialysis (HD) and Peritoneal Dialysis (PD) are commonly used treatments, each influencing sarcopenia progression and patient well-being differently. The purpose of this study is to compare the prevalence, progression, and impact of sarcopenia on quality of life (QoL) between patients undergoing Hemodialysis (HD) and Peritoneal Dialysis (PD). In this way, the study aims to advance the understanding of frailty and aging in the context of clinical care. **Methods:** Two observational pilot studies were conducted at San Martino Hospital in Genoa, Italy, involving 23 patients receiving Hemodialysis (HD) and 24 patients undergoing Peritoneal Dialysis (PD). Body composition parameters, including muscle mass and fat-free mass, were assessed using bioelectrical impedance analysis (BIA). To evaluate functional outcomes and quality of life (QoL) related to sarcopenia, the SarQoL questionnaire, a validated instrument, was administered. For HD patients, data were collected both before and after dialysis sessions, while for PD patients, assessments were conducted during routine follow-up visits. Statistical analyses examined gender-specific differences, treatment-related effects, and the relationships between the severity of sarcopenia and QoL measures. **Results:** In the Hemodialysis (HD) cohort, clinical signs of sarcopenia were observed in 78% of male patients and 65% of female patients. Post-dialysis analysis of muscle mass revealed an average reduction of 12% in fat-free mass, underscoring the immediate impact of fluid shifts and catabolic processes associated with the treatment. While male patients exhibited marginally higher functional performance scores compared to females, they experienced more pronounced quality of life (QoL) impairments, particularly related to fatigue and mobility limitations. In the Peritoneal Dialysis (PD) cohort, the prevalence of severe sarcopenia was lower, affecting 55% of male patients and 42% of female patients. This group also demonstrated greater long-term stability in muscle mass. However, despite functional advantages such as enhanced mobility and autonomy, PD patients reported a higher perceived burden associated with self-management responsibilities, which negatively affected their QoL. Comparative analysis indicated that HD patients are more susceptible to substantial muscle mass loss immediately following treatment, while PD patients encounter challenges related to extended recovery periods and increased psychological stress, impacting overall well-being. Across both cohorts, sarcopenia severity was strongly correlated with reduced SarQoL scores, underscoring the multifaceted impact of this condition. In both groups female patients reported lower QoL scores, indicating a need for gender-sensitive interventions. **Conclusion:** The findings highlight distinct sarcopenia related-outcomes in HD and PD patients, emphasizing individualized care strategies. Tailored interventions, including nutritional support and exercise programs adapted to the specific dialysis modality and patient demographic factors, are crucial to minimizing the impact of sarcopenia. Addressing psychological and social QoL aspects, particularly in women and PD patients, is crucial for holistic and effective care. **Keywords:** Sarcopenia, dialysis modalities, frailty, quality of life, aging. **Disclosures:** The authors declare no conflicts of interest related to this study. The research was conducted in compliance with ethical standards, and all participants provided informed consent. No external funding was received for this work. **References:** 1. Yang Y, Zeng Y, Lv W, et al. BMC Nephrol 2024; 25(385). https://doi.org/10.1186/s12882-024-03836-z. 2. Elder M, Moonen A, Crowther S, et al. BMC Nephrol 2023; 24(138). https://doi.org/10.1186/s12882-023-03175-5. 3. Seto Y, Kimura M, Matsunaga T, et al. Ren Replace Ther 2022; 8(57). https://doi.org/10.1186/s41100-022-

00448-x. 4. Wathanavasin W, Banjongjit A, Avihingsanon Y, et al. Nutrients 2022; 14(19): 4077. https://doi.org/10.3390/nu14194077. 5. Pender D, McGowan E, McVeigh JG, et al. Arch Rehabil Res Clin Transl 2023; 5(1): 100252. https://doi.org/10.1016/j.arrct.2022.100252.

LP019- WALKING PACE OPTIMIZES CONVENTIONAL CARDIOVASCULAR DISEASE RISK PREDICTION MODELS AMONG VULNERABLE SUBPOPULATIONS.

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Background: Previous studies have reported associations of grip strength and walking pace with CVD. However, the clinical utility of grip strength and walking pace in predicting incident CVD remains uncertain. This study aimed to evaluate the performance of the conventional CVD risk prediction models across subpopulations with varying grip strength or walking pace, and to determine the added predictive value of grip strength and walking pace. **Methods:** A total of 206,371 individuals without CVD (aged 40-69 years) from the UK Biobank was prospectively studied. Four conventional CVD prediction models, Framingham, Reynolds, ASSIGN, and Pooled Cohort Equations (PCEs), for estimating 10-year risk of CVD were considered. Grip strength was measured using a dynamometer, with low grip strength defined as <27 kg for men and <16 kg for women. Walking pace was self-reported using a touchscreen questionnaire. First, associations of grip strength and walking pace with incident CVD were examined using Cox-proportional hazard models. Second, performances of the four conventional CVD risk prediction models across diverse subpopulations defined by age, grip strength, or walking pace were compared using Harrell's concordance index (C index) and calibration plot. Third, grip strength and walking pace was added to the optimal conventional model, and their added predictive value was evaluated among vulnerable subpopulations using the C index change and net reclassification improvement (NRI). The added predictive value was further validated in the English Longitudinal Study of Ageing (ELSA). **Results:** A total of 19,664 cases of incident CVD were registered during the follow-up period (mean 12.85 years [standard deviation 2.74]). The significant associations of grip strength and walking pace with incident CVD were confirmed. All four models performed inferior among vulnerable subpopulations characterized by advanced age, low grip strength or slow walking pace. The ASSIGN model performed optimal in both total population (0.700 [95% CI: 0.693-0.707]) and all subpopulations. C index for the ASSIGN model was 0.659 (95% CI, 0.646-0.672) in low grip strength subpopulation vs 0.702 (95% CI: 0.699-0.706) in normal grip strength subpopulation, 0.646 (95% CI, 0.635-0.657) in slow walking pace subpopulation vs 0.701 (95% CI: 0.698-0.705) in normal walking pace subpopulation, and 0.624 (95% CI, 0.614-0.634) in old subpopulation vs 0.701 (95% CI: 0.689-0.712) in young subpopulation. The calibration plot for the ASSIGN model was also poorer for old subpopulation (intercept: 0.024, slope: 0.605) than young subpopulation (intercept: -0.001, slope: 0.805). Adding walking pace to the ASSIGN model improved its discriminative ability in vulnerable subpopulations, i.e., those with low grip strength (NRI, 0.046 [95% CI: 0.009-0.100]) and old subpopulation (NRI, 0.035 [95% CI: 0.020-0.048]), compared with the original ASSIGN model. The finding was similar in ELSA. **Conclusion:** The performance of the conventional CVD risk prediction models was worse in vulnerable subpopulation, but could be improved by adding walking pace, a simple, low-cost, and non-invasive measurement. **Keywords:** Walking pace, grip strength, cardiovascular disease, risk prediction. **Disclosure:** All authors declare no disclosure of interest for this contribution. **References:** 1. Mensah GA, Fuster V, Murray CJL, et al. Global Burden of Cardiovascular Diseases and Risks, 1990-2022. J Am Coll Cardiol 2023;82:2350-2473. doi: 10.1016/j.jacc.2023.11.007. 2. Visseren FLJ, Mach F, Smulders YM, et al. 2021 ESC Guidelines on cardiovascular disease prevention in clinical practice. Eur Heart J 2021;42:3227-3337. doi: 10.1093/eurheartj/ehab484. 3. D'Agostino RB, Sr., Vasan RS, Pencina MJ, et al. General cardiovascular risk profile for use in primary care: the Framingham Heart Study. Circulation 2008;117:743-753. doi: 10.1161/CIRCULATIONAHA.107.699579. 4. Ridker PM, Buring JE, Rifai N, Cook NR. Development and validation of improved algorithms for the assessment of global cardiovascular risk in women: the Reynolds Risk Score. Jama 2007;297:611-619. doi: 10.1001/jama.297.6.611. 5. Woodward M, Brindle P, Tunstall-Pedoe H. Adding social deprivation and family history to cardiovascular risk assessment: the ASSIGN score from the Scottish Heart Health Extended Cohort (SHHEC). Heart 2007;93:172-176. doi: 10.1136/hrt.2006.108167. 6. Bhatia HS, Rikhi R, Allen TS, et al. Lipoprotein(a) and the pooled cohort equations for ASCVD risk prediction: The Multi-Ethnic Study of Atherosclerosis. Atherosclerosis 2023;381:117217. doi: 10.1016/j.atherosclerosis.2023.117217. 7. Hong C, Pencina MJ, Wojdyla DM, et al. Predictive Accuracy of Stroke Risk Prediction Models Across Black and White Race, Sex, and Age Groups. JAMA 2023;329:306-317. doi: 10.1001/jama.2022.24683. 8. Neumann JT, Thao LTP, Callander E, et al. Cardiovascular risk prediction in healthy older people. Geroscience 2022;44:403-413. doi: 10.1007/s11357-021-00486-z. 9. Dalton JE, Rothberg MB, Dawson NV, et al. Failure of Traditional Risk Factors to Adequately Predict Cardiovascular Events in Older Populations. J Am Geriatr Soc 2020;68:754-761. doi: 10.1111/jgs.16329. 10. Li ZY, Yang YC, Wang XC, et al. Comparative analysis of atherosclerotic cardiovascular disease burden between ages 20-54 and over 55 years: insights from the Global Burden of Disease Study 2019. Bmc Medicine 2024;22. doi: ARTN 303, 10.1186/s12916-024-03527-4. 11. Damluji AA, Alfaraidhy M, AlHajri N, et al. Sarcopenia and Cardiovascular Diseases. Circulation 2023;147:1534-1553. doi: 10.1161/Circulationaha.123.064071. 12. Ferrucci L, Fabbri E. Inflammageing: chronic inflammation in ageing, cardiovascular disease, and frailty. Nature Reviews Cardiology 2018;15:505-522. doi: 10.1038/s41569-018-0064-2.

13. Chen LK, Li XB, Lv YL, et al. Physical frailty, adherence to ideal cardiovascular health and risk of cardiovascular disease: a prospective cohort study. Age and Ageing 2023;52. doi: ARTN afac311, 10.1093/ageing/afac311. 14. Celis-Morales CA, Welsh P, Lyall DM, et al. Associations of grip strength with cardiovascular, respiratory, and cancer outcomes and all cause mortality: prospective cohort study of half a million UK Biobank participants. Bmj-British Medical Journal 2018;361. doi: ARTN k1651, 10.1136/bmj.k1651. 15. Kamiya K, Hamazaki N, Matsue Y, et al. Gait speed has comparable prognostic capability to six-minute walk distance in older patients with cardiovascular disease. Eur J Prev Cardiol 2018;25:212-219. doi: 10.1177/2047487317735715. 16. Sudlow C, Gallacher J, Allen N, et al. UK biobank: an open access resource for identifying the causes of a wide range of complex diseases of middle and old age. PLoS Med 2015;12:e1001779. doi: 10.1371/journal.pmed.1001779. 17. Steptoe A, Breeze E, Banks J, Nazroo J. Cohort profile: the English longitudinal study of ageing. Int J Epidemiol 2013;42:1640-1648. doi: 10.1093/ije/dys168. 18. Cruz-Jentoft AJ, Bahat G, Bauer J, et al. Sarcopenia: revised European consensus on definition and diagnosis. Age Ageing 2019;48:601. doi: 10.1093/ageing/afz046. 19. Eastwood SV, Mathur R, Atkinson M, et al. Algorithms for the Capture and Adjudication of Prevalent and Incident Diabetes in UK Biobank. PLoS One 2016;11:e0162388. doi: 10.1371/journal.pone.0162388. 20. Wan EYF, Fung WT, Schooling CM, et al. Blood Pressure and Risk of Cardiovascular Disease in UK Biobank: A Mendelian Randomization Study. Hypertension 2021;77:367-375. doi: 10.1161/HYPERTENSIONAHA.120.16138. 21. Arnett DK, Blumenthal RS, Albert MA, et al. 2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. J Am Coll Cardiol 2019;74:e177-e232. doi: 10.1016/j.jacc.2019.03.010. 22. Whelton SP, Marshall CH, Cainzos-Achirica M, et al. Pooled Cohort Equations and the competing risk of cardiovascular disease versus cancer: Multi-Ethnic study of atherosclerosis. Am J Prev Cardiol 2021;7:100212. doi: 10.1016/j.ajpc.2021.100212. 23. Group WCRCW. World Health Organization cardiovascular disease risk charts: revised models to estimate risk in 21 global regions. Lancet Glob Health 2019;7:e1332-e1345. doi: 10.1016/S2214-109X(19)30318-3. 24. Sud M, Sivaswamy A, Chu A, et al. Population-Based Recalibration of the Framingham Risk Score and Pooled Cohort Equations. J Am Coll Cardiol 2022;80:1330-1342. doi: 10.1016/j.jacc.2022.07.026. 25. White IR, Royston P, Wood AM. Multiple imputation using chained equations: Issues and guidance for practice. Stat Med 2011;30:377-399. doi: 10.1002/sim.4067. 26. van Es N, Takada T, Kraaijpoel N, et al. Diagnostic management of acute pulmonary embolism: a prediction model based on a patient data meta-analysis. Eur Heart J 2023;44:3073-3081. doi: 10.1093/eurheartj/ehad417. 27. Caetano SJ, Sonpavde G, Pond GR. C-statistic: A brief explanation of its construction, interpretation and limitations. Eur J Cancer 2018;90:130-132. doi: 10.1016/j.ejca.2017.10.027. 28. Steyerberg EW, Vergouwe Y. Towards better clinical prediction models: seven steps for development and an ABCD for validation. Eur Heart J 2014;35:1925-1931. doi: 10.1093/eurheartj/ehu207. 29. Zheng Z, Lv Y, Rong S, Sun T, Chen L. Physical Frailty, Genetic Predisposition, and Incident Parkinson Disease. JAMA Neurol 2023;80:455-461. doi: 10.1001/jamaneurol.2023.0183. 30. Kalyani RR, Corriere M, Ferrucci L. Age-related and disease-related muscle loss: the effect of diabetes, obesity, and other diseases. Lancet Diabetes Endocrinol 2014;2:819-829. doi: 10.1016/s2213-8587(14)70034-8. 31. He P, Ye Z, Liu M, et al. Association of handgrip strength and/or walking pace with incident chronic kidney disease: A UK biobank observational study. J Cachexia Sarcopenia Muscle 2023;14:805-814. doi: 10.1002/jcsm.13180. 32. Leong DP, Teo KK, Rangarajan S, et al. Prognostic value of grip strength: findings from the Prospective Urban Rural Epidemiology (PURE) study. Lancet 2015;386:266-273. doi: 10.1016/s0140-6736(14)62000-6. 33. Li M, Lin Y, Zhong X, et al. Predictive performance of established cardiovascular risk scores in the prediabetic population: external validation using the UK Biobank data set. Eur J Prev Cardiol 2023;30:1427-1438. doi: 10.1093/eurjpc/zwad106. 34. Hlatky MA, Greenland P, Arnett DK, et al. Criteria for evaluation of novel markers of cardiovascular risk: a scientific statement from the American Heart Association. Circulation 2009;119:2408-2416. doi: 10.1161/CIRCULATIONAHA.109.192278. 35. Xie W, Zheng F, Yan L, Zhong B. Cognitive Decline Before and After Incident Coronary Events. J Am Coll Cardiol 2019;73:3041-3050. doi: 10.1016/j.jacc.2019.04.019.

LP020- EVALUATING THE COMPREHENSIVE GERIATRIC ASSESSMENT MODEL AS AN ASSESSMENT TOOL TO PREDICT CHEMOTOXICITY IN ELDERLY PATIENTS WITH LYMPHOMA.

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Elderly patients with lymphoma are at greater risk of chemotherapy related adverse events with poorer outcomes. ECOG and the CARG Chemotherapy Toxicity Tool may over-estimate the fitness of elderly patients in receiving anti-cancer treatment, hence exposing them to greater risks. This study aims to utilise the Comprehensive Geriatric Assessment (CGA) model and the Clinical Frailty Scale (CFS) as a tool to identify frail elderly (Asian) patients with lymphoma who are at greater risk of chemo-toxicities,and compare it with ECOG and CARG assessment tools. A prospective analysis was conducted on patients over 65 years with newly diagnosed lymphoma receiving chemotherapy. All parameters were assessed prior to treatment. Treatment related adverse events (TRAE) were recorded at each clinical encounter, and classified according to the CTCAE 5.0. The relationship between the various tools was evaluated. Overall Survival (OS) and incidence of severe TRAEs (Grades 3 to 5) was also evaluated. 104 patients were analyzed, with a median age of 75 years. Diffuse Large B Cell Lymphoma was the most common subtype. 27.9% patients

were identified as Fit, 58.7% as Pre-Frail, and 13.4% as Frail. Of note, 50% of patients identified as Frail on CGA were also categorized as ECOG 0, whilst 62.3% of Pre-Frail patients were categorized as ECOG 0. Similarly, 28.6% of patients identified as Frail were categorized as Low and Medium risk on CARG scoring, and 14.8% of patients identified as Pre-Frail were also categorized to be Low risk on CARG. When both geriatric tools were compared (CFS vs CGA), there was poor concordance for frail patients, where frail patients on CGA were categorized as CFS 1-3 (14.3%), CFS 5 (43.9%), CFS 6 (28.6%) and CFS 7,8 (14.3%). However, if a CFS score of 5 and above was categorized as frail on the CGA, then the concordance improves with both fit and frail patients having a concordance of 78.6% and 85.7% respectively. 699 severe TRAEs were reported throughout the follow-up duration. Fit patients experienced an average of 4.97 severe TRAEs, whilst Pre-Frail and Frail patients experienced a higher average of 7.26 and 8.00 events respectively (P-value=0.165). Fit patients had an average of 1.69 severe non-hematological TRAEs, compared to 2.65 and 3.28 events respectively for Pre-Frail and Frail patients (P=0.067). Median OS of Frail patients was 274 days, while the median OS of Pre-Frail and Fit patients were not reached. Hazard ratios (HRs) for death of Frail patients and Pre-Frail patients compared to Fit patients were 5.72 (95% CI 1.72-19.10), and 1.23 (95% CI 0.39-3.92) respectively. A significant proportion of Frail and Pre-Frail patients were initially identified as fit based on ECOG and CARG Toxicity Tool. This indicates that both these tools are not robust enough to identify frailty in the older cancer patient. Frail and Pre-Frail patients have a trend to higher incidence of severe TRAEs compared to Fit patients. Additionally, Frail patients demonstrate significantly lower overall survival rates compared to Pre-Frail and Fit patients. Both CFS and CGA appears to be better tools in predicting frailty and should be utilized instead.

LP021- PROXY INDICATORS TO SUPPORT INDEPENDENT AGEING-IN-PLACE IN OLDER PEOPLE WITH FRAILTY: A DELPHI-STYLE EXPERT CONSULTATION SURVEY. S. Dlima[1], A. Aminu[1], A. Hall[1], C. Todd[1], E. Vardy[1] *((1) University Of Manchester - Manchester (United Kingdom))*

Background: Frailty is not a one-way path to permanent disability and dependency; there is a call to reframe the goal from "managing the condition" to "living well with the condition". This means that older people with or at risk of frailty who live at home can still lead fulfilling lives, engage with their community, maintain a good quality of life, and age successfully, that is, age in place. We need reliable and valid measures that capture the various ageing-in-place experiences to help design appropriate services and policies for older people with frailty in the community. This two-stage expert consultation survey aimed to identify potential ageing-in-place indicators in community-dwelling older people with frailty. **Methods:** We used a modified Delphi approach to build consensus on ageing-in-place indicators for older people with frailty. Potential indicators were extracted from a rapid literature review and bucketed under the following ageing-in-place themes developed by Pani-Harreman et al. (2021): "Personal Characteristics of Older People", "Place", "Social Networks", "Support", and "Technology". Experts were practitioners and/or researchers with experience in gerontology, geriatric care, healthy ageing research, social and community care, and the care of older people with frailty. In the first survey, experts rated the indicators on a scale of 1–5 according to two criteria: - Importance: how important is this indicator in understanding how older people with or at risk of frailty are ageing in place? - Feasibility: how feasibly can this indicator be routinely measured in health and social care practice? The second survey only included indicators where there was a difference between the expert's rating and the group's mean rating. Experts could either change their rating or retain the same rating for that indicator. Consensus was defined as mean importance and feasibility ratings of ≥4.0, that is, extremely or very important for ageing-in-place and feasible to routinely measure. Both rounds of the survey were conducted from September to December 2024. **Results:** Twenty experts based in England completed both surveys: eleven academics and researchers, six healthcare practitioners, and three social care and policy professionals. In the first survey, only four indicators met the criteria for consensus: physical performance and mobility, multimorbidity, sensory function, and pressure ulcers (all "Personal Characteristics"). Thirty-one indicators were rated extremely or very important for ageing-in-place (21 "Personal Characteristics", four related to "Social Networks", and three related to "Place" and "Support" each). Only five indicators were considered extremely or very feasible to routinely measure: polypharmacy, physical performance and mobility, multimorbidity, sensory function, and pressure ulcers. Analyses of the second survey results are ongoing, where we will determine the final indicators that reach consensus. We also plan to discuss the survey results with public contributors (older people and carers) to gain their feedback. **Conclusion:** Given the growing recognition of non-physical frailty, such as social and cognitive frailty, future directions include using these indicators to stratify risk in older people with frailty, helping design targeted policies and implement personalised interventions, and understanding where in the care pathway these indicators can be feasibly measured and captured. **Keywords:** Frailty, ageing-in-place, independent living, older people, healthy ageing. **Disclosures:** This abstract presents independent research funded under the Dunhill Medical Trust (grant number PDM2202\9), National Institute for Health and Care Research Applied Research Collaboration-Greater Manchester (grant number NIHR20017405156), National Institute for Health and Care Research Policy Research Unit in Older People and Frailty (grant number PR-PRU-1217-21502) / Healthy Ageing (grant number NIHR206119), and the University of Manchester. The views expressed are those of the authors and not necessarily those of the NIHR or the Department of Health and Social Care. **References:** Pani-Harreman, K. E., Bours, G. J. J. W., Zander, I., Kempen, G. I. J. M. & Van Duren, J. M. A. 2021. Definitions, key themes

and aspects of 'ageing in place': a scoping review. Ageing and Society, 41, 2026-2059.

LP022- ATTITUDES OF OLDER ADULTS TO SCREENING FOR FALL RISK, PHYSICAL FRAILTY AND SARCOPENIA: A SYSTEMATIC REVIEW. O.F. Oluwakemi[1], I. Tsocheva[1], O.M. Ezeokoli[1], N. Jeyapalan[1], G. Randhawa[1], D.J. Hewson[1] *((1) Institute For Health Research, University Of Bedfordshire - Luton (United Kingdom))*

Background: The International Conference on Frailty and Sarcopenia Research (ICFSR) clinical practice guidelines recommend screening for both physical frailty and sarcopenia in older adults aged 65 and over [1, 2]. The World Falls Guidelines recommend offering advice on fall prevention and physical activity to all older adults and using opportunistic case finding to detect people at high risk, before offering a personalised multidomain intervention [3]. Despite the recommendation for early detection of all three conditions, there have been no systematic reviews on attitudes of older adults to proactive screening other than reviews that have focused on people already in the healthcare system, such as people attending clinics [4]. Therefore, the aim of this study is to synthesise the evidence on the attitudes of older adults to early detection and preventive health checks/ screening for fall risk, physical frailty and sarcopenia. **Methods:** This review was conducted based on Preferred Reporting Items for Systematic Reviews and Meta-analyses statement (PRISMA) guidelines. The inclusion criteria, which were based on the participants, interventions, comparisons and outcomes (PICO) methodology, were a focus on older adults, falls or frailty or sarcopenia, attitudes to screening, and being a qualitative study. Relevant articles were searched for using keywords and MeSH headings in six electronic databases: Medline, Web of Science Core Collection, CINAHL, PsycINFO, Amed, SPORTDiscus. Databases were searched in November 2024. Studies that met the inclusion criteria were critically appraised using the JBI critical appraisal tool and findings were synthesized thematically. **Results:** The search found 1293 articles of which 45 were eligible for full text review, with nine articles meeting the inclusion criteria. All the studies looked at attitudes to screening in older people for physical frailty and falls, with no study looking at screening for sarcopenia. The thematic analysis saw several themes emerge, including a requirement for strong social support for screening to be effective. This theme was identified in both healthcare professionals and older adults and included the need to bring older adults to wherever screening took place. In addition, supportive friends and family was thought to convince older people of the benefits of screening was also a facilitator of a positive attitude toward screening. Having confidence in healthcare services and good relationships with GPs and nurses were also worthwhile. **Conclusion:** The principle of screening was generally acceptable to older people, however none of the studies looked at early screening, with all older participants already attending healthcare services in relation to frailty or falls. In addition, none of the studies focused on cultural issues related to screening, although many minority-ethnic groups have substantially lower screening uptakes for other conditions. Future work will focus on the co-production of a culturally acceptable physical frailty and sarcopenia screening programme for older adults. **Keywords:** Frailty, sarcopenia, falls, screening, attitudes.

LP024- TELOMERE LENGTH AND ITS ASSOCIATION WITH PHYSICAL AGING IN ELDERLY POPULATIONS: A SYSTEMATIC REVIEW. K.M. Wai[1], A.M. Paing[2], T. Swe[3] *((1) Department Of Human Ecology, Graduate School Of Medicine, The University Of Tokyo - Tokyo (Japan), (2) Faculty Of Sciences, Engineering And Technology, University Of Adelaide - Adelaide (Australia), (3) Preclinical Department, University Of Medicine, Yangon (Myanmar))*

Background: Telomeres, repetitive sequences of nucleotides (TTAGGG), at the ends of human chromosomes naturally shorten with each cell division. Telomere length (TL) serves as a marker for biological aging, influenced by chronological aging but distinct from it. TL has increasingly been linked to age-related diseases and disabilities. However, there is limited evidence regarding the components of physical aging and its association with biological aging, TL. This systematic review aims to evaluate and synthesize the evidence on the association between components of physical aging and TL in the elderly population. **Methods:** A comprehensive search was conducted in online databases of PubMed, Web of Science, ProQuest, and ScienceDirect to identify the eligible papers published until 1st August 2024. The authors independently extracted data from the eligible studies using the standardized form. The quality of the included studies was evaluated for the risks of biases. **Results:** A total of 1,080 records were initially identified using the predefined search strategy. Forty eligible records from the selected full-text screening were included in this review. When assessing physical aging, the nature and type of measurements across studies vary, including subjective assessment, objective assessments, and a combination of both approaches. Subjective assessments of general health or physical limitations may be linked with TL, while frailty, whether measured subjectively or objectively, shows associations with TL in less than 35 percent of total studies. In contrast, composite measures of physical performance/ability are associated with TL in the elderly population. **Conclusion:** In conclusion, we demonstrated that the associations between physical aging and TL varies depending on the type and nature of physical aging assessments. Composite measures of physical performance/ ability, however, demonstrate a strong and consistent parameter of physical aging to link with TL in older adults. Future research should prioritize standardized, multidimensional approaches to measure physical aging to understand better its association with TL to support healthy aging strategies. **Keywords:** Physical aging, frailty, telomere length, biological aging. **Clinical Trial Registry:** Not applicable. **Disclosures:** This work is funded by Grant-in-Aid for Scientific Research for Early Career Researchers of the Japanese Society for the Promotion of Science (No.23K16301). The authors declare no competing interests. **References:** 1. William J. Strawbridge,

Margaret I. Wallhagen, Richard D. Cohen, Successful Aging and Well-Being: Self-Rated Compared With Rowe and Kahn, The Gerontologist, Volume 42, Issue 6, 1 December 2002, Pages 727–733, https://doi.org/10.1093/geront/42.6.727. 2. Jason L. Sanders, Anne B. Newman, Telomere Length in Epidemiology: A Biomarker of Aging, Age-Related Disease, Both, or Neither?, Epidemiologic Reviews, Volume 35, Issue 1, 2013, Pages 112–131, https://doi.org/10.1093/epirev/mxs008. 3. Xiong, L., Yang, G., Guo, T. et al. 17-year follow-up of association between telomere length and all-cause mortality, cardiovascular mortality in individuals with metabolic syndrome: results from the NHANES database prospective cohort study. Diabetol Metab Syndr, 2023, 15, 247. https://doi.org/10.1186/s13098-023-01206-7. 4. Hernández-Álvarez, D., Rosado-Pérez, J. et al. Aging, Physical Exercise, Telomeres, and Sarcopenia: A Narrative Review. Biomedicines 2023, 11, 598. https://doi.org/10.3390/biomedicines11020598

LP026- RISK PREDICTION MODELS FOR FRAILTY IN OLDER ADULTS: A SYSTEMATIC REVIEW AND CRITICAL APPRAISAL. L.N. Kong[1], J. Yang[2], L. Yang[3], Q. Lyu[2], D.X. Liu[2] *((1) Chongqing Medical University - Chongqing (China), (2) The First Affiliated Hospital Of Chongqing Medical University - Chongqing (China), (3) Qingdao University - Qingdao (China))*

Background: Frailty is common in older adults and associated with increased adverse health outcomes. Risk prediction model for frailty has benefits in guiding the frailty prevention. Increasing studies have focused on the development of risk prediction models for frailty among older adults, however, the model quality and clinical applicability remain unknown and this may impede their clinical use. Therefore, this review systematically reviewed and critically appraised the current risk prediction models for frailty among older adults. **Methods:** Databased of PubMed, Embase, CINAHL, and Cochrane Library were searched from inception to June, 2024 to identify published studies focusing on developing or validating risk prediction models for frailty among older adults, with language restriction to English. Data extraction was independently conducted by two reviewers based on the checklist for Critical Appraisal and Data Extraction for Systematic Reviews of Prediction Modelling Studies. Quality of included models was assessed using the Prediction Model Risk of Bias Assessment Tool. The findings of included studies were presented using the narrative synthesis approach. **Results:** A total of 5421 studies were retrieved. 19 studies with 22 risk prediction models for frailty were included, of which 15 studies reporting 17 (77.3%) models were published between 2021 and 2024. 13 (59.1%) models focused on community-dwelling older adults and 9 (40.9%) on hospitalized older adults. Logistic regression and machine learning methods were employed to develop risk prediction models. A variety of predictors were identified, including sociodemographic, lifestyle, clinical, anthropometric, echocardiography, laboratory, cognitive, psychological, and social factors. The frequently used predictors were age (77.3%), cognitive function (31.8%), self-rated health (27.3%), sex (22.7%), activities of daily living (22.7%), and depression (22.7%). Internal and external validation were conducted in 17 (77.3%) and 4 (18.2%) models, respectively. 21 (95.5%) models evaluated model discrimination, with the AUC or c-index ranging from 0.707 to 0.920 in the internal validation and from 0.612 to 0.889 in the external validation. 15 (68.2%) models assessed model calibration using the calibration curve, Hosmer-Lemeshow test, and Brier score and showed good calibration. 19 (86.4%) models reported presentation format, including nomogram (n=6), logistic regression equation (n=5), risk score (n=4), a points system in an app (n=1), online calculator (n=1), online clinical support system (n=1), and excel spreadsheet (n=1). All risk prediction models had high risk of bias primarily due to problems in analysis domain and 9 (40.9%) models had high concern regarding applicability. **Conclusion:** Current risk prediction models for frailty in older adults were with poor validation and evaluation. Future research should focus on improving current models to aid their implementation and developing and validating new models according to the Prediction Model Risk of Bias Assessment Tool to reduce the risk of bias and increase the clinical utility. **Keywords:** Frailty, older adults, risk prediction model, systematic review. **PROSPERO registration:** CRD42024582883. **Disclosures:** This work was supported by the Humanities and Social Science Project of Ministry of Education of China (No. 22YJAZH041). The authors declared no conflict of interest.

COGNITIVE FRAILTY

P24- PSYCHOSOCIAL FACTORS MEDIATE THE RELATIONSHIP BETWEEN OLFACTORY FUNCTION AND COGNITIVE FRAILTY IN OLDER ADULTS: A STRUCTURAL EQUATION MODELING. L.J. Chen[1], C.Y. Lin[2], F.W. Hu[3] *((1) National Cheng Kung University Hospital - Tainan (Taiwan, Republic of China), (2) National Cheng Kung University - Tainan (Taiwan, Republic of China), (3) Kaohsiung Medical University - Kaohsiung (Taiwan, Republic of China))*

Background: With the trend of population aging, cognitive frailty in the older adults is an increasingly pressing public health issue. Previous studies on cognitive frailty have primarily focused on the independent direct effects of various risk factors, with less exploration of their potential interactive effects and interconnected pathways. This study aimed to test a conceptual model and elucidate the pathways leading to cognitive frailty using Structural Equation Modeling. **Methods:** A cross-sectional study was conducted with potential participants identified from the outpatient departments of family medicine and geriatrics at a tertiary care medical center in southern Taiwan. Participants (n=208) aged 65 years or older who were able to communicate independently with the researchers were included. Demographic factors, Top International Biotech Smell Identification Test (assess olfactory function), Short-Form Mini Nutritional Assessment, Handgrip strength, Short Physical Performance Battery, and Bioelectrical Impedance

Analysis (assess sarcopenia) were collected. Cognitive frailty was assessed using Fried's Frailty Phenotype and the Saint Louis University Mental Status Examination. Psychosocial factors were measured using the five-item Geriatric Depression Scale, Brief Resilience Scale, and Lubben Social Network Scale-Revised. **Results:** Olfactory function was positively correlated with nutritional status, but negatively correlated with depressive symptoms, resilience, and cognitive frailty. Nutritional status was significantly negatively correlated with sarcopenia. Resilience was significantly positively correlated with social support but negatively correlated with sarcopenia. Sarcopenia was significantly positively correlated with cognitive frailty. Social support was significantly negatively correlated with cognitive frailty. In our model, resilience and social support were significant mediators attenuating the effect of olfactory function on cognitive frailty. Specifically, resilience and social support weakened the negative effects of olfactory dysfunction on cognitive frailty. **Conclusion:** Olfactory function emerged as an early-stage factor, with psychosocial factors playing crucial mediating roles. The early detection of olfactory dysfunction in older adults and enhancement of resilience and social support are crucial for preventing cognitive frailty. **Keywords:** Cognitive frailty, olfactory function, resilience, social network, structural equation modeling. **Disclosures:** FWH received a grant from the National Science and Technology Council (NSTC 112-2314-B-037-132-MY3). The authors declared no competing interests.

P25- THE ASSOCIATION BETWEEN COGNITIVE FRAILTY AND TRANSITION TO INSTITUTIONAL CARE AMONG COMMUNITY-DWELLING OLDER ADULTS: A COMPETING RISKS SURVIVAL ANALYSIS. J. Bian[1], Z. Chen[1], D.Y.T. Fong[1], E.P.H. Choi[1], P.H. Chau[1] *((1) The University Of Hong Kong - Hong Kong (China))*

Background: Cognitive frailty, characterized as the concurrent presence of physical frailty and cognitive impairment, was an independent risk factor for adverse outcomes such as falls, disability, and hospitalization. Currently, there is a lack of evidence regarding the association between cognitive frailty and transition to institutional care (TIC), which is generally not considered a preferred option for older adults in later life due to its severe adverse outcomes. This study aimed to investigate the longitudinal relationship between cognitive frailty and TIC in community-dwelling older adults. **Methods:** We conducted a retrospective cohort study among community-dwelling older adults aged 65 to 100 years (n=8863). Data were extracted from four waves of the Chinese Longitudinal Healthy Longevity Survey (2008-2018). Cognitive frailty was determined by the modified Fried criteria and the Chinese version Mini-Mental Status Examination. The Fine-Gray subdistribution regression models were used to explore the relationship between cognitive frailty and TIC, considering mortality and lost to follow-up as competing risks, and controlling for gender, age, region, marital status, living arrangement, multimorbidity and household income. The results were presented as subdistribution hazards ratios (SHRs) and 95% confidence intervals (CIs). **Results:** The prevalence of cognitive frailty was 2.3% at baseline. During the 46535.5 person-years of follow-up, 107 (1.2%) transitioned to institutional care, 4183 (47.2%) died before TIC and 2846 (32.1%) lost to follow-up. Incidence rates of TIC, mortality and lost to follow-up were 2.3 (95% CI: 1.9 to 2.8), 89.9 (95% CI: 87.3 to 92.5) and 61.2 (95% CI: 59.0 to 63.4) per 1,000 person-years, respectively. Older adults with cognitive frailty had a higher risk of TIC (SHR 3.32, 95% CI: 1.41 to 7.83; p=0.006) compared to those without physical frailty and cognitive impairment. Advanced age, living alone and living in urban areas were also associated with TIC. Besides, cognitive frailty was associated with greater hazard of mortality (SHR 1.50, 95% CI: 1.26-1.80; p<0.001) and lost to follow-up (SHR 1.40, 95% CI:1.08-1.80; p=0.011) compared to unimpaired. **Conclusion:** Our findings highlight the necessity for appropriate and timely management of cognitive frailty and personalized interventions for this vulnerable group to delay their premature admission to nursing homes. **Keywords:** Cognitive frailty, nursing home admission, institutionalisation, cognitive impairment, physical frailty.

P26- ASSOCIATION OF PHYSICAL FUNCTION WITH COGNITIVE FUNCTION AMONG MALE OLDER ADULTS IN A RETIREMENT HOME. L. Chih-Ming[1], W. Soushan[2], K. Yu-Shien[1] *((1) Chang Gung Memorial Hospital - Taipei (Taiwan, Republic of China), (2) National Taiwan Normal University - Taipei (Taiwan, Republic of China))*

Objectives: The purpose of this study was to identify the effectiveness of various measures to detect of the physical and cognitive function of male older adults in a retirement home. Association of physical function with cognitive function is also investigated. **Design:** Cross-sectional, observation study. **Methods:** All enrolled subjects are residents of a retirement home who can live independently without nursing assistance. They must have normal cognitive and physical status on each item with SPMSQ ≤2 errors, ADL >90 points, and IADL with a total scores of 5 in five domains of using the telephone, shopping, using transportation, handling medications and handling finances. The enrolled subjects will receive sarcopenia and MMSE as different tools for physical and cognitive measurement. The diagnosis of sarcopenia was according to the Asian Working Group for Sarcopenia (AWGS) 2014 criteria. CDR study will be arranged if highly suspected MCI by MMSE study. MCI is defined as the subjects can live independently with MMSE ≤25 and CDR ≥0.5. **Results:** There were 201 male older adults enrolled and 124 subjects were eligible for analysis. There were 70 in the group of sarcopenia subjects and 54 in the group of non-sarcopenia subjects. Overall, there were 15 MMSE ≤25 in the group of sarcopenia subjects. There were 2 of 15 MMSE ≤25 had CDR = 0 and 13 of 15 had CDR ≥0.5. There were 2 MMSE ≤25 in the group of non-sarcopenia subjects and 2 had CDR ≥0.5. Thirteen out of 70 sarcopenia subjects and 2 out of 54 non-sarcopenia subjects had MCI

(odds ratios (OR): 5.9298; 95% CI= 1.2771-27.5344; p value= .0231). **Conclusion:** Sarcopenia and MMSE can detect different levels of physical and cognitive functional capacities decline for male older adults in a retirement home with normal ADL and IADL and SPMSQ. Besides there is a higher incidence of MCI in male older adults with sarcopenia. Further longer-term investigation of associations is warranted.

P27- RESPIRATORY MUSCLE PERFORMANCE AND COGNITION IN OLDER ADULTS WITH SUBJECTIVE COGNITIVE COMPLAINTS: A PILOT STUDY.

L. Cahalin[1], P. Rocco[1], M. Prysiazny Obispo[1], D. Cilien[1], K. Garcia[1], P. Lewis[1], C. Von Vreckin[1], A. Witter[1], I. Mendoza[1], N. Kirk-Sanchez[1] *((1) University Of Miami Miller School Of Medicine - Coral Gables (United States))*

Background: A growing literature has identified the role that greater respiratory muscle strength appears to have in maintaining cognition in older adults and several studies have found that inspiratory muscle training (IMT) in midlife and in older adults who are healthy improves not only inspiratory muscle strength, but also cognition. Greater respiratory muscle performance (RMP), therefore, may have a role in maintaining and possibly improving cognitive function. The purpose of this study was to examine the relationship of RMP on cognition in older adults with subjective cognitive complaints (SCC) using two established cognitive instruments including the Montreal Cognitive Assessment (MoCA) and the NeuroTrax System (NTS; NeuroTrax Corp., Naples, FL). **Methods:** 13 older adults (8 women, 5 men) with SCC and slow gait (≤ 0.65 m/sec) underwent measurement of RMP using standard methods via the PrO2 device (PrO2 Health, Inc., Smithfield, RI) providing the maximal inspiratory pressure (MIP), sustained MIP (SMIP), maximal expiratory pressure (MEP), sustained MEP (SMEP), and fatigue index test (FIT). Higher values of all PrO2 measures are associated with greater RMP. MIP was measured at 1-2 seconds of inspiration from residual volume (RV) and SMIP was measured from RV to total lung capacity. MEP was measured at 1-2 seconds of exhalation from TLC and SMEP was measured from TLC to RV. The MoCA and NTS were administered using standard methods from which the total MoCA score was calculated and the NTS provided 6 cognitive measures including memory (MEM), executive function (EF), attention (ATT), processing speed (PS), verbal function (VF), and a global cognitive score (GCS). **Results:** The mean±SD age, height, and weight were 69.2±4.4 yrs, 171.7±13.8 cm, and 84.2±24.7 kg, respectively. The mean±SD MIP, SMIP, MEP, SMEP, and FIT were 53.4±17.6 cm H2O, 298.9±129.1 PTU, 55.7±27.1 cm H2O, 541.5±221.7 PTU, and 10.2±5.6, respectively. The mean±SD MoCA and NTS MEM, EF, ATT, PS, VF, and GCS were 21.4±6.2, 88.3±15.7, 92.7±14.1, 86.9±17.4, 96.2±19.1, 85.6±22.9, and 88.9±14.4, respectively, all of which were below age-predicted values. No measure of inspiratory muscle performance (IMP) was significantly correlated to any cognitive measure, but both MEP and SMEP were significantly ($p<.05$) correlated to NTS GCS (r=.61 and .50), MEM (r=.67 and .59), and ATT (r=.75 and .67), respectively. The MEP was also significantly correlated to the MoCA (r=.57; p=.04). **Conclusion:** Expiratory muscle performance (EMP), but not IMP was significantly correlated to several measures of cognition in older adults with SCC. The finding that MEP was significantly correlated to two different measures of cognition is important and highlights the role that EMP may play in cognition. No previous study has examined the relationship between RMP and cognition making this pilot study novel with potential implications for older adults with SCC. The results of this study suggest that improving EMP may have a role in maintaining and possibly improving cognition in older adults with SCC. However, further investigation of RMP and cognition as well as the effects of IMT on cognition in a larger sample of older adults with SCC is needed. **Keywords:** Subjective cognitive complaints, cognition, respiratory muscles, inspiratory muscles, expiratory muscles. **Disclosures:** LPC and NKS received a University of Miami Aging Team Science Research Grant to perform this study and have no conflict of interest nor competing interest. **References:** Ferreira L, Tanaka K, Ferreira R et al. Respiratory training as strategy to prevent cognitive decline in aging: a randomized controlled trial. Clinical Interventions in Aging 2015;10:593-603. Cheng YY, Lin SY, Hsu CY, Fu PK. Respiratory Muscle Training Can Improve Cognition, Lung Function, and Diaphragmatic Thickness Fraction in Male and Non-Obese Patients with Chronic Obstructive Pulmonary Disease: A Prospective Study. J Pers Med. 2022 Mar 16;12(3):475. Freeberg KA, Craighead DH, Heinbockel TC, Rossman MJ, Jackman RA, Jankowski LR, Ludwig KR, Chonchol M, Bailey EF, Seals DR. Time-efficient, high-resistance inspiratory muscle strength training increases cerebrovascular reactivity in midlife and older adults. Am J Physiol Heart Circ Physiol. 2023 Nov 1;325(5):H1059-H1068. Craighead DH, Heinbockel TC, Freeberg KA, Rossman MJ, Jackman RA, Jankowski LR, Hamilton MN, Ziemba BP, Reisz JA, D'Alessandro A, Brewster LM, DeSouza CA, You Z, Chonchol M, Bailey EF, Seals DR. Time-Efficient Inspiratory Muscle Strength Training Lowers Blood Pressure and Improves Endothelial Function, NO Bioavailability, and Oxidative Stress in Midlife/Older Adults With Above-Normal Blood Pressure. J Am Heart Assoc. 2021 Jul 6;10(13):e020980. Burman R, Alperin N. CSF-to-blood toxins clearance is modulated by breathing through cranio-spinal CSF oscillation. J Sleep Res. 2024;33(1):e14029. doi:10.1111/jsr.14029. Livingston G, et al. Dementia prevention, intervention, and care: 2020 report of the Lancet Commission. The Lancet. 2020; doi:10.1016/S0140-6736(20)30367-6.

P28- MACHINE LEARNING TO DETECT COGNITIVE FRAILTY IN COMMUNITY-DWELLING OLDER ADULTS. C. Park[1], N. Kim[2], C.W. Won[3], M. Kim[4]
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Background: Cognitive frailty (CF), a clinical syndrome combining physical frailty (PF) and cognitive impairment (CI), is increasingly recognized for its association with adverse health outcomes in older adults [1]. Early identification and intervention are crucial, as CF can be reversed with timely management, significantly improving health outcomes and reducing healthcare costs [1]. This study aimed to examine key factors identifying CF and develop a machine learning-based identifiable model to accurately classify CF in older adults. **Methods:** This retrospective cohort study analyzed data from the Korean Frailty and Aging Cohort Study (KFACS) between 2016 and 2017, including 2,404 community-dwelling older adults [2]. Comprehensive assessments evaluated participants' sociodemographic, clinical, and health status. Participants were exposed to evaluations of PF using the Fried frailty phenotype [3] and cognitive function through the Mini-Mental State Examination (MMSE) [4]. Participants with at least one frailty phenotype and an MMSE score less than 24 were classified as having CF, while the rest were categorized as non-CF. Key outcome measures included sociodemographic factors (age, sex, education), clinical characteristics (comorbidities, prescription medications), and health status (mobility, balance, depression, nutrition). Machine learning, with recursive feature elimination and bootstrapping [5,6], was employed to develop an identifiable model, optimizing features related to CF. **Results:** Key factors significantly associated with CF included advanced age, female sex, lower educational attainment, PF, sarcopenia, diminished balance confidence, impaired motor capacity, malnutrition, and elevated levels of depression. Furthermore, a machine learning algorithm model identified six optimal features: motor capacity, education level, mobility limitations, nutritional status, balance confidence, and activities of daily living. The model with the optimal features achieved an area under the curve of 84.34%, a sensitivity of 75.12%, a specificity of 80.87%, and an accuracy of 79.51%. **Conclusion:** This study successfully identified key factors associated with CF and developed a robust machine learning model for its identification. The findings underscore the importance of comprehensive health assessments for early detection of CF, which can help prevent progression to more severe physical and cognitive decline. Incorporating identifiable models into clinical practice may facilitate personalized interventions, improving outcomes for older adults at risk of CF. **Keywords:** Aged, cognition, frailty, geriatric assessment, machine learning, precision medicine. **Disclosures:** This research was supported by the Ministry of Science (MIST, ICT) under the National Program for Excellence in Software (SW), supervised by the Institute of Information & communications Technology Planing & Evaluation (IITP) in 2023, Republic of Korea (identifier number: 2019-0-01219). This research was supported by a grant of the Korea Health Technology R&D Project through the Korea Health Industry Development Institute (KHIDI), funded by the Ministry of Health and Welfare, Republic of Korea (grant number: HI15C3153). The authors declared no competing interests. **References**: 1. Kelaiditi E, Cesari M, Canevelli M, et al. Cognitive frailty: rational and definition from an (I.A.N.A./I.A.G.G.) international consensus group. J Nutr Health Aging. 2013;17(9):726-34. doi:10.1007/s12603-013-0367-2. 2. Won CW, Lee S, Kim J, et al. Korean frailty and aging cohort study (KFACS): cohort profile. BMJ Open. 2020;10(4):e035573. doi:10.1136/bmjopen-2019-035573. 3. Fried LP, Tangen CM, Walston J, et al. Frailty in older adults: evidence for a phenotype. J Gerontol A Biol Sci Med Sci. 2001;56(3):M146-56. doi:10.1093/gerona/56.3.m1464. 4. O'Bryant SE, Humphreys JD, Smith GE, et al. Detecting dementia with the mini-mental state examination in highly educated individuals. Arch Neurol. 2008;65(7):963-7. doi:10.1001/archneur.65.7.963. 5. Park C, Mishra R, Golledge J, Najafi B. Digital biomarkers of physical frailty and frailty phenotypes using sensor-based physical activity and machine learning. Sensors (Basel). 2021;21(16):5289. doi:10.3390/s21165289. 6. Park C, Mishra R, Sharafkhaneh A, et al. Digital biomarker representing frailty phenotypes: The use of machine learning and sensor-based sit-to-stand test. Sensors (Basel). 2021;21(9), 3258. doi:10.3390/s21093258.

P29- DO MYOKINES INFLUENCE THE ASSOCIATION BETWEEN SARCOPENIA-RELATED PARAMETERS AND COGNITIVE FUNCTION IN COMMUNITY-DWELLING OLDER ADULTS? EXPLORATORY RESULTS FROM THE ENHANCE STUDY. N. Amini[1], L. Lapauw[1], J. Dupont[1,2], L. Vercauteren[1], S. Dalle[3,4], K. Koppo[3], S. Verschueren[5], J. Tournoy[1,2], E. Gielen[1,2]
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Background: Multiple studies have shown that sarcopenia and its related parameters (muscle mass, muscle strength and physical performance) are associated with cognitive dysfunction. Emerging preclinical evidence suggest that myokines, such as irisin, Brain-Derived Neurotrophic Factor (BDNF), myostatin and Insulin-like Growth Factor-1 (IGF-1) might explain this relationship. This study aimed to explore the association between sarcopenia-related parameters and both global and specific cognitive domains, and whether myokines influenced this association. **Methods:** An exploratory, cross-sectional analysis of data from the Exercise and Nutrition

for Healthy AgeiNg (ENHANce) study, a 5-armed triple blinded RCT in older adults (≥65 years) with sarcopenia (EWGSOP2-criteria) was performed. Cognitive functioning was assessed by Mini-Mental State Examination (MMSE), Repeatable Battery for the Assessment of Neuropsychological Status (RBANS), Trail Making Test A&B (TMT), Stroop and Maze Test. Muscle mass and function were evaluated by measuring HandGrip Strength (HGS), Chair Stand Test (CST), appendicular Lean Mass (aLM), Gait Speed (GS) and Short Physical Performance Battery (SPPB). Serum myokines (IGF-1, irisin, myostatin, BDNF) were determined through Enzyme Linked Immunosorbent Assay. Multivariable regression analyses were performed to explore the associations between sarcopenia-related parameters and cognitive functioning, with adjustment for putative confounders including myokines. **Results:** Fifty-eight participants were included in this analysis (mean age: 76.2 years, ♀:65.5%). After adjustment for age, sex, body mass index, physical activity and nutritional status, aLM was significantly associated with MMSE (β=0.207,p=0.040), RBANS Total (β=0.206,p=0.011) and RBANS Attention (β=0.200,p=0.007), SPPB was significantly associated with Maze time (β=-0.306,p=0.024) and GS was significantly associated with TMT A (β=-0.240, p=0.009). After further adjustment for BDNF, the association between aLM and MMSE became non-significant. Adjustment for irisin, myostatin and IGF-1 did not influence the significance of the associations. **Conclusion:** This study showed that several sarcopenia-related parameters, such as muscle mass and physical performance, are associated with both global and specific cognitive domains. Furthermore, BDNF may, at least partially, explain the association between muscle mass and MMSE. Additional research with larger sample size is needed to replicate these novel findings. **Keywords:** Sarcopenia, older adults, cognition, muscle mass, muscle strength, physical performance, myokines, insulin-like growth factor-1, brain-derived neurotrophic factor, irisin, myostatin. **References:** Peng TC, Chen WL, Wu LW, Chang YW, Kao TW. Sarcopenia and cognitive impairment: A systematic review and meta-analysis. Clin Nutr. 2020;39(9):2695-701. Cabett Cipolli G, Sanches Yassuda M, Aprahamian I. Sarcopenia Is Associated with Cognitive Impairment in Older Adults: A Systematic Review and Meta-Analysis. J Nutr Health Aging. 2019;23(6):525-31. Scisciola L, Fontanella RA, Surina, Cataldo V, Paolisso G, Barbieri M. Sarcopenia and Cognitive Function: Role of Myokines in Muscle Brain Cross-Talk. Life (Basel). 2021;11(2). Dedeyne L, Dupont J, Koppo K, Verschueren S, Tournoy J, Gielen E. Exercise and Nutrition for Healthy AgeiNg (ENHANce) project - effects and mechanisms of action of combined anabolic interventions to improve physical functioning in sarcopenic older adults: study protocol of a triple blinded, randomized controlled trial. BMC Geriatr. 2020;20(1):532.

P30- COGNITIVE FRAILTY AND MALNUTRITION: ASSOCIATED SYNDROMES AND THEIR MANAGEMENT USING CGA AT GERIATRIC OUTPATIENT CLINICS. H. Vankova[1], D. Hrnciarikova[2], B. Juraskova[2] *((1) Third Faculty Of Medicine, Charles University - Praha (Czech Republic), (2) Charles University - Hradec Králové (Czech Republic))*

Background: Combination of cognitive frailty and malnutrition increases risks for the patient. Geriatricians are expected to have optimal competency to address both syndromes. Surprisingly, evaluation and management of malnutrition in geriatric patients is not supported economically by the Czech health care system in the geriatric clinics in 2024 (neither in previous years). On the contrary, evaluation of cognitive functions by geriatricians is traditionally supported. **Objectives:** During a pilot project, geriatricians in geriatric outpatient clinics were mapping malnutrition and its risk factors including cognitive frailty in community dwelling patients and reported the effect of CGA, comprehensive geriatric assessment. **Methods:** A pilot project for geriatric outpatient clinic provided dedicated time of geriatricians for malnutrition evaluation and management in community dwelling patients in 2023, supported by charity Alzheimer nadacni fond (the Alzheimer's Foundation). This means an additional time allocation above basic minimum per patient which was guaranteed by the national health care system before. The pilot project collected first qualitative and quantitative data on the effect of this intervention in geriatric outpatient clinic. Evaluation of cognitive frailty was included as an important aspect which deserves targeted intervention by geriatrician. **Results:** This pilot project documented the competency of geriatricians in the Czech Republic in the field of malnutrition in older adults. Fourteen geriatric outpatient clinics were involved in data collection on malnutrition and cognitive frailty. Clinical recommendations on malnutrition risk and its evaluation in geriatric patients were developed and approved by the Board of the Czech Society of Gerontology and Geriatrics, based on international guidelines and outcomes of the pilot project in geriatric outpatient clinics in fourteen regions of the Czech Republic. Among home-dwelling patient with normal cognition only 10% were malnourished. Malnutrition was present in 23% of patients living with mild dementia syndrome and 48% of people with moderate to severe dementia syndrom. In the pilot project sample, malnutrition was highly associated with cognitive impaírment (p= 0.002). **Conclusion:** Cognitive frailty and malnutrition are highly interrelated. Based on the guidelines of the Czech Society of Geriatrics and Gerontology and outcomes of the pilot project, the Ministry of Health is supporting change in resources allocation. At the moment of submission, we are expecting the decision whether malnutrition evaluation and management in geriatric outpatient clinics patients will be economically supported. **Disclosures:** Presentation supported by the Charles University research program Cooperatio 34 – Internal disciplines. **Keywords:** Cognitive frailty, malnutrition, geriatric outpatient clinic, frailty. **References:** Cesari M, et al. The geriatric

management of frailty as paradigm of „The end of the disease era“. Eur J InternMed. 2016 Jun; 31: 11-4. doi: 10.1016/j.ejim.2016.03.005. Epub 2016 Mar18. PubMed26997416. Vankova H, et al. Vyhodnocení syndromu krehkosti (frailty) u geriatrického pacienta… (Evaluation of frailty in geriatric patient. Clinical guidelines of the Board of the Czech Society of Gerontology and Geriatrics). Geriatrie a Gerontologie 2023, 12, 1: 5-8.

P31- SIMPLE WHISPER TEST MAY HELP DETECT PHYSIO-COGNITIVE DECLINE SYNDROME IN OLDER ADULTS. Y. Xing[1], L. Ma[1] *((1) Xuanwu Hospital Capital Medical University, National Clinical Research Center For Geriatric Diseases - Beijing (China))*

Background: Objective: To explore the association between hearing function assessed by simple whisper test and physio-cognitive decline syndrome (PCDS) in older adults. **Methods:** Data were from Beijing Disability Risk and Ageing Monitoring Study (BEAM). A total of 1558 community-dwelling older adults were included. PCDS was defined as concurrent mobility impairment without disability and cognitive impairment with no ting in 1.14% of cognitive frailty. In the end of follow up, the survival rates in the cognitive frailty group were 23.8% and in the non-frail group 64.2% (p<0.001). The first group survived 33.4 months longer than the other. When analysing the risk of death separately, in the adjusted analysis, frailty had an increased risk of 1.55 (95% CI: 1.35-1.79) compared to non-frailty. Those with memory impairments had a 1.81 (95% CI: 1.51-2.18) increased risk of death compared to those without the condition. When cognitive frailty was analysed as a predictor of mortality, the risk was the doubled in those with the condition compared to those without (HR: 2.02; 95% CI: 1.44-2.83). **Conclusion:** Cognitive frailty is not a prevalent condition among the older adults. However, its presence becomes greater the risk of mortality. Therefore, older adults presenting with this condition should be closely monitored to prevent the progression of cognitive impairment and improve frailty phenotype. **Keywords:** Cognition, frailty, aging, older adults. **Disclosures:** The authors declared no competing interests. **References:** 1. Kelaiditi E, Cesari M, Canevelli M, et al. Cognitive frailty: Rational and definition from an (I.A.N.A./I.A.G.G.) International Consensus Group. J Nutr Health Aging. 2013;17(9):726-734. doi:10.1007/s12603-013-0367-2. 2. Fried LP, Tangen CM, Walston J, Newman AB, Hirsch C, Gottdiener J, Seeman T, Tracy R, Kop WJ, Burke G, McBurnie MA; Cardiovascular Health Study Collaborative Research Group. Frailty in older adults: evidence for a phenotype. J Gerontol A Biol Sci Med Sci. 2001 Mar;56(3):M146-56. doi: 10.1093/gerona/56.3.m146. PMID: 11253156. 3. Kim HG, Kim Y, Edmonds EC, Bondi MW. Comparison of Cognitive Impairment Diagnosis Criteria in Clinical Settings: Conventional vs. Neuropsychological. Alpha Psychiatry. 2024 Mar 1;25(2):212-219. doi: 10.5152/alphapsychiatry.2024.231448. PMID: 38798819; PMCID: PMC11117417.

LP027- MORTALITY RISK IN COGNITIVE FRAILTY OLDER ADULTS: FOLLOW-UP OF 12 YEARS. I.J.C. Schneider[1], T.D.S. Alexandre[2], L.C. Fontanela[1], C. De Oliveira[3], D.S.R. Vieira[4] *((1) UFSC - Araranguá (Brazil), (2) UFSCAR - São Carlos (Brazil), (3) UCL - London (United Kingdom), (4) UCL - Araranguá (Brazil))*

Background: Cognitive frailty is defined as presence of simultaneous of physical frailty and cognitive impairment, as long as it is not related to the diagnosis of dementia or neurodegenerative diseases [1]. The purpose of this study was to investigate the risk of mortality for all causes associated of cognitive frailty in older adults. **Methods:** This prospective cohort study included 4,736 participants aged ≥60 years from wave 2 of the English Longitudinal Study of Ageing (ELSA). Participants had a maximum follow-up of 12 years. The cognitive frailty was defined as presence of Fried frailty phenotype (three of five characteristics: weight loss, weakness, slowness, exhaustion, and low level of physical activity) [2] and cognitive impairment (z-score ≤-1.5 standard deviation composed of the average z-scores of orientation on time, immediate and delayed recall of 10 words and semantic verbal fluency, by sex, age and education) [3]. It was performed descriptive analyse, Kaplan Meier survival analysis and cox regression adjusted by sex, age, wealth, smoking habits, chronic and circulatory diseases. **Results:** The majority were female (54.1%), aged 60 to 69 years (49.5%), highest wealth quintile (21,5%). At the begging of follow-up, the prevalence of frailty was 8.9% and of cognitive impairment 6%, resulting in 1.14% of cognitive frailty. In the end of follow up, the survival rates in the cognitive frailty group were 23.8% and in the non-frail group 64.2% (p<0.001). The first group survived 33.4 months longer than the other. When analysing the risk of death separately, in the adjusted analysis, frailty had an increased risk of 1.55 (95% CI: 1.35-1.79) compared to non-frailty. Those with memory impairments had a 1.81 (95% CI: 1.51-2.18) increased risk of death compared to those without the condition. When cognitive frailty was analysed as a predictor of mortality, the risk was the doubled in those with the condition compared to those without (HR: 2.02; 95% CI: 1.44-2.83). **Conclusion:** Cognitive frailty is not a prevalent condition among the older adults. However, its presence becomes greater the risk of mortality. Therefore, older adults presenting with this condition should be closely monitored to prevent the progression of cognitive impairment and improve frailty phenotype. **Keywords:** Cognition, frailty, aging, older adults. **Disclosures:** The authors declared no competing interests. **References:** 1. Kelaiditi E, Cesari M, Canevelli M, et al. Cognitive frailty: Rational and definition from an (I.A.N.A./I.A.G.G.) International Consensus Group. J Nutr Health Aging. 2013;17(9):726-734. doi:10.1007/s12603-013-0367-2. 2. Fried LP, Tangen CM, Walston J, Newman AB, Hirsch C, Gottdiener J, Seeman T, Tracy R, Kop WJ, Burke G, McBurnie MA; Cardiovascular Health Study Collaborative Research Group. Frailty in older adults: evidence for a phenotype. J Gerontol A Biol Sci Med Sci. 2001 Mar;56(3):M146-56. doi: 10.1093/gerona/56.3.m146.

PMID: 11253156. 3. Kim HG, Kim Y, Edmonds EC, Bondi MW. Comparison of Cognitive Impairment Diagnosis Criteria in Clinical Settings: Conventional vs. Neuropsychological. Alpha Psychiatry. 2024 Mar 1;25(2):212-219. doi: 10.5152/alphapsychiatry.2024.231448. PMID: 38798819; PMCID: PMC11117417.

LP028- IMPACT OF NUMBER OF FUNCTIONAL TEETH ON INCIDENT COGNITIVE DYSFUNCTION AFTER 2-YEAR. N. Lim[1], S.Y. Shin[2], H.E. Shin[3], J.Y. Jang[4], C.W. Won[5], M. Kim[3] *((1) Department Of Precision Medicine, Graduate School, Kyung Hee University - Seoul (Korea, Republic of), (2) Department Of Periodontology, Periodontal-Implant Clinical Research Institute, College Of Dentistry, Kyung Hee University - Seoul (Korea, Republic of), (3) Department Of Health Sciences And Technology, College Of Medicine, Kyung Hee University - Seoul (Korea, Republic of), (4) Department Of Biomedical Science And Technology, College Of Medicine, Kyung Hee University - Seoul (Korea, Republic of), (5) Elderly Frailty Research Center, Department Of Family Medicine, College Of Medicine, Kyung Hee University, Kyung Hee University Medical Center - Seoul (Korea, Republic of))*

Background: Cognitive dysfunction in older adults has been known to deteriorate their ability to maintain their independent daily living. Several cross-sectional studies have reported the association between loss of functional teeth and cognitive dysfunction [1, 2]. However, longitudinal studies examining the association between the number of functional teeth and incident cognitive dysfunction are scarce. We aimed to evaluate the association between the number of functional teeth at baseline and incident cognitive dysfunction after 2-year in community-dwelling older adults. **Methods:** A longitudinal analysis was conducted using data of 1,722 participants without cognitive dysfunction at baseline (2016–2017) (49.0% women; mean age 76.0 ± 3.8 years) from the Korean Frailty and Aging Cohort Study. Functional teeth were defined as total teeth, including remaining natural teeth and prosthetically restored teeth [3], via an assessment of panoramic radiography. Participants were categorized into two groups based on the number of functional teeth at baseline: <20 and ≥20 functional teeth [3]. A cut-off value of cognitive dysfunction was <24 scores of the Mini-Mental State Examination Korean version (MMSE-KC) [4]. The multivariate logistic regression analysis was used to evaluate the association between the number of functional teeth and incident cognitive dysfunction after fully adjusting for covariates: age, sex, body mass index, education, living alone, marital status, social security recipient status, alcohol consumption, smoking status, physical activity, depressive symptoms, nutritional status, high-sensitivity C-reactive protein, comorbidity, number of present medications, prostheses, tooth brushing frequency, oral examination during the last year, self-reported chewing discomfort, and periodontitis. **Results:** At baseline, 39.8% of the total participants had <20 functional teeth. Participants with <20 functional teeth had a lower mean of MMSE-KC scores after 2-year than those with ≥20 functional teeth (25.8 ± 2.8 vs. 26.6 ± 2.4 scores, $p < 0.001$). After 2-year, the incidence of cognitive dysfunction was higher in <20 functional teeth group (18.3%) than in ≥20 functional teeth group (9.6%) ($p < 0.001$). Having <20 functional teeth was significantly associated with a higher risk of incident cognitive dysfunction in the un-adjusted model (odds ratio [OR]: 2.10, 95% confidence interval [CI]: 1.57–2.83). After adjusting for covariates, <20 functional teeth had a higher risk of incident cognitive dysfunction (OR: 1.49, 95% CI: 1.03–2.14). **Conclusion:** The number of functional teeth was independently associated with incident cognitive dysfunction. Our findings suggest that maintaining <20 functional teeth may prevent cognitive dysfunction in older adults. **Keywords:** Functional teeth, cognitive dysfunction, older adults. **Disclosures:** The authors declared no competing interests. **References:** 1. Han, J. H., Lee, H. J., Han, J. W., Suh, S. W., Lee, J. R., Byun, S., ... & Kim, K. W. (2020). Loss of functional dentition is associated with cognitive impairment. Journal of Alzheimer's Disease, 73(4), 1313-1320. 2. Cho, M. J., Kim, J. Y., Jung, Y. S., Shin, H. E., Youn, H. Y., Park, T. J., ... & Song, K. B. (2018). Can the number of functional teeth potentially affect cognitive function?. Journal of Korean Academy of Oral Health, 42(2), 52-58. 3. Maekawa, K., Ikeuchi, T., Shinkai, S., Hirano, H., Ryu, M., Tamaki, K., ... & Ohkawa, S. (2020). Number of functional teeth more strongly predicts all-cause mortality than number of present teeth in Japanese older adults. Geriatrics & Gerontology International, 20(6), 607-614. 4. Lee, D. Y., Lee, K. U., Lee, J. H., Kim, K. W., Jhoo, J. H., Kim, S. Y., ... & Woo, J. I. (2004). A normative study of the CERAD neuropsychological assessment battery in the Korean elderly. Journal of the International Neuropsychological Society, 10(1), 72-81.

LP029- A MULTICENTER STUDY OF MOTORIC COGNITIVE RISK SYNDROME (MCR) IN CHINESE OLDER ADULTS. L. Zhang[1], L. Ma[1] *((1) Xuanwu Hospital, Capital Medical University - Beijing (China))*

Objective: To analysis the prevalence and influencing factors of Motoric Cognitive Risk Syndrome (MCR) among older inpatients in China. **Methods:** Data were obtained from the China Comprehensive Geriatric Assessment Study(CCGAS), conducted in 2011–2012 in China from seven cities. A total of 2,690 individuals were included. Information was collected on demographics, lifestyle habits, cognitive abilities, physical activity levels, and chronic diseases. The prevalence of MCR was calculated based on the diagnostic criteria, and multivariate logistic regression was used to analyze the associated risk factors. **Results:** The prevalence of MCR is 9.4% in older hospitalized adults, with 9.15% in women and 9.39% in men. The prevalence of MCR is significantly higher among older individuals living in rural areas, those with lower education levels, depression, multimorbidity, rarely participate in physical exercise, and those who do not do housework ($p < 0.05$). After adjusting for confounding factors, the logistic regression analysis showed that multimorbidity (OR =1.437, 95% CI: 1.065–31.939, $p = 0.018$), depressive symptoms (OR = 1.808, 95% CI: 1.345–2.430, $p<0.001$) , exercising for less than

1 hour a day (OR = 1.415, 95% CI: 1.072–1.867, p = 0.014), those who has lower education levels(OR = 1.609, 95% CI: 1.225–2.115, p = 0.001) and who do not eat meat(OR = 1.416, 95% CI: 1.059–1.892, p = 0.019) were risk factors for MCR. **Conclusion:** The prevalence of MCR is higher among rural older adults. Engaging in regular exercise, reducing anxiety, and frequently doing housework can help reduce the occurrence of MCR. There should be increased promotion of healthy lifestyle habits and awareness of health maintenance to reduce or delay the onset and progression of MCR.

LP030- ASSOCIATION BETWEEN STEP COUNT AND FRAILTY PHENOTYPES AMONG COMMUNITY-DWELLING OLDER ADULTS WITH MILD COGNITIVE IMPAIRMENT: A CROSS-SECTIONAL STUDY. T. Ohta[1], S. Hatanaka[1], C. Ando-Ohmura[1], Y. Takahashi[1], K. Sato[1], R. Sakurai[1], H. Kawai[1], H. Suzuki[1], H. Sasai[1], Y. Fujiwara[1], S. Awata[1], K. Toba[1], D.S. Investigators[1] *((1) Tokyo Metropolitan Institute For Geriatrics And Gerontology - Tokyo (Japan))*

Backgrounds: Frailty is linked to adverse health outcomes, including mortality, hospitalization, and disability, and thus early detection and intervention are required [1]. Recent studies have demonstrated that gait parameters, such as step counts measured by wearable devices, are effective in identifying frailty [2]. However, investigations within the context of mild cognitive impairment (MCI) have not yet been reported. necessitating further research. To facilitate the early preventive intervention of a condition associated with an increased risk of loss of independence—it is essential to elucidate the association between step counts and frailty among individuals with MCI. **Objective:** This study aimed to determine whether step counts could be associated with frailty in community-dwelling older adults with MCI. **Methods:** This cross-sectional study is part of the Determinant of MCI Reversion/Conversion study, which is a prospective cohort study designed to describe reversion and conversion rate from MCI to dementia, conducted at the Tokyo Metropolitan Institute for Geriatrics and Gerontology. Participants were community-dwelling older adults aged 65 and above residing in Itabashi Ward, Tokyo, who were identified as having MCI based on an operational definition comprising Mini-Mental State Examination scores between 21 and 27 and Montreal Cognitive Assessment scores of ≤25. Data were collected between August 2022 and September 2023. Exclusion criteria included individuals diagnosed with dementia and those deemed untraceable by study physicians based on medical judgment. Step counts were measured by having participants wear a triaxial accelerometer on their non-dominant wrist for seven days, only step count data from participants who wore the device for at least 10 hours per day on four or more days were included in the study. Frailty phenotypes were assessed using the Japanese version of the Cardiovascular Health Study criteria [3], with individuals scoring three points or higher classified as frail. To elucidate the association between step counts and frailty, a binary logistic regression model was developed, adjusting for age, sex, height and weight, depressive symptoms, nutritional assessment, and hearing impairment. Adjusted odds ratios and their 95% confidence intervals (CI) were calculated using the lowest tertile of step counts as the reference category. A linear trend test was also performed. **Results:** A total of 399 individuals participated in the baseline survey, of whom 155 were excluded because they met the exclusion criteria or without MCI. This resulted in 244 participants (61.2%, 79.2 ± 4.5 years) identified as MCI included in the analysis. Among the included participants, 26 individuals (10.7%) were classified as frail. The adjusted odds ratios (95% CI) for the intermediate and highest step count groups, compared to the lowest group, were 0.26 (0.08, 0.82) and 0.13 (0.02, 0.67), respectively. Furthermore, a linear association was observed (p for trend = 0.022). **Conclusion:** Among community-dwelling older adults with MCI, step counts were associated with frailty. Additionally, a dose–response association was identified. Further longitudinal studies are needed to delve deeper into the association between these factors and to clarify the underlying mechanisms. **Keywords:** Frailty phenotype, mild cognitive impairment, gait parameter, step count, cognitive frailty. **Disclosures:** This study was supported by an internal grant from the Tokyo Metropolitan Institute for Geriatrics and Gerontology, and the DOBOKU KENCHIKU KOSEIKAI, GENERAL INC. FOUNDATION under «Donations for Education of Health and Nutrition and Prevention of Diseases.» All researchers have no conflict of interest to disclose regarding any aspect of this work. **References:** 1. Fried LP, Tangen CM, Walston J, et al. Frailty in older adults: evidence for a phenotype. J Gerontol A Biol Sci Med Sci 2001;56:M146-56. 2. Osuka Y, Chan LLY, Brodie MA, Okubo Y, Lord SR. A Wrist-Worn Wearable Device Can Identify Frailty in Middle-Aged and Older Adults: The UK Biobank Study. J Am Med Dir Assoc 2024;25:105196. 3. Satake S, Arai H. The revised Japanese version of the Cardiovascular Health Study criteria (revised J-CHS criteria). Geriatr Gerontol Int 2020;20:992–993.

LP031- ASSOCIATION OF SOCIAL SUPPORT AND COGNITIVE FRAILTY AMONG COMMUNITY-DWELLING MIDDLE-AGED AND OLDER ADULTS IN CHINA: A CROSS-SECTIONAL SURVEY. X. Wei[1], F. Tan[1], E. Gong[1], R. Shao[1] *((1) Chinese Academy Of Medicine Science & Peking Union Medical College - Beijing (China))*

Backgrounds: Cognitive frailty, characterized by the coexistence of physical frailty and cognitive impairment, is a critical predictor of adverse outcomes such as disability and mortality in older adults. Social support, an essential factor for maintaining physical and mental health, may play a protective role against cognitive frailty. However, the relationship between social support and cognitive frailty has not been thoroughly explored, particularly in diverse community-dwelling populations. This study aimed to examine the association between social support levels and cognitive frailty among middle-aged and older adults in rural and urban communities in China. **Methods:** A cross-sectional study was conducted in one rural (Wuyuan county) and urban (Beijing city) setting between July and August in 2023. Community-dwelling residents who were aged 50 years and above, lived in the selected 36

communities/villages of nine townships by following a stratified sampling approach, and completed face-to-face survey. Social support was measured by using Lubben social network scale [1], and a score of 0–11 was defined as poor social support, a score of 12–23 as moderate social support, and a score of 24 or above as good social support. Individuals with cognitive frailty are defined as the coexistence of physical frailty (defined by Fried Frailty Phenotype [2]) and cognitive impairment (defined by Mini-Mental State Examination [3]). Logistic regression was used to analyze the relationship between social support status and cognitive frailty. All data analysis was performed by using STATA. **Results:** A total of 3,058 participants (mean aged:61.29 ± 8.05 years, 54.84% female) completed the survey with all key measurements. About 7.65% (n=234), 56.82% (n=1737), and 35.53% (n=1086) self-reported with good, moderate and poor social support, respectively. The prevalence of cognitive frailty was 6.74% (n=206). Compared with individuals with poor social support, those with moderate social support had a 45% lower likelihood of suffering from cognitive frailty (Odds Ratio = 0.55, 95% CI: 0.40–0.74, P < 0.001), and individuals with good social support had a 68% lower likelihood of suffering from cognitive frailty (Odds Ratio = 0.32, 95% CI: 0.14-0.74, P = 0.008). after adjusting socio-demographic characteristics, lifestyle factors and number of diseases. **Conclusion:** The findings indicate that higher levels of social support are significantly associated with a lower likelihood of cognitive frailty among middle-aged and older adults. These results highlight the importance of strengthening social support systems to mitigate the risk of cognitive frailty, particularly in aging populations. **Keywords:** Social support, cognitive frailty, healthy ageing, older adults. **Disclosures:** The study was funded by the non-profit Central Research Institute Fund of Chinese Academy of Medical Sciences (Grant No.2022-ZHCH330-01) and Chinese Academy of Engineering (Grant No.2023-GJ-01). The authors have no conflicts of interest to declare. **References:** 1. Chang, Qingsong et al. "Validation of an abbreviated version of the Lubben Social Network Scale («LSNS-6») and its associations with suicidality among older adults in China." PloS one vol. 13,8 e0201612. 2 Aug. 2018, doi:10.1371/journal.pone.0201612. 2. Xue, Qian-Li et al. "Initial manifestations of frailty criteria and the development of frailty phenotype in the Women's Health and Aging Study II." The journals of gerontology. Series A, Biological sciences and medical sciences vol. 63,9 (2008): 984-90. doi:10.1093/gerona/63.9.984. 3. Folstein, M F et al. "«Mini-mental state». A practical method for grading the cognitive state of patients for the clinician." Journal of psychiatric research vol. 12,3 (1975): 189-98. doi:10.1016/0022-3956(75)90026-6.

LP032- ASSOCIATION OF SOCIAL FRAILTY AND COGNITIVE IMPAIRMENT AMONG COMMUNITY-DWELLING - MIDDLE-AGED AND OLDER ADULTS IN CHINA: A CROSS-SECTIONAL SURVEY. X. Wei[1], F. Tan[1], E. Gong[1], R. Shao[1] *((1) Chinese Academy Of Medicine Science & Peking Union Medical College - Beijing (China))*

Background: Social frailty, a multidimensional construct involving deficits in social resources, social activities, and social relationships, has been increasingly recognized as a potential risk factor for adverse health outcomes in older adults. Cognitive impairment, a key predictor of disability and reduced quality of life, may be associated with social frailty. However, evidence on the relationship between social frailty and cognitive impairment remains limited, particularly in diverse rural and urban settings. This study aimed to investigate the association between social frailty and cognitive impairment among middle-aged and older adults in both rural and urban communities in China. **Methods:** A cross-sectional study was conducted in one rural (Wuyuan county) and urban (Beijing city) setting between July and August in 2023. Community-dwelling residents who were aged 50 years and above, lived in the selected 36 communities/villages of nine townships by following a stratified sampling approach, and completed face-to-face survey. Social frailty was measured by using HALFT scale [1], and a score of 0 was defined as no social frailty, a score of 1–2 was defined as social prefrailty (pre-SF), and a score of ≥3 was defined as social frailty (SF). Cognitive impairment was measured by using Mini-Mental State Examination (MMSE) [2], and the MMSE score was adjusted based on education level: ≤17 for illiteracy, ≤20 for primary school, and ≤24 for middle school or above were classified as cognitive impairment. An ordinal logistic regression was used to analyze the relationship between the degree of social frailty and cognitive impairment. All data analysis was performed by using STATA. **Results:** A total of 3,058 participants (mean aged:61.29 ± 8.05 years, 54.84% female) completed the survey with all key measurements. About 18.38% (n=562) had cognitive impairment, 47.22% (n=1444) and 6.61% (n=202) self-reported with pre-SF and SF, respectively. Compared with individuals without SF, those with pre-SF had a 43% higher likelihood of developing cognitive impairment (Odds Ratio = 1.43, 95% CI: 1.16–1.76, P = 0.001), and individuals with SF exhibited an even higher risk of cognitive impairment (Odds Ratio = 2.67, 95% CI: 1.90–3.76, P < 0.001), after adjusting socio-demographic characteristics and lifestyle factors. **Conclusion:** This study revealed that social frailty, even at a pre-frailty stage, was significantly associated with an increased risk of cognitive impairment among middle-aged and older adults. These findings underscore the importance of early identification and intervention for individuals with social frailty to mitigate the risk of cognitive decline. **Keywords:** Social frailty, cognitive impairment, healthy ageing, older adults. **Disclosures:** The study was funded by the non-profit Central Research Institute Fund of Chinese Academy of Medical Sciences (Grant No.2022-ZHCH330-01) and Chinese Academy of Engineering (Grant No.2023-GJ-01). The authors

have no conflicts of interest to declare. **References:** 1. Ma, L et al. "Social Frailty Is Associated with Physical Functioning, Cognition, and Depression, and Predicts Mortality." The journal of nutrition, health & aging vol. 22,8 (2018): 989-995. doi:10.1007/s12603-018-1054-0. 2. Juby, Angela et al. "The value of clock drawing in identifying executive cognitive dysfunction in people with a normal Mini-Mental State Examination score." CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne vol. 167,8 (2002): 859-64.

LP035- MEDIATING ROLE OF PHYSICAL CAPABILITIES IN THE ASSOCIATION BETWEEN PERCEIVED PHYSICAL FATIGABILITY AND COGNITIVE FRAILTY IN OLDER ADULTS. Y.X. Hu[1], A.Y. Bai[2] *((1) Chinese Pla General Hospital - Beijing (China), (2) Chinese Academy Of Medical Science & Peking Union Medical College - Beijing (United Kingdom))*

Introduction: Perceived physical fatigability, common among older adults, can significantly affect physical function and overall health. This study investigated the prognostic value of physical fatigability as an independent risk factor for cognitive frailty (CF) and explored potential underlying pathways in older adults. **Methods:** We analyzed data from the first wave of a longitudinal study, including 837 participants (mean age 83.05, SD 7.10; 49.5% women). Perceived physical fatigability was measured using the Pittsburgh Fatigability Scale (PFS), and CF was defined as the co-occurrence of pre-frailty, frailty, and mild cognitive impairment (MCI). Frailty was assessed with the FRAIL scale and the Frailty Index (FI). Multivariate logistic regression models evaluated the association between physical fatigability and CF. Mediation analysis explored the roles of gait speed (GS), handgrip strength (HGS), and disability. **Results:** CF prevalence was higher when defined by the FI than the FRAIL scale, in groups with both mild and severe physical fatigability. Higher PFS scores were associated with increased CF risk, with odds ratios (ORs) decreasing after covariate adjustment (FRAIL: ORs 2.63 to 1.90; FI: ORs 2.31 to 1.71). Mediation analysis revealed that GS, HGS, and disability accounted for 36.7%, 14.7%, and 22.7% of the association between physical fatigability and CF using the FRAIL scale, and 33.5%, 24.2%, and 22.6% using the FI. **Conclusion:** Severe physical fatigability is linked to higher CF risk. Interventions targeting GS, HGS, and disability could delay or mitigate CF, enhancing independence and well-being in older adults.

LP036- DEVELOPMENT AND VALIDATION OF A NOMOGRAM-ASSISTED TOOL TO PREDICT POTENTIALLY REVERSIBLE COGNITIVE FRAILTY IN CHINESE COMMUNITY-LIVING OLDER ADULTS. Y. Jiang[1], B.A. Bai[2], H.Y. Hu[3] *((1) Chinese Academy Of Medical Science & Peking Union Medical College - Beijing (China), (2) Chinese Academy Of Medical Science & Peking Union Medical College, Beijing (China), (3) Chinese Pla General Hospital - Beijing (China))*

Background: Cognitive Frailty (CF) is a complex and heterogeneous clinical syndrome that indicates the onset of neurodegenerative processes and poor prognosis. In order to prevent the occurrence and development of CF in real world, we intended to develop and validate a simple and timely diagnostic instrument based on comprehensive geriatric assessment that will identify patients with Potentially Reversible CF (PRCF). **Methods:** 750 community-dwelling individuals aged over 60 years were randomly allocated to either a training or validation set at a 4:1 ratio. We used the operator regression model offering the least absolute data dimension shrinkage and feature selection among candidate predictors. PRCF was defined as the presence of physical pre-frailty, frailty, and mild cognitive impairment (MCI) occurring simultaneously. Multivariate logistic regression was conducted to build a diagnostic tool to present data as a nomogram. The performance of the tool was assessed with respect to its calibration, discrimination, and clinical usefulness. **Results:** PRCF was observed in 326 patients (43%). Predictors in the tool were educational background, coronary heart disease, handgrip strength, gait speed, instrumental activity of daily living (IADL) disability, subjective cognitive decline (SCD) and five-times-sit-to-stand test. The diagnostic nomogram-assisted tool exhibited good calibration and discrimination with a C-index of 0.805 and a higher C-index of 0.845 in internal validation. The calibration plots demonstrated strong agreement in both the training and validation sets, while decision curve analysis confirmed the nomogram's efficacy in clinical practice. **Conclusion:** This tool can effectively identify older adults at high risk for PRCF, enabling physicians to make informed clinical decisions and implement proper patient-centered individual interventions.

LP037- COMPARISON OF THREE AGING METRICS IN DUAL DECLINES TO CAPTURE ALL-CAUSE DEMENTIA AND MORTALITY RISK. B.A. Bai[1], J.Y. Jiang[1], H.Y. Hu[2] *((1) Chinese Academy Of Medical Science And Peking Union Medical College - Beijing (China), (2) Chinese Pla General Hospital - Beijing (China))*

Background: The utility of aging metrics that incorporate cognitive and physical function is not fully understood. We aim to compare the predictive capacities of three distinct aging metrics - motoric cognitive risk syndrome (MCR), physio-cognitive decline syndrome (PCDS), and cognitive frailty (CF) - for incident dementia and all-cause mortality among community-dwelling older adults. **Methods:** We utilized

longitudinal data from Waves 10 - 15 of the Health and Retirement Study (HRS). Cox proportional hazards regression analysis was employed to evaluate the effects of MCR, PCDS, and CF on incident all-cause dementia and mortality, controlling for socioeconomic and lifestyle factors, as well as medical comorbidities. Discrimination analysis was conducted to assess and compare the predictive accuracy of the three aging metrics. **Results:** All three metrics were predictive of incident all-cause dementia and mortality when adjusting for multiple confounders, with variations in the strength of their associations (incident dementia: MCR, odds ratio (OR) [95% confidence interval (CI)] 1.90 [1.30–2.78]; CF, 5.06 [2.87–8.92]; PCDS, 3.35 [2.44–4.58]; mortality: MCR, 1.60 [1.17–2.19]; CF, 3.26 [1.99–5.33]; PCDS, 1.58 [1.17–2.13]). The C-index indicated that PCDS and MCR had the highest discriminatory accuracy for all-cause dementia and mortality, respectively. **Conclusion:** Despite the inherent differences among the aging metrics that integrate cognitive and physical functions, they consistently identified risks of dementia and mortality. This underscores the importance of implementing targeted preventive strategies and intervention programs based on these metrics to enhance the overall quality of life and reduce premature deaths in aging populations.

LP038- REDUCING DELIRIUM RISK IN ACUTE ELDERLY CARE: AN INNOVATIVE INTERDISCIPLINARY APPROACH. M.Y. Chung[1], H.Y. Su[1], W.C. Tang[1], P.Y. Liu[1], S.C. Chang[1], C.H. Li[1], Y.F. Li[1], S.C. Lin[1] *((1) Buddhist Tzu Chi Medical Foundation Dalin Tzu Chi Hospital - Chiayi (Taiwan, Republic of China))*

Background: Delirium, a common but often underrecognized complication in hospitalized elderly patients, poses significant risks, including increased morbidity, prolonged hospital stays, and higher healthcare costs. Despite advances in acute care, delirium incidence remains high due to the multifactorial nature of its triggers, such as environmental disorientation, sleep disturbances, and the absence of patient-centered interventions. There is a pressing need to address the knowledge gap in integrating interdisciplinary strategies to mitigate these risks, particularly in high-risk geriatric units. **Objective:** To develop and evaluate a novel multidisciplinary care model aimed at reducing delirium incidence in elderly acute care patients, while simultaneously enhancing patient safety, nursing care quality, and staff satisfaction. **Methods:** A geriatric unit with a historically high delirium rate (12.6% in 2022) served as the pilot site. A cause-and-effect analysis identified modifiable risk factors, guiding the design of targeted interventions. These included rest therapy, orientation reinforcement, and environmental optimization. An interdisciplinary team comprising geriatric specialists, nurses, and physicians developed individualized care plans. Delirium was systematically monitored using the Confusion Assessment Method (CAM), with outcomes evaluated from January 2023 to August 2024. **Results:** Implementation of the model resulted in a significant reduction in delirium incidence, from 12.6% to 4.8% ($p<0.05$). This was accompanied by notable decreases in restraint use (53.9%), falls (44.4%), and tube dislodgements (28.4%). Additionally, staff satisfaction scores improved, reflecting the model's positive impact on workplace efficiency and morale. **Conclusion:** This innovative multidisciplinary approach effectively addressed the complex risk factors associated with delirium in elderly patients. The integration of tailored interventions not only reduced delirium rates but also enhanced overall patient safety and care quality. Our findings highlight the critical importance of a comprehensive, team-based care model in managing high-risk geriatric populations and provide a replicable framework for other healthcare settings. Future research should explore the long-term sustainability and scalability of such interventions in broader clinical contexts. **Keywords:** Delirium, geriatric care, patient safety, inter-professional practice.

COVID 19 & FRAILTY & SARCOPENIA

P032- DISTINCT FRAILTY PROFILES IN LONG COVID AND GERIATRIC PATIENTS: A COMPARATIVE EVALUATION. Y. Flores Pazos[1], F. Tang[2], A. Alkuyam[2], N. Resendes[1,2], J. Bradley[1], I. Hammel[1,2] *((1) University Of Miami/jackson Health System - Miami (United States), (2)Miami VAHS Geriatric Research Education Clinical Center, Miami, (United States))*

Background: Long COVID, as defined by the CDC, is a chronic condition that arises following SARS-CoV-2 infection, persisting for at least three months and manifesting as a continuous, relapsing-remitting, or progressive disease affecting multiple organ systems. Frailty, characterized by diminished physiological reserve and increased vulnerability to stress, is a shared concernin both Long COVID and geriatric populations, though its specific manifestations may differ. This study compares thefrailty profiles of adult patients of all ages evaluated in the Long COVID clinic and older patients evaluated for frailty in the Geriatric Specialty clinic at the Miami Veterans Affairs Medical Center (VAMC), highlighting the unique features of frailty in these distinct populations. **Methods:** Continuous variables were presented as mean ± standard deviation; categorical variables were presented as frequency and percent. Chi-squared test was used to compare categorical variables between groups. T-test was used to compare continuous variable between groups. The groups studied wereadult patients of all ages seen in the Long COVID clinic and older patients (65 and older) evaluated for frailty in the Geriatric Specialty clinic at the Miami VAMC. Frailty was measured in the two groups using the Johns Hopkins Frailty Assessment Calculator, with frailty defined as a score of 3-5/5 components of the Fried Frailty Phenotype. **Results:** 106 patients from the Long COVID clinic, and 97 patients from the Geriatric Specialty clinic at the Miami Veterans Affairs Medical Center were included in this study. The Long COVID group was younger than the Geriatric clinic one (age 60±12.6vs. 79.8±5.8, $p<0.01$), and included more females (78.9% vs. 96.9%, $p<0.01$). There were 28 (26.4%) frail, 63 (59.4%) prefrail, and 15 (14.3%) robust patients from

the Long COVID clinic, which is not significantly different from the GeriatricSpecialty clinic with 33 (39.1%) frail, 45 (51.7%) prefrail, and 8(9.2%) robust(p=0.17). For the frail patients from the Long COVID clinic, the most predominant symptoms were exhaustion (27, 96.4%) and low activity (22, 78.6%). For the frail patients in the Geriatric Specialty clinic, the most predominant symptoms were weakness (32, 97.0%) and slowness (29, 87.9%). **Conclusion:** The findings reveal that frailty is prevalent in both populations, with 61 out of 203 patients identified as frail (28 from the Long COVID Clinic and 33 from the Geriatric Clinic). Objective symptoms such as weakness and slowness were more common in the geriatric group, while subjective symptoms likeexhaustion and low activity predominated in the Long COVID group. Notably, weight loss was the least prevalent frailtyphenotype component in both cohorts. The study emphasizes the fact that the post-viral frailty variant may be distinctly different than the frailty typically encountered in the geriatric population at large, underscoring the need for further research to explore tailored interventions. Early identification and comprehensive care are critical in addressing frailty, especially in the Long COVID population, to improve health outcomes. **Keywords:** Long COVID, frailty, geriatric. **Disclosures:** The authors declare that the study was conducted in the absence of any potential conflicts of interest or relevant funding sources. **References:** 1. https://www.cdc.gov/covid/hcp/clinical-overview/index.htm. 2. Johns Hopkins Frailty Assessment Calculator (hopkinsfrailtyassessment.org). 3. https://www.pennmedicine.org/news/news-blog/2022/November/hope-for-neurological-long-covid-at-the-penn-neuro-covid-clinic. 4. https://www.yalemedicine.org/news/how-to-manage-long-covid-brain-fog. 5. https://www.uchealth.org/today/trials-testing-treatments-for-long-covid-symptoms. 6. https://www.aafp.org/pubs/afp/issues/2018/0615/p776.html. 7. https://www.aafp.org/pubs/afp/issues/2011/0101/p48.html.

P033- EVALUATION OF SARCOPENIA VIA A THREE-LEVEL BALANCING ASSESSMENT. X. Ma[1], J. Chen[1], V.W. Lou[2,3], N. Xi[1] *((1) Department Of Industrial And Manufacturing Systems Engineering, The University Of Hong Kong - Hong Kong Sar (China), (2) Department Of Social Work & Social Administration, The University Of Hong Kong - Hong Kong Sar (China), (3) Sau Po Centre On Ageing, The University Of Hong Kong - Hong Kong Sar (China))*

Background: Background: Heterogeneity in sarcopenia manifests in skeletal muscle mass, muscle strength, and physical performance. However, there is a wide variation in the reported global prevalence of sarcopenia (9.9% to 40.4%), mainly due to differences in diagnostic methods [1]. Here, we introduce a systematic and quantitative evaluation of sarcopenia using a human model-based three-level balancing assessment (HM-TLBass). **Methods:** Firstly, we diagnosed sarcopenia in the subjects according to the AWGS 2019 guidelines and obtained clinical baseline labels. Subsequently, we conducted a three-level assessment: measuring muscle mass through bioelectrical impedance analysis (BIA), measuring muscle strength through maximum voluntary contraction (MVC) force of the lower limbs, and testing physical performance using our designed balance sensor. Next, we extracted features related to human balance, including the BIA indices of the limbs, MVC torque of the knee and ankle joints, and the trajectory of the center of pressure (CoP) during standing. These features were then input into a human balancing dynamics model for normalization. Finally, we used the normalized features (BIA indices, normalized joint torque, and center of gravity (CoG)) to establish machine learning models for sarcopenia classification. Through this systematic approach, we aim to provide a more comprehensive and accurate diagnostic tool for sarcopenia. **Results:** One hundred and fifty-seven (n=157) older adults (age 69.4 ± 3.8) were included measurement. HM-TLBass achieved the best performance in our dataset. Specifically, for sarcopenia classification, HM-TLBass achieved AUROC scores of 0.82, 0.66, and 0.82 on muscle mass level, muscle strength level, and physical performance level, respectively, significantly outperforming traditional clinical assessments (AUROC: 0.39 for ASM assessment, 0.25 for handgrip test, and 0.59 for the 4-meter walking test). This demonstrates the effectiveness of the HM-TLBass framework across diverse assessment levels. **Conclusion:** The new HM-TLBass is an efficient and accurate solution to evaluate sarcopenia in the elderly. This model-based evaluation provides increased reproducibility and scalability, enabling large-scale mechanistic and interventional studies of sarcopenia in the elderly. **Keywords:** Sarcopenia, three-level balancing assessment, center of gravity (CoG), human dynamics, machine learning. **Disclosures:** The authors declared no competing interests. **References:** 1. Dent, Elsa, Jean Woo, David Scott, and Emiel O. Hoogendijk. 2021. “Toward the Recognition and Management of Sarcopenia in Routine Clinical Care.” Nature Aging 1 (11): 982–90.

P034- THE MINIMUM FERET’S DIAMETER AS A RELIABLE GEOMETRIC PARAMETER FOR DISTINGUISHING HEALTHY AND SARCOPENIC MUSCLE FIBERS IN SURGICAL PATIENTS. Q.K. Quek[1,2], J.H. Hong[1,3], L. Liu[1,2], X.Y. Kwek[1,4], P.Y. Guan[1,5], H.X.F. Koh[1,6], B.T. Teh[1,4] *((1) SKH Musculoskeletal Regenerative Laboratory, Academia, Singhealth - Singapore (Singapore), (2) Research Office, Sengkang General Hospital - Singapore (Singapore), (3) Cancer And Stem Cell Biology, Duke-Nus Medical School - Singapore (Singapore), (4) National Cancer Centre Singapore - Singapore (Singapore), (5) Genome Institute Of Singapore - Singapore (Singapore), (6) Department Of General Surgery, Sengkang General Hospital - Singapore (Singapore))*

Background: Sarcopenia is defined as the age-related reduction and loss of muscle mass and strength. It is a major component of frailty, resulting in negative postoperative outcomes for patients undergoing major surgery [1, 2]. Currently, following the Asian Working Group for Sarcopenia (AWGS) 2019, sarcopenia is diagnosed based on the cutoff values for handgrip strength, gait speed and bioelectrical impedance (BIA) [1]. The current diagnostic tools

focus on muscle function, but fail to account for overlapping conditions such as malnutrition that may affect muscle health [3]. This interferes with the accurate diagnosis of sarcopenia and thus, there is a need to validate the obtained phenotypes. The minimum Feret's diameter is a geometric parameter that measures the shortest distance between two parallel lines on opposite sides of the muscle fiber [4]. It is least affected by the sectioning orientation, making it robust for measuring fiber cross-sections. Currently, its use in analyzing human muscle fibers has yet to be demonstrated. The aim of this study is to determine the reliability of minimum Feret's diameter in differentiating the muscle fibers of healthy and sarcopenic patients matched according to age, gender and race. **Methods:** All patients undergoing elective major surgery at Sengkang General Hospital were recruited for the study. A total of 141 patients were assessed, including male (n = 92) and female (n = 49) of age 43 to 89 years, and consisted of Chinese, Malay and Indian ethnicities. Their sarcopenic status was categorized as non-sarcopenia, sarcopenia and severe sarcopenia, based on the AWGS 2019 diagnostic criteria. During surgery, skeletal muscle was harvested and cross-sections of formalin-fixed paraffin-embedded tissue were generated. They were stained with hematoxylin and eosin (H&E), and three fields were imaged at 100x magnification. Images were analyzed using ilastik and ImageJ software to obtain the average minimum Feret's diameter. The morphology of the muscle tissue was also analyzed visually. Statistical analyses was performed to determine the significance and correlation between the diameter, sarcopenic status and clinical data. **Results:** Histopathological analyses of H&E slides supported the obtained minimum Feret's diameter, which showed that sarcopenic specimens had irregular-shaped and smaller-sized muscle fibers, in contrast to the non-sarcopenic ones. The average diameter was also compared between the non-sarcopenic and sarcopenic patients. Within the male and female groups, there was a significant difference between the non-sarcopenic and sarcopenic groups (male: 67.25 vs 59.60 μm, p = 0.0102; female: 61.75 vs 49.40 μm, p = 0.0033). In addition, the diameter and clinical data showed a positive correlation between the diameter and gait speed for males (r = 0.2486, n = 88, p = 0.0195), and diameter and handgrip strength for females (r = 0.3569, n = 48, p = 0.0128). This supports the obtained sarcopenic status and clinical data following the AWGS 2019 diagnosis. **Conclusion:** The minimum Feret's diameter demonstrated its reliability as a geometric parameter for differentiating the muscle fiber size between sarcopenic and non-sarcopenic patients. It has the potential to increase the accuracy of sarcopenic diagnosis in surgical patients. **Keywords:** Sarcopenia, AWGS, Feret's diameter, diagnosis, histopathology. **Disclosure:** There is no conflict of interest to declare. **References:** 1. Chen, L.-K., Woo, J., Assantachai, P., Auyeung, T.-W., Chou, M.-Y., Iijima, K., Jang, H. C., Kang, L., Kim, M., Kim, S., Kojima, T., Kuzuya, M., Lee, J. S. W., Lee, S. Y., Lee, W.-J., Lee, Y., Liang, C.-K., Lim, J.-Y., Lim, W. S., … Arai, H. (2020). Asian Working Group for sarcopenia: 2019 consensus update on Sarcopenia diagnosis and treatment. Journal of the American Medical Directors Association, 21(3). https://doi.org/10.1016/j.jamda.2019.12.012. 2. Cruz-Jentoft, A. J., Bahat, G., Bauer, J., Boirie, Y., Bruyère, O., Cederholm, T., Cooper, C., Landi, F., Rolland, Y., Sayer, A. A., Schneider, S. M., Sieber, C. C., Topinkova, E., Vandewoude, M., Visser, M., & Zamboni, M. (2019). Sarcopenia: Revised European consensus on definition and diagnosis. Age and Ageing, 48(4), 601–601. https://doi.org/10.1093/ageing/afz046. 3. Ooi, H., & Welch, C. (2024). Obstacles to the early diagnosis and management of Sarcopenia: Current perspectives. Clinical Interventions in Aging, Volume 19, 323–332. https://doi.org/10.2147/cia.s438144. 4. Briguet, A., Courdier-Fruh, I., Foster, M., Meier, T., & Magyar, J. P. (2004). Histological parameters for the quantitative assessment of muscular dystrophy in the MDX-mouse. Neuromuscular Disorders, 14(10), 675–682. https://doi.org/10.1016/j.nmd.2004.06.008.

P036- EFFECT OF ONLINE EXERCISE CLASSES ON THE PHYSICAL FITNESS AND COMMUNITY DEVELOPMENT AMONG OLDER ADULTS.

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Background: The COVID-19 pandemic restricted people's physical interactions. Concerns have been raised, particularly among older individuals, regarding secondary damage to health, such as loss of muscle mass, worsening of underlying diseases, and cognitive decline as a result of reduced opportunities to exercise in public places owing to restrictions (Yamada et al., 2020). To address these problems, Ishizaki et al. (2023) conducted a two-month online exercise class and found that it was effective in improving fitness in older adults. However, it is unclear whether opportunities for interaction in online exercise classes have an impact on community development among older individuals. **Objectives:** This study aimed to investigate the effects of online exercise classes on the physical fitness and community development in older adults. **Methods:** Eighty-four healthy older adults (mean [±SD] age, 73.3 ± 4.8 years) volunteered to participate in this study. The participants were divided into four exercise groups: ZOOM exercise (ZE), self-exercise (SE), hybrid exercise (ZOOM + self-exercise: HE), and control (CON). Those with the exception of the CON group, participated in a two-month exercise program (70 min, 2 times/week), with classes consisting of stretching (20 min), resistance exercise (25 min), step exercise (10 min), and cool-down (5 min). The ZE and HE groups participated in an online program and were trained under the guidance of a researcher. Following the exercise session, both groups used the 10-minute «breakout room» to interact with one another on a specific theme. The number of persons in the «breakout room» was limited to three or four, with efforts made to rotate the members each time. In contrast, the SE group performed the same training regimen at home using a booklet consisting of instructions and pictures. The HE group was

given two exercise sessions per week: one with ZOOM and the other with self-exercise. Before and after the exercise classes, the following physical performance metrics were measured: handgrip strength, chair stand, arm curl, sit-up (SU), chaired sit and reach (CSR); 10 m normal walk (10mNWK); 10 m brisk walk; 10m obstacle walk (10mOWK); and 6 min walk (6 MW). A network analysis to ascertain the effects of pre- and post-exercise class interactions were conducted on the ZE and HE groups. **Results:** The average participation rate in the three exercise groups (ZE, SE, and HE) was 94%. The SU, CSR, 10mNWK, 10mOWK, and 6 MW demonstrated significant effects after the exercise period ($p<0.05$). The main effect between the groups was also observed for SU and 6 MW ($p<0.05$). Interactions were observed only for CSR ($p<0.05$). The number of networks showed a significant increase after two months compared to that before the exercise class for both ZE and HE. A significant difference was also observed between the ZE and HE groups ($p=0.07$). **Conclusion:** A two-month online exercise class was found to be effective in improving physical fitness. It was also noted that interactions using breakout rooms could help to develop an older adult community.

P037- LOWER ADIPOSITY AND HIGHER MUSCLE QUALITY ARE ASSOCIATED WITH AN INCREASED LIKELIHOOD OF RECOVERY AND HIGHER HEALTH-RELATED QUALITY OF LIFE UP TO ONE-YEAR FOLLOWING HOSPITALISATION FOR COVID-19.

H.J.C. Mcauley[1], L. Latimer[1], G. Mills[2], C.E. Bolton[3], C.E. Brightling[1], P.L. Greenhaff[3], W.D.C. Man[4], S.J. Singh[2], L.V. Wain[1], R.A. Evans[1], N.J. Greening[1] *((1) University Of Leicester - Leicester (United Kingdom), (2) University Hospitals Of Leicester Nhs Trust - Leicester (United Kingdom), (3) University Of Nottingham - Nottingham (United Kingdom), (4) King's College London - London (United Kingdom))*

Background: Obesity represents an established risk factor for severe COVID-19 and the development of long-COVID [1] yet the underlying mechanisms of this association remain less clear. This study aims to identify specific body composition phenotypes associated with delayed recovery from COVID-19 and to generate plausible mechanistic hypotheses for further investigation. **Methods:** Data from the prospective multicentre cohort study of hospitalised survivors of COVID-19 (PHOSP-COVID) [2] were analysed using self-reported recovery at one-year following discharge as the primary endpoint. Body composition was measured by either dual-energy X-ray absorptiometry or bioelectrical impedance analysis, hand-grip strength was measured by dynamometer and health related quality of life (HRQoL) measured by the EQ5D-5L utility index [3]. Measures were captured at research visits occurring five-months and one-year following discharge from hospital. A muscle quality ratio (MQR) was derived as the ratio of hand-grip strength to fat free mass and expressed as grouped quintiles of low MQR (bottom quintile), median MQR (second, third and fourth quintiles), and high MQR (top quintile). Body composition values, hand-grip strength and MQR quintiles were stratified by sex. Differences between groups were compared either by students t-test with paired tests used for longitudinal change measures or ANOVA for comparisons of more than two groups. **Results:** This analysis includes 1,208 participants with mean (SD) age 57.3(13.0) years and 41.1% female, and 54.4% participants with BMI>30 Kg/m2. Participants who recovered by one-year had lower mean (SD) fat mass at five-months than those who did not (males: 28.4(12.6)kg vs 30.9(12.3)kg $p=0.047$, females: 37.3(15.7)kg vs 41.9(16.8) kg $p=0.035$) with no differences in fat free mass or hand-grip strength seen between these groups. Between five-months and one-year, mean (SD) fat mass increased significantly among both recovered ($\Delta=1.85(7.23)$kg, $p=0.010$) and non-recovered ($\Delta=1.66(8.15)$kg, $p=0.003$) male participants and among non-recovered female participants ($\Delta=1.32(4.66)$kg, $p=0.022$) with no significant change among recovered female participants. No significant change in fat free mass or hand-grip strength was seen between time points in any groups. A significantly lower proportion of participants with low MQR recovered by one-year (24.4%) compared to those with median (33.6%) or high (39.8%) MQR ($p<0.005$). HRQoL was significantly lower at five-months among participants with low MQR (mean (SD) EQ5D-5L utility index (0.62 (0.31)) compared to those with median MRQ (0.74 (0.22) or high MQR (0.82 (0.18)) ($p<0.005$) with this difference remaining up to the one-year visit. **Conclusion:** These data highlight two phenotypes of body composition associated with delayed recovery following hospitalisation for COVID-19. Further exploration of inflammatory, metabolic and physiological drivers and consequences of these phenotypes may provide mechanistic insight in to delayed recovery following COVID-19 as well as other acute inflammatory illnesses. **Keywords:** COVID-19, adiposity, muscle quality, health related quality of life. **Clinical Trial Registry:** ISRCTN10980107. **References:** 1. Thompson, E.J., Williams, D.M., Walker, A.J. et al. Long COVID burden and risk factors in 10 UK longitudinal studies and electronic health records. Nat Commun 13, 3528 (2022). https://doi.org/10.1038/s41467-022-30836-0. 2. Elneima O., McAuley H.J.C., Leavy O.C., et al. Cohort Profile: Post-Hospitalisation COVID-19 (PHOSP-COVID) study. International Journal of Epidemiology, 53(1), (2024). https://doi.org/10.1093/ije/dyad165. 3. Herdman, M., Gudex, C., Lloyd, A., et al. Development and preliminary testing of the new five-level version of EQ-5D (EQ-5D-5L), Qual Life Res 20, 1727-1736 (2011). https://doi.org/10.1007/s11136-011-9903-x

P039- PROSPECTIVE OBSERVATIONAL STUDY ON PREDICTORS OF PROLONGED LENGTH-OF-STAY (PLOS) IN HOSPITALIZED GERIATRIC PATIENTS.

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Background: The global ageing population poses challenges to healthcare systems, particularly with respect to managing prolonged hospital stays in older adults. Prolonged Length-of-stay (pLOS) is an important issue in geriatric care due to its impact on healthcare costs, resource utilization, and

patient outcomes. Identifying factors that predict pLOS in hospitalized older adults is essential to optimize care and improve patient outcomes. **Methods:** This prospective observational study was conducted over a 3-month period, from March 2022 to June 2022, in the Geriatric Medicine Ward at AIIMS, Delhi. A total of 152 geriatric patients were included, of whom 27 experienced prolonged length of stay (pLOS), defined as hospitalization lasting 21 days or more. The study included patients aged 60 years and above who were admitted to the ward. Patients were excluded if they were admitted to the intensive care unit (ICU) at the time of hospitalization. Data were collected at admission, including demographic characteristics, clinical features (e.g. covid 19 status), presence of geriatric syndromes (e.g., delirium, malnutrition, cognitive impairment, polypharmacy, sarcopenia, frailty), comorbidities, functional status, and severity of acute illness. The study also tracked hospital-acquired adverse events, including infections and complications. The primary objective was to identify factors associated with pLOS. **Results:** In our analysis, multivariate logistic regression revealed that among geriatric syndromes, functional status, comorbidities, and severity of illness, the severity of acute illness (CIRSG Score >20) showed a significant association with prolonged length of stay(OR 3.96; 95% C.I. 1.10–14.25, p = 0.035). Our multivariate logistic regression analysis also highlighted significant associations between in-hospital sepsis (OR 15.86; 95% C.I. 4.17–60.25, p < 0.001), falls, venous thromboembolism, and episodes of hypoglycemia or hyperglycemia with pLOS. **Conclusion:** This study suggests that pLOS in geriatric patients is influenced by various factors, including acute illness severity, and in-hospital adverse events. These findings can guide the development of targeted management strategies to reduce hospital stays and improve outcomes for older patients. However, larger multicentric studies are necessary to better understand these relationships across diverse populations and establish standardized care protocols. Early identification of high-risk patients and tailored interventions may significantly enhance the quality of care, reduce healthcare burden, and prevent adverse events leading to prolonged hospitalizations. **Keywords:** Geriatric syndromes, acute illness severity, hospital-acquired adverse events, prolonged length of stay, elderly care, hospital outcomes. **References:** 1. Toh HJ, Lim ZY, Yap P, Tang T. Factors associated with prolonged length of stay in older patients. Singapore Med J. 2017 Mar;58(3):134-138. doi:10.11622/smedj.2016158. 2. Ojeda Méndez, CA, Palomino Pacichana, DS, Bejarano Barragan, L., Ocampo Chaparro, JM, and Reyes-Ortiz, CA. Factors associated with prolonged hospital stay in an acute geriatric unit. Colombian Medical Act. 2020;46. https://doi.org/10.36104/amc.2021.1844. 3. Ferreira MS, de Melo Franco FG, Rodrigues PS, et al. Impaired chair-to-bed transfer ability leads to longer hospital stays among elderly patients. BMC Geriatr. 2019 Mar 21;19(1):89. doi: 10.1186/s12877-019-1104-4..

LP039- SOCIAL-MEDIA BASED HEALTH EDUCATION PLUS EXERCISE PROGRAMME (SHEEP) TO IMPROVE MUSCLE FUNCTION AMONG COMMUNITY YOUNG-OLD ADULTS WITH POSSIBLE SARCOPENIA: A FEASIBILITY STUDY.

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Background: Notwithstanding the relatively elevated prevalence of potential sarcopenia among young-old adults in the community [1-6], there exists no effective social media intervention to enhance awareness and behaviour within this demographic to prevent sarcopenia [6, 7]. Employing a co-design methodology, a multicomponent intervention strategy encompassing health education and exercise was formulated for sarcopenia prevention via the TikTok platform [7, 8]. The primary goal of this research is to assess the feasibility of the study design and the acceptability of the social media-based intervention among community-dwelling young-old persons with possible sarcopenia. **Methods:** A single-arm pre-post feasibility study employing a mixed-method design was conducted between May 2024 and August 2024. Older adults aged 60-69 years with possible sarcopenia were recruited from two communities in Changsha, China. Using the TikTok platform, participants were required to view a total of seven health education videos in the first week and receive a six-week multi-component exercise intervention, then accept six-week follow-up testing. Data collection was conducted at baseline, post-intervention, and follow-up. The primary outcomes were related to the feasibility and acceptability of the study, such as recruitment capability, data collection procedure, outcome measurement, intervention procedures' acceptability, researchers' ability to manage and implement the study, etc. The secondary outcomes included standard measures for muscle function, body composition, and some relevant questionnaires. Finally, all participants were offered a semi-structured interview to assess their in-depth experiences with the intervention and research process. **Results:** Thirty-five participants were recruited, including 28 (80%) females and 7 (20%) males. The average age was 66.40±2.90 years. Thirty-two participants completed the whole intervention procedure, and 26 accepted the final semi-structured interview. The primary outcomes indicated that the recruitment was accessible; the intervention and the measurement procedures were safe, stress-free, and acceptable; and the researchers found the execution and management for this project achievable. The secondary outcomes showed that the SHEEP intervention had the potential to improve some indices, including handgrip strength, walking speed, sit-to-stand function, knowledge of sarcopenia prevention, self-efficacy, and self-management behaviours in managing chronic disease. The exercise adherence is high. Participants who participated in the interview approved of the intervention strategies and the entire procedure and reported varying degrees of beneficial changes in their physical and mental health, like increased strength in their hands and feet, improved mood, enhanced sleep quality, and heightened appetite. **Conclusion:** The findings suggest that

the SHEEP intervention is both feasible and acceptable for community-dwelling older adults with possible sarcopenia and is also potentially effective in improving some physical function outcomes in this population. A future randomised controlled trial will be necessary to evaluate its actual effectiveness. **Keywords:** Sarcopenia, feasibility study, social media, health education, exercise, community young-old adults. **Trial registration:** ISRCTN registry, ISRCTN17269170, Registered 14 September 2023. **Data Deposition:** The research data and findings of this study will be presented in peer-reviewed journals and scientific conferences, as well as shared through a series of public engagement events, including webinars. The anonymised participant-level dataset will not be publicly available but will be available from the principal investigator upon reasonable request. **Disclosures:** The authors declare that they have no relevant or material financial interests that relate to the research described in this paper. **References**: 1. Chen Z, Ho M, Chau PH. Prevalence, Incidence, and Associated Factors of Possible Sarcopenia in Community-Dwelling Chinese Older Adults: A Population-Based Longitudinal Study. Front Med (Lausanne). 2022; 8:769708. doi:10.3389/fmed.2021. 769708. 2. Pérez-Sousa MÁ, Pozo-Cruz JD, Cano-Gutiérrez CA, Izquierdo M, Ramírez-Vélez R. High Prevalence of Probable Sarcopenia in a Representative Sample From Colombia: Implications for Geriatrics in Latin America. J Am Med Dir Assoc. 2021; 22(4):859-864. e1. doi:10.1016/j.jamda. 2020.10.021. 3. Wu YZ, Loh CH, Hsieh JG, Lin SZ. Physical Inactivity and Possible Sarcopenia in Rural Community Daycare Stations of Taiwan: A Cross-Sectional Study. Int J Environ Res Public Health. 2022; 19(4):2182. doi:10.3390/ijerph19042182. 4. Lim SK, Kong S. Prevalence, physical characteristics, and fall risk in older adults with and without possible sarcopenia. Aging Clin Exp Res. 2022; 34(6):1365-1371. doi:10.1007/s40520- 022-02078-z. 5. Tsekoura M, Billis E, Matzaroglou C, Tsepis E, Gliatis J. Prevalence of probable sarcopenia in community-dwelling older Greek people. J Frailty Sarcopenia Falls. 2021; 6(4):204-208. doi:10. 22540/JFSF-06-204. 6. Shi Y, Tang Y, Stanmore E, McGarrigle L, Todd C. Non-pharmacological interventions for community-dwelling older adults with possible sarcopenia or sarcopenia: a scoping review. Arch Gerontol Geriatr. 2023; 112:105022. doi:10.1016/j. archger.2023.105022. 7. Shi Y, Stanmore E, McGarrigle L, Todd C. Social-media based Health Education plus Exercise Programme (SHEEP) to improve muscle function among community-dwelling young-old adults with possible sarcopenia in China: A study protocol for intervention development. PLoS One. 2024; 19(3): e0286490. doi:10.1371/journal. pone.0286490. 8. Shi Y, Stanmore E, McGarrigle L, Wang XH, Wang XQ, Li YH, Todd C. Intervention development for a social-media based health education plus exercise programme (SHEEP) to improve muscle function among young-old adults with possible sarcopenia in the community: Co-design Approach. Maturitas, 2024; 186: 108027. doi:10.1016/j.maturitas.2024.108027.

E-HEALTH, DIGITAL TOOL

P040- EFFECTS OF AN AR-BASED HOME EXERCISE INTERVENTION ON PHYSICAL AND COGNITIVE FUNCTION IN THE IN COMMUNITY-DWELLING OLDER ADULTS WITH PRE-SARCOPENIA.

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Background: This study investigates the effects of an augmented reality (AR)-based home exercise program on the physical and cognitive functions of elderly individuals, aiming to demonstrate how modern technology can enhance health management in an aging population. **Method:** Forty elderly participants with low muscle mass, aged 65 and above, were enrolled in a randomized controlled trial. They were allocated into an AR exercise intervention group (20 participants) and a control group (20 participants). The intervention group performed medium-to-high intensity AR-guided exercises targeting major muscle groups for 60 minutes, three sessions per week, over four weeks. Exercise parameters were customized to optimize intensity, frequency, duration, and type for each individual. **Results:** The AR exercise group exhibited significant improvements in maximal oxygen uptake (VO2max), the 6-minute walk test (SMWT), and the 5-times sit-to-stand test compared to controls. EEG analyses showed enhancements in the Theta Beta Ratio and Delta Alpha Ratio, indicative of improved attention and executive functions. Although changes in handgrip strength and muscle mass were not statistically significant, positive trends were observed. Participant compliance exceeded 90%. **Conclusion:** The AR-based home exercise program effectively enhanced both cardiopulmonary and muscle functions, as well as cognitive functions associated with brain activity, in elderly individuals. This study highlights the potential of digital interventions to provide personalized health management and revolutionize traditional exercise approaches, which could significantly contribute to the prevention of sarcopenia and cognitive decline. **Keywords:** Augmented reality, sarcopenia, exercise, digital healthcare, cognitive function, E-health. **Disclosures:** The authors declared no competing interests. **References:** 1. H Park et al. Yearlong physical activity and sarcopenia in older adults: the Nakanojo Study European Journal of Applied Physiology 109, 953-961. 2. N Thapa, H Park et al. The effect of a virtual reality-based intervention program on cognition in older adults with mild cognitive impairment: a randomized control trial Journal of clinical medicine 9 (5), 1283.

P041- EFFECTIVENESS OF TELEMEDICINE IN MANAGING FRAIL PATIENTS WITH ACUTE ILLNESS AT HOME: A SYSTEMATIC REVIEW AND META-ANALYSIS. C.H.H. Huang[1]
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Background: Telemedicine is increasingly recognized as a valuable approach for enhancing patient outcomes and reducing healthcare costs, particularly in home-based care. This meta-analysis assessed the effectiveness of telemedicine compared to traditional in-person care for frail patients with acute illness, focusing on key outcomes such as hospitalization duration, frequency of home visits, patient satisfaction, and successful onsite management. **Methods:** A meta-analysis was conducted using data from four randomized controlled trials (RCTs) comparing telemedicine with traditional care. These studies included a total of 470 patients (Telemedicine: 252; Control: 218). Outcomes assessed were length of hospitalization (2 studies, n = 288), number of home visits (2 studies, n = 554), patient satisfaction (2 studies, n = 288), and successful onsite management (2 studies, n = 610). Standardized mean differences and odds ratios were calculated using a random-effects model, with heterogeneity assessed by the I^2 statistic. **Results:** No significant difference was observed in the length of hospitalization (SMD = 0.00, 95% CI: [-0.23, 0.23]; p = 1.00) or the number of home visits (SMD = 0.01, 95% CI: [-1.59, 1.61]; p = 0.99). However, a slight, though not statistically significant, improvement was noted in patient satisfaction (SMD = -0.90, 95% CI: [-2.67, 0.86]; p = 0.32) and onsite management success rates (OR = 1.46, 95% CI: [0.66, 3.23]; p = 0.35). Heterogeneity varied from low to high, with I^2 reaching up to 98%. **Conclusion:** While telemedicine shows potential for improving patient satisfaction and onsite management, the data do not conclusively demonstrate its superiority over traditional care in reducing hospitalization length or home visits. Larger, more homogeneous studies are needed to confirm these findings. **Keywords:** Telemedicine, hospital-at-home, meta-analysis, healthcare systems, patient outcomes

P042- PREDICTION OF HOSPITALIZATION AND DEATH IN MIDDLE-AGED AND OLDER ADULTS BY FRAILTY ASSESSED USING A WRIST-WORN DEVICE: THE UK BIOBANK STUDY. Y. Osuka[1,2], L. Chan[2], M. Brodie[2], Y. Okubo[2], S. Lord[2]
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Background: Digital biomarkers obtained from wearable devices offer real-time, efficient, and continuous monitoring of individuals' biometric data in their daily lives. Recently, we developed an algorithm to extract digital gait biomarkers (DGBs) from acceleration signals captured by a wrist-worn wearable device. Furthermore, we demonstrated that a composite of DGBs, which encompassed multiple domains of real-world gait (e.g., speed, quantity, quality, and arm motion during ambulation) could identify frailty in middle-aged and older adults. However, the predictive validity of these biomarkers remains unverified. **Objectives:** This study aimed to evaluate whether frailty assessed through DGBs is not inferior to the Fried frailty phenotype in predicting hospitalization and mortality outcomes. **Methods:** This longitudinal study involved 10,156 adults aged 43 to 81 years, all of whom had complete data on the Fried frailty phenotype (including weakness, weight loss, exhaustion, slowness, and low activity) and DGBs from the UK Biobank. DGBs (including step count, maximum walking speed, step time variability, and manual tasks performed while walking) were extracted using validated algorithms applied to raw data from wrist-worn accelerometers over seven days. DGB frailty was derived from these digital biomarkers and compared to the Fried frailty phenotype. **Results:** Participants were followed for an average of 4.4 ± 2.7 years for hospitalizations and 7.2 ± 0.7 years for mortality. During these follow-up periods, 6,148 individuals (60.5%) experienced hospitalization (totaling 44,277 person-years of follow-up), and 270 individuals (2.7%) died (totaling 73,312 person-years of follow-up). Cox proportional hazards models, adjusted for variables including age, sex, body mass index, household income, smoking and drinking status, and total number of major diseases, indicated that both the Fried and DGB frailty measures were predictive of hospitalization (Hazard Ratios and 95% confidence intervals: 1.29 [1.13–1.47] for Fried frailty versus 1.33 [1.17–1.52] for DGB frailty) and mortality (1.63 [1.01–2.62] for Fried frailty versus 1.77 [1.14–2.74] for DGB frailty). The mean differences (DGB frailty - Fried frailty) and 95% confidence intervals in Harrell's C-index for hospitalization and mortality were 0.000 [-0.002 to 0.001] and 0.002 [-0.004 to 0.009], respectively, with the lower limit of the 95% confidence intervals surpassing the predetermined non-inferiority margin of -0.1. **Conclusion:** The findings indicate that frailty derived from DGBs is predictive of hospitalization and mortality, demonstrating non-inferiority to the Fried frailty phenotype. DGB frailty measures may complement Fried frailty assessments by providing remote monitoring of frailty using a wrist-worn device that has proven acceptable. **Disclosures:** A non-profit initiative is underway to create an electronic platform that will allow researchers to upload wrist accelerometry data and utilize the digital gait biomarkers referred to as Watch Walk. At present, the algorithms associated with Watch Walk are not accessible for commercial purposes.

P043- DEVELOPMENT OF A NOVEL SARCOPENIA DIAGNOSTIC MEDICAL DEVICE SYSTEM(RE:HAVE) LEVERAGING MOBILE-BASED MULTIMODAL DIGITAL BIOMARKERS. H. Lee[1], M. Ju[2], S. Moon[3], M. Kim[1], S. Lim[4], J. Kim[4] *((1) Yonsei University - Goyang (Korea, Republic of), (2) Yonsei University - Daegu (Korea, Republic of), (3) Haii Corp. - Gwacheon (Korea, Republic of), (4) Yonsei University - Seoul (Korea, Republic of))*

Background: The World Health Organization (WHO) defines sarcopenia as a major obstacle to healthy aging and urges governments around the world to take preventive measures. However, compared to the severity of sarcopenia, technology development to diagnose and manage it is still insufficient. Although various sarcopenia diagnosis guidelines and technologies have been proposed, existing diagnostic technologies are not standardized and require a controlled experimental environment for measurement. To address these shortcomings, we developed re:Have, a multimodal digital biomarker-based sarcopenia diagnostic medical device that can revolutionize the sarcopenia diagnostic paradigm and lay the foundation for standardized studies on clinical phenotypes of sarcopenia severity by utilizing quantified data. **Methods:** The feasibility of digitizing the sarcopenia diagnostic tool presented at AWGS 2019 was examined. To this end, we applied a multidisciplinary approach involving experts from various fields such as medicine, engineering, and data science, and comprehensively considered not only technical implementation but also user convenience and suitability. Finally, we designed the system by investigating additional assessment tools that can effectively examine muscle strength, muscle mass, and physical function while considering the actual usage environment of the patient. **Results:** Six examination tools were developed to evaluate muscle strength, muscle mass, and physical function using smartphone sensors. It consists of a rapid tapping test to evaluate muscle strength, Arm Curl, a 3D-Volume based calf measurement tool for examining muscle mass, and STS, TUG, and Balance test to evaluate physical function. It was designed to collect multi-modality data such as images, motion sensors, and videos to comprehensively collect and analyze various bio-signals and behavioral data. Finally, based on the collected data, a customized precision diagnostic model was created to classify the severity of sarcopenia and a mobile environment system was built that can provide a report. **Conclusion:** In future work, the effectiveness and validity of the system that classifies the severity of sarcopenia will be verified. Clinical data will be collected and analyzed to evaluate the accuracy of the customized precision diagnosis model algorithm, while expanding the research toward enhancing user experience and convenience to improve usability in daily life. **Keywords:** Digital biomarkers, digital theranostics, multimodal data, personalized diagnosis model. **Disclosures:** This research was supported by a grant of the Information and Communications Promotion Fund through the National IT Industry Promotion Agency (NIPA), funded by the Ministry of Science and ICT (MSIT), Republic of Korea. **References:** 1. Chen, L. K., Woo, J., Assantachai, P., Auyeung, T. W., Chou, M. Y., Iijima, K., ... & Arai, H. (2020). Asian Working Group for Sarcopenia: 2019 consensus update on sarcopenia diagnosis and treatment. Journal of the American Medical Directors Association, 21(3), 300-307. https://doi.org/10.1016/j.jamda.2019.12.012.

P044- RELATIONSHIP BETWEEN PSYCHOMOTOR AND LOCOMOTOR SKILLS IN AGING WORKFORCE. O. Tomarevska[1], O. Poliakov[1], O. Rukšėnas[2], Z. Boiarska[2], S. Kovalenko[3], O. Plyska[4], V. Chyzhyk[5], M. Yena[1,6], Y. Kreslov[1] *((1) D. F. Chebotarev Institute Of Gerontology Of Nams Of Ukraine - Kyiv (Ukraine), (2) Life Sciences Center, Vilnius University - Vilnius (Lithuania), (3) The Bohdan Khmelnytsky National University Of Cherkasy - Cherkasy (Ukraine), (4) National Pedagogical Dragomanov University - Kyiv (Ukraine), (5) Kremenets Regional Humanities Pedagogical Academy Named After Taras Shevchenko - Kremenets (Ukraine), (6) Kyiv Medical University - Kyiv (Ukraine))*

Background: Background: Determination of complex capabilities that include simple basis of work activity is important in monitoring the health level at workplace in the work environment or a convenient time and place. Maintaining health and reserves helps the worker achieve smart aging and optimal life after retirement. The purpose of the study was to determine the health level of workers and students during their studies and working pensioners by remote method to assess the psychomotor and locomotor skills. **Methods:** Research methods included 257 people aged 16 - 88 years. The answers of 7 people contained elements of unnatural behavior and were removed from the calculations as falsified. Psychomotor studies included visuomotor performance in the missing digit test in 6 digits combination in 4 fixed options with the same exposure for viewing for 17 seconds, auditory motor tests for whispered and normal speech of 10 short monosyllabic words for 15 seconds and repetition at the same speed, as well as static balancing time on the left leg with eyes closed. Locomotor functions were determined by the ability to sit down and stand up within 14 seconds and daily mileage distance km walking. The level of health was determined automatically according to the criteria of the «Human Health Passport» [1, 2]. **Results:** The results obtained showed a reliable sensitivity of parameters of psychomotor and locomotor skills, health levels to the age of students, workers and pensioners ($p<0.001$). Instead, the psychomotor skill of static balancing provided a reliable link with locomotive functions ($p<0.001$). Visual and whisper's auditory psychomotor skills showed independence from locomotor performance, but showed a trend of stronger associations between them, rather than with age ($p<0.001$). Highlight of the study was the analysis of respondents' errors in the visual-motor test, which indicated the prevalence of problems with the gnostic component at the skill in 18.8% cases. Thus, absolute performance was preserved for visual motor functions - 44.4%, for auditory functions regarding whispered speech - 50.4%, and spoken speech - 64.4% of respondents. However, the number of errors in the visual-motor

response, auditory response to whispered speech, performance and auditory response errors to normal speech had marked independence for all age groups. The health level of laboring in mass professions: 34% - need medical diagnosis, treatment services and rehabilitation; medical consultation and physical activity - 33.2%; special attention to be paid to physical training - 30.8%; apparently healthy - 1.6%; need for medical and social, caregiver's services - 0.4%. Psychomotor functions of shallow motility are among the complex functions that have a reduced scope for correction unlike locomotor functions reserves. **Conclusion:** Remote assessment of health reserves, psychomotor and locomotor skills of the intergenerational workforce demonstrated informative perspectives particularity for subsequent generations of older workers as smart aging benefits. Highlighted was the decline in sensorimotor abilities among younger generations and its impact on prognostic outcomes for smart aging, possibilities for caregiving the present generation of older adults. The above relationships indicated extreme underutilization of the physical training for improving health reserves over and over. **Keywords:** Psychomotor skills, locomotor skills, aging, workforce, health. **Disclosures:** the author declared no competing interests. **References:** 1. Tomarevska O., Poliakov O. Ageing and Longevity 2023; 4(3): 86-97. https://doi.org/10.47855/jal9020-2023-3-3. 2. Tomarevska O, Poliakov O. Innov Aging. 2023; 7(Suppl 1): 912. https://doi.org/10.1093/geroni/igad104.2934

LP042- COMPARISON OF HEALTH COACHING WITH A WEB-BASED RESOURCE FOR PEOPLE AWAITING TOTAL JOINT REPLACEMENT SURGERY: A FEASIBILITY STUDY. L. Tong[1,2], T. Maden-Wilkinson[1,2], R. Young[1,2] *((1) Sheffield Hallam University - Sheffield (United Kingdom), (2) Advance Wellbeing Research Centre - Sheffield (United Kingdom))*

Background: Patients with osteoarthritis awaiting hip or knee replacement often face long wait times that can lead to both physical and cognitive decline, adversely impacting their surgical outcomes and recovery. Such decline is closely linked to the development of sarcopenia and frailty in an aging population [1, 2]. Research supports the need for prehabilitation strategies to maintain or improve physical and mental health during these wait periods. The «Active Wait» web-based digital resource was co-designed by patients and healthcare providers to offer guidance on physical activity, nutrition, and self-management to patients awaiting total joint replacement. Initial findings indicated an increase in self-reported physical activity. However, only subjective patient-reported outcomes were used. This study aims to assess the feasibility of conducting a larger-scale randomised controlled trial (RCT) to evaluate the effectiveness of combining health coaching with a self-management digital tool to improve physical function and activity levels among patients awaiting elective joint replacement in Sheffield, United Kingdom. **Methods:** This randomised, single-blinded, single-centre feasibility trial recruits 36 adult patients from the Sheffield waitlist for hip or knee replacement surgery. Participants are randomised 1:1 into two groups: (i) those receiving access to the Active Wait web-based resources combined with personalised health coaching, and (ii) those receiving access to the Active Wait resource only. Baseline and 13-week follow-up assessments will include both objective and subjective measures. Objective measures include physical activity (measured with ActivPAL™ accelerometers), muscle strength (isometric knee flexion and extension), and physical function (Osteoarthritis Research Society International's recommended physical performance tests). Subjective measures include self-reported outcomes such as quality of life (EQ-5D-5L), pain, and joint-specific function (Oxford Hip/Knee Score). After the intervention, semi-structured interviews will capture participants' perspectives on adherence, satisfaction, and the acceptability of the ActiveWait platform and health coaching. **Results:** Feasibility will be evaluated using Bowen's framework' [3], focusing on the acceptability, demand, implementation, and practicality of the Active Wait resource with health coaching. Secondary outcomes will include changes in objectively measured physical activity levels, muscle strength, self-efficacy, quality of life, and joint-specific function. Findings will inform the sample size estimates, and protocol adjustments needed for a larger-scale RCT. **Conclusion:** This study aims to assess the feasibility and preliminary efficacy of the Active Wait resource combined with health coaching to enhance physical function and activity among patients awaiting total joint replacement. Results will inform future prehabilitation interventions and may contribute to improved patient outcomes by addressing the decline in physical strength and function commonly seen in patients awaiting elective joint replacement, particularly those with sarcopenia and frailty. **Keywords:** Digital resource, osteoarthritis, prehabilitation, physical function. **Clinical Trial Registry:** NCT0659603; https://clinicaltrials.gov. **Disclosures:** NA. **References:** 1. Wong, L., G. Duque, and L.P. McMahon, Sarcopenia and Frailty: Challenges in Mainstream Nephrology Practice. Kidney Int Rep, 2021. 6(10): p. 2554-2564. 2. Clement, N.D., et al., Significant deterioration in quality of life and increased frailty in patients waiting more than six months for total hip or knee arthroplasty : a cross-sectional multicentre study. Bone Joint J, 2022. 104-b(11): p. 1215-1224. 3. Bowen, D.J., et al., How we design feasibility studies. American journal of preventive medicine, 2009. 36(5): p. 452-457.

LP043- ASSESSING THE IMPACT OF A WEB-BASED RESOURCE ON PAIN, FUNCTION, AND SURGICAL INTENT IN PATIENTS WITH KNEE OSTEOARTHRITIS. L. Tong[1,2], R. Young[1], A. Semciw[3,4], T. Pizzari[3] *((1) Sheffield Hallam University - Sheffield (United Kingdom), (2) Advance Wellbeing Research Centre - Sheffield (United Kingdom), (3) La Trobe University - Melbourne (Australia), (4) Northern Health Hospital - Melbourne (Australia))*

Background: Osteoarthritis (OA) is a chronic joint condition affecting the mobility and independence of individuals, the majority of which are greater than 55 years old. These patients are commonly referred for orthopaedic review.

Whilst being on the waitlist, many do not receive recommended first-line non-surgical management, and the excessive wait time leads to prolonged suffering. The reduced physical activity, chronic pain, and functional limitations increase the risk for sarcopenia and frailty in the aging population [1, 2]. To address this, Northern Health Hospital, Victoria, Australia, implemented a digital resource including education, exercise, and dietary advice, paired with telephone by a physiotherapist for patients on the orthopaedic waitlist for knee OA. **Objective:** This study evaluated the impact of a 12-week digital, web-based intervention offering information about education, exercise and nutrition, on self-reported physical function, pain, and quality of life (QoL) among patients on the orthopaedic waitlist for knee OA. **Methods:** Patients on the orthopaedic waitlist were screened and referred to the program. Demographic information (age, BMI, sex) was recorded. Changes in physical function, pain and QoL were assessed over 12 weeks using the knee injury and osteoarthritis outcome score (KOOS) [3], analysed using the linear mixed-effect models. The program's acceptability was reported using the participant's perceived benefit of the program (Global Rating of Change) [4], and their surgical intent. **Results:** At the time of analysis, 887 patients were screened, 287 were recommended for the program, 164 registered, and 72 completed it (63% Female; Age: 63.4±9.4 years; BMI: 34.9±8.1 kg/m2). Small but statistically significant improvements were observed in walking pain (-0.84 [-0.45, -1.24], p<0.001), QoL (KOOS) (6.57 [3.11, 10.03], p<0.001), pain (KOOS) (3.85 [1, 6.7], p<0.01), and physical function (KOOS) (4.17 [0.61, 7.71], p<0.05). For the perceived benefit of the program, 23 participants (32%) reported themselves as "better", and 43 (60%) no longer intend to have surgery. **Conclusion:** A digitally-delivered resource has a positive influence on patient's beliefs on the need for surgery in managing their knee OA. It is associated with small improvements in pain and quality of life. Future work will focus on scaling the program and identifying patient profiles most likely to benefit from such digital support, compared to those who may require more intensive intervention or surgical management. **Keywords:** Digital resource, osteoarthritis, frailty, waitlist. **Disclosure:** NA. **References:** 1. Wong, L., G. Duque, and L.P. McMahon, Sarcopenia and Frailty: Challenges in Mainstream Nephrology Practice. Kidney Int Rep, 2021. 6(10): p. 2554-2564. 2. Clement, N.D., et al., Significant deterioration in quality of life and increased frailty in patients waiting more than six months for total hip or knee arthroplasty : a cross-sectional multicentre study. Bone Joint J, 2022. 104-b(11): p. 1215-1224. 3. Roos, E.M., et al., Knee Injury and Osteoarthritis Outcome Score (KOOS)--development of a self-administered outcome measure. J Orthop Sports Phys Ther, 1998. 28(2): p. 88-96. 4. Kamper, S.J., C.G. Maher, and G. Mackay, Global rating of change scales: a review of strengths and weaknesses and considerations for design. J Man Manip Ther, 2009. 17(3): p. 163-70.

LP046- ASSOCIATION WITH DETERIORATION OF CARE-NEED LEVELS AMONG COMMUNITY-DWELLING OLDER ADULTS: AN INTERPRETABLE MACHINE LEARNING APPROACH. S. Itoh[1,2], J. Komiyama[2,3], A. Suzuki[2,4], N. Kuroda[2,5], V. Xi Wu[6], N. Tamiya[2,3] *((1) Graduate School Of Health Care Science, Institute Of Science Tokyo - Bunkyo (Japan), (2) Research And Development Center For Health Services, University Of Tsukuba - Tsukuba (Japan), (3) Department Of Health Services Research, Institute Of Medicine, University Of Tsukuba - Tsukuba (Japan), (4) Department Of Health Services Research, Graduate School Of Comprehensive Human Sciences, University Of Tsukuba - Tsukuba (Japan), (5) Department Of Public Mental Health Research, National Institute Of Mental Health, National Center Of Neurology And Psychiatry - Kodaira (Japan), (6) Yong Loo Lin School Of Medicine, National University Of Singapore - Singapore (Singapore))*

Backgrounds: Background: Research on factors associated with the deterioration of care-need levels among community-dwelling older adults is limited [1-5]. This study employed an interpretable machine learning approach to investigate these factors in older adults in Japan requiring moderate care levels. **Methods:** We conducted a population-based observational study with individual-level secondary data from the suburban municipal government between May 2015 and March 2019. A random forest model was developed to predict the progression of care-need levels using 34 predictor variables. The predictor variables included demographic characteristics (i.e., sex, age), clinical factors (i.e., Charlson Comorbidity Index [CCI]), functional status indicators (e.g., transfer, toileting, dressing, and eating), the use of long-term care services (e.g., home help, daycare, and nurse visit), and the type of care management. The model was trained using the randomForest package in R, with the following hyperparameters: 500 trees, five variables randomly selected at each split, and a minimum node size of 5. Feature importance was assessed using the Mean Decrease Gini metric. The model's performance was evaluated using cross-validation tenfold. Accuracy and Kappa statistics were calculated to determine the model's predictive ability. To further interpret the model was used to create a Predictor object, which allowed for the analysis of individual predictions and the calculation of Shapley values. **Results:** The 1011 recipients of a mild care-need level in the long-term care system were analyzed with a machine learning approach. The most important features identified were age (Mean Decrease Gini: 36.8), CCI (26.0), moving (17.4), and transfer (16.2). The analysis using Shapley values identified the contribution of each characteristic to the deterioration of care-need levels. CCI had the most negative contribution (Shapley value: -0.05), indicating that a higher score of CCI could increase the risk of deteriorating care-need levels. Furthermore, age showed a negative contribution (Shapley value: -0.04), suggesting that older age was associated with a greater risk of worsening care-need levels. The need for care in transfer also had negative Shapley values of -0.03. **Conclusion:** The analysis using Shapley values identified key factors contributing to

progressing care-need levels, indicating that higher scores of CCI, older age, and higher transferring care needs increase the risk of deteriorating care-need levels. These findings underscore critical factors associated with progressing care-need levels and provide valuable insights into potential intervention points to prevent further deterioration in care requirements. **Keywords:** Activities of daily living, functional impairment, machine learning, older adults. **Disclosures:** SI received a grant from JSPS KAKENHI, grant number JP22H03413. The authors declared no competing interests. **References**: 1. Itoh S, Mori T, Jin X, Ito T, Komiyama J, Kuroda N, Uda K, Tsuchiya-Ito R, Wu XV, Kodama K, Takahashi H, Takeda T, Tamiya N. Outcomes of advanced care management in home-based long-term care: A retrospective population-based observational study. Int J Nurs Stud. 2024 Oct;158:104862. 2. Itoh S, Mori T, Jeon B, Morioka N, Ito T, Jin X, Ogata Y, Tamiya N. Comparison of progression of care-need levels among long-term care recipients with and without advanced care management in a rural municipality of Japan: A population-based observational study. Int J Nurs Stud. 2021 Jan;113:103804. 3. Itoh S, Hikichi H, Murayama H, Ishimaru M, Ogata Y, Yasunaga H. Association Between Advanced Care Management and Progression of Care Needs Level in Long-Term Care Recipients: Retrospective Cohort Study. JMIR Aging. 2018 Jul 25;1(2):e11117. 4. Itoh S, Sakano T, Sagawa M, Yanagiya R, Kanno Y, Hirooka K, Fukui S. Home Care Services in the Last Year of Life by Type of Care Management. Studies in health technology and informatics 315, 685-686. 5. Igarashi A, Yamamoto-Mitani N, Yoshie S, Iijima K. Geriatr Gerontol Int. Patterns of long-term care services use in a suburban municipality of Japan: a population-based study.2017 May;17(5):753-759.

CLINICAL TRIALS AND THERAPEUTICS

P045- EFFECT OF NELUMBO NUCIFERA EXTRACTS AND REGULAR WALKING ON MUSCLE STRENGTH AND MASS IN ADULTS WITH RELATIVELY LOW MUSCLE MASS: A RANDOMIZED CONTROLLED TRIAL.

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Background: Sarcopenia is a phenomenon in which skeletal muscle mass decreases with age, causing many health problems. Many studies have been conducted to improve sarcopenia nutritionally. Previous in vitro and in vivo studies have confirmed the efficacy of Nelumbo nucifera leaf extracts (NM) in increasing muscle production and reducing muscle breakdown. In particular, NM improved muscle wasting by regulating muscle protein metabolism in DEX-induced muscle atrophy mice. However, the effect of oral NM supplementation on human muscle strength and mass is still being determined. Therefore, we tested the effects and safety of consumption of NM combined with regular walking for 12 weeks on muscle strength and mass in older adults with relatively low muscle mass. **Methods:** A randomized controlled trial was conducted on 80 adults aged 50–80. A total of 80 participants will be enrolled in this study. Participants were assigned an IOE-taking group (receiving 500 mg/kg IOE, mean ± SD; age 62.7 ± 7.2 years, n = 40) and placebo placebo-taking group (age 63.1 ± 7.1 years, n = 40). At a baseline and 12 weeks after treatment, the following parameters of the participants were checked: knee extension strength, handgrip strength, body composition, laboratory tests, dietary recall, physical activity, and EQ-5D-5L. Clinical Trial Registry: NCT04320121; https://clinicaltrials.gov. **Results:** Of the 80 participants, 73 completed the trial. NM supplementation did not result in a significant improvement in quadriceps strength, as measured by leg extensions when compared to the control group in both the ITT and PP analyses. As measured by leg extensions, the actual intensities of quadriceps strength showed no significant augmentation with NM supplementation, neither at baseline nor at 12 weeks, with no intragroup change observed in either leg extension. Additionally, no differences were observed between the two groups in muscle mass or biomarkers. Importantly, none of the participants experienced adverse events, and the application of NM was well tolerated. **Conclusion:** This trial is the first randomized, double-blind, placebo-controlled human study to investigate whether NM can enhance skeletal muscle strength in adults with relatively low skeletal muscle mass when combined with regular resistance training. Contrary to expectations, no significant enhancement in muscle strength was observed after three months of administration of NM. However, further research is warranted to re-verify the effects of NM on muscle strength in humans by exploring various appropriate doses, administration periods, or different subject groups. **Keywords:** Nelumbo nucifera, sarcopenia, muscle, strength, elderly. **Disclosures:** The authors declared no competing interests.

P046- EXPLORATORY FUNCTIONAL AND QUALITY OF LIFE OUTCOMES WITH DAILY CONSUMPTION OF THE KETONE ESTER BIS-OCTANOYL (R)-1,3-BUTANEDIOL IN HEALTHY OLDER ADULTS: A RANDOMIZED, PARALLEL ARM, DOUBLE-BLIND, PLACEBO-CONTROLLED STUDY.

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Background: Ketone bodies are metabolites produced during fasting or on a ketogenic diet that have pleiotropic effects on the inflammatory and metabolic aging pathways underpinning frailty in in vivo models. Ketone esters (KEs) are compounds that induce hyperketonemia without dietary changes and may impact physical and cognitive function in

young adults. The functional effects of KEs have not been studied in older adults. **Objectives:** Our long-term goal is to examine if KEs modulate aging biology mechanisms and clinical outcomes relevant to frailty in older adults. Here, we report the exploratory functional and quality-of-life outcome measures collected during a 12-week safety and tolerability study of KE (NCT05585762). **Design:** Randomized, placebo-controlled, double-blinded, parallel-group, pilot trial of 12-weeks of daily KE ingestion. **Setting:** The Buck Institute for Research on Aging, California. **Participants:** Community-dwelling older adults (≥ 65 years), independent in activities of daily living, with no unstable medical conditions (n = 30). **Intervention:** Subjects were randomly allocated (1:1) to consume 25 g daily of either KE (bis-octanoyl (R)-1,3-butanediol) or a taste, appearance, and calorie-matched canola oil placebo (PLA). **Measurements:** Longitudinal change in physical function, cognitive function and quality of life were analyzed as exploratory outcomes in completers (n = 11 PLA, n = 12 KE). A composite vigor-frailty functional outcome was calculated. Heart rate and activity were followed using digital wearables. **Results:** There were no statistically significant longitudinal differences between groups in exploratory functional, activity-based or quality of life outcomes in this pilot study. **Disclosures:** The Buck Institute holds shares in BHB Therapeutics (Ireland) and Selah Therapeutics. B.J.S. has stock in H.V.M.N Inc, and stock options in Selah Therapeutics Ltd, BHB Therapeutics (Ireland) Ltd., and Juvenescence Ltd. J.C.N. has stock options in Selah Therapeutics Ltd and BHB Therapeutics (Ireland) Ltd. J.C.N and B.J.S. are inventors on patents related to the use of ketone bodies that are assigned to The Buck Institute. Individual and institutional conflict management plans were developed and approved by the Buck Institute and submitted to the reviewing IRB.

P047- RANDOMISED CONTROLLED TRIAL ASSESSING VITAMIN D'S ROLE IN REDUCING BPPV RECURRENCE IN OLDER ADULTS. K. Chua[1], X. Huang[1], J. Soh[2], X.H. Koh[1], V.C. Barrera[1], P. Anaikatti[1], J. Deng[1], S.M.P.S. Moh[1], M.K.T. Yeo[1], H.W. Yuen[1], D.A. Low[1], B.H. Rosario[1] *((1) Changi - Singapore (Singapore), (2) Ministry Of Home Affairs - Singapore (Singapore))*

Background: BPPV is most common cause of vertigo in older adults [1]. Despite BPPV being considered a benign self-limiting condition, it has serious physical and psychosocial consequences such as injuries from falls precipitated by vertiginous attacks and fear of unexpected vertigo leading to restriction of daily activities and functional decline [2, 3]. **Objective:** To determine if the recurrence rates of BPPV in older adults were lower in the vitamin D treated group A as compared to placebo group B and control group C. This is a single-center, three-arm Phase IIa double-blinded randomised control trial (RCT) with a 1:1:1 ratio, investigating the effectiveness of Vitamin D versus placebo control at reducing recurrence rates of BPPV and maintaining or improving functional ability, postural stability and reducing rate of falls in older adults during a 12-month follow up period. Vitamin D3 deplete participants were randomized into treatment (Group A) or placebo groups (Group B). Treatment group received 13 weeks of 2000IU vitamin D3 followed by 1000IU for the next 13 weeks. Patients who were replete were allocated to a control group (Group C) for observation and follow up. All groups had dietary interventions for vitamin D3 and calcium. Baseline assessments included a serum vitamin D3 test and corrected calcium measurements and abbreviated mental test (AMT). Balance and functional assessment in the form of a Gans Sensory Organisation Performance Test (Gans SOP), Short Physical Performance Battery (SPPB), Barthel Index (BI) and Rockwood Clinical Frailty Scale (CFS). **Results:** A total of 53 participants aged ≥50 years with history suggestive of idiopathic BPPV participated in this study and were predominantly female with mean age 66.2 +/- 8.1 years, and the majority were CFS 3 or 4. Fourteen participants were assigned to group C (replete vitamin D), while 39 participants were randomized in a 1:1 ratio to groups A (n = 19) and B (n = 20). Results showed an 87% reduction in recurrence rates of BPPV in the treatment group (Group A), with 0.75 fewer clinical episodes per one person-year as compared to placebo (Group B). Time to first recurrence was also significantly longer in Group A. There was no statistically significant difference between Group A and C in both recurrence rates and dizziness handicap scores. Compared to participants with no incident fall, participants with an incident fall had a lower baseline Barthel Index for ADL score (median 19.5 vs. 20, Mann-Whitney U-test P=0.043) and baseline SPPB total score (median 10 vs. 11, P=0.067; table 2). Participants who received vitamin D supplementation (group A) had a better 5x sit to stand time compared to those without vitamin D supplementation in the placebo group (group B). **Conclusion:** This clinical trial has laid the foundation to expand the investigation of vitamin D as standard of care treatment in BPPV patients in future phase IIb and III studies. With fewer BPPV episodes and longer time to recurrence, older patients may have better postural stability and improved functional ability. **Keywords:** Benign paroxysmal positional vertigo (BPPV), giddiness, frailty, geriatrics, falls. **Disclosures:** The authors declare that they have no competing interest **References:** 1. Parham K, Kuchel GA. A geriatric perspective on benign paroxysmal positional vertigo. J Am Geriatr Soc. 2016; 64(2):378-385. 2. Balatsouras D, Koukoutsis G, Fassolis A, Moukos A, Aspris A. Benign paroxysmal positional vertigo in the elderly: current insights. Clin Interv Aging. 2018;13:2251-2266. 3. Kao CL, Hsieh WL, Chern CM, Chen LK, Lin MH, Chan RC. Clinical features of benign paroxysmal positional vertigo (BPPV) in Taiwan: differences between young and senior age groups. Arch Gerontol Geriat. 2009;49(SUPPL.2):S50-S54.

P048- SIGNAL OF SLOWING IN DNA METHYLATION AGING CLOCKS FOLLOWING DAILY CONSUMPTION OF A KETONE ESTER FOR 12-WEEKS IN HEALTHY OLDER ADULTS.
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Background: Interventions which target the biology of aging hold promise for ameliorating geriatric syndromes such as frailty. DNA methylation (DNAm) of peripheral blood mononuclear cells (PBMCs) provides a useful and minimally invasive metric for assessing biological age through epigenetics. Ketone bodies are metabolites produced during carbohydrate-depletive metabolic states and have pleiotropic effects relevant to aging biology mechanisms of frailty. Ketone esters are precursor compounds which rapidly induce therapeutically relevant circulating concentrations of ketone bodies without dietary adjustment. We recently completed the first pilot clinical study using a ketone ester to target frailty mechanisms in older adults, which primarily assessed tolerability and safety. Here, we report exploratory aging biomarker outcomes. Our long-term goal is to examine if ketone esters can improve functionality and clinical outcomes relevant to frailty in older adults. **Methods:** Randomized, placebo-controlled, double-blinded, parallel-group, pilot clinical trial of 12-week ketone ester ingestion conducted at The Buck Institute for Research on Aging, Novato, CA. Male and female participants (N = 30) were community-dwelling older adults (> 65 years) who were independent in activities of daily living and had no unstable medical conditions. Subjects were randomly allocated (1:1) to consumption of 25 g daily of a ketone ester (bis-octanoyl (R)-1,3-butanediol), or a taste, appearance, and calorie-matched canola oil placebo. Whole blood samples were collected at first and final subject visits. PBMCs from subjects with completed timecourse (N = 23) were isolated from blood. Genomic DNA for sequencing was purified from PBMCs (N = 18) using a modified Qiagen extraction protocol and was used for methylation analysis (Illumina Methylation EPIC arrays, via UMinnesota Genomics Center). DNAm epigenetic clocks were calculated from DNA CpG site data using methylclock and methylcipher R packages. **Results:** Several DNAm clocks of aging were assessed: Hannum, Horvath, PhenoAge, and IntrinClock. Age acceleration in Hannum, Horvath, and PhenoAge DNAm clocks displayed trends towards reduction in ketone ester subjects, compared to static in placebo subjects. Ketone ester subjects trended towards improvement in IntricClock, compared to static in placebo subjects. **Conclusion:** In a placebo-controlled pilot trial, ketone esters were safe and tolerable compounds in older adults. Furthermore, ketone ester ingestion is associated with a trend toward improving or slowing age acceleration in DNAm epigenetic clocks. Ketone esters show promise for targeting geroscience mechanisms relevant to frailty in older adults. **Keywords:** Frailty, DNA methylation epigenetics clock, ketone body, Aging. **Clinical Trial Registry:** NCT05585762; https://clinicaltrials.gov.

P049- THE STUDY OF MERIDIAN POINTS STIMULATION SELFCARE METHOD TO IMPROVE ACTION POSTURE BASED ON MOTION CAPTURE DATA.
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Background: Recently, many research about health condition of the older adults has shown that the proportion of older adults requiring health care has sharply increased from the 70 years old because the decline of physical functions. The reason of requiring health care is largely related to the health condition and lifestyle habits prior to that point, so it is necessary to pay close attention to the health condition of people in their 60s [1]. In a global disease survey shown that chronic back pain is the symptom that lasts the longest among all other symptoms of physical discomfort. It also increases the mental burden and accelerate the decline of body functions [2]. Therefore, if some frailty prevention measures such as meridian points stimulation selfcare method [3] could be used at an early stage, chronic low back pain symptoms can be alleviated and improved. **Methods:** In this research, meridian points stimulation selfcare method for 4 to 5 months was used on 18 older adults alleviate to improve chronic low back pain symptoms. In order to effectively evaluate the changes before and after pressure points stimulation method, motion capture technology was used to record changes in physical activity of older adults including walking speed, walking step length, left and right-side bending angle, and front and back bending angle (Ethical approval number: R5-10). **Results:** Compared with before meridian points stimulation, the average step length of the 18 older adults increased by 29mm ($p<0.05$) and the walking speed increased by 141mm/s ($p<0.05$). The left and right bending range of the waist increased by 9 degrees ($p<0.05$) and 7 degrees ($p<0.05$) respectively. In the results of the forward and back range of waist, the forward bending angle did not change, and the backward bending angle increased by 4 degrees ($p<0.05$). **Conclusion:** Based on the analysis results, the implementation of meridian points selfcare stimulation could significantly improve the chronic low back pain of older adults, increase walking speed and walking step length. Further increase the left and right movement angle and backward bending angle of the waist. In future research, we will gradually increase the number of participants to further explore the effects of meridian points stimulation on the daily activities of older adults. **Keywords:** Local older adults, frailty prevention, meridian points stimulation, chronic low back pain, motion capture. **Disclosures:** The authors declared

no competing interests. **Funding:** This study was supported by the Japan Society for the Promotion of Science (JSPS) KAKENHI (Grant No.: 24K14144). **References:** 1. Hiroko Nakano, et al. "Association between Fatigue and Household Roles among Community Residents in Their 60s", Journal of Japan Academy of Community Health Nursing, Vol: 24, Issue 3, pp. 23-33, 2021. https://doi.org/10.20746/jachn.24.3_23. 2. Takuya Kitamura, et al. «Effects of exercise therapy prior to treatment for a patient with adult spinal deformity and chronic back pain», Journal of Spine Research, Vol. 11, Issue 6, pp. 923-930, 2020. https://doi.org/10.34371/jspineres.2020-0510. 3. Pingping Zhang, et al. «Development of meridian point stimulation self-care methods to reduce chronic low back pain in older adults», The Journal of Cultural Nursing Studies, Vol. 15, Issue 1, pp. 1_1-1_10, 2023. https://doi.org/10.24658/bunkakango.15.1_1_1.

P050- RECRUITING AND RETAINING DIVERSE AND FRAIL OLDER ADULTS INTO TRIALS: ANTICIPATING TIME AND FINANCIAL COSTS AND LITERATURE-INFORMED STRATEGIES. M. Huisingh-Scheetz[1], B. Bryant[1], B. Foster[1], C. Taylor[1], M. Saunders[1], J. Scherer[2], R. Hall[3], M. Mcadams-Demarco[4] *((1) University Of Chicago - Chicago (United States), (2) New York University Langone - New York (United States), (3) Duke University - Durham (United States), (4) Duke University - New York (United States))*

Background: Hurdles to enrolling frail and especially minority older adults into trials have been a concern for >two decades but very little progress has been made to overcome these hurdles. The financial cost of recruiting older adults has been estimated to be higher than other groups, but the published estimate is >25 years old. Strategies for recruiting frail and underrepresented older adults comes primarily from prior literature reporting field experience. The aims of this study are 1) to quantify time and study costs for the EngAGE Trial (NCT05337514) and 2) to compile the recommendations for recruiting frail and underrepresented adults from a literature review. **Methods:** The EngAGE trial is an on-going randomized controlled trial comparing the effect of a voice-activated device delivered exercise and social engagement program to an exercise program delivered on paper. The trial is targeting n=124 frail (Short Physical Performance Batter scores of 4-8/12), multimorbid (2+ chronic conditions) older (60+) adults who self-identify as African-American and their self-identified care partners. To date, n=53 dyads have been randomized. Financial costs for recruitment (staff, recruitment supplies and equipment) were summed. Time costs were described as an average rate of recruitment. A non-systematic literature review was then conducted using PubMed and Google Scholar with the following search phrases: "recruitment of older adults," "recruitment of frail adults", and "recruitment of minority older adults." **Results:** To date, EngAGE recruitment materials and presentations have reached hundreds of people resulting in: n=169 telephone screened, n=76 in-person screened, and n=53 randomized. Including only the staff salary + benefits and recruitment supply costs to date, financial costs were >$4000 per telephone screened older adults or >$14,000 per randomized dyad. Approximately one dyad is randomized per week on average. The literature review resulted in n=11 relevant articles. Key strategies included establishing trust, good communication skills; having flexible protocols, staff, and data collection sites, race/ethnicity concordant staff, minimizing exclusion criteria, covering transportation, lowering recruitment age to 60, and showing gratitude. **Conclusion:** These findings assist future trialists to anticipate budget and staff costs and to prepare a literature-informed recruitment strategy, maximizing success.

P050BIS- GEROSCIENCE GUIDED RAPAMYCIN CLINICAL TRIALS: RATIONALE AND EXPERIMENTAL DESIGN. A. Konopka[1], D. Lamming[1], J. Gooding[1], A. Lii[1], N. Garg[1] *((1) University Of Wisconsin-Madison - Madison (United States))*

Background: Treatment with rapamycin, an inhibitor of the mechanistic Target Of Rapamycin Complex One (mTORC1) protein kinase, has been repeatedly demonstrated to extend lifespan and prevent or delay age-related diseases in diverse model systems. Concerns over the risk of potentially serious side effects in humans, including immunosuppression and metabolic disruptions, have cautiously limited the translation of rapamycin and its analogs as a treatment for aging associated conditions. During the last decade, we and others have developed a working model that suggests that while inhibition of mTORC1 promotes healthy aging, many of the negative side effects of rapamycin are associated with «off-target» inhibition of a second mTOR complex, mTORC2. Differences in the kinetics and molecular mechanisms by which rapamycin inhibits mTORC1 and mTORC2 suggest that a therapeutic window for rapamycin could be exploited using intermittent dosing schedules or alternative rapalogs that may enable more selective inhibition of mTORC1. However, the optimal dosing schedules and the long-term efficacy of such interventions in humans are unknown. To close these translational knowledge gaps, we are currently performing phase 1 and phase 2 geroscience-guided rapamycin clinical trials. **Methods:** The Rapalog Pharmacology (RAP PAC) Trial will identify a recommended phase 2 weekly dose (RP2D) for the mTOR inhibitors rapamycin and everolimus by performing an open label, phase I, dose finding trial in healthy older men and women (n=18 per drug per sex, 55–89years). RAP PAC will combine comprehensive molecular, pharmacologic, and metabolic approaches to evaluate pharmacokinetics (PK) and pharmacodynamics (PD) in older adults and identify dosing regimens that safely inhibit mTORC1 signaling and intervene on the biology and metabolism of aging. The Everolimus Aging Study (EVERLAST) is an ongoing phase 2 trial of insulin-resistant, older adults (55–80 years old) who are at increased risk of multiple aged-related conditions, including type 2 diabetes, cardiovascular disease, frailty, and dementia. In this randomized, double-blinded study, subjects will receive either 0.5 mg/day everolimus, 5 mg/week everolimus, or placebo-

control for approximately 24 weeks to determine if attenuation of mTORC1 by everolimus can safely improve or maintain clinically relevant physiological outcomes, fundamental mechanisms of aging, and proposed geroscience biomarkers. **Results:** Clinical trials are ongoing. Data will be available for the early cohorts of RAP PAC in March. **Conclusion:** Results from these early phase studies will help guide the design of multi-site phase 3 clinical trials to determine whether rapamycin can be used safely to inhibit mTORC1 for the treatment and prevention of age-related diseases in humans. **Keywords:** mTOR, metabolism, muscle, aging. **Clinical Trial Registry:** NCT05949658; NCT05835999. **Disclosures:** DWL has received funding from, and is a scientific advisory board member of, Aeovian Pharmaceuticals, which seeks to develop novel, selective mTOR inhibitors for the treatment of various diseases. Aeovian Pharmaceutical mTOR inhibitors will not be used in the clinical trials presented. The authors declare no other conflicts of interests.

LP047- THE IMPACT OF EXPRESSIVE THERAPIES CONTINUUM (ETC) BASED ART THERAPY INTERVENTIONS ON COGNITIVE FUNCTIONING AND QUALITY OF LIFE IN OLDER ADULTS WITH DEMENTIA: A RANDOMIZED CONTROLLED TRIAL.

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Background: Dementia impacts cognitive functioning and quality of life, and non-pharmacological are increasingly sought after due to the adverse effects of medication. Art therapy, guided by the Expressive Therapies Continuum (ETC) framework, has shown promise in promoting cognitive and emotional well-being. However, limited evidence exists on the structured application of ETC-based interventions in dementia care. This randomized controlled trial (RCT) aimed to assess the effects of ETC-based art therapy on cognitive functioning and quality of life in older adults with dementia living in a complex care setting. The study also investigated participants' visual expression elements, media preferences, ETC entry levels during art-making. **Methods:** A randomized controlled trial (RCT) was conducted with 26 older adults (mean age = 78.31 years) diagnosed with dementia in a complex care home. Participants were randomly assigned to an experimental group (ETC-based art therapy; n=13) or an active-controlled group (standard art sessions; n=13). Each group participated in 10 sessions over four months. Pre- and post-intervention assessments included the Min-Mental State Examination (MMSE), Clock Drawing Test (CDT), and Older People's Quality of Life (OPQOL-Brief) questionnaire. Data were analyzed using chi-square, t-tests, and Wilcoxon Signed Rank tests. **Results:** The experimental group demonstrated significant increases in MMSE-Language scores compared to the control group ($p < 0.05$). Both groups experienced improvements in OPQOL-Brief scores ($p < 0.05$), with slightly more significant gains in the experimental group. Visual expression elements, media preferences, and ETC entry levels were consistent across participants, with "other paints on dry paper" as the most preferred medium (43.3%). The most common ETC entry level was extreme perceptual variation ($p = 0.011$). **Conclusion:** ETC-based art therapy interventions significantly improve cognitive functioning and quality of life in older adults with dementia, supporting the integration of structured art therapy programs into dementia care. These findings contribute new insights into artistic engagement in dementia populations and underscore the importance of nonpharmacological approaches for cognitive and emotional well-being. Future research should focus on larger, diverse populations and explore the long-term effects of these interventions. **Keywords:** Art therapy, dementia, cognitive functioning, quality of life. **Clinical Trial Registry:** Not applicable. **Funding:** This research was supported by the Canadian Art Therapy Association Registered Art Therapy Research Grant (2023) and the American Art Therapy Association Gladys Agell Award for Excellence in Research (2023). **Disclosures:** The research was presented at the Gerontological Society of America 2023 Conference and the American Society on Aging 2024 Conference, with the abstract published in the conference proceedings. The full article has been submitted to the Canadian Art Therapy Association Journal and is currently under review. Additionally, this research has been co-authored and included in the book Applied Psychology in the Modern Era: Integrating Theory, Research, and Practice for Real-World Application (2024). The author declares no competing interests concerning the research authorship or publication of this article.

LP049- EFFECTS OF PEMAFIBRATE ON SERUM CARNITINE IN PATIENTS WITH HYPERTRIGLYCERIDEMIA: A SUB-ANALYSIS OF PHASE 2 STUDY OF PEMAFIBRATE EXTENDED-RELEASE FORMULATION.

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Background: Sarcopenia is characterized by a decline in muscle mass and strength. Although there are currently no established pharmacological treatments for sarcopenia, several clinical studies have demonstrated that L-carnitine supplementation inhibits skeletal muscle loss in patients with sarcopenia and liver cirrhosis. Thus, pharmacological interventions targeting carnitine upregulation may serve as promising therapeutic strategies for sarcopenia. Pemafibrate is thought to enhance carnitine biosynthesis and uptake into the gastrointestinal tract, renal tubules, skeletal muscles, and other tissues through the upregulation of PPARα target genes. However, the effects of pemafibrate on carnitine levels in the clinical setting remain unclear. Therefore, we conducted a sub-analysis of a phase 2 study of a pemafibrate extended-release (XR) formulation to investigate the effects of pemafibrate on serum carnitine levels. **Methods:** A multicenter, randomized, single-blind, active-controlled, two-period, crossover, phase

2 clinical pharmacology study with treatment period 1 followed by treatment period 2 without a washout period was performed in patients with hypertriglyceridemia. Each treatment period lasted four weeks. 63 eligible patients were randomly assigned to pemafibrate immediate-release (IR) 0.2 mg/day, XR 0.4 mg/day, or XR 0.8 mg/day before/after meals. After enrollment, three patients were withdrawn from the study at the investigator's discretion or at the patient's request, resulting in 60 patients receiving the study drug for a total of eight weeks [1]. This sub-analysis examined the change in total carnitine, free carnitine, and acylcarnitine levels from baseline under fasting and after high-fat meal loading conditions. **Results:** Pemafibrate dose dependently increased the serum total and free carnitine levels from baseline under fasting conditions. The change in total carnitine from baseline after 4 weeks was 5.46 μmol/L at a dose of IR 0.2 mg, 11.88 μmol/L at XR 0.4 mg, and 12.82 μmol/L at XR 0.8 mg. Similarly, the change in free carnitine from baseline after 4 weeks was 6.24 μmol/L at a dose of IR 0.2 mg, 11.46 μmol/L at XR 0.4 mg, and 12.78 μmol/L at XR 0.8 mg. The time-matched change in free carnitine from baseline after 1 hour in the postprandial state were 16.19 μmol/L at a dose of IR 0.2 mg, 23.69 μmol/L at XR 0.4 mg, and 28.04 μmol/L at XR 0.8 mg. **Conclusion:** Pemafibrate increased serum free carnitine levels both under fasting condition and after high-fat meal loading in patients with hypertriglyceridemia. The increase in serum free carnitine levels following pemafibrate treatment was clinically significant, suggesting the potential utility of pemafibrate as a novel therapeutic option for diseases in which sarcopenia or carnitine replacement therapy is effective. **Keywords:** Pemafibrate, selective PPARα modulator, sarcopenia, carnitine. **Clinical Trial Registry:** NCT04079530; https://clinicaltrials.gov/study/NCT04079530?term=NCT04079530&rank=1. **Disclosure:** H Takahashi received grants from Abbvie and GSK, and payments for speakers from Kowa Company Ltd., Taisho Pharma, and Novo Nordisk. H Arai received payment for lectures from Kowa Company, Ltd., Tsumura & Co and Astellas Pharma Inc. R Tanigawa, H Suganami, and M Tanahashi are employees of Kowa Company, Ltd. **References:** 1. Shizuya Y, et al. J Atheroscler Thromb. 2024; 31: 000-000. http://doi.org/10.5551/jat.65001.

OSTEOPOROSIS & FRAILTY

P052- PREVALENCE AND RISK FACTORS FOR HYPOPHOSPHATEMIA FOLLOWING FERRIC CARBOXYMALTOSE ADMINISTRATION IN OLDER ADULTS WITH HIP FRACTURE.

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Background: Hypophosphatemia is an emerging complication of intravenous iron therapy, particularly with ferric carboxymaltose (FCM), which is increasingly used to treat iron deficiency anemia in various clinical settings. Existing literature indicates that hypophosphatemia occurs in approximately 47% of patients treated with FCM, compared to a significantly lower incidence with other formulations such as iron dextran [1, 2]. However, limited research has focused specifically on geriatric populations and the associated risk factors in patients hospitalized for hip fractures [3]. Given the increasing incidence of hip fractures among older adults and the frequent use of FCM in this population [4], this study aims to assess the prevalence and risk factors for hypophosphatemia following FCM administration in hospitalized older adults. **Methods:** We conducted a prospective observational study involving 207 consecutive patients (median age 87 years, 84% female) who were hospitalized for hip fracture and treated with FCM between January and September 2024. The dosages of FCM administered ranged from 0.5 g to 2 g, and serum phosphate levels were measured at baseline and subsequently on days 1, 3, 5, and 7 after surgery. A Comprehensive Geriatric Assessment was performed to evaluate frailty, functional status, comorbidities, and nutritional status using standardized tools, including the Barthel Index, the Clinical Frailty Scale, and the Mini Nutritional Assessment Short Form (MNA-SF). The Modified Frailty Index (mFI-19) was used to assess the frailty status. Both univariate and multivariate regression analyses were conducted to identify significant risk factors for post-infusion hypophosphatemia (<2 mg/dL), adjusting for variables such as age, baseline phosphate levels, FCM dosage, and the presence of chronic kidney disease (CKD). **Results:** Hypophosphatemia was observed in 48.3% of the patients, with severe cases (phosphate levels < 1 mg/dL) occurring in 7.2%. The average reduction in phosphate levels post-FCM administration was 1.3 mg/dL. The multivariate analysis identified higher vitamin D levels (OR 1.032; p = 0.017), higher baseline hemoglobin levels (OR 1.293; p = 0.027), and lower mFI-19 scores (OR 0.009; p = 0.007) as significant predictors of post-infusion hypophosphatemia. **Conclusion:** Hypophosphatemia is a common and often underdiagnosed complication in older adults treated with FCM for anemia associated with hip fractures. Notably, this study is among the first to explore the relationship between frailty and hypophosphatemia. Our findings indicate that higher baseline hemoglobin and vitamin D levels, along with lower mFI-19 scores, are significantly associated with an increased risk of this complication. The higher incidence in a more robust segment of the geriatric population may suggest an increased erythropoietic drive, demanding phosphate for ATP synthesis. **Keywords:** Hypophosphatemia, ferric carboxymaltose, hip fracture, frailty, iron deficiency anemia. **References:** 1. Schaefer B, Glodny B, Möller A, et al. Ferric carboxymaltose and hypophosphatemia in clinical practice: an emerging risk. J Clin Endocrinol Metab. 2016;101(12):2142-2150. doi:10.1210/jc.2016-1387. 2. Wolf M, Koch TA, Bregman DB. Effects of iron deficiency anemia and its treatment with IV iron on fibroblast growth factor 23 and phosphate homeostasis in women. J Clin Invest. 2013;123(6):2337-2344. doi:10.1172/JCI67055. 3. van Vuuren AJ, Wolffenbuttel BH, et al. Incidence of hypophosphatemia following ferric carboxymaltose in hospitalized elderly patients. Osteoporos Int. 2020;31(2):423-430. doi:10.1007/s00198-

019-05021-x. 4. Dyer S, et al. The increasing burden of hip fractures in older adults: a global perspective. J Frailty Aging. 2019;8(3):152-158. doi:10.14283/jfa.2019.24.

P053- USING WALKING SPEED TO SCREEN FOR FRAILTY IN AN AMBULATORY GERIATRIC OSTEOPOROSIS CLINIC. J. Des Bordes[1], V. Ramirez[1], N. Rianon[1] *((1) McGovern Medical School - Houston (United States))*

Background: Frailty is a geriatric syndrome characterized by depletion of physiological reserves resulting in decreased resistance to stressors and poor health outcomes. Prevalence of frailty in community-dwelling adult population is about 7% and increases with age. Frailty has a prognostic significance in the management of older patients. Various ways of assessing frailty have emerged since the description of a frailty phenotype. Measures involve those of physical functioning, e.g., grip strength and walking speed, comorbidities, cognition, polypharmacy, etc. It is often difficult to conduct multiple tests, especially when there is need for instruments not usually available for standard of care in a busy geriatric medicine clinic. We routinely assess frailty, balance, handgrip strength and time to complete a 6-meter walk in our Geriatric Osteoporosis clinic where knowing frailty status informs management planning to prevent fall and fractures. We aimed to determine the best predictor of frailty in our physical assessment measures. **Methods:** We undertook a cross-sectional study involving review of the electronic health records (EHR) of older adults 60 years and older, seen at an ambulatory geriatric osteoporosis clinic in a major urban center. Frailty status was assessed by the FRAIL scale. Walking speed was assessed by the time to complete a 6-meter course. Hand grip strength was determined using the handheld dynamometer and balance, a Zibrio® scale. These were all extracted from the EHR. We also collected data on age, sex and body mass index (BMI). We used bivariate logistic regression to determine associations with frailty. All measures with P-value <0.10 were used in a multivariable regression model. Associations were expressed as odds ratios (OR) and 95% confidence intervals (CI). We used area under ROC curve to determine cut-off for walking speed that best predicts frailty. **Results:** Ninety EHRs were analyzed. Mean age was 78.0 ±7.4 years, 97% were female, 21% had a history of fall in the past year and 18.6% were frail. On bivariate analysis, variables associated with frailty were mean grip strength of dominant hand (OR=0.95; 95% CI=0.90-0.99), mean time for 6-meter walk (OR=1.27; 95% CI=1.14-1.41), mean percentile balance score (OR=0.96; 95%CI=0.94-0.98) and BMI (OR=1.16; 95%CI=1.02-1.33). On multivariable logistic analysis, time for 6-meter walk remained significant (OR=1.23; 95%CI=1.07-1.41). Time for 6-meter walk cut-off for best predictor of frailty was 13.3 seconds (i.e., walking speed of 0.45 m/s) with a sensitivity of 87.5% and specificity of 80.5%. **Conclusion:** Walking speed of 0.45 m/s or slower could be a good screening tool for frailty in our patient population who are able to ambulate. Interventions aimed at improving walking speed can improve frailty, as walking is an important weight bearing exercise for better bone health in this population. **Keywords:** Frailty, walking speed, geriatrics. **Disclosures:** The authors declare that they have no conflicts of interests. **References:** Castell M, Sancez M, Julian R, Queipo R, Martin S, Otero A. Frailty prevalence and slow walking speed in persons age 65 and older: implications for primary care. BMC Family Practice 2013 ;14:86. doi: 10.1186/1471-2296-14-86. Dent E, Kowal P, Hoogendijk EO. Frailty measurement in research and clinical practice: A review. Eur J Intern Med. 2016;31:3-10. doi: 10.1016/j.ejim.2016.03.007.

P055- ENHANCING RESISTANCE TRAINING ADHERENCE IN PATIENTS WITH SARCOPENIA AND OSTEOPOROSIS: A STUDY ON REFERRAL SUCCESS RATES. C.P. Hsu[1,2], C.H. Lin[1], H.C. Ma[1], H.H. Lin[1,2], L.C. Hwang[2], G.C. Hu[3], Y.J. Cheng[4], Y.N. Chien[5] *((1) Department of family medicine, mackay memorial hospital - Taipei (Taiwan, Republic of China), (2) Department Of Medicine, Mackay Medical College - New Taipei (Taiwan, Republic of China), (3) Department Of Rehabilitation,mackay Memorial Hospital - Taipei (Taiwan, Republic of China), (4) Asia University, Department Of Long-Term Care, College Of Nursing - Taichung (Taiwan, Republic of China), (5) Department Of Health And Welfare, University Of Taipei - Taipei (Taiwan, Republic of China))*

Background: Sarcopenia and osteoporosis are prevalent conditions in an aging population, contributing to increased disability and a greater demand for caregiving. The 2018 LIFTMOR study demonstrated that high-intensity resistance and impact training can effectively enhance bone mineral density. Currently, no pharmacological treatments are available for sarcopenia, leaving nutritional support and resistance training as the primary interventions. However, access to appropriate resistance training facilities poses a significant challenge for older patients, often leading to poor adherence to prescribed programs. This study aims to address these barriers by offering structured resistance training programs for patients diagnosed with osteoporosis or sarcopenia, assisting them in finding accessible community-based training programs, and tracking the referral success rate. **Methods:** Older adults often face difficulties in adopting and adhering to resistance training programs. To address this, we developed a specialized training program to enhance engagement and participation. The study included older adults diagnosed with osteoporosis or sarcopenia from the Family Medicine Department of a medical center in northern Taiwan. Participants were educated on the benefits of resistance training, the specific techniques involved, and the study's objectives. Those interested underwent cardiopulmonary exercise testing to ensure suitability for physical exercise. Physicians then collaborated with certified volunteer fitness trainers to provide structured, in-house resistance training sessions, totaling up to 10 sessions per participant. The training regimen was designed to gradually increase resistance based on each participant's physical capabilities. During the first four sessions, participants were introduced to key resistance

exercises, including squats, deadlifts, seated rows, and bench presses. Vital signs were monitored throughout the training sessions. After becoming familiar with these exercises and completing the initial in-house sessions, participants were encouraged to transition to community-based training facilities. Once community programs were identified, the research team provided external trainers with a summary of each participant's in-house progress. Participants' physical conditions were then evaluated following their engagement with community-based training. **Results:** The study, conducted from January 8, 2024, to October 4, 2024, included nine female participants with an average age of 67 years. The average bone mineral density T-scores were -3.3 for both the hip and lumbar spine. Mean grip strength was 20.1 kg, and the skeletal muscle index averaged 5.7 kg/m^2. Calf circumference averaged 32.5 cm. Among the participants, two individuals continued with in-house training due to financial constraints and successfully completed all 10 sessions, demonstrating progressive improvement in training weights. Five participants were able to locate and transition to community fitness programs, achieving a referral success rate of 56%. One participant discontinued the program due to personal reasons, and another had not yet begun the community training search after completing only two in-house sessions. **Conclusion:** Pre-assessment by healthcare professionals and structured resistance training education significantly enhance patient participation in community-based resistance training programs. Implementing these strategies can improve adherence and outcomes for older adults with osteoporosis or sarcopenia, promoting long-term functional independence and better overall health.

P056- RISK OF SARCOPENIA IN OLDER ADULTS WITH VERTEBRAL FRACTURES.

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Background: Nowadays, sarcopenia is an important age-related condition that leads to disability, a deterioration in the quality of life, and death in older adults, particularly those with bone and joint pathologies.. Vertebral fractures (VFs) are common and important osteoporotic fractures that lead to back pain, a decrease in quality of life and its duration, and an increased risk of other osteoporotic fractures. The study aimed to evaluate the risk of sarcopenia in elderly individuals with previously confirmed VFs. **Materials and methods:** In a retrospective study, data from 500 women aged 60 and older (mean age 70.2 ± 6.7 years) were analyzed, including 374 individuals without any previous fractures and 126 patients with VFs. The subjects did not differ in terms of age; however, patients with VFs had lower indices of height ($p = 0.02$), weight ($p = 0.0001$), and body mass index (BMI) ($p = 0.001$). The survey was conducted using the SARC-F questionnaire and included measurements of hand grip strength and the sit-to-stand test to assess the presence of sarcopenia, which was determined based on DXA indices according to the latest recommendations (EWGSOP2, 2019). **Results:** SARC-F was significantly higher in patients with VFs (4.0 [1.0-5.0] vs. 2.0 [0.0-4.0] un. respectively, $Z=3.7$; $p=0.0003$), and correlated with hand grip strength of dominant and non-dominant sides in both groups ($p<0.00001$ for all indices). However it significantly correlated with «sit-to-stand» test in patients without any previous fractures ($p=0.000008$), but not in patients with VFs ($p=0.18$). The patients with VFs present fewer negative replies on all SARC-F questions: (1. Strength: How much difficulty do you have in lifting and carrying 10 pounds? 25.4 vs. 42.0 %, respectively. 2. Assistance in walking: How much difficulty do you have walking across a room? 47.6 vs. 61.5 %. 3. Rise from a chair: How much difficulty do you have transferring from a chair or bed? 34.9 vs. 50.8 %. 4. Climb stairs: How much difficulty do you have climbing a flight of 10 stairs? 36.5 vs. 49.5 %. 5. Falls: How many times have you fallen in the past year 64.3 vs. 71.7 %, respectively) The high risk of sarcopenia according to SARC-F (≥4 un.) was revealed in 54.8 % of patients with VFs and 37.7 % of subjects without any previous fracture. Sarcopenia was confirmed in 20% of patients with VFs and 8.8 % of subjects without previous fractures. The corresponding indices in subjects with high sarcopenia risk according to SACR (≥4 un.) were 21.4 and 7.4 %. **Conclusion:** The risk of sarcopenia is higher in patients with VFs that requires complex strategy for preventing bone and muscle loss in the elderly. **Keywords:** Risk of sarcopenia, vertebral fractures.

GEROSCIENCE: SENESCENT CELLS

P059- INORGANIC POLYPHOSPHATE AND DIETARY RESTRICTION: INTERACTIONS BETWEEN PHYSIOLOGY AND AGE-RELATED PATHOLOGY.

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Background: Inorganic polyphosphate (polyP) plays a key role in mitochondrial function, especially in age-related diseases [1, 2]. While reduced polyP levels are mainly linked to neurodegeneration in the literature [1], its role in cancer is less clear, though it may promote tumor growth [2]. Dietary restriction, known to affect mitochondrial metabolism, shows promise in mitigating aging-related diseases, including neurodegenerative and some oncological conditions [4, 5, 6]. Our study explores the interaction between polyP and dietary restriction, focusing on its role in neuronal senescent phenotype and tumor proliferation. **Methods:** For the neuroscientific

study, we used SH-SY5Y cells wild-type (Wt) and MitoPPX, which are cells enzymatically depleted of mitochondrial polyP thanks to the ectopic expression of the exopolyphosphatase (PPX). Both cell types were differentiated into neurons using retinoic acid. We assessed the effects of Short-Term Starvation (STS) on total and mitochondrial polyP levels, markers of senescence, cell viability, bioenergetics, and key mitochondrial functions. Moreover, in vivo experiments were conducted using C57BL/J mice on either an ad libitum diet or three cycles of intermittent fasting. In the oncological study, we evaluated STS effects on total polyP levels and cell viability across different human tumor cell lines compared to control medium. In particular, the studied cancer cell lines were the subsequent: HCT116, SH-SY5Y, OVCAR5, MDA, and MCF7. We also examined the impact of treatment with exogenous polyP on cell viability under both control and STS conditions in these cell lines. **Results:** Mitochondrial polyP depletion induces a neuronal senescent phenotype, characterized by increased β-galactosidase activity, morphological alterations, and proteomic changes. MitoPPX cells also show reduced ATP and increased mitochondrial levels of Bax without an increase in cell death. STS restores mitochondrial polyP levels, increases AMPK activity, and modify the levels of some proteins involved in oxidative phosphorylation in MitoPPX cells compared to control medium. However, STS does not reverse the effects induced by the depletion of mitochondrial polyP on several neuronal senescence markers, including the levels of β-galactosidase activity and altered morphology. In C57BL/J mice, there is an increase in ketone bodies and a reduction in blood glucose during intermittent fasting cycles in both sexes, but only in males there is an increase in brain polyP levels compared with the corresponding controls. Moreover, in males, there is also an improvement in glucose tolerance right before the last cycle of fasting. In the oncological studies, 72 hours of STS induce a reduction in cell viability compared with control conditions in all tumor cell lines studied without a concomitant modification in total polyP levels. Furthermore, treatment with exogenous polyP has no effect on cell viability in any tumor cell lines, either under control or STS conditions. **Conclusion:** Our findings highlight polyP's crucial role in mitochondrial function, with its depletion contributing to neuronal senescence. Dietary restriction may mitigate this by regulating polyP metabolism in the brain, possibly with sex-specific effects. In vitro studies on human tumor lines showed no changes in polyP levels with dietary restriction and no impact of exogenous polyP on tumor proliferation. **Keywords:** Inorganic polyphosphate, mitochondrial function, dietary restriction, neuronal senescence, cancer metabolism. **Disclosures:** The neuroscience project was mostly funded by the StartUp funds from Rutgers University to Maria E. Solesio. Moreover, J. Nicholas Betley and his team were supported by 1R01AG079877 and 1R01DK13339 (both to J. Nicholas Betley) to conduct the experiments in which mice were involved in the above-mentioned project. The oncological project was supported in part by the Associazione Italiana per la Ricerca sul Cancro (AIRC; #22098 to Alessio Nencioni and MFAG#26482 to Irene Caffa), the Italian Ministry of Health (PE-2016-02362694, PE-2016-02363073), the 5×1000 2014 Funds to the IRCCS Ospedale Policlinico San Martino (to Alessio Nencioni). Alessio Nencioni and Irene Caffa hold intellectual property rights on clinical uses of modified fasting regimens. Relevant patents by Alessio Nencioni and Irene Caffa include WO2017140641A1, MI2014A000537, WO2018138090A1, USCLN0306PUSA. The remaining authors declare no competing interests. **References:** 1. Urquiza P, Solesio ME. Inorganic Polyphosphate, Mitochondria, and Neurodegeneration. Prog Mol Subcell Biol. 2022;61:27-49. doi: 10.1007/978-3-031-01237-2_3. 2. Kus F, Smolenski RT, Tomczyk M. Inorganic Polyphosphate-Regulator of Cellular Metabolism in Homeostasis and Disease. Biomedicines. 2022 Apr 15;10(4):913. doi: 10.3390/biomedicines10040913. 3. Boyineni J, Sredni ST, Margaryan NV, et al. Inorganic polyphosphate as an energy source in tumorigenesis. Oncotarget. 2020;11(50):4613-4624. Published 2020 Dec 15. doi:10.18632/oncotarget.27838. 4. Mehrabani S, Bagherniya M, Askari G, Read MI, Sahebkar A. The effect of fasting or calorie restriction on mitophagy induction: a literature review. J Cachexia Sarcopenia Muscle. 2020;11(6):1447-1458. doi:10.1002/jcsm.12611. 5. Nencioni A, Caffa I, Cortellino S, Longo VD. Fasting and cancer: molecular mechanisms and clinical application. Nat Rev Cancer. 2018;18(11):707-719. doi:10.1038/s41568-018-0061-0. 6. Tagliafico L, Nencioni A, Monacelli F. Fasting and Cognitive Impairment. Nutrients. 2023 Dec 14;15(24):5108. doi: 10.3390/nu15245108.

NUTRITION AND AGING

P060- UNDERSTANDING THE MECHANISMS BEHIND BRANCHED-CHAIN AMINO ACIDS (BCAA) IN MITIGATING SARCOPENIA. A. Wee[1], L.L. Ling[1], J.H. Hong[2], X.Y. Kwek[3], K. Quek[1], Y. Liu[2], Y. Wang[2], T.B. Teh[3], F. Koh[1] *((1) Sengkang General Hospital - Singapore (Singapore), (2) Singhealth Duke-Nus - Singapore (Singapore), (3) National Cancer Centre Singapore - Singapore (Singapore))*

Background: Sarcopenia, defined to be the age-related loss of muscle mass and function, becomes increasingly significant as the population ages, contributing to risk of morbidity and declining quality of life. While there are many risk factors for sarcopenia, a key issue is a catabolic and anabolic imbalance which favours muscle degradation over synthesis [1]. Hence, a majority of prehabilitation programmes focus on protein supplementation for anabolism. Studies have shown preoperative supplementation of branched-chain amino acids (BCAA), particularly leucine, can aid in the dysregulation of metabolic pathways [2]. Additionally, BCAA has been demonstrated to attenuate the protein degradation rate [4] [5]. However, the specific mechanisms in which BCAA influences sarcopenic pathways remains poorly understood. This study aims to understand the molecular mechanistic underpinnings of how BCAA can be a promising therapeutic for sarcopenia, offering a potential nutritional supplement to enhance muscle health. **Methods:** Participants who gave written consent and were undergoing major elective surgeries

were recruited. Patients were assessed for sarcopenia based on the AWGS 2019 diagnostic criteria upon enrolment and prior to surgery. Some of those with sarcopenia who underwent multimodal prehabilitation were provided with BCAA-enriched oral nutritional supplements as part of the HEROS Study (Clinicaltrials.gov # NCT05344313). All patients contributed at least 2cm3 skeletal muscle from the most accessible operative site. Western blot analysis was conducted to evaluate the expression of MuRF-1 production, a hallmark protein associated with sarcopenia, whereby proteins were extracted from muscle tissue samples obtained. RNA extraction from skeletal muscle tissue was done with Trizol/Chloroform to prepare RNA libraries and paired-end 150bp sequencing was performed [6]. The transcriptomic landscape from sarcopenic patients with BCAA supplementation (BCAAy), without BCAA supplements (BCAAn), and non-sarcopenic patients (NS) were compared to uncover pathways altered by the BCAA treatment. Gene Set Enrichment Analysis (GSEA) and Gene Ontology enrichment of the differentially expressed genes were carried out. Gene regulation network was analysed to identify core modules using STRING database, while correlation of gene expressions was visualized using corrplot [7, 8]. **Results:** Western blot revealed that the production of MuRF-1 was diminished in BCAAy compared against BCAAn. Upon comparing BCAAn and NS with the Hallmark pathway analysis, an upregulation of inflammatory and metabolic pathways involved in Oxidative Phosphorylation, Interferon Gamma Response and Fatty Acid metabolism were observed. With the known anti-inflammatory properties of Beta-Hydroxy-Beta-Methylbutyrate (HMB), a metabolite of leucine in BCAA, BCAAy patients expectedly demonstrated upregulation of MTORC1 signaling, myogenesis, Myc targets V1 and reactive oxygen species degradation pathways. The Hallmark pathway analysis for BCAAy against BCAAn revealed downregulation in the same inflammatory pathways, Interferon gamma response and Allograft rejection, as well as KRAS signalling up, TNFα Signalling via NFKb, and IL6 JAK STAT3 signalling. Orthogonal analysis was performed using the KEGG database, yielding similar results where pathways upregulated from NS to BCAAn, such as Cell adhesion molecules cams, allograft rejection, and graft versus host disease, were correspondingly downregulated for BCAAy compared to BCAAn. **Conclusion:** The supplementation of BCAA was shown to reverse the inflammatory and metabolic processes which are associated with sarcopenia and may be vital in preventing the progression of sarcopenia. Furthermore, it not only enhances MTOR1 signalling but also promotes myogenesis and Myc targets v1, along with reactive oxygen species pathways. These help to indicate that reduction in inflammation can aid the metabolic and regenerative abilities of muscles, supporting the potential of BCAA as a therapeutic agent for sarcopenia. **Keywords:** BCAA, sarcopenia, transcriptomics landscape, metabolism.

References: 1. Ng TP, Lu Y, Choo RWM, Tan CTY, Nyunt MSZ, Gao Q, Mok EWH, Larbi A. Dysregulated homeostatic pathways in sarcopenia among frail older adults. Aging Cell 2018; 17: e12842. 2. Norton LE, Layman DK. Leucine regulates translation initiation of protein synthesis in skeletal muscle after exercise. J Nutr 2006; 136: 533S-537S. 3. Layman DK. Role of leucine in protein metabolism during exercise and recovery. Can J Appl Physiol 2002; 27: 646-663. 4. Nair KS, Schwartz RG, Welle S. Leucine as a regulator of whole body and skeletal muscle protein metabolism in humans. Am J Physiol 1992; 263: E928-E934. 5. Louard RJ, Barrett EJ, Gelfand RA. Effect of infused branched-chain amino acids on muscle and whole-body amino acid metabolism in man. Clin Sci (Lond) 1990; 79: 457-466. 6. Simões AE, Pereira DM, Amaral JD, Nunes AF, Gomes SE, Rodrigues PM, Lo AC, D'Hooge R, Steer CJ, Thibodeau SN, Borralho PM, Rodrigues CM. Efficient recovery of proteins from multiple source samples after TRIzol(®) or TRIzol(®)LS RNA extraction and long-term storage. BMC Genomics. 2013 Mar 15;14:181. 7. Szklarczyk, D., Kirsch, R., Koutrouli, M., Nastou, K., Mehryary, F., Hachilif, R., Gable, A.L., Fang, T., Doncheva, N.T., Pyysalo, S., et al. (2023). The STRING database in 2023: protein-protein association networks and functional enrichment analyses for any sequenced genome of interest. Nucleic Acids Res 51, D638-D646. 10.1093/nar/gkac1000. 8. Wei, T., and Simko, V. (2021). R package 'corrplot': Visualization of a Correlation Matrix.

P061- MALNUTRITION AND ITS DETERMINANTS AMONG OLDER ADULTS LIVING IN FOSTER FAMILIES IN GUADELOUPE (FRENCH WEST INDIES). A CROSSSECTIONAL STUDY.

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Background: Foster families may represent an alternative model for dependent older adults in many countries where nursing homes are insufficiently developed. This study aimed to assess the prevalence of malnutrition and its determinants in older adults living in foster families in Guadeloupe (French West Indies). **Methods:** This cross-sectional study was gathered from the KASAF (Karukera Study of Ageing in Foster families) study (n = 107, 41M/66F, Mdn 81.8 years). Nutritional status was assessed with the Mini Nutritional Assessment Short-Form (MNA-SF). Clinical characteristics and scores on geriatric scales (Mini-Mental State Examination (MMSE), Activities of Daily Living (ADL), Short Physical Performance Battery (SPPB), Center for Epidemiologic Studies- Depression (CESD) and Questionnaire Quality of Life Alzheimer's Disease (QoL-AD)) were extracted. Bivariate analysis and logistic models adjusted for age and gender were performed to test the association of nutritional status with socio-demographic variables and geriatric scales. **Results:** Thirty (28.0%) older adults were malnourished (MNA-SF score < or =7). In bivariate analysis, malnutrition was associated with an increased prevalence of cardiovascular diseases (46.7% versus 19.5%, p = 0.004), the presence of hemiplegia (30.0% versus 6.5%, p = 0.003), a poorer cognitive status (MMSE score 4.7 ± 7.1versus 9.7 ± 10.7; p = 0.031), higher risk of depression (CESD score 27.3 ± 23.0 versus 13.5 ± 14.4; p = 0.035) and dependency (ADL score 1.9 ± 1.9 versus 2.3 ± 2.1; p<0.001).

Malnutrition was also associated with lower caregivers'rating of QoL (QoL-AD score 21.8 ± 6.4 versus 26.0 ± 5.7; p = 0.001) but not by older adult's rating (24.1 ± 11.2 versus 28.3 ± 7.7; p = 0.156). Similar associations were observed in logistic models adjusted for age and gender. **Conclusion:** Malnutrition was common among foster families for older adults. Special attention towards the prevention and treatment of malnutrition in older adults from cardiovascular diseases, cognitive impairment, dependency and depression is necessary in this model of dependency support.

P063- ASSOCIATION BETWEEN NUTRITIONAL STATUS AND DYNAPENIA AMONG COMMUNITY-DWELLING OLDER ADULTS IN TAIWAN: A CROSS-SECTIONAL STUDY. C.C. Chang[1], Y. Liao[2] *((1) Department Of Health Promotion And Health Education, College Of Education, National Taiwan Normal University - Taipei (Taiwan, Republic of China), (2) Graduate Institute Of Sport, Leisure And Hospitality Management, National Taiwan Normal University - Taipei (Taiwan, Republic of China))*

Background: Dynapenia, defined as the decline in muscle strength associated with aging [1, 2], enables the early identification of individuals at risk for sarcopenia [3]. Despite the extensive study of the connection between malnutrition and sarcopenia [4-8], current evidence [9-11] on the correlation between nutritional status and dynapenia in older community-dwelling adults remains limited. This study aims to investigate the association between nutritional status and dynapenia among older Taiwanese adults. **Methods:** A cross-sectional study was conducted, enrolling community-dwelling older adults aged 65 and above with independent mobility from September 2020 to September 2021. Participants were recruited through convenience sampling, targeting individuals who had undergone a physical check-up or visited the outpatient clinic at the Department of Geriatrics and Gerontology (DGG), National Taiwan University Hospital (NTUH). Nutritional status was assessed using the Mini-Nutritional Assessment-Short Form (MAN-SF) [12], with MNA-SF scores ≤ 11 classified as indicating malnutrition [13]. To confirm the classification of dynapenia, defined as either low muscle strength or poor physical performance but without low muscle mass [3], participants completed a series of standardized assessments. These included bioelectrical impedance analysis (BIA) for estimating muscle mass (appendicular skeletal muscle mass < 7.0 kg/m^2 for men and < 5.7 kg/m^2 for women classified as low muscle mass), the hydraulic hand-held dynamometer for measuring muscle strength (handgrip strength < 28 kilograms for males and < 18 kilograms for females classified as low muscle strength), and a 6-meter walk test to assess physical performance (a gait speed of < 1.0 metre per second for both men and women classified as poor physical performance). Covariate data including age, gender, educational level, living situation, (alone or with others) alcohol consumption, smoking habits, body mass index (BMI), chronic diseases status, moderate-to-vigorous physical activity (MVPA), which was objectively measured using a tri-axial accelerometer, were collected. Exclusion criteria included participants who: (1) failed to complete the questionnaire or the standard measurement procedures for dynapenia, and (2) had invalid MVPA data. A multiple binary logistic regression analysis was performed to examine the association between nutritional status and dynapenia. **Results:** A total of 202 older Taiwanese adults were included in the study, with a mean age of 80.5 ± 7.0 years, 52.8% of whom were female. Among the participants, 19.8% were identified as being at risk of malnutrition, and 55.8% were classified as meeting the criteria for dynapenia. An increased risk of malnutrition was significantly associated with dynapenia (OR: 2.53; 95% CI: 1.04-6.16; P = 0.041) after adjusting for potential confounders such as age, sex, BMI, educational level, smoking, and MVPA. **Conclusion:** Our findings highlight a significant association between the risk of malnutrition and dynapenia, utilizing the 2019 AWGS guidelines, among older community-dwelling adults. This study provides important insights for public health professionals and practitioners, recommending the screening of elderly individuals with poor nutritional status for dynapenia to facilitate the early detection of sarcopenia. **Keywords:** Malnutrition, handgrip strength, Sarcopenia, aging. **Ethics statement:** The procedure in this study was approved by the Research Ethics Committee of the NTUH (REC number: 202008046RINC). **Data availability statement:** Data will be made available on request. **Disclosures:** Dr. Yung Liao received personal grants from the Ministry of Science and Technology, Taiwan (MOST 111-2628-H-003-006-MY3). This work was also financially supported by the National Taiwan Normal University (NTNU) within the framework of the Higher Education Sprout Project by the Ministry of Education (MOE) in Taiwan. The authors declare no conflict of interest. **References:** 1. Clark, B.C. and T.M. Manini, Sarcopenia =/= dynapenia. J Gerontol A Biol Sci Med Sci, 2008. 63(8): p. 829-34. 2. Manini, T.M. and B.C. Clark, Dynapenia and aging: an update. J Gerontol A Biol Sci Med Sci, 2012. 67(1): p. 28-40. 3. Chen, L.K., et al., Asian Working Group for Sarcopenia: 2019 Consensus Update on Sarcopenia Diagnosis and Treatment. J Am Med Dir Assoc, 2020. 21(3): p. 300-307.e2. 4. Robinson, S., A. Granic, and A.A. Sayer, Nutrition and Muscle Strength, As the Key Component of Sarcopenia: An Overview of Current Evidence. Nutrients, 2019. 11(12). 5. Eglseer, D., R. Poglitsch, and R.E. Roller-Wirnsberger, Muscle power and nutrition. Z Gerontol Geriatr, 2016. 49(2): p. 115-9. 6. Barkoukis, H., Nutrition Recommendations in Elderly and Aging. Med Clin North Am, 2016. 100(6): p. 1237-1250. 7. Chen, L.K., et al., Roles of nutrition in muscle health of community-dwelling older adults: evidence-based expert consensus from Asian Working Group for Sarcopenia. J Cachexia Sarcopenia Muscle, 2022. 13(3): p. 1653-1672. 8. Crovetto Mattassi, M., C. Henríquez Mella, and L. Pérez Bocaz, Association between Sarcopenia and Nutritional Status in Chilean Older People Aged 65 Years and Older. Nutrients, 2022. 14(24). 9. de Medeiros, L.C., et al., Nutritional status and dynapenia in people living with Parkinson's disease: a cross-sectional study. Neurol Sci, 2022. 43(4): p. 2509-2517. 10. de Blasio, F., et al., Poor Nutritional Status and Dynapenia Are Highly Prevalent

in Post-Acute COVID-19. Front Nutr, 2022. 9: p. 888485. 11. Filion, M.E., et al., Relationship between protein intake and dynapenia in postmenopausal women. J Nutr Health Aging, 2012. 16(7): p. 616-9. 12. Suzana, S., Jr. and H. Siti Saifa, Validation of nutritional screening tools against anthropometric and functional assessments among elderly people in selangor. Malays J Nutr, 2007. 13(1): p. 29-44. 13. Guigoz, Y., B. Vellas, and P.J. Garry, Assessing the nutritional status of the elderly: The Mini Nutritional Assessment as part of the geriatric evaluation. Nutr Rev, 1996. 54(1 Pt 2): p. S59-65.

P065- ADHERENCE TO HEALTHY EATING HABITS IS LINKED TO SARCOPENIA RISK INDEPENDENTLY OF ADEQUATE PROTEIN INTAKE AND PHYSICAL ACTIVITY IN OLDER ADULTS. A. Nilsson[1], A. Santoro[2], L. Smeldy Jurado-Medina[2], A.A.M. Berendsen[3], L.C.P.G.M. De Groot[3], J. Kaluza[4], O. Januszko[4], A. Jennings[5], S. Fairweather-Tait[5], C. Franceschi[2], F. Kadi[1] *((1) School Of Health Sciences, Örebro University - Örebro (Sweden), (2) Department Of Medical And Surgical Sciences, University Of Bologna - Bologna (Italy), (3) Division Of Human Nutrition, Wageningen University & Research - Wageningen (Netherlands), (4) Department Of Human Nutrition, Warsaw University Of Life Sciences (wuls-Sggw) - Warsaw (Poland), (5) Norwich Medical School, University Of East Anglia - Norwich (United Kingdom))*

Introduction: Lifestyle behaviors, including diet and physical activity, have potential to play an important role in preventing the occurrence of sarcopenia. Besides the well-documented role of dietary proteins on muscle health, inconsistencies remain about the impact of healthy eating habits, incorporating potential synergistic effects from different food items on sarcopenia risk. To elucidate the role of healthy eating habits in promotion of muscle health, concurrent effects by protein intake and physical activity need to be considered. Therefore, the aim of the present work was to investigate associations between adherence to healthy eating habits and sarcopenia risk in a sample of European older adults. **Methods:** A continuous sarcopenia risk score (SRS) was created based on appendicular skeletal muscle mass assessed by dual-energy X-ray absorptiometry and handgrip strength assessed using Jamar handheld dynamometer in a sample of 864 community-dwelling older men and women (65–79 years). Adherence to healthy eating habits was determined based on a healthy dietary index score derived from seven-day food records. A score ranging from 0 to 10 could be obtained for greater intakes of each beneficial food item including: whole grains, fruits, vegetables, legumes, low-fat dairy, low-fat cheese, fish, low-fat meat and poultry, nuts, eggs, olive oil and fluids. For non-beneficial items (alcohol, salt and sweets), participants with lower intakes received 10 points ranging to 0 points for participants with greater intakes. Tertiles of healthy eating habits were subsequently derived. Physical activity was assessed using the Actigraph GT3x accelerometer. General linear models were used to determine effects on SRS across tertiles of healthy eating habits, while controlling for study center, age, education level, health status, smoking, marital status, level of physical activity and protein intake. **Results:** While the analysis confirmed adequate protein intake as a significant factor for variations in SRS, a significant main effect ($p < 0.05$) on SRS across tertiles of healthy eating habits was independently observed. Indeed, older adults belonging to the lowest healthy eating tertile (low adherence) had a significantly ($p < 0.05$) higher SRS compared to those in the highest tertile (high adherence). Importantly, these findings were evident after adjustment for physical activity level. **Conclusion:** Our findings indicate that adherence to healthy eating habits should be endorsed alongside adequate protein intake and a physically active lifestyle in order to optimize promotion of muscle health in older adults. **Keywords:** Healthy dietary patterns, skeletal muscle mass, muscle strength, aging. **Disclosures:** no competing interest.

P066- THE ASSOCIATION OF DIETARY OMEGA-3 FATTY ACID INTAKE AND INDICATORS OF SARCOPENIA. B. Soma[1], M. Samuel[1], G. Coletta[1], J. Pritchard[1] *((1) McMaster University - Hamilton (Canada))*

Background: Nutrients that support optimal muscle protein synthesis, such as omega-3 fatty acids, may play a role in skeletal muscle health in older adults. Some evidence supports the role of omega-3 fatty acids (alpha-linolenic acid [ALA], eicosapentaenoic acid [EPA] and docosahexaenoic acid [DHA]) in optimizing muscle health. We aimed to determine: 1) if there is a between group difference in total omega-3 fatty acid intake (ALA+EPA+DHA) in older adults who have normal compared to low appendicular lean mass (ALM) or normal compared to low grip strength; 2) if there is a relationship between omega-3 fatty acid intake and ALM and grip strength. **Methods:** For this cross-sectional study, we recruited older adults ≥65 years of age who were undergoing total joint replacement (hip or knee) or were adults living in the community. This was a secondary analysis of data from a previously conducted study. We assessed grip strength using a hand dynamometer and assessed ALM using dual x-ray absorptiometry (DXA), and normalized ALM to body mass index (BMI)(ALMBMI). The cut-points for ALMBMI of <0.725m2 for men and <0.591m2 for women were used to identify those with low ALMBMI, and the cut-points for grip strength of <31.83 kg for men and <19.99 kg for women were used to identify those with low grip strength. To determine omega-3 fatty acid intakes, 5-day diet records were analyzed using Nutritionist ProTM, average intakes computed, and total (sum) omega-3 fatty acid intake was determined (ALA+EPA+DHA). As nutrient data was not normally distributed, medians (IQR) were compared between low and normal ALMBMI groups, and low and normal grip strength. Spearman correlation coefficient is reported for the relationship between omega-3 fatty acid intakes, ALMBMI and grip strength. Mean (standard deviation [SD]) is reported for descriptive characteristics. **Results:** A total of 63 participants were included, all participants were Caucasian, and the mean (SD) age was 74 (5) years. A total of 17/63 (27%) and 23/63 (36%) were considered to have low ALMBMI and

low grip strength, respectively. There were no between-group differences in ALA, EPA or DHA intakes or total omega-3 fatty acid intake when groups were separated by low ALMBMI or low grip strength ($p>0.05$). Significant positive relationships were found between ALMBMI and EPA (Spearman coefficient = 0.307, $p = 0.014$) and DHA (Spearman coefficient = 0.285, $p = 0.023$), and grip strength and EPA (Spearman coefficient = 0.268, $p = 0.032$) and DHA (Spearman coefficient = 0.319, $p = 0.010$). **Conclusion:** These findings suggest that higher intakes of EPA and DHA are associated with indicators of sarcopenia, and may play a role in achieving optimal skeletal muscle health. A larger study exploring the between-group differences in dietary intakes is needed when using sarcopenia indicator cut-offs.

P067- DEVELOPMENT OF THE VISUAL DISHES SCALE (VDS) TO SCREEN MALNUTRITION IN OLDER ADULTS. X. Li[1], P. Liu[1], J. Li[1], W. Zhang[1], Y. Pan[1], X. Li[1], Y. Xing[1], L. Ma[1] *((1) Xuanwu Hospital Capital Medical University, National Clinical Research Center For Geriatric Diseases - Beijing (China))*

Background: Background: Identifying malnutrition is essential for older people. Rapid and effective nutritional assessment tools are necessary to improve the detection rate and increase awareness of malnutrition. Visual screening or assessment scales for malnutrition are not available at present. Therefore, we aimed to develop the Visual Dishes Scale (VDS) for quick detection of malnutrition in older adults. **Methods:** VDS included three items: staple foods, vegetables, and meat. The Mini Nutritional Assessment Short-Form (MNA-SF) and Malnutrition Universal Screening Tool were used to assess malnutrition. The optimal cut-off value for VDS was determined using the receiver operating characteristic curve with the MNA-SF as the standard. **Results:** The VDS was tested using two scoring methods. The VDS sum score was the sum of 5-point Likert scores (0–4) for staple foods, vegetables, and meat with a 12-point total. The VDS-weighted score weighted these factors 4:1:9 based on the per-gram caloric content of the items and had 56 total points. The optimal cut-off values for the VDS sum and VDS-weighted scores were ≤5 and ≤21, respectively, with area under the curve (AUC) of 0.809 and 0.811. Both scoring methods showed significant positive correlations with the body mass index, appendicular skeletal muscle mass index, calf circumference, waist circumference, pre-albumin level, hemoglobin level, and handgrip strength. **Conclusion:** The VDS can detect malnutrition in older adults effectively and feasibly. **Keywords:** Malnutrition, screening, visual scale, older adults. **Disclosures:** None.

P068- DEVELOPING THE EAMIT (EAST ANGLIAN MALNUTRITION IDENTIFICATION TOOL): FEASIBILITY OF USING THE UK CLINICAL PRACTICE RESEARCH DATABASE (CPRD) FOR AVAILABILITY OF FACTORS TO CONSTRUCT A NEW SCREENING TOOL FOR MALNUTRITION. A. Welch[1,2], J. Skinner[1,2], K. Richardson[1,2], H. Parretti[1,2], J. Holmes[1], A. Smith[3], A. Macgregor[1,2] *((1) Norwich Medical School, University Of East Anglia - Norwich (United Kingdom), (2) Norwich Epidemiology Centre, (3) Nhs Hertfordshire And West Essex Icb - West Essex (United Kingdom))*

Background: Malnutrition is a common but underrecognized clinical problem associated with sarcopenia, frailty, fragility fractures, and multiple long-term conditions with a prevalence in the UK community of 10%-30% in those over 65 years [1]. Malnutrition increases treatment costs, inpatient lengths of stay, affecting recovery in secondary care so early detection is important. Disadvantages of current methods are reliance on direct measures of weight loss, and or change in BMI which are often less used in community settings, with malnutrition often missed. Our project aims to support the development of a digital application EAMIT (East Anglian Malnutrition Identification Tool), using routine clinical healthcare data by including combinations of demographic factors, health care data (e.g. medications) and clinical biochemistry (e.g. CRP) for identification of malnutrition in the community. Our prior research indicates feasibility of this approach [2]. **Methods:** Individuals screened with the MUST tool (Malnutrition Universal Screening Tool), older than 65 years, and a matched set of people according to age, sex and GP practice were identified within the CPRD Aurum database (Feasbility Study reference FS_002595). Four groups were examined for demographic, health care and clinical biochemistry variables according to MUST screening category result: 1) low risk of malnutrition, 2) medium risk 3) high risk (MUST_H), 4) matched unscreened individuals (MUST_0) and either medians (IQR) or percentage of individuals per group were calculated. **Results:** MUST screening was identified in 62,625 (22,924 men, 39,701 women) and the number of matched individuals was 185,781. The percentage of people over 85Y was 47% in in the MUST_H group, versus 43% in MUST_0. Median, IQR BMI ranged from MUST_0 26.3 kg/m2 (23.1-29.8) to18.3 (16.7-20.9) in MUST_H, with median weight loss being -5.9% in MUST_H compared with 0.1% in MUST_ 0. As expected, 50% of people in MUST_H had a BMI <18.5 kg/m2 compared with 1% in MUST_0, though the percentage of missing values for BMI was 72%-80% in MUST categories and 50% in MUST_0. The median number of GP visits (year before screening) was 12 (IQR 6-20) per year in MUST_H compared with 8 (IQR 4-16) in MUST_0. Number of people prescribed 5+ medications was 25% higher in MUST_H than MUST_0. Clinical biochemistry data differed by group. The percentage with low albumin (<35g/L) was 6.5% in MUST_0 compared with 22.8% in MUST_H, iron deficiency as Low Hb [<120g g/l (women); <130g/l (men)] ranged from 18% in MUST_0 to 36% in MUST_H. CRP, median IQR,

was higher in MUST_H (7; 3-25) compared with MUST_0 (5;2-10). **Conclusion:** We found gradients across categories of MUST, and between matched individuals, of greater age, lower BMI, greater percentage of weight loss, lower concentrations of haemoglobin and albumin and higher concentrations of CRP. The number of medications and visits to GPs increased according to category of MUST screening. The proportion of missing BMI data indicates the need to develop a new tool but sufficient demographic, health care and clinical biochemistry data exists within the CPRD database to continue developing an algorithm for identifying risk of malnutrition in the community. **References:** 1. BAPEN https://www.bapen.org.uk/pdfs/must/must_full.pdf (accessed 30/9/24). 2. Predicting Malnutrition Risk with Data from Routinely Measured Clinical Biochemical Diagnostic Tests in Free-Living Older Populations. Truijen S.P.M et al https://www.mdpi.com/2072-6643/13/6/1883 (accessed 1/10/24).

P069- IMPACT ON NUTRITIONAL STATUS ACCORDING TO GLIM CRITERIA OF ORAL NUTRITIONAL SUPPLEMENTATION IN MALNOURISHED OLD NURSING HOME RESIDENTS.

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Background: Malnutrition according to GLIM criteria in older patients is associated with increased mortality risk [1–3]. Its treatment with oral nutritional supplementation (ONS) might preserve the quality of life [4–6]. This study describes the impact of ONS on the nutritional status of malnourished old nursing home patients, who were seen by a geriatric liaison team employing GLIM criteria. **Methods:** Retrospective study that included ≥75-year-old patients nutritionally valued before the ONS and 3-6 months after its prescription from 15 Spanish nursing homes between January 2023-July 2024. Those in the end-of-life situation, and who had been with ONS for the previous three months were excluded. Demographic data (age, sex) was collected. The nutritional assessment included anthropometric data (weight, IMC), MNA-SF and GLIM criteria. At the end of the follow-up period ONS characteristics and tolerability, no programmed hospitalisations and mortality were registered from medical records. **Results:** 52 patients were included (82.7% women, median age 89.9 +/- 6.2 years). Most had dementia (71.2%), and 25% oropharyngeal dysphagia. All patients were at risk of malnutrition (MNA-SF <11) and met GLIM criteria (median weight 46.5 +/- 7.8kg, 84.6% IMC < 22) in 36.5% in a severe degree. 84.6% of the ONS prescribed were hyperprotheic and hypercaloric, 80.8% with fibre and 9.6% suitable for diabetics and with kidney disease. After 3-6 months of treatment, 59,5% of the patients won weight (average gain 2.6 +/- 2.3Kg) and 5 were no longer malnourished, severity was reduced to 28.8%. At the end of the follow-up one patient did not tolerate supplements, three died and 15 were charged for unscheduled hospitalisations, these were not associated with malnutrition severity. **Conclusion:** Malnutrition according to GLIM treatment with ONS in old nursing home patients is well tolerated and improves nutritional status. **Keywords:** Malnutrition, GLIM criteria, nursing homes, oral nutritional supplementation. **Disclosures:** The authors declared no competing interests. **References:** 1. Cederholm T, Jensen GL, Correia MITD, Gonzalez MC, Fukushima R, Higashiguchi T, et al. GLIM criteria for the diagnosis of malnutrition - A consensus report from the global clinical nutrition community. J Cachexia Sarcopenia Muscle 2019;10(1):207-17. 2. De Van Der Schueren MAE, Borkent JW, Spaans GW, Nijhof A, Manders M. GLIM in nursing homes; practical implications. Clin Nutr 2022;41(11):2442-5. 3. Sanz-Paris A, González Fernández M, Perez-Nogueras J, Serrano-Oliver A, Torres-Anoro E, Sanz-Arque A, et al. Prevalence of Malnutrition and 1-Year All-Cause Mortality in Institutionalized Elderly Patients Comparing Different Combinations of the GLIM Criteria. J Parenter Enter Nutr 2021;45(6):1164-71. 4. Huppertz VAL, Van Wijk N, Baijens LWJ, De Groot LCPGM, Halfens RJG, Schols JMGA, et al. Design of the DYNAMO study: a multi-center randomized controlled trial to investigate the effect of pre-thickened oral nutritional supplements in nursing home residents with dysphagia and malnutrition (risk). BMC Geriatr 2020;20(1):537. 5. Malafarina V, Serra Rexach JA, Masanés F, Cervera-Díaz MC, Lample Lacasa L, Ollero Ortigas A, et al. Results of High-Protein, High-Calorie Oral Nutritional Supplementation in Malnourished Older People in Nursing Homes: An Observational, Multicenter, Prospective, Pragmatic Study (PROT-e-GER). J Am Med Dir Assoc 2021;22(9):1919-1926.e5. 6. Chen B, Zhao H, Li M, Zhao T, Liao R, Lu J, et al. Effect of multicomponent intervention on malnutrition in older adults: A multicenter randomized clinical trial. Clin Nutr ESPEN 2024;60:31-40.

P070- CROSS-SECTIONAL ASSOCIATIONS BETWEEN DIETARY AND PLASMA VITAMIN C, STRENGTH, AND FUNCTIONAL OUTCOMES IN MEN AND WOMEN FROM THE EPIC-NORFOLK COHORT.

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Background: Background: Vitamin C is important for several biological processes that are relevant to skeletal muscle. It is involved in the synthesis of collagen and carnitine, acts as an antioxidant [1], and recent animal studies have shown that deficiency can lead to muscle atrophy and loss of strength and physical function [2, 3]. Maintaining an adequate vitamin C status may be important for maintaining muscle mass, muscle strength and physical function during ageing and for preventing sarcopenia. Prior epidemiological research investigating vitamin C and muscle strength or physical function in humans has mainly focused on dietary vitamin C with plasma vitamin

C, a marker of nutritional status, only previously investigated in women [4]. In this study, we investigate associations between both plasma and dietary intakes of vitamin C and measures of muscle strength and physical function in adult men and women. **Methods:** Cross-sectional data from the third health check of the European Prospective Investigation into Cancer and Nutrition (EPIC)-Norfolk cohort were provided. Over 5,000 participants (age 48 to 92 years) had full datasets for analysis. Plasma vitamin C was measured from non-fasting blood samples by fluorometric assay and organised into categories for analysis (low <25mmol/L, suboptimal 25 to <50mmol/L, optimal 50-100mmol/L, high >100mmol/L). Dietary vitamin C intake was assessed using a food frequency questionnaire and categorised into quintiles for analysis. Hand grip strength was measured using a hand-held dynamometer and normalised by dividing by height2 (HGSht). Physical function was assessed using 4m gait speed (GS) and time to complete 5 chair stands (CS). Multiple linear regression, including relevant lifestyle, medical, biological, and dietary covariates, was used to investigate associations between dietary and plasma vitamin C and HGSht, GS, and CS. Least square means were calculated via linear regression analysis. **Results:** Compared with optimal plasma vitamin C status, women with low plasma vitamin C had 0.53 kg/m2 lower HGSht ($p = 0.001$), 0.11m/s slower GS ($p < 0.001$), and an increased CS time of 1s ($p = 0.03$). In men, no association was found between plasma vitamin C and HGSht. Men with low versus optimal plasma vitamin C had 0.05 m/s slower GS ($p = 0.009$) and an increased CS time of 0.7s ($p = 0.021$). No associations were found between dietary vitamin C and HGSht in men or women, or with GS and CS in men. Compared with Q1, women in Q2 and Q5 of dietary vitamin C intake had 0.04 m/s faster GS ($p < 0.001$ for both), and women in Q4 and Q5 had 0.6s ($p = 0.002$) and 0.5s ($p = 0.013$) faster CS times respectively. **Conclusion:** These results suggest that maintaining optimal vitamin C status may be important for maintaining physical function in both men and women. These associations should be investigated prospectively to confirm our findings. Further research is required to determine whether there are gender differences in the association between vitamin C and muscle indices of muscle function. **Keywords:** Vitamin C, muscle strength, physical function, sarcopenia. **Disclosures:** J.S. was supported by the Wellcome Trust EDESIA PhD Programme (218467/Z/19/Z). The authors declare no competing interests. **References:** 1. Dosedel M, et al. Nutrients 2021; 13 (2): 615. https://doi.org/10.3390/nu13020615. 2. Takisawa S, et al. Sci Rep 2019; 9 (1): 4702. https://doi.org/10.1038/s41598-019-41229-7. 3. Takisawa S, et al. Biology (Basel) 2022; 11 (7): 955. https://doi.org/10.3390/biology11070955. 4. Saito K, et al. J Gerontol A Biol Sci Med Sci 2012; 67 (3): 295-301. https://doi.org/10.1093/gerona/glr174.

LP050- CORRELATING CHANGES IN INTRAMUSCULAR ADIPOSE TISSUE IN SARCOPENIC SURGICAL PATIENTS UNDERGOING PREHABILITATION WITH HMB SUPPLEMENTATION – A 6-MONTH UPDATE OF THE HEROS STUDY.

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Background: Sarcopenia, characterized by the progressive loss of muscle mass, quality, and strength, is a major risk factor for adverse surgical outcomes, particularly in older adults undergoing major procedures. Despite this, the optimal prehabilitation regimen for mitigating sarcopenia's effects in surgical patients remains poorly defined. This study evaluates a multi-modal prehabilitation program combining high-protein oral nutritional supplementation with beta-hydroxy beta-methylbutyrate (HMB) and resistance exercise training to assess its impact on muscle quality, functional outcomes, and perioperative recovery in sarcopenic patients undergoing elective gastrointestinal surgeries. **Methods:** A prospective, single-arm interventional pilot study was conducted at Sengkang General Hospital, Singapore, enrolling 40 sarcopenic patients (median age: 73 years) scheduled for elective gastrointestinal surgery. Over a 2-4 week prehabilitation period, patients received a high-protein oral nutritional supplement (ONS) containing HMB (2 units daily) alongside a structured resistance training program. Outcomes included 1) Muscle quality, measured via intramuscular adipose tissue (IMAT) index; 2) Functional parameters, including handgrip strength, chair rise, functional reach test, 6-minute walk test (6MWT), and gait speed; 3) Anthropometric assessments, such as mid-arm circumference, muscle area, and triceps skinfold. Outcomes were assessed at baseline, two weeks into prehabilitation, 1- and 6- month postoperatively. **Results:** The program achieved an 87.5% compliance rate, demonstrating feasibility in this population. IMAT index, a marker of muscle quality, showed a statistically significant increase from baseline to week 2 ($p = 0.037$), indicating early improvements in muscle composition. A non-significant upward trend was observed from baseline to one month postoperatively ($p = 0.068$). Functional outcomes improved markedly during the prehabilitation period, with significant gains observed in 6MWT performance ($p = 0.005$) and gait speed ($p = 0.008$) between baseline and week 2. These improvements were sustained postoperatively, underscoring the potential benefit of prehabilitation in enhancing functional recovery. In contrast, anthropometric measures, such as mid-arm circumference and muscle area, showed no significant changes over the study period, suggesting that IMAT and functional metrics may be more sensitive indicators of early intervention efficacy. **Conclusion:** Multi-modal prehabilitation combining HMB-enriched ONS and resistance training is feasible, safe, and well-tolerated in sarcopenic patients undergoing surgery. The observed improvements in muscle quality (IMAT index) and functional outcomes (gait speed, 6MWT) suggest that early interventions can significantly benefit patients before standard anthropometric measures detect changes. These findings highlight the potential for

prehabilitation to enhance perioperative outcomes and warrant further research through larger, randomized controlled trials to optimize protocols and validate these results.

LP051- IMPACT OF NUTRITIONAL STATUS ON BODY COMPOSITION CHANGES IN OLDER JAPANESE PATIENTS AFTER GASTROINTESTINAL CANCER SURGERY. E. Takano[1], T. Aritake[1], K. Hashimoto[1], Y. Suzuki[1], Y. Kitagawa[1], K. Fujishiro[1], Y. Kawabata[1], S. Kobayashi[2], I. Kondo[1] *((1) National Center For Geriatrics And Gerontology - Obu (Japan), (2) Kasugai Municipal Hospital - Kashugai (Japan))*

Background: As individuals age, susceptibility to malnutrition shows a marked increase, particularly among older adults undergoing surgical procedures for gastrointestinal (GI) cancers [1-4]. This study investigated the relationship between nutritional status and body composition changes over 12 months after surgery in older Japanese patients with upper GI (UGI) and lower GI (LGI) cancers. **Methods:** This retrospective study analyzed 55 older Japanese patients (≥65 years) who underwent curative GI cancer surgery at the National Center for Geriatrics and Gerontology between 2018 and 2022. Participants were categorized into groups with UGI (n=17) and LGI (n=38). Nutritional assessments and body composition metrics (weight, body mass index [BMI], fat-free mass [FFM], and body fat mass [BFM]) were conducted using bioelectrical impedance analysis preoperatively and at 1, 3, 6, and 12 months postoperatively. Data on body composition changes were analyzed using two-way repeated-measures analysis of variance to assess differences between the two groups over time. Malnutrition prevalence was determined using the Global Leadership Initiative on Malnutrition criteria [5]. **Results:** Significant differences in body composition were observed between the UGI and LGI groups over time. Weight changes showed significant interactions (p=0.024), with UGI patients experiencing a steady decrease, while LGI patients gradually increased (p=0.865). BMI decreased in the UGI group (p<0.001) and increased in the LGI group (p=0.015). Significant interactions were noted for BFM (p=0.008) and percentage body fat (p=0.007). The UGI group showed declines in trunk muscle mass (p=0.047) and fat mass index (p=0.007), while the LGI group remained stable or showed increases in these parameters. The prevalence of malnutrition in the UGI group was 94.1% at 1 month and 94.1% at 12 months, compared to 71.1% at 1 month and 50.0% at 12 months in the LGI group. **Conclusion:** This study highlights the significant differences in body composition changes between older Japanese patients undergoing surgery for UGI and LGI cancers. These findings demonstrate that UGI patients are particularly vulnerable to postoperative malnutrition, as indicated by persistent declines in weight, BMI, and muscle mass. In contrast, LGI patients exhibited more favorable recovery trajectories. These results underscore the need for targeted nutritional interventions and rehabilitation strategies specifically tailored to the distinct recovery patterns of UGI patients, aiming to mitigate muscle loss and improve overall health outcomes in this aging population. **Keywords:** Nutrition, aging, upper gastrointestinal cancer, lower gastrointestinal cancer, body composition, malnutrition. **Disclosures:** The authors declare no conflicts of interest. **References** 1. Braga M, et al. Feeding the gut early after digestive surgery: results of a nine-year experience. Clin Nutr 2002; 21: 59-65. http://doi.org/10.1054/clnu.2001.0504. 2. Farreras N, et al. Effect of early postoperative enteral immunonutrition on wound healing in patients undergoing surgery for gastric cancer. Clin Nutr 2005; 24: 55-65. http://doi.org/ 10.1016/j.clnu.2004.07.002. 3. Fettes S.B, et al. Nutritional status of elective gastrointestinal surgery patients pre- and post-operatively. Clin Nutr 2002; 21: 249-254. http://doi.org/ 10.1054/clnu.2002.0540. 4. Rey-Ferro M, et al. Nutritional and immunologic evaluation of patients with gastric cancer before and after surgery. Nutrition 1997; 13: 878-881. http://doi.org/10.1016/s0899-9007(97)00269-4. 5. Cederholm T, et al. GLIM criteria for the diagnosis of malnutrition - a consensus report from the global clinical nutrition community. Clin Nutr 2019; 38: 1-9. http://doi.org/10.1016/j.clnu.2018.08.002.

LP055- MEGESTROL ACETATE AS APPETITE STIMULANT IN GERIATRIC PATIENTS: A SYSTEMATIC REVIEW AND META-ANALYSIS. M.G. Cruz-Tantoco[1], C.A. Villanueva[2], L.C. Dumlao[1] *((1) St. Luke's Medical Center Global City - Taguig (Philippines), (2) Philippine General Hospital - Manila (Philippines))*

Background: Diminished appetite among older adults is attributable to medications, comorbidities, and age-related changes in olfaction, taste and sight. Megestrol acetate is a steroidal agent used in cancer patients with anorexia and cachexia. Evidence on its use among older adults is limited. This review aimed to determine the efficacy and safety of megestrol acetate among geriatric patients with poor appetite or weight loss. **Methods:** Electronic databases (MEDLINE and Cochrane Library) were systematically searched for randomized controlled trials until July 25, 2024. Search terms used were "megestrol acetate", "geriatric" or "elderly" or "older adult", "cachexia" and "appetite". Observational studies and trials involving cancer patients were excluded in the review. Eligible studies were assessed for quality using the Cochrane Risk of Bias tool. Meta-analyses of applicable outcomes were performed using Review Manager 5.4. Certainty of evidence was evaluated using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach. **Results:** Four randomized controlled trials (n = 171), most with moderate risk of bias, were included. Pooled analysis from two studies showed greater increase in body weight among patients given megestrol acetate 800 mg (mean difference [MD] 4.42 kg, 95% CI 2.16 to 6.69, I2=83%) than control. Improved appetite scores were observed in the megestrol acetate group [MD range 0.80 (95% CI, -0.04 to 1.64) to 0.91 (95% CI, 0.79 to 1.03)]. The effect of megestrol acetate on well-being and serum albumin was inconclusive. Although analysis of total adverse events was inconclusive, two patients experienced thromboembolism and one death was reported in the megestrol

acetate group. **Conclusion:** Very low certainty of evidence suggests that megestrol acetate leads to weight and appetite improvement among geriatric patients. Further high-quality trials with larger sample sizes may be considered to ascertain the benefit and safety of megestrol acetate in older adults. **Keywords:** Megestrol acetate, appetite. **Disclosures:** The authors have no conflict of interest to declare.

LP057- DIETARY PATTERNS FROM MID-THROUGH LATER-LIFE IN RELATION TO SARCOPENIA RISK OVER 20 YEARS AMONG CHINESE COMMUNITY-DWELLING OLDEST OLD INDIVIDUALS. A.Y. Bai[1], Y.X. Hu[1] *((1) Chinese Academy Of Medical Science & Peking Union Medical College - Beijing (China))*

Background: Although dietary diversity (DD) has been confirmed to be associated with multiple health outcomes and longevity in older people, the related mechanisms have not been elucidated. In this study, we explored the mediating roles of physical activities and cognitive function in the relationship between DD and all-cause mortality. **Methods:** We recruited 34,068 community-dwelling older adults aged ≥60 years from the Chinese Longitudinal Healthy Longevity Study (CLHLS) and followed them up until 2018. Dietary diversity score (DDS) was assessed by the intake frequency of nine food sources. We evaluated physical activities and cognitive function using the Katz index and Mini-Mental State Examination. We explored the mediating roles of physical activities and cognitive function between DDS and all-cause mortality using mediated analyses in Cox proportional risk regressions models. **Results:** A total of 25,362 deaths were recorded during 148,188.03 person-years of follow-up. Participants with physical disability and cognitive impairment had lower DDS than the normal group (P<0.001). DDS, physical activities, and cognitive functioning were negatively associated with all-cause mortality. Physical activities and cognitive function mediated 18.29% (95%CI: 12.90-23.10%) and 27.84% (95%CI: 17.52-37.56%) of the total effect of DDS on mortality, respectively. **Conclusion:** Physical activities and cognitive function mediated the association between DDS and all-cause mortality. Maintaining DD may benefit early death prevention by reducing physical disability and cognitive impairment in community- dwelling older people.

EPIDEMIOLOGY

P071- COMPARISON OF QUALITY OF LIFE OF OLDER ADULTS LIVING IN FOSTER FAMILIES VERSUS NURSING HOMES. RESULTS FROM THE KASA STUDIES. M. Tabué-Teguo[1], D. Boucaud-Maitre[2] *((1) CHU De Martinique - Fort-De-France (Martinique), (2) Centre Hospitalier Le Vinatier - Bron (France))*

Introduction: Professional foster families for dependent older adults could be an alternative to nursing homes. Engagement in the family life and close contact with a single reference person could enhance their quality of life (QOL). This study aimed to compare the Health-Related Quality of Life (HrQOL) and subjective QOL among older adults living in foster families versus those in nursing homes. **Methods:** Cross-sectional analysis from twin studies conducted in foster families (the KASAF study) and nursing homes (the KASEHPAD study) in French Caribbean Islands. HrQOL was measured using the EuroQol-five dimensions (EQ5D-3L) and QOL was assessed using a Visual Analog Scale (QOL-VAS). For older adults unable to complete these scales, proxy EQ-5D-3L assessments were conducted by paramedical staff or foster caregivers. **Results:** A total of 439 older adults, with 107 in foster families and 332 in nursing homes were included. Participants living in foster families were less often male, had less often hypertension, were more dependent or physical impaired and had lower score of cognition. In multivariate analyses, factors associated with low self-reported HRQoL (n = 240) were Mini Mental State Examination (MMSE) score (B: -0.011; p = 0.003) and Activities of Daily Living (ADL) score (B: 0.014; p < 0.001). A lower QOL-VAS score (n = 150) was associated with living in a nursing home compared to living in a foster family (B: - 19.48 points; p < 0.001) and with the ADL score (B:2.94 points; p = 0.019). In older adults with major cognitive disorders, the only factor associated with low proxy EQ-5D proxy index score (n = 136) was dependency (B: 0.167; p < 0.001). **Conclusion:** HrQOL was similar between older adults living in nursing homes and foster families. Additionally, older adults reported a better subjective quality of life when residing in foster families. These findings suggest that the foster family model may meet the social and environmental needs of dependent older adults for whom nursing homes are not suitable.

P072- HEALTH OUTCOMES AND CARE UTILIZATION AMONG OLDER ADULTS WITH DYNAPENIC OBESITY: INSIGHTS FROM 27 EUROPEAN COUNTRIES. R. Espírito Santo[1], G. Melo[1], A. Rauckiene-Michaelsson[1], C. Agostinis-Sobrinho[1] *((1) Health Research And Innovation Science Centre, Klaipeda University, Klaipeda, Lithuania. - Klaipeda (Lithuania))*

Background: Aging leads to changes in body composition, particularly a decrease in muscle mass and an increase in fat mass, and often accompanied by reduced grip strength [1]. The combination of low muscle strength and obesity is termed dynapenic obesity [2]. Despite the significant implications of these changes [2], evidence regarding the relationship between dynapenic obesity and healthcare is limited. The aim of the study was to verify the association between dynapenic obesity and health outcomes as well as care utilization. **Methods:** We identified adults aged ≥ 50 years from wave 8 of the Survey of Health, Ageing and Retirement in Europe (SHARE). A total of 53,217 individuals aged 50 to 103 years were included in this study, with 30,277 (56%) being women. Obesity was defined as a body mass index ≥ 25 kg/m^2, while dynapenia was defined as grip strength <27 kg for men and <16 kg for women. Dynapenic obesity was defined by the presence of both conditions. The sample was divided into four groups: dynapenic/obese (D/O), dynapenic/non-obesity (D/NO), non-dynapenic/obesity (ND/O),

and non-dynapenic/non-obesity (ND/NO). We collected data on the frequency of long-term illness, chronic disease, hospitalizations, and long-term care insurance. A chi-squared test was performed, and a p-value of <0.05 was considered statistically significant. **Results:** Among the participants, 33,517 (65.2%) were classified as obese. Additionally, 3,731 participants (7.8%) had dynapenia. The breakdown of the participants was as follows: 8,823 exhibited D/O (16.6%), 1,357 exhibited D/NO (2.5%), 23,393 exhibited ND/O (53.4%), and 14,644 exhibited ND/NO (27.5%). A higher percentage of individuals with D/O and long-term illness was observed compared to those with D/O but without long-term illness (20.6% vs. 11.1%, respectively). Moreover, a higher percentage of individuals without long-term illness was found in the ND/NO group compared to those with long-term illness (33.5% vs. 22.8%, respectively). Individuals in the D/O group tended to have more chronic diseases, particularly as the number of chronic diseases increased compared to the ND/NO group ($p < 0.05$). The D/O group had more emergency hospitalizations than the ND/NO group (26.1% vs. 22.8%), while the ND/NO group had more planned hospitalizations than the D/O group (24.4% vs. 16.7%). On the other hand, the ND/O group showed a higher percentage of public long-term care insurance (55.1%) compared to other groups, whereas the D/NO group had a lower percentage of public long-term care insurance (2.3%) than the other groups. A similar trend was observed for private long-term care insurance and private voluntary/supplementary insurance. **Conclusion:** The findings of this study highlight the significant health implications associated with D/O in older adults. Individuals classified as D/O exhibited a higher prevalence of long-term illnesses and chronic diseases, as well as increased emergency hospitalizations compared to those ND/NO. In contrast, ND/O were more likely to utilize public long-term care insurance, as well as private long-term care insurance and voluntary/supplemental private insurance, compared to those with D/O. Further research is essential to explore the specific impacts of D/O to healthcare utilization and to develop effective strategies for prevention and management in this clinical condition. **Keywords:** Body composition, sarcopenia, epidemiology. **Disclosures:** None declared. **References:** 1. Briand, M., Raffin, J., Gonzalez-Bautista, E. et al. GeroScience (2024). https://doi.org/10.1007/s11357-024-01245-6. 2. Lv, D.; Shen, S.; Chen, X. . J. Clin. Interv. Aging 2022, 17, 439–445. doi: 10.2147/CIA.S347053.

P073- ASSOCIATIONS OF SARCOPENIA AND PHYSICAL ACTIVITY WITH QUALITY OF LIFE IN POSTMENOPAUSAL WOMEN: THE KOREA NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY 2009-2011.

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Purpose: Participation in consistent physical activity (PA) and strength exercise (SE) is identified as a key preventive strategy for sarcopenia, while conferring benefits for improving Quality of Life (QoL) in postmenopausal women. However, uncertainty exists about the potential variability of associations in the relationship between sarcopenia, overall levels of PA, engagement in SE, and QoL in menopausal women. Hence, our study aims to examine the differences in QoL based on sarcopenia and PA in postmenopausal women. **Methods:** Postmenopausal women (N=3,820; mean age=63.9±9.3 years) from the Korea National Health and Nutrition Examination Survey (2009-2011) were examined. The QoL was assessed using the European Quality of Life 5 Dimension (EQ-5D) index. Sarcopenia was defined according to the Asian Working Group for Sarcopenia criteria, utilizing the appendicular skeletal muscle mass and body mass index. Levels of total PA and SE were categorized based on the World Health Organization's guidelines. **Results:** Women with sarcopenia showed a significantly lower EQ-5D score compared to women without sarcopenia (0.87±0.16 vs 0.85±0.19; $p < .001$). Women who met SE guidelines showed higher EQ-5D scores than those who did not meeting (0.93±0.11 vs 0.86±0.17; $p < .001$). Women adhering to the SE guidelines exhibited significantly higher EQ-5D scores compared to those not meeting, irrespective of sarcopenia (not meeting/sarcopenia: 0.84±0.20) (not meeting/non-sarcopenia: 0.86±0.17) vs (meeting/sarcopenia: 0.93±0.11) (meeting/non-sarcopenia: 0.92±0.11), $p<.001$). **Conclusion:** The study findings suggest that women with sarcopenia may be more likely to have lower QoL; however, this association may not be evident in the women who are sufficiently active.

P074- THE INTERPLAY BETWEEN GRIP STRENGTH AND BRAIN AGE: DIFFERENTIAL TRAJECTORIES OF NEUROMUSCULAR DECLINE IN AGING.

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Background: Background: Grip strength, a biomarker of aging and defining feature of sarcopenia, reflects both muscle and brain health. While emerging evidence links declining brain integrity to sarcopenia, the use of brain age as a metric to quantify variability in the aging process remains underexplored. This study uniquely examined trajectories of grip strength and brain aging, their interrelationship, and factors that modify these trajectories. **Methods:** Data from the Baltimore Longitudinal Study of Aging (N = 309; age 77.9 ± 7.3 years; 52.4% female) were analyzed using growth mixture models to identify trajectories of grip strength and brain age over time. Brain age was estimated using Spatial Pattern Atrophy for Recognition of Brain Age (SPARE-BA), a validated support vector regression model trained on T1-weighted MRI data from 11 sites within the iSTAGING consortium. Multinomial logistic regression determined baseline markers of latent class membership. **Results:** Classes of slow, intermediate, and fast rates of change were identified for both grip strength decline and brain aging. Older chronological age at baseline predicted faster decline in both domains (grip strength: β=-0.706,

p=0.001; brain aging: β=2.310, p<0.001). Higher baseline lean mass attenuated both grip strength loss (β=1.101, p<0.001) and brain aging (β=-1.070, p=0.01). Faster grip strength decline was linked to older brain age at baseline (β=0.447, p=0.015). Faster brain aging was associated with higher alcohol consumption (β=2.11, p<0.001), higher IL-6 (β=1.54, p=0.002), and stronger grip strength (β=1.06, p=0.012) at baseline. Sex differences were evident with males exhibiting faster brain aging (β=3.14, p=0.002) but slower grip strength decline (β=3.712, p<0.001). Higher education reduced the likelihood of fast class membership for both domains (grip strength: OR=0.808, p=0.015; brain aging: OR=0.763, p=0.034). Greater baseline leg strength reduced the likelihood of membership in the slow grip strength loss (OR=0.764, p=0.032) and slow brain aging (OR=0.780, p=0.012) groups. Worse cognitive performance at baseline increased the likelihood of fast grip strength loss (OR=1.538, p=0.03), whereas men (OR=2.109, p=0.04) and non-White (OR=2.625, p=0.002) had a higher likelihood of slow grip strength loss class membership. Fast brain aging class membership was more likely for females (OR=2.189, p=0.02), smokers (OR=3.534, p=0.045), and individuals with higher baseline physical activity (OR=1.650, p< 0.001). Higher alcohol consumption at baseline increased the likelihood of being in the fast brain aging class (OR=1.23, p=0.04), but increased the likelihood of being in the slow grip strength loss class (OR=1.48, p=0.002). **Conclusion:** This study highlights the interrelated, yet distinct trajectories of grip strength and brain aging, driven by shared and domain-specific biological, behavioral, and demographic factors. Findings advance the understanding of neuromuscular aging as a multifaceted process, emphasizing the importance of integrative research frameworks and interventions that address the dynamic interplay between muscle and brain health in aging populations. **Keywords:** Grip strength, brain age, latent class trajectories, growth mixture models. **Disclosures:** In the past 5-years, Brian Clark has received research funding from NMD Pharma for contracted studies that involved aging and neuromuscular related research. Brian Clark is a co-founder with equity of OsteoDx Inc. The remaining authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest. **References:** 1. Bohannon RW. Grip strength: an indispensable biomarker for older adults. Clinical interventions in aging. Published online 2019:1681-1691. 2. Bhasin S, Travison TG, Manini TM, et al. Sarcopenia Definition: The Position Statements of the Sarcopenia Definition and Outcomes Consortium. Journal of the American Geriatrics Society. 2020;68(7):1410-1418. doi:10.1111/jgs.16372. 3. Cole JH, Ritchie SJ, Bastin ME, et al. Brain age predicts mortality. Molecular psychiatry. 2018;23(5):1385-1392. doi:10.1038/mp.2017.62. 4. Gurholt TP, Borda MG, Parker N, et al. Linking sarcopenia, brain structure and cognitive performance: a large-scale UK Biobank study. Brain Communications. 2024;6(2):fcae083. doi:10.1093/braincomms/fcae083. 5. Cole JH, Marioni RE, Harris SE, Deary IJ. Brain age and other bodily 'ages': implications for neuropsychiatry. Molecular psychiatry. 2019;24(2):266-281. doi:https://doi.org/10.1038/s41380-018-0098-1. 6. Eavani H, Habes M, Satterthwaite TD, et al. Heterogeneity of structural and functional imaging patterns of advanced brain aging revealed via machine learning methods. Neurobiology of Aging. 2018;71:41-50. doi:10.1016/j.neurobiolaging.2018.06.013.

P075- SERUM VITAMIN D DEFICIENCY AS A POTENTIAL RISK FACTOR FOR INCIDENCE OF SLOWNESS OF GAIT IN OLDER PEOPLE: INSIGHTS FROM THE ELSA STUDY. M. Luiz[1], R. Máximo[2], A. Souza[1], T. Souza[1], S. Lima[1], L. Silveira[1], T. Silva[2], A. Steptoe[3], C. De Oliveira[4], T. Alexandre[5] *((1) Post-Graduate Program In Physical Therapy, Federal University Of Sao Carlos - Sao Carlos (Brazil), (2) Post-Graduate Program In Gerontology, Federal University Of Sao Carlos - Sao Carlos (Brazil), (3) Department Of Behavioural Science And Health, University College London - London (United Kingdom), (4) Department Of Epidemiology And Public Health, University College London - London (United Kingdom), (5) Gerontology Department, Federal University Of Sao Carlos - Sao Carlos (Brazil))*

Background: The gait speed decline with age is multifactorial. Some studies have suggested that endocrine, metabolic and nutritional diseases, such as serum vitamin D deficiency, are associated with lower gait speed in older people. However, longitudinal studies do not support such association. Therefore, the present study aimed to investigate whether serum vitamin D deficiency and insufficiency are risk factors for the incidence of low gait speed in older people. **Methods:** Longitudinal study with a 6-year follow-up period of 2,815 individuals aged 60 years or older, participants of the English Longitudinal Study of Aging (ELSA). At baseline, participants had their serum vitamin D [25(OH)D] levels classified as "sufficiency" (> 50 nmol/L), "insufficiency" (30-50 nmol/L) or "deficiency" (≤ 30 nmol/L). Gait speed in m/s was measured to select only individuals without slowness (> 0.8 m/s). At four and six years of follow-up, gait speed was reassessed to identify incident cases of slowness (gait speed ≤ 0.8 m/s). A Poisson regression model controlled by baseline sociodemographic, behavioral, and clinical characteristics was conducted to determine the association between serum 25(OH) D levels and the risk of slowness. **Results:** The incidence densities of slowness were 67.4/1000 person-years (95% CI: 60.93–74.64), 76.7/1000 person-years (95% CI: 68.30–86.22), and 90.7/1000 (95% CI: 78.46–104.92) person-years in those with serum 25(OH)D sufficiency, insufficiency, and deficiency, respectively. Furthermore, only serum 25(OH) D deficiency was associated with the risk of incidence of slowness (IRR: 1.22; 95% CI: 1.01–1.49) compared with serum 25(OH)D sufficiency. **Conclusion:** Serum 25(OH)D deficiency (≤ 30 nmol/L) is a risk factor for the incidence of low gait speed in older people, suggesting that maintaining sufficient serum 25(OH)D levels (> 50 nmol/L) is a possible strategy to minimize long-term mobility impairment. **Keywords:** 25(OH)D, gait speed, mobility limitation, longitudinal study. **Disclosures:** The authors declared no competing interests.

P076- DOES THE CHAIR STAND TEST PERFORM BETTER THAN THE SHORT PHYSICAL PERFORMANCE BATTERY IN PREDICTING MORTALITY AMONG HIGH-FUNCTIONING OLDER ADULTS? R. Máximo[1], M. Luiz[2], A. Steptoe[3], C. De Oliveira[3], T. Alexandre[4] *((1) Postgraduate Program In Gerontology, Federal University Of Sao Carlos - Sao Carlos (Brazil), (2)Postgraduate Programme In Physical Therapy, Federal University Of Sao Carlos - Sao Carlos (Brazil), (3) Department Of Epidemiology And Public Health, University College London, London - London (United Kingdom), (4) Gerontology Department, Federal University Of Sao Carlos - Sao Carlos (Brazil))*

Background: Poor lower extremity function is an age-related concern and could predict negative outcomes later in life, including death. However, current studies lack clear, consistent evidence on the association between poor lower extremity function and a greater risk of all-cause mortality in high-functioning older adults. The aim of this study was to investigate whether the Short Physical Performance Battery (SPPB) ≤10 points or the Chair Stand Test (CST) >15 seconds is better at identifying the risk of all-cause mortality among high-functioning older adults over a 15-year follow-up period. **Methods:** We used longitudinal data from the English Longitudinal Study of Aging (ELSA) on 2,747 high-functioning older adults, i.e. gait speed > 0.8 m/s at baseline. The complete SPPB (standing balance, 2.4-meter walk, and five repetitive chair stands) was compared to the CST alone. Cox proportional regression models controlled for sociodemographic, behavioural, and clinical characteristics were used to analyse performances on the SPPB and CST as risk factors for mortality. **Results:** The mortality rate was 20.3/1,000 and 40.9/1,000 person/years for SPPB >10 points and ≤10 points, respectively, and 22.7/1,000 and 42.7/1,000 person/years for CST ≤15 seconds and >15 seconds, respectively. The risk of mortality was 32% higher for SPPB ≤10 points than SPPB >10 points (HR = 1.32; 95%CI 1.12–1.55) and 37% higher for CST >15 seconds than CST ≤15 seconds (HR = 1.37; 95%CI: 1.14–1.64). **Conclusion:** In high-functioning older adults, the CST can predict a slightly higher risk of all-cause mortality than the complete SPPB. As the CST is easier to apply, it could be the test of choice in clinical practice for identifying the risk of mortality in high-functioning older adults. **Keywords:** Chair stand test, SPPB, physical performance, mortality, Cox. **Disclosures:** The author declares no competing interests.

P077- USE OF DIGITAL DYNAMOMETER TO MEASURE HANDGRIP STRENGTH IN THE OLDER ADULTS: A STUDY OF VALIDITY AND RELIABILITY. G. Benatti De Oliveira[1], L. Vilar Fernandes[2], A.C. Vasques Junqueira[2], L. Pires Corona[2] *((1) Faculty Of Medical Sciences,state University Of Campinas - Campinas-Sp (Brazil), (2) Faculty Of Applied Sciences,state University Of Campinas - Limeira-Sp (Brazil))*

Background: Handgrip strength (HGS) is widely used to assess muscle function and overall health, serving as an important indicator of successful aging, and being associated with slower epigenetic aging, suggesting a protective effect. while useful in clinical practice, traditional dynamometers do not offer automatic data integration. The Gripwise® digital dynamometer was developed with the proposal to mitigate this difficulty, connecting to a mobile app and cloud platform, and facilitating the transfer of results to a database. Technological advancements allow for a more detailed analysis of muscle function with digital devices, which stand out for their portability and low cost, though age and gender variations require improved ergonomics and validated cut-off points. Our study aimed to evaluate the reliability of the Gripwise® measurements with Saehan®'s hydraulic dynamometer in Brazilian older individuals, and its potential to identify dynapenia according to three well-known cut-off points. This study of a digital dynamometer promote early diagnosis and interventions. **Methods:** We conducted a cross-sectional study with 149 participants (32 men and 117 women) aged 60 to 86 years to assess handgrip strength (HGS) using the Gripwise® (GripWise Tech, Portugal) and Saehan® (Saehan Corporation – SH5001, Korea) dynamometers. Three measurements were taken from each individual's dominant hand, and the highest value was used for comparison. The reliability and agreement between the devices were analyzed using Intraclass Correlation Coefficients (ICC) and Bland-Altman plots. Sensitivity, specificity, and 95% confidence intervals were calculated based on three cut-off points from the literature, established by Villain et al. (2023), Spexoto et al. (2022), and Cruz-Jentoft et al. (2019). For this analysis, three comparison models were created: Model 1 compared the dynapenia classification by Spexoto et al. (2022) using a manual dynamometer with the low strength classification by Villain et al. (2023) using the Gripwise dynamometer. Model 2 compared the dynapenia classification by Spexoto et al. (2022) using both dynamometers. Model 3 compared the dynapenia classification by Cruz-Jentoft et al. (2019) using both dynamometers. **Results:** The comparison of dynamometers showed an excellent average ICC (0.920; $p < 0.001$; 95% CI), but with an average grip strength difference of 3.5 kg (LOA: 3.52 to -2.54). When analyzing strength data with the recommended cutoffs, significant variability was found in the classification of low strength. The diagnostic performance of the cutoffs varied across models: Model 1 showed 100% sensitivity and 31.69% specificity, Model 2 had 55.77% sensitivity and 97.78% specificity, and Model 3 demonstrated 16.67% sensitivity and 99.20% specificity. **Conclusion:** The accuracy and reliability of the measurements from Gripwise® are evident when compared to Saehan®, which is widely used in academic research. However, the differences in sensitivity and specificity values of the cut-off points are significant, highlighting better results in models that include measures of physical performance. This underscores the need for new reliability studies and proposals for cut-off points for low strength, specific to the digital dynamometer, to improve classification in populations, avoiding false positives or false negatives that depend only on the type of equipment used. **Keywords:** Older adults, hand strength, muscle strength

dynamometer, reliability. **Disclosures:** The authors declared no competing interests. **References:** Benz E, Pinel A, Guillet C, Capel F, Pereira B, De Antonio M, et al. Sarcopenia and Sarcopenic Obesity and Mortality among Older People. JAMA Netw Open. 2024;7(3):E243604. Lu WH, González-Bautista E, Guyonnet S, Martinez LO, Lucas A, Parini A, et al. Investigating three ways of measuring the intrinsic capacity domain of vitality: Nutritional status, handgrip strength and ageing biomarkers. Age Ageing. 2023;52(7):1–9. Villain C, Lebaube S, Kremer C, Chavoix C, Fournel F, Briant AR, et al. Gripwise Versus Jamar: The Challenge of a New Dynamometer Assessing Handgrip Strength. J Gerontol A Biol Sci Med Sci. 2023;78(12):2458-2465. doi:10.1093/gerona/glad198. Spexoto MCB, Bós AJG, Corrente JE, Ferriolli E, Moriguti JC, Lima NKC, et al. European Working Group on Sarcopenia in Older People 2010 (EWGSOP1) and 2019 (EWGSOP2) criteria or slowness: which is the best predictor of mortality risk in older adults? Age Ageing. 2022;51(7). doi:10.1093/ageing/afac164. Cruz-Jentoft AJ, Bahat G, Bauer J, Boirie Y, Bruyère O, Cederholm T, et al. Sarcopenia: revised European consensus on definition and diagnosis. Age Ageing. 2019;48(1):16-31. doi:10.1093/ageing/afy169.

P078- ALL-CAUSE MORTALITY OF OLDER ADULTS WITH FRAILTY FOLLOWING ACUTE HOSPITAL ADMISSION: A MULTICENTRE STUDY IN NORTHERN TANZANIA. A. Murray[1], S.L. Davidson[1], J. Hardy[1], T. Randall[1], G. Lyimo[2], J. Kilasara[3], S. Urasa[2], R.W. Walker[1], C.L. Dotchin[1] *((1) Newcastle University, Uk - Newcastle Upon Tyne (United Kingdom), (2) Kilimanjaro Christian Medical Centre, Tanzania - Moshi (Tanzania, United republic of), (3) Kilimanjaro Christian Medical University College, Tanzania - Moshi (Tanzania, United republic of))*

Background: The prevalence and associated pressures of frailty are expected to increase as populations continue to age. Sub- Saharan Africa is experiencing the fastest demographic transition towards an ageing population globally. In response to evolving population dynamics, healthcare systems will be faced with the challenge of rapidly adapting services to address the needs and complexities of older adults. Building upon the little known about frailty and its relationship with mortality following acute hospital admission in low- income settings, may contribute to assisting healthcare services in navigating these changes. **Methods:** This study is a follow-up phase of a longitudinal study. 308 adults aged ≥60 years were recruited from the medical wards of four hospitals across the Kilimanjaro region of Tanzania. At baseline assessment, the Clinical Frailty Scale (CFS) was used to establish participants frailty status, with CFS score of ≥5 indicating frailty. Patients were further stratified into groups based on CFS scores indicating low (1-3), intermediate (4-6) and high (7-9) scores. Subsequently, after a follow-up period of 10-12 months, telephone interviews were conducted with 192 participants and/or their informants to assess long-term all-cause mortality as the primary outcome. Survival analysis alongside univariate and multivariate Cox regression was used to estimate hazard ratios (^{3} 95% CI) for mortality. **Results:** Follow-up participants had a mean age of 75.20 years and 99 (51%) of respondents were female. During the follow-up period there were 100 deaths, of these 77 (77%) were among the frail group. Kaplan-Meier survival analysis and log-rank testing found the survival distributions were statistically different between the frail and non-frail groups, ($\chi2$ (1) = 10.63, p <0.001). A biological gradient was evidenced between increasing frailty scores (indicating frailty severity) and reduced days to death. Pairwise log-rank comparisons (using a Bonferroni correction with statistical significance accepted at p<0.017 level) demonstrated that survival distributions, when stratified by CFS scores, low, intermediate and high, were also significantly different between all groups; low and intermediate ($\chi2$ (1) = 6.21, p = 0.013), low and high ($\chi2$ (1) = 17.89, p <0.001) and intermediate and high ($\chi2$ (1) = 6.69, p = 0.01). Frailty was associated with a significantly increased risk of mortality demonstrated by adjusted hazard ratios for all-cause mortality (Hazard Ratio 2.27 [95% Confidence Interval 1.39-3.69], p<0.01). **Conclusion:** Frailty status and its severity proved to be a powerful independent predictor of mortality for older adults following acute hospital admission in Tanzania. Accurate identification of frailty in clinical practice, using the CFS, could assist healthcare services prioritise the use of limited resources by providing targeted interventions to older adults most at risk. The CFS may prove beneficial in other low-resource settings also navigating the challenges that will continue to evolve in tandem with demographic trajectories. **Keywords:** Frailty, mortality, survival, Tanzania. **Disclosures:** The authors declared no competing interests.

P079- CLINICAL OUTCOMES OF OLDER PEOPLE LIVING WITH FRAILTY FOLLOWING AN ACUTE HOSPITAL ADMISSION: A MULTICENTRE STUDY IN NORTHERN TANZANIA. A. Murray[1], S.L. Davidson[1], J. Hardy[1], T. Randall[1], G. Lyimo[2], J. Kilasara[3], S. Urasa[2], C. Dotchin[1], R. Walker[1] *((1) Newcastle University, Uk - Newcastle Upon Tyne (United Kingdom), (2) Kilimanjaro Christian Medical Centre, Tanzania - Moshi (Tanzania, United republic of), (3) Kilimanjaro Christian Medical University College, Tanzania - Moshi (Tanzania, United republic of))*

Background: Frailty is associated with significant adverse clinical outcomes for older adults with frailty following hospital discharge. The prevalence of frailty is likely to rise in parallel with ageing demographic trajectories occurring in Low- and Middle-Income Countries (LMICs). This study aimed to address the little evidence on long-term clinical outcomes post-hospital admission in low-income settings, with an intent to optimise healthcare services response to the substantial clinical challenges of frailty. **Methods:** The present study is the follow-up of a wider prospective cohort study assessing the clinical outcomes of 308 adults aged ≥60 years following an acute hospital admission to medical wards of four hospitals in northern Tanzania. Once recruited, frailty status was established using the Clinical Frailty Scale (CFS). Follow-up assessment consisted of telephone interviews of 192 of the participants after

a follow-up period of 10-12 months. Clinical outcomes assessed the relationship between frailty at baseline and disability at follow-up, hospital readmissions, number of falls and change in frailty status. Disability was assessed using the Barthel Index (BI) to quantify dependency in activities of daily living (ADL) and the Identification and Intervention for Dementia in Elderly Africans (IDEA) Instrumental Activities of Daily Living (IADL) to assess dependency for IADLs, more complex tasks that require cognitive abilities. Disability was defined as a lack of independence in any domain assessed by BI or IDEA-IADL tools. Differences between frail and non-frail groups were assessed using Mann-Whitney U tests and chi-square tests. **Results:** Participants with frailty at baseline had significantly more hospital readmissions within the follow-up period when compared to adults without frailty, with 2 and 1 hospital readmissions respectively. Additionally, participants identified as frail at baseline were significantly more likely to be disabled at follow-up and have a greater severity of dependency in both ADL and IADL at follow-up. Disability in ADLs deteriorated by greater amount for participants classified as frail at baseline compared adults classified as non-frail. There was no association between frailty and increased number of falls. The dynamic state of frailty was highlighted by results that showed those identified as frail at baseline improved in terms CFS score at follow-up, contrasting to those classified as non-frail at baseline deteriorated in terms of CFS score at follow-up. **Conclusion:** Screening for frailty using the CFS was able to positively identify those at increased risk of adverse clinical outcomes including: increased number of hospital re-admissions, disability and increased dependency at follow-up. The CFS may be used in low-income settings in the future to risk stratify and effectively prioritise the use of resources and interventions. Contrasting to literature on clinical outcomes and frailty, dominated by research in high-income settings, frailty at baseline was not associated with an increased risk of falls or deterioration of CFS. This emphasises the paucity and necessity of further research on the relationship of frailty and clinical outcomes in LMICs. **Keywords:** Frailty, Tanzania, clinical outcomes. **Disclosures:** The authors declared no competing interests.

P080- SIT-TO-STAND TEST AND HANDGRIP STRENGTH: WHICH IS THE BEST TEST TO IDENTIFY MOBILITY DECLINE IN OLDER PEOPLE? T. Souza[1], R. Máximo[2], T. Silva[2], S. Lima[1], J.P. Santos[1], A. Steptoe[3], C. De Oliveira[3], T. Alexandre[4] *((1) Postgraduate Program In Physical Therapy, Federal University Of Sao Carlos - Sao Carlos (Brazil), (2) Postgraduate Program In Gerontology, Federal University Of Sao Carlos - Sao Carlos (Brazil), (3) Department Of Epidemiology And Public Health, University College London - London (United Kingdom), (4) Gerontology Department, Federal University Of Sao Carlos - Sao Carlos (Brazil))*

Introduction: Muscle weakness, identified by handgrip strength (HGS), is known as an important predictor of gait speed decline (GS) and several adverse outcomes among older people. However, the requirement for a dynamometer in healthcare services to measure HGS has been leading to the search for alternative tests, such as the sit-to-stand test (SST), which are easier and cheaper to identify the risk of such outcomes. Thus, the present study aims to compare the various HGS cut-off points adopted in the literature to define muscle weakness and the SST >15 seconds and verify which would be better to identify the worst trajectories of decline in GS in eight years of follow-up. **Methods:** This is a longitudinal study with 2.930 participants of the English Longitudinal Study of Ageing (ELSA) aged 60 years or older and free of mobility limitation (GS > 0.8 m/s) at baseline. The exposures analysed were low muscle strength, defined by HGS (<36, <32, <30, <27 and <26 kg for men and <23, <21, <20 and <16 kg for women) and by the SST >15 seconds. The outcome measure was the GS in m/s. All measurements were conducted at baseline, at four and eight years of follow-up. Generalized linear mixed models adjusted by sociodemographic, behavioural and clinical factors were used to analyse the decline of GS (m/s) in function to low muscle strength, measured by HGS and SST, in separate models. **Results:** Participants with performance on SST > 15 seconds had higher rate of annual decline on GS than those who performed ≤15 seconds (-0.006 m/s per year, 95% CI: -0.009 – -0.002), with a total decline of -0.180 m/s in eight years. Among the HGS cut-off points, the only one that was able to identify a higher rate of annual decline in GS was <30 kg for men and <20 kg for women (-0.004 m/s per year, 95% CI: -0.008 – -0.001), with a total decline of -0,160 m/s in eight years. **Conclusion:** The SST >15 seconds was better than several HGS cut-off points for discriminating mobility decline in older people, except the HGS cut-off points <30 kg for men and <20 kg for women. Therefore, in clinical practice, the SST may be the test of choice for screening the risk of GS decline in older people, considering it has lower cost than HGS and is easy to apply. **Keywords:** Sit-to-stand test, handgrip strength, mobility, older people. **Disclosures:** The authors declared no competing interests.

LP059- PREVALENCE OF RISK OF SARCOPENIA IN OLDER ADULTS WITH TYPE 2 DIABETES MELLITUS: INSIGHTS FROM THE AMAZONIAN SAPPA STUDY. H.L.M. Campos[1], P.P. Batista[2], A.L. Alves[3], L.A.C. Spósito[4], T.A.S. Farias[5], E.B. De Leon[5] *((1) Institute Of Health And Biotechnology Of The Federal University Of Amazonas - Coari, Am (Brazil), (2) Federal University Of Minas Gerais - Belo Horizonte, Mg (Brazil), (3) Faculty Of Physical Education And Physiotherapy Of The Federal University Of Amazonas - Manaus, Am (Brazil), (4) Postgraduate Program In Physical Education Of The Federal University Of Santa Catarina - Florianópolis, Sc (Brazil), (5) Postgraduate Program In Human Movement Sciences Of The Faculty Of Physical Education And Physiotherapy Of The Federal University Of Amazonas - Manaus, Am (Brazil))*

Background: Sarcopenia, defined as a decline in skeletal muscle mass and strength, increases the risk of falls,

functional disability, frailty and mortality in older adults. In individuals with Type 2 Diabetes Mellitus (T2DM), factors such as chronic inflammation, insulin resistance, and physical inactivity accelerate this condition. Regional and sociocultural characteristics may further influence the mechanisms driving the risk of sarcopenia (RS). The use of population-based of RS screening enables the identification of individuals in early stages, allowing timely interventions and improved prognostic outcomes. This study evaluates the prevalence of RS in older adults with T2DM and examines differences in sociodemographic and clinical characteristics among those with and without sarcopenia risk within the Amazonian context. **Methods:** This cross-sectional study analyzed data from the SAPPA Study, conducted in the Amazon region of Brazil. Researchers recruited older adults (≥60 years) from urban and rural primary healthcare units. Eligibility criteria included a diagnosis of T2DM for at least six months, BMI ≤30 kg/m^2, and no cognitive impairments [1]. The modified SARC-F questionnaire (SARC-Calf, cutoff ≥11 points) assessed RS and data collection included sociodemographic and clinical questionnaires. The prevalence of RS was estimated, and comparisons between groups with and without RS (GRS and GNRS) were performed using Pearson's chi-square test ($p<0.05$). This study was approved by the Research Ethics Committee of the Federal University of Amazonas (4.318.325 and 4.994.196). **Results:** This study included 447 older adults (≥60 years) with Type 2 Diabetes Mellitus, of whom 70.4% (n=315) were women. Participants had a mean age of 70.5 ± 7.9 years and a mean BMI of 28.1 ± 5.6 kg/m^2. The prevalence of RS was 40% (n=179). Among those at risk, 45.3% (n=81) reported a diabetes diagnosis of up to 5 years, 29.1% (n=52) between 6 and 10 years, and 25.7% (n=46) for 11 years or more. Comparisons between the GRS and GNRS groups revealed significant associations between RS and female sex, advanced age, lower education levels, and sensory impairments ($p<0.05$). In the GRS group, women comprised 78.2% (n=140) of participants. Age distribution showed that 39.1% (n=70) were between 70 and 79 years, and 24.6% (n=44) were over 80 years. Among participants with RS, 78.2% (n=140) had up to 5 years of education. Sensory impairments were frequent, with 77.7% (n=139) reporting visual deficits and 34.1% (n=61) experiencing hearing difficulties. **Conclusion:** A high prevalence of RS emerged in older adults with Type 2 Diabetes Mellitus within the Amazonian context. Sensory impairments, including vision and hearing deficits, require attention during assessments of this population. **Keywords:** Sarcopenia, type 2 diabetes mellitus, aged, Amazon region, rural health, mobility limitation. **Disclosures:** The authors declare no competing interests. **Reference:** 1. de Leon EB, Campos HLM, Brito FA, Almeida FA. Study of Health in Primary Care of the Amazonas Population: Protocol for an Observational Study on Diabetes Management in Brazil. JMIR Res Protoc. 2022;11(9):e37572. Published 2022 Sep 15. doi:10.2196/37572.

LP060- IDENTIFYING A SET OF QUALITY INDICATORS FOR OLDER ADULTS HOSPITALIZED FOR INJURIES: AN EXPERT CONSENSUS STUDY.

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Background and objectives: Frail older adults account for over 50% of adult trauma admissions and are at increased risk of adverse health outcomes following their injury. Several quality indicators in geriatric trauma care have been suggested. However, there is currently no consensus on which ones should be used. This study aimed to reach a consensus on a set of indicators for assessing the quality of care of older adults hospitalized for injuries. **Methods:** A consensus study was conducted using the RAND-UCLA Appropriateness Method, consisting of an individual online questionnaire (round 1) and a virtual group meeting (round 2). Forty quality indicators identified in the literature were submitted to a multidisciplinary panel of 40 trauma and geriatric experts and three patient-partners. Indicators were evaluated using a 9-point Likert scale according to 4 criteria: importance, available evidence, actionability, and measurability. Consensus was defined using RAND-UCLA criteria. **Results:** 30/41 (73%) invited participants completed the two rounds. In the 1st round, 12 indicators were retained while 14 were rejected. In the 2nd round, three additional indicators were retained. The final set consists of 15 indicators, including surgical delays, optimal pain management using appropriate modalities for older people, delirium screening, documentation of the level of care within 48 hours of arrival, prompt initiation of mobilization and rehabilitation and discharge destination. **Conclusion:** This study allowed us to identify a set of 15 quality indicators based on the literature, experts' opinions, and patient-partner priorities. This set could eventually be implemented in trauma systems and contribute to improving the quality of hospital care for this clientele.

LP062- SARCOPENIA PREVALENCE IN A GERMAN GERIATRIC DAY CLINIC.

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Purpose: Sarcopenia is characterized by the loss of muscle strength and mass. Its prevalence vary across different populations. The aim of this study is to estimate the prevalences of sarcopenia in community dwelling older adults attending a geriatric day clinic. **Methods:** A secondary analysis of the Paint-II Data (single-center RCT on the effects of art therapy) was deployed to estimate the prevalences of sarcopenia using the EWGOSP2 criteria. **Results:** Body composition information was available from 255 participants. Their mean age was

81.2 ± 5.3 years and 78.4% were female. Depending on the appendicular skeletal muscle mass (ASMM) metric used the prevalence of sarcopenia ranged between 10.2% and 23.5% using either ASMM/height^2 or absolute ASMM respectively. The mismatch between the two diagnoses criteria occurred because 37 participants were classified as sarcopenic only in ASMM, even though their muscle strength was similar to those classified as sarcopenic by both ASMM and ASMM/height^2. These 37 participants had a mean height of 154 cm (SD 4.7) compared to the overall sample mean height of 161 cm (SD 8.5). In contrast, 3 participants with a mean height of 177 cm (SD 10) were sarcopenic only using ASMM/height^2. **Conclusion:** Community-dwelling older adults attending geriatric day clinics are at high risk for sarcopenia. There is a significant discrepancy in sarcopenia prevalence depending on whether muscle mass is measured absolutely or adjusted for body size.

LP063- RELATIONSHIPS BETWEEN COMORBIDITY, PHYSICAL ACTIVITY AND FRAILTY DIFFER ACCORDING TO EDUCATIONAL ATTAINMENT: FINDINGS FROM THE SOUTHAMPTON LONGITUDINAL STUDY OF AGEING (SALSA).

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Background: Comorbidity is common among older adults and is known to be related to lower physical activity and increased risk of developing frailty. However, there is a paucity of research exploring the effect of education on these associations. We aimed to explore the potential interation effect of eduational attainment on the relationship between comorbidity, physical activity and frailty among community-dwelling older people. **Methods:** A cross-sectional analysis was conducted on 513 community-dwelling older participants aged 74-96 identified from primary care, who completed a questionnaire which ascertained educational attainment (university degree/Higher National Diploma/higher professional qualifications vs not) , number of comorbidities and physical activity. Participants with ≥ 3 of the following were regarded as living with frailty: lost more than 10 lb unintentionally in the past year; self-reported exhaustion in the past week (≥3 days); low physical activity (bottom sex-specific fifth of the distribution); low self-reported walking speed (very slow or unable to walk); or difficulty carrying 10 lb (a lot of trouble or unable). Body mass index (BMI) was calculated from self-reported height and weight. Number of comorbidities in relation to physical activity and frailty was examined using linear and logistic regression respectively, with stratification by educational attainment. Men and women were pooled, and all analyses were adjusted for age, sex, BMI and smoking status. **Results:** Median (lower quartile, upper quartile) number of comorbidities was 2 (1, 3) among both men and women; 17 (7%) men and 42 (15%) women had frailty. Standard deviation differences in physical activity scores (95% CI) per unit increase in number of comorbidities were greater among less educated participants (-0.09 [-0.15, -0.03], p=0.006) compared to more educated participants (-0.02 [-0.17, 0.14], p=0.826). Similarly, odds ratios (95% CI) for frailty per unit increase in number of comorbidities were greater among less educated participants (1.39 [1.13, 1.72], p=0.002) compared to more educated participants (1.17 [0.69, 1.98], p=0.552). **Conclusion:** The detrimental effects of multimorbidity on physical activity and risk of developing frailty may be greater among less educated participants. These findings suggest that multimodal health and wellbeing intervention strategies coordinated across the primary-secondary care interface could be targeted to this vulnerable group of older people.

LP064- A VIGOR TO FRAILTY SCORE DISTINGUISHES WIDE RANGE OF RISK FOR INCIDENT FUNCTIONAL LIMITATION: THE STUDY OF MUSCLE, MOBILITY AND AGING (SOMMA).

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Background: Aging is a heterogeneous process that leads to functional decline. In the Study of Muscle, Mobility and Aging (SOMMA), there was marked heterogeneity with only a few participants classified as frail and some were very high functioning individuals. The SOMMA Vigor to Frailty Score was designed to capture this heterogeneity using challenging tests such as VO2peak on a treadmill. Participants with lower (better) vigor to frailty scores at baseline were active and rarely reported any difficulty with mobility at baseline than those with worse scores. Prospective validation is needed. **Methods:** The SOMMA cohort included 879 men and women with mean age 76 ± 5 years recruited in Pittsburgh, PA and Winston Salem, NC. Components of the Vigor to Frailty Score included continuous measures of fitness (oxygen consumption at peak exercise—VO2peak), muscle power (leg power by Keiser leg press), fatigability (reported Pittsburgh Fatigability Scale - physical), muscle mass (D3 creatine dilution method), sedentary time by wrist-worn ActiGraph GT9x accelerometry) and cognitive processing speed (digit symbol coding test score), each divided into tertiles and summed 0-12, with higher scores indicating worse frailty status. At each of 3 annual follow-up exams, self-reported lower extremity functional limitation, defined as self-report of any difficulty walking ¼ mile or climbing 10 steps and reported ease for walking one mile (0-5, 0=unable to 5 = very easy) were among the outcomes assessed.

Confounders assessed included age, sex, race, smoking, weight, multimorbidity score, and medication number. Associations of the Vigor to Frailty Score, [continuous per one unit increment, and score tertiles (0-3, 4-7, 8-12)] with incidence or change were assessed using time-to-event Cox models and linear regression. **Results:** The mean Vigor to Frailty Score at baseline was 6 ± 3. Excluding baseline limitations, there were 198 participants with incident lower extremity functional limitation events with adjusted HR 1.23 (95% CI 1.15, 1.30) per unit increment of the score. Only 14 events occurred with score 0-3 (referent), 79 in score 4-7 (adjusted HR 2.46, 95% CI 1.37, 4.44), 105 in score group 8-12 (HR 5.46. 95% CI 2.94, 10.13, p trend <0.001). More severe levels of disability were considered but were too few to model for those in the lowest vigor to frailty group. Baseline walking ease score was 4.2 ± 1.1 and mean change was – 0.34 ± 1.4, with beta = -0.07 per unit of Vigor to Frailty score in a fully adjusted model, p< 0.001. Those in the 8-12 vigor to frailty group declined by 0.71, vs. 0.14 in the 0-3 group, adjusted p <0.001. **Conclusion:** After 3 years of follow-up, SOMMA participants classified as relatively vigorous had very low rates of incident self-reported limitations and reported little decline in the ease of walking 1 mile. Decline was significantly greater with higher scores, whether considered per unit or by group. Validation of the Vigor to Frailty Score for other health events including SOMMA's primary outcome of incident objective mobility disability requires longer follow-up.

LP066- FUNCTIONAL DEPENDENCY AND CARDIOMETABOLIC MULTIMORBIDITY IN OLDER PEOPLE: POOLED ANALYSIS OF INDIVIDUAL-LEVEL DATA FROM 20 COUNTRIES.

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Background: The impact of cardiometabolic multimorbidity (CMM)—the co-occurrence of two or more cardiometabolic conditions such as diabetes, heart disease, and stroke—on functional dependency (FD) is well established. However, the temporal relationship between FD and the subsequent development of CMM remains poorly understood. The mechanisms underlying this relationship, including the potential roles of hypertension and depressive symptoms, require further investigation. This study aims to explore these associations and identify potential mediators. **Methods:** This multi-cohort study pooled data from three large international cohorts: the Health and Retirement Study (USA), the China Health and Retirement Longitudinal Study, and the Survey of Health, Ageing, and Retirement in 18 European countries. FD was defined as the inability to perform basic activities of daily living (ADLs) and instrumental ADLs (IADLs) independently. Generalized estimating equation (GEE) models were used to assess the longitudinal associations between FD and CMM. Mediation analysis, employing the Karlson, Holm, and Breen method, was conducted to examine the roles of hypertension and depressive symptoms. Sensitivity analyses were performed to confirm the robustness of the findings. **Results:** The final cohort consisted of 157,512 individuals for ADL analyses and 190,249 for IADL analyses. The prevalence of CMM was 18.97% and 16.65% in the ADL and IADL groups, respectively. FD was consistently associated with an increased risk of developing CMM, with odds ratios (ORs) ranging from 1.47 (95% CI: 1.33–1.63) to 1.56 (95% CI: 1.42–1.73). Mediation analysis revealed that hypertension accounted for 8.01% to 16.43% of the effect of FD on CMM, while depressive symptoms accounted for 12.04% to 18.36%. These effects were more pronounced among smokers and heavy drinkers. **Conclusion:** FD is a significant predictor of CMM in older adults, with hypertension and depressive symptoms partially mediating this relationship. Targeted interventions addressing these factors, as well as promoting healthy lifestyle changes and integrated treatment approaches, could help mitigate the risk of CMM in this population. Future research should focus on refining these interventions and exploring other potential mechanisms linking FD to CMM.

ANIMAL MODELS, PRECLINICAL STUDIES

P082- MF-300 (15-PGDH ENZYME INHIBITOR) REVERSES AGE-RELATED MUSCLE WEAKNESS IN MICE BY RESTORING MUSCLE QUALITY.

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Background: Reduced muscle quality (i.e. force per unit of muscle) contributes to muscle weakness in sarcopenia. While loss of muscle mass also impacts muscle function with aging, strength declines at a faster rate compared to muscle mass and is a better predictor of mortality compared to muscle quantity. Additionally, fast twitch fiber force is disproportionately weakened with age compared to slow twitch in skeletal muscle across species, including rodents and human. Therefore, mitigating progressive decline in fast twitch muscle quality may be an effective strategy to prevent weakness and offset sarcopenia in humans. Prostaglandin E2 (PGE2) is a lipid signaling molecule with multiple beneficial effects on the motor unit, including enhanced muscle quality as well as improved function of the neuromuscular junction. In preclinical models of aging, PGE2 levels are reduced in skeletal muscle due to increased activity of 15-hydroxyprostaglandin dehydrogenase (15-PGDH), an enzyme that converts PGE2 to an inactive metabolite. 15-PGDH gene expression is elevated in muscle in aged rodents and humans, coincident with onset of age-induced muscle weakness. Inhibiting 15-PGDH in aged muscle may be a strategy to increase physiologic levels of PGE2 to benefit muscle quality in aging. MF-300 is an orally bioavailable small molecule inhibitor of 15-PGDH currently in development for the treatment of sarcopenia. MF-300 stabilizes PGE2 levels by reversibly occupying the PGE2 binding site of 15-PGDH, and blocking the metabolic conversion of PGE2. The reported study tested MF-300's effect on muscle force in an aged mouse model of sarcopenia. **Methods:** C57BL/6J mice, aged 90-92 weeks, were stratified on body weight and muscle force into groups that were administered oral MF-300

(10, 30 or 60 mg/kg every other day) or vehicle (the control). A group of 39-54 week-old mice, administered vehicle, served as a younger adult comparator. Muscle force was assessed in two ways: in vivo by nerve evoked force production of the plantar flexors, and ex vivo via electrical stimulation of the extensor digitorum longus (EDL) muscle. Absolute muscle force was normalized to muscle mass to assess muscle specific force. **Results:** Aged-vehicle mice had lower absolute and specific muscle force relative to the adult-vehicle group. After 12 weeks, MF-300 10 mg/kg significantly increased maximal muscle force ($p<0.0001$) and specific force ($p=0.02$) in aged animals compared to vehicle. Treatment with MF-300 10 mg/kg demonstrated a significant increase in absolute ($p=0.0003$) and specific muscle force ($p=0.02$), as well as contraction rate ($p=0.0068$), of the EDL (fast-twitch muscle) compared to the aged-vehicle group. **Conclusion:** MF-300 treatment increased isometric plantar flexion in aged mice, augmenting muscle force without affecting muscle mass, indicating improved muscle quality (i.e. specific force defined as force per unit of muscle). The beneficial effect is further supported by increased absolute and specific force, as well as contraction rate of the EDL muscle, a fast-twitch muscle. Recognizing sarcopenia's high prevalence, as well as its significant impact on morbidity and mortality, improving muscle quality may be more important than increasing mass alone. MF-300 holds potential as therapeutic strategy for improving muscle quality and strength in sarcopenia. **Keywords:** Sarcopenia, muscle quality, muscle strength, muscle specific force. **Disclosures:** MW and BF are employees of Epirium Bio; JM is an employee of a CRO (Myologica LLC) that provides services to Epirium Bio; RK is Co-Founder of a CRO (Myologica LLC) that provides services to Epirium Bio.

P083- KYNURENINE METABOLISM IN THE AGE-ASSOCIATED DECLINE OF THE BACTERIAL IMMUNE RESPONSE. G. Sutphin[1] ((*1) University Of Arizona - Tucson (United States)*)

Tryptophan metabolism by the kynurenine pathway is increasingly linked to aging and age-associated disease. Kynurenine pathway enzymes and metabolites influence a range of molecular processes critical to healthy aging, including regulation of inflammatory and immune responses, cellular redox homeostasis, and energy production. Aberrant kynurenine metabolism is observed during normal aging and has been implicated in a range of age-associated pathologies, including chronic inflammation, atherosclerosis, neurodegeneration, and cancer. We discovered that knockdown of haao-1, a kynurenine pathway gene encoding the enzyme 3-hydroxyanthranilic acid dioxygenase (HAAO), extends lifespan by ~30% and delays age-associated decline in health in Caenorhabditis elegans. This lifespan extension is mediated by increased physiological levels of the HAAO substrate 3-hydroxyanthranilic acid (3HAA). In mice, knocking out Haao, the mammalian ortholog of haao-1, or feeding mice a diet supplemented with 3HAA similarly extends lifespan and improves several metrics of health. The mechanism of action linking 3HAA to aging is complex and partially overlaps with multiple pathways previously implicated in aging. Among these pathways, activation of the Nrf2/SKN-1 oxidative stress response and alterations to iron homeostasis are key players in the benefits 3HAA. This works provides a foundation for detailed examination of the molecular mechanisms underlying the benefits of 3HAA, and how these mechanisms interact with other interventions both within and beyond the kynurenine pathway. In ongoing work, we are exploring the role of 3HAA in modulating the response of C. elegans to environmental stress and bacterial pathogens, the role of kynurenine metabolism in kidney and liver cancer, and the interaction between 3HAA and iron homeostasis. We anticipate that these findings will bolster growing interest in developing pharmacological strategies to target tryptophan metabolism to improve health aging. This work was supported by NIH P30AG038070 and NIH R35GM133588.

P084- MF-300 (15-PGDH INHIBITOR) ACCELERATES RECOVERY OF MUSCLE FORCE IN A MOUSE MODEL OF NERVE INJURY. M. Webster[1], J. Martin[2], B. Fahr[1], R. Khairallah[2] *((1) Epirium Bio - San Diego (United States), (2) Myologica Llc - Baltimore (United States))*

Background: Progressive denervation contributes to muscle weakness in sarcopenia. Mitigating denervation by enhancing reinnervation may be an effective strategy to prevent muscle weakness and offset sarcopenia in humans. Prostaglandin E2 (PGE2) is a lipid signalling molecule with multiple beneficial effects on the motor unit, including improved function of the neuromuscular junction, as well as enhanced muscle quality (i.e. specific force). In preclinical models of aging, PGE2 levels are reduced in skeletal muscle due to increased activity of 15-hydroxyprostaglandin dehydrogenase (15-PGDH), an enzyme that converts PGE2 to an inactive metabolite. 15-PGDH gene expression is elevated in muscle from aged rodents and humans, coincident with the onset of age-induced muscle weakness. Inhibiting 15-PGDH in aged muscle may be a strategy to increase physiologic levels of PGE2 to benefit muscle function in aging. MF-300 is an orally bioavailable small molecule inhibitor of 15-PGDH currently in development for the treatment of sarcopenia. MF-300 stabilizes levels of PGE2 by reversibly occupying the PGE2 binding site of 15-PGDH and blocking the metabolic conversion of PGE2. The current study tested MF-300's effect on neurogenic atrophy and muscle force in a mouse model of nerve crush injury, a model of sarcopenia that causes a significant increase in 15-PGDH gene expression in muscle. **Methods:** C57BL/6J mice (n=11 per group, male, 15-17 weeks old) were used for the sciatic nerve crush injury model. Mice were stratified based on muscle force and body weight into three groups: 1) sham (no nerve crush)-vehicle, 2) nerve crush-vehicle, 3) nerve crush-MF-300 60 mg/kg. Vehicle and MF-300 were administered orally and daily, beginning on the day of surgery and continuing for 35 Days. Nerve evoked isometric plantar flexion was measured in vivo at baseline and then weekly beginning at Day 14 post-injury; Day 35 muscle force data were normalized to muscle mass to assess muscle specific force (force generated by unit of

mass). **Results:** Nerve crush caused significant loss of isometric force at Day 14 post injury versus sham. Both crush-vehicle and crush-MF-300 groups showed early signs of nerve repair with muscle force recovery beginning at Day 21. MF-300 treated animals showed significantly stronger isometric force compared to crush-vehicle at Day 28 ($p<0.0001$) and Day 35 ($p<0.0001$; 27% increase over vehicle and within 60% of sham force at 150 Hz). At the Day 35 study endpoint, gastrocnemius and tibialis anterior muscles of the crushed limb in both groups weighed less than sham-vehicle. MF-300 did not increase muscle mass compared to vehicle, however, normalizing Day 35 force to muscle mass showed that MF-300 increased muscle specific force compared to crush-vehicle ($p<0.0001$). **Conclusion:** MF-300 treatment accelerated muscle force recovery following denervating nerve injury. Enhanced muscle force at Days 28 and 35 post injury suggests an effect of MF-300 on reinnervation. A mechanism for MF-300 acting proximal to the motor endplate is further supported by increased muscle specific force at Day 35, as MF-300 did not increase muscle mass compared to vehicle. MF-300 holds potential as therapeutic strategy for protecting muscle innervation, quality and strength in sarcopenia. **Keywords:** Sarcopenia, muscle quality, muscle strength, muscle specific force. **Disclosures:** MW is an employee of Epirium Bio; JM is an employee of a CRO (Myologica LLC) that provides services to Epirium Bio; BF is an employee of Epirium Bio; RK is Co-Founder of a CRO (Myologica LLC) that provides services to Epirium Bio.

P085- N-BUTYLPHTHALIDE AMELIORATED ISCHEMIA/REPERFUSION-INDUCED SKELETAL MUSCLE INJURY IN MALE MICE VIA ACTIVATING SIRT1/NRF2 SIGNALING PATHWAY. J.W. Li[1], W. Gao[1] *((1) Department Of Geriatrics, Zhongda Hospital, School Of Medicine, Southeast University - Nanjing (China))*

Introduction: N-Butylphthalide (NBP) has been reported to have potential protective effects in ischemic stroke via its antioxidative properties. The present study was aimed to investigate the protective effects of NBP on ischemia/reperfusion (I/R)-induced skeletal muscle injury. **Methods:** Mouse model of I/R-induced skeletal muscle injury and hypoxia/reoxygenation (H/R)-induced C2C12 myotube injury model were constructed to test the protective effects of NBP both in vivo and in vitro. **Results:** Our results showed that I/R resulted in skeletal muscle injury, as evidenced by elevated levels of LDH, CK, ROS, 3-NT, MDA, and 4-HNE as well as decreased activities of SOD, GSH-Px, and decreased expression of Myog and MyoD in gastrocnemius muscle, which was ameliorated by NBP treatment. Mechanistically, NBP treatment increased the expression of Sirt1 and Nrf2 in the injured skeletal muscle. Notably, the protective effects of NBP on I/R-induced skeletal muscle injury was diminished by the treatment of Sirt1 inhibitor. Further studies in hypoxia/reoxygenation (H/R)-induced C2C12 myotubes injury model also showed that NBP activated the Sirt1/Nrf2 pathway. NBP treatment upregulated the expression of myog and MyoD in H/R-stimulated C2C12 myotubes, which was eliminated by silencing of Sirt1. **Conclusion:** Taken together, our results suggest that NBP may alleviated I/R-induced skeletal muscle injury by activating Sirt1/Nrf2 signaling pathway.

P086- KNOCKOUT OF ANGIOTENSIN TYPE 2 RECEPTOR IS LINKED TO INCREASED FRAILTY IN AGED MICE. M. Abadir[1], M. Bene[2], J. Walston[2] *((1) Univeristy Of Maryland - College Park (United States), (2) Johns Hopkins University - Baltimore (United States))*

Frailty, characterized by a decline in strength and endurance, significantly contributes to increased vulnerability and dependence in older adults. The biological mechanisms underlying frailty remain a critical area of research, with the renin-angiotensin system (RAS) playing a potentially pivotal role. This study investigates the impact of angiotensin receptors, particularly the Angiotensin Type 2 (AT2) receptor, on physical performance and frailty indicators in aged mice. We evaluated 24-month-old wild-type (WT) mice treated with Losartan (an AT1 receptor antagonist) compared to age- and sex-matched mice lacking the AT1 or AT2 receptor (AT1KO or AT2KO). Physical performance was assessed through treadmill exhaustion tests, where key metrics such as number of falls (NOF), number of gentle stimuli (NGS), and total time on the belt (TOB) were recorded. Body weight and endurance were also analyzed. Significant differences in body weight were observed between groups (ANOVA, $p=0.03$), with AT2KO mice exhibiting significantly higher body weights compared to WT ($p=0.04$). Importantly, AT2KO mice displayed markedly poorer endurance, as shown by reduced TOB (Kruskal-Wallis, $p=0.03$), with AT2KO mice spending less time on the treadmill than both WT ($p=0.008$) and WT Losartan-treated mice ($p=0.01$). Additionally, AT2KO mice required more external stimuli to continue running, reflecting greater fatigue and frailty ($p=0.003$ compared to WT). These findings highlight potentially important role of AT2 receptors in maintaining physical resilience in aging. The absence of AT2 receptors is associated with increased body weight, and diminished aerobic capacity. Targeting the AT2 receptor pathway could offer new insights into mitigating frailty in aging populations.

LP067- SEX DIFFERENCES IN AGE-RELATED MOBILITY DECLINE: A COMPARISON OF SPOT TESTS AND CONTINUOUS DIGITAL MONITORING IN SWISS MICE. Y. Santin[1], A. Alfonso[2], M. Chiesa[1], S. Guyonnet[2], B. Guiard[2], B. Vellas[2], A. Parini[2] *((1) Centro Cardiologico Monzino - Milan (Italy), (2) IHU HealthAge - Toulouse (France))*

Background: Aging is a key risk factor for declining health and chronic diseases, with reduced mobility being a critical aspect of age-related functional decline. Mobility impairments not only compromise independence but also act as precursors to a greater burden of age-associated diseases. However, the timing and progression of mobility decline during aging remain poorly understood, particularly in relation to potential differences between sexes. **Methods:** To address this gap, we established a large cohort of outbred Swiss mice (1,576

males and females) to longitudinally monitor spontaneous and voluntary physical activities from 6 to 24 months of age. The mice were studied under two conditions: normal aging and diet-induced accelerated aging (high-fat/high-sucrose diet). Locomotion was assessed using an electromagnetic platform beneath the cages for continuous home-cage monitoring. This approach captured daily motor activity patterns from 6 to 24 months of age. Additionally, multiorgan functional phenotyping, including assessments of physical performance, was conducted at 6, 12, 18, and 24 months to identify signs of organ dysfunction. **Results:** Spot tests measuring grip strength, walking speed, and endurance revealed an age-dependent decline in motor activity in both male and female Swiss mice. While these tests provided valuable insights, they failed to capture the full dynamics of motor activity during daily living. Through continuous monitoring using innovative digital technologies, we observed a progressive, age-dependent decline in spontaneous and voluntary motor activities in both sexes. Intriguingly, functional decline began early in life, between 10 and 14 months, which corresponds to approximately 40–50 years in humans. Importantly, the patterns of activity decline strongly differed between sexes. Females exhibited higher overall physical activity levels than males up to 18 months but experienced a sharper decline with age. Consequently, sex-based differences in mobility were no longer evident beyond 18 months. These findings are particularly significant in advancing our understanding of sex-specific trajectories in age-related mobility impairments. **Conclusion:** To our knowledge, this is the first study to continuously monitor real-time spontaneous and voluntary motor activities in male and female mice from 6 to 24 months of age under experimental conditions that support social interaction (four animals per cage). By incorporating digital biomarkers into our research, we provide a more nuanced understanding of age-related mobility decline. This approach not only enhances the precision of assessing functional impairments but also establishes a robust framework for future studies exploring aging and related diseases. **Keywords:** INSPIRE mouse cohort, digital biomarkers, mobility, sex differences. **Disclosures:** The authors declared no competing interests. **Reference:** "Computational and digital analyses in the INSPIRE mouse cohort to define sex-specific functional determinants of biological aging", Science Advances, 2024. DOI: 10.1126/sciadv.adt1670.

BIOMARKERS AND IMAGING

P087- NEURAL CORRELATES OF FRAILTY IN COGNITIVELY HEALTHY ADULTS: A MULTIMODAL IMAGING STUDY.

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Frailty has emerged as prevalent condition in aging. While frailty is assessed through physical and functional criteria, recent studies have explored the link between cognitive decline and frailty, which remains complex and warrants further investigation. Our aims were to compare brain differences between robust and frail older people free from dementia and to explore possible associations between brain characteristics and cognitive performances assessed with neuropsychological tests Using data from the "CAM-Cam" project that recruited community-dwelling population, we identified robust and frail participants based on the Rockwood Frailty index. Magnetic Resonance Imaging is performed to probe the interplay between physical frailty and cognitive health. Main aim is to find difference in cognitive performance using Cattell Culture Fair test and the Tip of the Tongue test. Moreover, to assess voxel-wise group-related differences, the cross-subject general linear model design will be used for "frail" and "robust" groups. Our findings revealed significantly smaller grey matter volume in frail individuals, primarily localized in cerebellar areas (rho=0.19; p= 0.004) and right supramarginal gyrus (rho= 0.16; p= 0.018). Diffusion magnetic resonance imaging scans showed diminished axial diffusivity in frail participants, particularly in the corticospinal tract. Resting-state functional MRI evidenced increased connectivity within Default Mode Network in frail individuals. The associations between cognitive test scores and anatomical and functional brain clusters underscore the complex interconnections between physical and cognitive aspects of frailty. This study brings novel insights into the early neurobiological markers associated with physical frailty in a cognitively healthy population. **Keywords:** Cognition, neuroimaging, default mode network, aging process, frailty. **Disclosures:** Data collection and sharing for this project was provided by the Cambridge Centre for Ageing and Neuroscience (CamCAN). CamCAN funding was provided by the UK Biotechnology and Biological Sciences Research Council (grant number BB/H008217/1), together with support from the UK Medical Research Council and University of Cambridge, UK. **References:** 1. Ahmad NA, Mat Ludin AF, Shahar S, Mohd Noah SA, Mohd Tohit N. Willingness, perceived barriers and motivators in adopting mobile applications for health-related interventions among older adults: a scoping review. BMJ Open. 2022;12(3):e054561. doi:10.1136/bmjopen-2021-054561. 2. Ferrucci L, Fabbri E. Inflammageing: chronic inflammation in ageing, cardiovascular disease, and frailty. Nat Rev Cardiol. 2018;15(9):505-522. doi:10.1038/s41569-018-0064-2. 3. World report on disability. Lancet Lond Engl. 2011;377(9782):1977. doi:10.1016/S0140-6736(11)60844-1. 4. Wang X, Hu J, Wu D. Risk factors for frailty in older adults. Medicine (Baltimore). 2022;101(34):e30169. doi:10.1097/MD.0000000000030169. 5. Proietti M, Cesari M. Frailty: What Is It? Adv Exp Med Biol. 2020;1216:1-7. doi:10.1007/978-3-030-33330-0_1. 6. Fhon JRS, Rodrigues RAP, Santos JLF, et al. Factors associated with frailty in older adults: a longitudinal study. Rev Saúde Pública. 2018;52:74. doi:10.11606/S1518-8787.2018052000497. 7. Palmer K, Vetrano DL, Padua L, et al. Frailty Syndromes in Persons With Cerebrovascular Disease: A Systematic Review and Meta-Analysis. Front Neurol. 2019;10:1255. doi:10.3389/fneur.2019.01255. 8. Wallace LMK, Theou O, Darvesh S, et al.

Neuropathologic burden and the degree of frailty in relation to global cognition and dementia. Neurology. 2020;95(24):e3269-e3279. doi:10.1212/WNL.0000000000010944. 9. Orchard SG, Polekhina G, Ryan J, et al. Combination of gait speed and grip strength to predict cognitive decline and dementia. Alzheimers Dement Diagn Assess Dis Monit. 2022;14(1):e12353. doi:10.1002/dad2.12353. 10. Lauretani F, Maggio M, Ticinesi A, et al. Muscle weakness, cognitive impairment and their interaction on altered balance in elderly outpatients: results from the TRIP observational study. Clin Interv Aging. 2018;13:1437-1443. doi:10.2147/CIA.S165085. 11. Pandya SY, Clem MA, Silva LM, Woon FL. Does mild cognitive impairment always lead to dementia? A review. J Neurol Sci. 2016;369:57-62. doi:10.1016/j.jns.2016.07.055. 12. Jernigan TL, Archibald SL, Berhow MT, Sowell ER, Foster DS, Hesselink JR. Cerebral structure on MRI, Part I: Localization of age-related changes. Biol Psychiatry. 1991;29(1):55-67. doi:10.1016/0006-3223(91)90210-d. 13. Salat DH, Kaye JA, Janowsky JS. Prefrontal Gray and White Matter Volumes in Healthy Aging and Alzheimer Disease. Arch Neurol. 1999;56(3):338-344. doi:10.1001/archneur.56.3.338. 14. Burke SN, Barnes CA. Neural plasticity in the ageing brain. Nat Rev Neurosci. 2006;7(1):30-40. doi:10.1038/nrn1809. 15. Greenwood PM. Functional plasticity in cognitive aging: review and hypothesis. Neuropsychology. 2007;21(6):657-673. doi:10.1037/0894-4105.21.6.657. 16. Jordan N, Gvalda M, Cody R, Galante O, Haywood C, Yates P. Frailty, MRI, and FDG-PET Measures in an Australian Memory Clinic Cohort. Front Med. 2021;7. Accessed February 12, 2024. https://www.frontiersin.org/articles/10.3389/fmed.2020.578243. 17. Shafto MA, Tyler LK, Dixon M, et al. The Cambridge Centre for ageing and neuroscience (Cam-CAN) study protocol: A cross-sectional, lifespan, multidisciplinary examination of healthy cognitive ageing. BMC Neurol. 2014;14. doi:10.1186/s12883-014-0204-1. 18. Taylor JR, Williams N, Cusack R, et al. The Cambridge Centre for Ageing and Neuroscience (Cam-CAN) data repository: Structural and functional MRI, MEG, and cognitive data from a cross-sectional adult lifespan sample. NeuroImage. 2017;144(Pt B):262-269. doi:10.1016/j.neuroimage.2015.09.018. 19. Rockwood K, Mitnitski A. Frailty defined by deficit accumulation and geriatric medicine defined by frailty. Clin Geriatr Med. 2011;27(1):17-26. doi:10.1016/j.cger.2010.08.008. 20. Cambridge Centre for Ageing and Neuroscience (CamCAN) dataset. http://www.mrc-cbu.cam.ac.uk/datasets/camcan/. 21. Cattell RB. Personality and Mood by Questionnaire. Jossey-Bass; 1973:xviii, 532. 22. Lovelace EA, Twohig PT. Healthy older adults' perceptions of their memory functioning and use of mnemonics. Bull Psychon Soc. 1990;28(2):115-118. doi:10.3758/BF03333979. 23. Taconnat L, Clarys D, Vanneste S, Bouazzaoui B, Isingrini M. Aging and strategic retrieval in a cued-recall test: the role of executive functions and fluid intelligence. Brain Cogn. 2007;64(1):1-6. doi:10.1016/j.bandc.2006.09.011. 24. Cattell RB. Abilities: Their Structure, Growth, and Action. Houghton Mifflin; 1971:xxii, 583. 25. Burke PJ. Identity processes and social stress. Am Sociol Rev. 1991;56(6):836-849. doi:10.2307/2096259. 26. Juncos-Rabadán O, Facal D, Rodríguez MS, Pereiro AX. Lexical knowledge and lexical retrieval in ageing: Insights from a tip-of-the-tongue (TOT) study. Lang Cogn Process. 2010;25(10):1301-1334. doi:10.1080/01690961003589484. 27. Smith SM, Jenkinson M, Woolrich MW, et al. Advances in functional and structural MR image analysis and implementation as FSL. NeuroImage. 2004;23 Suppl 1:S208-219. doi:10.1016/j.neuroimage.2004.07.051. 28. Tournier JD, Smith R, Raffelt D, et al. MRtrix3: A fast, flexible and open software framework for medical image processing and visualisation. NeuroImage. 2019;202:116137. doi:10.1016/j.neuroimage.2019.116137. 29. Douaud G, Smith S, Jenkinson M, et al. Anatomically related grey and white matter abnormalities in adolescent-onset schizophrenia. Brain J Neurol. 2007;130(9):2375-2386. doi:10.1093/brain/awm184. 30. Basser PJ, Mattiello J, LeBihan D. MR diffusion tensor spectroscopy and imaging. Biophys J. 1994;66(1):259-267. doi:10.1016/S0006-3495(94)80775-1 31. Smith SM, Jenkinson M, Johansen-Berg H, et al. Tract-based spatial statistics: voxelwise analysis of multi-subject diffusion data. NeuroImage. 2006;31(4):1487-1505. doi:10.1016/j.neuroimage.2006.02.024. 32. Woolrich MW, Ripley BD, Brady M, Smith SM. Temporal Autocorrelation in Univariate Linear Modeling of FMRI Data. NeuroImage. 2001;14(6):1370-1386. doi:10.1006/nimg.2001.0931. 33. Greve DN, Fischl B. Accurate and robust brain image alignment using boundary-based registration. NeuroImage. 2009;48(1):63-72. doi:10.1016/j.neuroimage.2009.06.060. 34. Griffanti L, Salimi-Khorshidi G, Beckmann CF, et al. ICA-based artefact removal and accelerated fMRI acquisition for improved resting state network imaging. NeuroImage. 2014;95:232-247. doi:10.1016/j.neuroimage.2014.03.034. 35. Beckmann CF, DeLuca M, Devlin JT, Smith SM. Investigations into resting-state connectivity using independent component analysis. Philos Trans R Soc Lond B Biol Sci. 2005;360(1457):1001-1013. doi:10.1098/rstb.2005.1634. 36. Filippini N, MacIntosh BJ, Hough MG, et al. Distinct patterns of brain activity in young carriers of the APOE-epsilon4 allele. Proc Natl Acad Sci U S A. 2009;106(17):7209-7214. doi:10.1073/pnas.0811879106. 37. Nichols TE, Holmes AP. Nonparametric permutation tests for functional neuroimaging: a primer with examples. Hum Brain Mapp. 2002;15(1):1-25. doi:10.1002/hbm.1058. 38. Smith SM, Nichols TE. Threshold-free cluster enhancement: addressing problems of smoothing, threshold dependence and localisation in cluster inference. NeuroImage. 2009;44(1):83-98. doi:10.1016/j.neuroimage.2008.03.061. 39. Raichle ME, MacLeod AM, Snyder AZ, Powers WJ, Gusnard DA, Shulman GL. A default mode of brain function. Proc Natl Acad Sci. 2001;98(2):676-682. doi:10.1073/pnas.98.2.676. 40. Robertson DA, Savva GM, Coen RF, Kenny R. Cognitive Function in the Prefrailty and Frailty Syndrome. J Am Geriatr Soc. 2014;62(11):2118-2124. doi:10.1111/jgs.13111. 41. Lorenzo-López L, Blanco-Fandiño J, Cibeira N, et al. Clinical and Neuropsychological Correlates of Prefrailty Syndrome. Front Med. 2020;7:609359. doi:10.3389/fmed.2020.609359. 42. Nelson ME, Jester DJ, Petkus AJ, Andel R. Cognitive Reserve, Alzheimer's Neuropathology, and Risk of Dementia: A

Systematic Review and Meta-Analysis. Neuropsychol Rev. 2021;31(2):233-250. doi:10.1007/s11065-021-09478-4. 43. Zheng L, Li G, Gao D, et al. Cognitive frailty as a predictor of dementia among older adults: A systematic review and meta-analysis. Arch Gerontol Geriatr. 2020;87:103997. doi:10.1016/j.archger.2019.103997. 44. Zijlmans JL, Lamballais S, Lahousse L, et al. The interaction of cognitive and brain reserve with frailty in the association with mortality: an observational cohort study. Lancet Healthy Longev. 2021;2(4):e194-e201. doi:10.1016/S2666-7568(21)00028-3. 45. Pinto TCC, Machado L, Bulgacov TM, et al. Is the Montreal Cognitive Assessment (MoCA) screening superior to the Mini-Mental State Examination (MMSE) in the detection of mild cognitive impairment (MCI) and Alzheimer's Disease (AD) in the elderly? Int Psychogeriatr. 2019;31(4):491-504. doi:10.1017/S1041610218001370. 46. Trzepacz PT, Hochstetler H, Wang S, Walker B, Saykin AJ, Alzheimer's Disease Neuroimaging Initiative. Relationship between the Montreal Cognitive Assessment and Mini-mental State Examination for assessment of mild cognitive impairment in older adults. BMC Geriatr. 2015;15:107. doi:10.1186/s12877-015-0103-3. 47. Bray NW, Pieruccini-Faria F, Witt ST, et al. Frailty and functional brain connectivity (FBC) in older adults with mild cognitive impairment (MCI): baseline results from the SYNERGIC Trial. GeroScience. 2023;45(2):1033-1048. doi:10.1007/s11357-022-00702-4. 48. Gutiérrez-Zúñiga R, Davis JRC, Ruddy K, et al. Structural brain signatures of frailty, defined as accumulation of self-reported health deficits in older adults. Front Aging Neurosci. 2023;15:1065191. doi:10.3389/fnagi.2023.1065191. 49. Fabrício D de M, Chagas MHN, Diniz BS. Frailty and cognitive decline. Transl Res. 2020;221:58-64. doi:10.1016/j.trsl.2020.01.002. 50. Robertson DA, Savva GM, Kenny RA. Frailty and cognitive impairment--a review of the evidence and causal mechanisms. Ageing Res Rev. 2013;12(4):840-851. doi:10.1016/j.arr.2013.06.004. 51. Jiang R, Noble S, Sui J, et al. Associations of physical frailty with health outcomes and brain structure in 483 033 middle-aged and older adults: a population-based study from the UK Biobank. Lancet Digit Health. 2023;5(6):e350-e359. doi:10.1016/S2589-7500(23)00043-2. 52. Suárez-Méndez I, Doval S, Walter S, et al. Functional Connectivity Disruption in Frail Older Adults Without Global Cognitive Deficits. Front Med. 2020;7:322. doi:10.3389/fmed.2020.00322. 53. Chen W, Chou K, Liu L, et al. Reduced cerebellar gray matter is a neural signature of physical frailty. Hum Brain Mapp. 2015;36(9):3666-3676. doi:10.1002/hbm.22870. 54. E KH, Chen SHA, Ho MHR, Desmond JE. A meta-analysis of cerebellar contributions to higher cognition from PET and fMRI studies. Hum Brain Mapp. 2014;35(2):593-615. doi:10.1002/hbm.22194. 55. Stoodley CJ, Schmahmann JD. Functional topography in the human cerebellum: a meta-analysis of neuroimaging studies. NeuroImage. 2009;44(2):489-501. doi:10.1016/j.neuroimage.2008.08.039. 56. Van Overwalle F, Manto M, Cattaneo Z, et al. Consensus Paper: Cerebellum and Social Cognition. Cerebellum Lond Engl. 2020;19(6):833-868. doi:10.1007/s12311-020-01155-1. 57. Rakesh D, Fernando KB, Mansour L S. Functional dedifferentiation of the brain during healthy aging. J Neurophysiol. 2020;123(4):1279-1282. doi:10.1152/jn.00039.2020.

P088- IDENTIFICATION OF METABOLITES ASSOCIATED WITH THE DEVELOPMENT OF SARCOPENIA IN OLDER WOMEN: A LONGITUDINAL NESTED CASE-CONTROL STUDY.

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Background & Aims: Omics multidimensional analysis has been increasingly used in recent years to understand the complex pathophysiology of sarcopenia [1]. Metabolomics, which involves the quantitative assessment of small-molecule metabolites, is a powerful tool for investigating the intricate origins of diseases [2]. However, the potential of metabolomics for identifying predictive markers preceding a sarcopenia diagnosis remains unclear. This study conducted a metabolomic analysis comparing older women who developed sarcopenia over a 5-year period with those who did not, aiming to identify serum metabolites associated with the development of sarcopenia. Furthermore, we examined the relationship between sarcopenia-associated metabolites and skeletal muscle mass and function, specifically muscle strength and walking speed. **Methods:** This longitudinal nested case-control study utilized data collected from an independent cohort as part of baseline surveys in 2017 and follow-up surveys in 2022 in Itabashi Ward, Tokyo, Japan. Exclusion criteria were established based on previous research, and participants meeting these criteria were excluded [3]. The two groups were matched on a 1:1 basis. We performed a comprehensive analysis of approximately 500 primary metabolites in serum samples collected in 2017, utilizing gas chromatography-mass spectrometry (GC-MS). Metabolite levels were treated as exposures, while low muscle mass, low muscle strength, and low walking speed—based on the Asian Working Group for Sarcopenia 2019 criteria—were treated as outcomes. Statistical analyses were conducted using R version 4.2.2 (R Foundation for Statistical Computing, Vienna, Austria). Statistical significance was set at $p < 0.05$. **Results:** A total of 425 older adults participated consistently in both the baseline survey conducted in 2017 and the follow-up survey conducted in 2022. Of these, 121 were excluded based on the exclusion criteria, leaving 304 study participants. The final analysis included 42 individuals who had no sarcopenia at the 2017 survey but were diagnosed with sarcopenia at the 2022 survey, as well as 42 matched controls who remained free of sarcopenia in both surveys. Five participants (2 from the sarcopenia group and 3 from the control group) had missing metabolite data. These five participants and their matched pairs were excluded, resulting in a final sample size of 74 participants. GC-MS analysis revealed significant associations between 2-aminoadipic acid, alanine, and leucine and the development of sarcopenia. Further binomial logistic regression analysis indicated that baseline

levels of 2-aminoadipic acid were significantly associated with an increased risk of reduced grip strength after 5 years. Specifically, a halving of 2-aminoadipic acid concentration increased this risk by 1.6 times. In contrast, no significant associations were observed between alanine or leucine and skeletal muscle index, grip strength, or gait speed. **Conclusion:** The findings suggest that measuring 2-aminoadipic acid, alanine, and leucine levels may provide new insights into the pathophysiology of sarcopenia. These metabolites could enhance early detection and prevention strategies for sarcopenia. **Keywords:** Preventive medicine, serum metabolite, amino acid metabolism;, autophagy. **Disclosures:** This work was supported by an internal operational grant from Tokyo Metropolitan Institute for Geriatrics and Gerontology. The Shimadzu Corporation performed metabolomic analysis free of charge. The authors have no other competing interests to declare regarding the content of this article. **References:** 1. Liu J C, Dong S S, Shen H, et al. Multi-omics research in sarcopenia: Current progress and future prospects. Ageing Res Rev 2022; 76: 101576. 2. Rivero-Segura N A, Bello-Chavolla O Y, Barrera-Vázquez O S, et al. Promising biomarkers of human aging: In search of a multi-omics panel to understand the aging process from a multidimensional perspective. Ageing Res Rev 2020; 64: 101164. 3. Cruz-Jentoft A J, Sayer A A. Sarcopenia. Lancet 2019; 393: 2636–2646.

P089- BIOMARKERS OF FRAILTY IN PATIENTS WITH CIRRHOSIS UNDERGOING A MULTIFACTORIAL INTERVENTION CONSISTING OF HOME EXERCISE, BRANCHED-CHAIN AMINO ACIDS AND A MULTISTRAIN PROBIOTIC. E. Roman[1], L. Laghi[2], M.A. Ortiz[3], G. Rossi[4], C. Mengucci[2], E. Cantó[3], L. Bigiani[4], E. Sanchez[3], M. Mulet[3], A. Garcia-Osuna[5], E. Urgell[5], N. Kaur[1], G. Soriano[1] *((1) Department Of Gastroenterology, Hospital De La Santa Creu I Sant Pau, Ciberehd, Instituto De Salud Carlos University Nursing School Eui-Sant Pau, Barcelona (Spain), (2) Department Of Agricultural And Food Sciences, university Of Bologna, - Cesena (Italy), (3) Institut De Recerca Sant Pau, Barcelona (Spain), (4) School Of Veterinary Medical Sciences, University Of Camerino - Camerino (Italy), (5) Department Of Biochemistry Hospital Ssanta Creu I Sant Pau - Barcelona (Spain))*

Background: In patients with cirrhosis and independently of the degree of liver failure, frailty has shown to be a prognostic factor for mortality, higher healthcare needs and poorer health-related quality of life. In the present study we aimed to analyze potential biomarkers associated with frailty and its improvement after a multifactorial intervention in patients with cirrhosis. **Patients and methods:** We analyzed the serum and urine samples of outpatients with cirrhosis who participated in a previous study [1] in which frailty was assessed using the Liver Frailty Index (LFI). The LFI includes handgrip strength, timed chair stands and balance, and classifies patients with a score >4.4 as frail, patients with a score 4.4-3.2 as pre-frail, and those with a score <3.2 as robust. Frail and prefrail patients were randomized to either the multifactorial intervention including home-exercise (3 sessions/week of 20-30 minutes, progressively increasing according to the degree of tolerance to 40-60 minutes), branched-chain amino acids (leucine, isoleucine and valine at a ratio 8:1:1, 10 g 30 minutes before each exercise session) and a multistrain probiotic (Vivomixx®, Mendes SA, Lugano, Switzerland, one sachet of 450x109 bacteria every 12 hours), or control for 12 months. We determined a biomarker battery of inflammation, bacterial translocation and liver damage in blood and urine, and blood metabolomics by 1H-NMR. Body composition was assessed by bioelectrical impedance analysis (BIA). **Results:** Thirty-seven patients were included. According to the LFI, 32 patients were frail or prefrail and 5 robust. At baseline, LFI correlated with age (r=0.40, p=0.01), muscular mass (r=-0.49, p=0.003), phase angle (r=-0.58, p<0.001), lipopolysaccharide binding protein (LBP) (r=0.43, p=0.01), soluble CD163 (sCD163) (r=0.56, p<0.001), mitochondrial DNA (mtDNA) (r=-0.46, p=0.008), fibroblast growth factor 21 (FGF-21) (r=0.38, p=0.03), urinary neutrophil gelatinase-associated lipocalin (uNGAL) (r=0.40, p=0.048), urinary claudin-3 (r=0.53, p=0.008), and the metabolites mannose (r=-0.52, p=0.02), ethanol (r=0.37, p=0.03) and isoleucine (r=-0.48, p=0.005). We did not find a correlation between the LFI and the degree of liver failure evaluated by the Child-Pugh and MELD scores. During the study, patients in the intervention group showed an improvement in LFI (p=0.02) and a decrease in c-reactive protein (CRP) (p=0.03), LBP (p=0.02), sCD163 (p=0.01) and caspase-cleaved keratin 18 (ccK18) (p=0.005) compared to the control group. Metabolomics showed a decrease in dimethyl sulfone (p=0.008) and creatinine (p=0.001), and an increase in malonate (p=0.03), ornithine (p=0.03), isoleucine (p=0.01) and valine (p<0.001). **Conclusion:** We conclude that frailty in patients with cirrhosis is associated with parameters of body composition, biomarkers of systemic inflammation, bacterial translocation, liver damage and oxidative stress, and alterations of amino acid and short-chain fatty acid metabolism.

P090- IDENTIFICATION AND VALIDATION OF MASAP AS A UNIVERSAL BLOOD BIOMARKER FOR SARCOPENIA. Y. Jo[1], S.H. Lee[2], B.J. Kim[3], D. Ryu[1] *((1) Department Of Biomedical Science And Engineering, Gwangju Institute Of Science And Technology (gist) - Gwangju (Korea, Republic of), (2) Department Of Orthopedic Surgery, Wonkwang University Hospital - Iksan (Korea, Republic of), (3) Division Of Endocrinology And Metabolism, Department Of Internal Medicine, Asan Medical Center, University Of Ulsan College Of Medicine - Seoul (Korea, Republic of))*

Sarcopenia, characterized by the age-associated loss of muscle mass and function, is a critical predictor of disability, diminished quality of life, and increased mortality in the elderly. The diagnosis of sarcopenia remains challenging due to the dependence on specialized and costly imaging techniques. In this study, we introduce muscle aging and sarcopenia-associated protein (MASAP) as a universal blood biomarker for sarcopenia, identified through advanced machine learning analysis and extensive clinical validation. Employing two-

sample Mendelian randomization analysis, we demonstrated a causal relationship between MASAP expression and sarcopenia, thereby reinforcing the biomarker's validity. Further validation was conducted in clinical cohorts in South Korea, along with functional assays in murine and nematode models, providing comprehensive insights into MASAP's role in muscle aging. Our findings indicate that MASAP serves not only as a reliable marker of sarcopenia across diverse populations but also offers a mechanistic understanding of muscle degeneration. This positions MASAP as a cost-effective and accessible diagnostic tool for global healthcare systems. **Keywords:** Aging, sarcopenia, biomarker, machine learning, XGBoost. **Abbreviation:** MASAP: Muscle Aging and Sarcopenia-Associated Protein.

P091- RESPIRATORY SARCOPENIA: A LITERATURE REVIEW OF PROPOSED DIAGNOSTIC MEASUREMENTS. M. Butler[1], M. O'malley[1], K. Arribart[1], G. Cipriano[2], G. Cipriano[2], L. Cahalin[1] *((1) University Of Miami - Coral Gables (United States), (2) University Of Brasilia - Brasilia (Brazil))*

Background: Sarcopenia is a musculoskeletal condition characterised by diminished skeletal muscle mass and muscle strength which leads to reduced functional performance. Changes in skeletal muscle mass and strength, however, do not occur uniformly throughout the body. Increased focus has recently been placed on the effects of sarcopenia in the respiratory system, defined as respiratory sarcopenia. The resulting decline in respiratory performance can cause moderate to severe dyspnea, reduced exercise tolerance, decreased functional performance and an increased risk of lung disease, dementia and mortality. Despite clear evidence of respiratory weakness in frail and sarcopenic populations, a precise definition of respiratory sarcopenia and its diagnostic measurements has not yet been agreed upon. The purpose of this literature review was to identify proposed diagnostic measurements of respiratory sarcopenia. **Methods:** We conducted a literature review for articles related to diagnostic measures of respiratory sarcopenia using CINAHL, Medline (Pubmed), Embase, Web of Science and Cochrane Library from inception to December of 2024. From the search, 11,732 articles were identified of which 16 reported on values for either respiratory muscle strength [maximal inspiratory pressure (MIP), maximal expiratory pressure (MEP)], pulmonary function [peak expiratory flow rate (PEFR)], or respiratory muscle mass [diaphragm thickness (DT) and diaphragm excursion (DE)]. **Results:** A total of 1,482 subjects diagnosed with sarcopenia based on either the European Working Group on Sarcopenia in Older People (EWGSOP) or the Asian Working Group on Sarcopenia (AWGS) definition of sarcopenia with a mean±SD age of 73.74±3.55 years were included in the review. Respiratory muscle strength measures were the most frequently reported including MIP (12 studies) with a mean±SD of 50.25±11.53 cmH2O and a cut-off of 58.83±10.13 cmH2O and MEP (8 studies) with a mean±SD of 70.06±26.36 cmH2O and a cut-off of 69.71±27.74 cmH2O. Pulmonary function was reported in 5 studies using PEFR with a mean±SD of 4.49±0.70 l/s and a cut-off of 4.60±1.72 l/s. Measures of respiratory muscle mass included DT (4 studies) with a mean±SD of 1.34±1.05 cm and no recommended cut-off and DE (1 study) with a mean±SD of 4.36 cm and a recommended cut-off of 5.27 cm. **Conclusion:** The current review provides information regarding mean values and recommended cut-off points for respiratory muscle strength, pulmonary function and respiratory muscle mass used in the assessment of respiratory sarcopenia. The findings from this study will help researchers and medical practitioners to better diagnosis respiratory sarcopenia and track progress for proposed treatment interventions. Several limitations were identified in the current literature, including the utilization of PEFR, a measure of airway resistance, for the diagnosis of a sarcopenic condition. There was also limited available data found on respiratory muscle mass in sarcopenic populations. Future research should aim to better define respiratory muscle mass cut-off values and utilize these values as part of the inclusion criteria for subsequent studies on respiratory sarcopenia.

P093- APPLICATION OF RADIOMIC FEATURES OF LIVER, ADIPOSE TISSUE, AND MUSCLE BASED ON PET IMAGING IN PREDICTING CANCER-ASSOCIATED CACHEXIA RISK. Y. Jiang[1], X.G. Peng[1] *((1) Southeast University - Nanjing (China))*

Background: Cachexia significantly impacts prognosis, treatment efficacy, and quality of life in cancer patients, particularly during advanced disease stages, where it exhibits high mortality rates and is challenging to reverse [1, 2. Early identification of cachexia is therefore critical for effective intervention. This study aims to develop and test a predictive model utilizing positron emission tomography (PET) radiomic features. By analyzing the radiomic characteristics of the liver, adipose tissue, and muscle tissue in PET images of cancer patients, we seek to predict the risk of cachexia in patients undergoing 18F-fluoro-2-deoxy-D-glucose ([18F]FDG) PET/computed tomography (CT) scans. The objective is to offer new perspectives and methodologies for the early diagnosis and intervention of cachexia. **Methods:** This retrospective study included 626 cancer patients who underwent [18F]FDG PET/CT scans at two medical centers between April 2017 and October 2021. The patients were randomly divided into a training set (438 cases, cachexia/non-cachexia = 266/172) and a testing set (188 cases, cachexia/non-cachexia = 114/74) in a 7:3 ratio, ensuring good consistency of baseline data between the two cohorts. Radiomic features from PET images of the liver, visceral fat, subcutaneous fat, psoas muscle, and sacrospinal muscle were extracted using FeAture Explorer Professional Edition (FAE, version 0.5.3), and a radiomic model was constructed. Feature selection was performed using Pearson correlation analysis, recursive feature elimination, and least absolute shrinkage and selection operator (LASSO) algorithms. Clinical variables independently associated with cancer-associated cachexia were identified through

univariable and multivariable logistic regression analyses to build a clinical model. These clinical variables were then integrated with radiomic features to form a combined clinical-radiomic model. The predictive performance of the models was evaluated using receiver operating characteristic (ROC) curves and their respective areas under the curve (AUC). The predictive performance of the clinical model, radiomic model, and clinical-radiomic model was compared using the DeLong test. **Results:** The radiomic model ultimately incorporated 13 features: 4 from the liver, 4 from visceral fat, 3 from subcutaneous fat, 1 from the psoas muscle, and 1 from the sacrospinal muscle. In the training dataset, the clinical-radiomic model achieved an AUC of 0.787 (95% confidence interval [CI]: 0.745–0.824), significantly outperforming the clinical model (AUC = 0.728 [95% CI: 0.683–0.769], P < 0.001). However, the radiomic model (AUC = 0.765 [95% CI: 0.722–0.804]) did not show a significant difference compared to the clinical model (AUC = 0.728 [95% CI: 0.683–0.769], P = 0.173) or the clinical-radiomic combined model (AUC = 0.787 [95% CI: 0.745–0.824], P = 0.053). In the testing dataset, the AUC of the clinical-radiomic model was significantly higher than that of the radiomic model (0.801 vs. 0.758, P = 0.019). However, no significant differences were observed between the clinical model (AUC = 0.770, 95% CI: 0.703–0.828), the radiomic model (AUC = 0.758, 95% CI: 0.691–0.818, P = 0.774), and the clinical-radiomic model (AUC = 0.801, 95% CI: 0.737–0.856, P = 0.241). **Conclusion:** Radiomic features extracted from [18F]FDG PET images of the liver, visceral fat, subcutaneous fat, psoas muscle, and sacrospinal muscle can effectively predict the risk of cachexia in cancer patients. The radiomic model demonstrated excellent predictive capability and can aid in the early identification of cachexia. When combined with clinical indicators, the predictive performance can be further enhanced, guiding personalized treatment for cancer patients. Future studies should explore additional imaging features and conduct large-scale validation to improve predictive accuracy and clinical applicability. **Keywords:** Radiomic, PET, cachexia, liver, adipose tissue. **Disclosures:** The authors declared no competing interests. **References:** 1. Baracos VE, Martin L, Korc M, Guttridge DC, Fearon KCH. Cancer-associated cachexia. Nat Rev Dis Primers 2018;4:17105. (In eng). DOI: 10.1038/nrdp.2017.105. 2. Ferrer M, Anthony TG, Ayres JS, et al. Cachexia: A systemic consequence of progressive, unresolved disease. Cell 2023;186(9):1824-1845. DOI: 10.1016/j.cell.2023.03.028.

P094- THE IMPORTANCE OF DIGITAL HEALTH TECHNOLOGY–DERIVED PHYSICAL ACTIVITY TO ADULT PATIENTS WITH CANCER AND CACHEXIA.

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((1) Pfizer - Groton (United States), (2) Cancer Support Community - Washington Dc (United States), (3) Oracle Life Sciences - Austin (United States), (4) Pfizer - New York (United States), (5) Pfizer - Cambridge (United States), (6) Tigerlily Foundation - Washington DC (United States))

Background: In a recent Phase 2 clinical trial, patients with cancer and cachexia had increased digital health technology (DHT)-derived physical activity following 12 weeks of ponsegromab (400 mg) as compared to placebo (increase in nonsedentary physical activity: 71.7 min/day modeled mean difference from placebo) [1]. DHTs enable quantitative measures of physical activity, but the question arises as to whether these activities are truly important to patients with cancer and cachexia. Therefore, this study aimed to determine if the activities that can be measured with DHTs are important to patients with cancer and cachexia. **Methods:** A cross-sectional online survey was conducted among US adults (≥18 years) with cancer and cachexia. Participants' ratings of the importance of 13 specific physical activities were elicited on 5-point rating scales. Subgroups (tumor type, cancer stage, ECOG performance status) were compared using chi-square tests or Fisher's exact tests. **Results:** In total, 181 patients with cancer and cachexia participated [tumor types: breast n=69, colorectal n=30, non-small cell lung n=20, pancreatic n=15, other solid tumors n=47; stage: I-III n=123, IV n=52; higher performance status (ECOG 1-2) n=147, lower (ECOG 3-4) n=34; don't recall/not sure n=6]. All physical activities were perceived by a majority of patients as being at least moderately important (range: 57.5%-95.0%). Less strenuous physical activities (e.g., doing housework, 89.5%) were more important to patients than more strenuous physical activities (e.g., doing yardwork, 63.5%). Generally, importance of physical activities were similar across subgroups. The importance of some of the physical activities differed significantly by tumor type, cancer stage, and performance status (p<0.05). Exercising/working out in a structured setting/going to the gym was at least moderately important to more patients with pancreatic cancer (100.0%) than those with colorectal (63.3%), breast (55.1%), or non-small cell lung (40.0%) cancer (p=0.002). Relative to stage IV, more stage I-III patients rated doing housework as at least moderately important (92.7% vs 80.8%, p=0.031). Cooking (89.1% vs 73.5%, p=0.026) and doing errands (95.2% vs 79.4%, p=0.049) were at least moderately important to a larger proportion of patients with higher performance status than lower performance status. **Conclusion:** Overall, patients with cancer and cachexia perceived physical activities that can be measured using DHTs, especially less strenuous physical activities, as being at least moderately important. These findings support the use and value of using DHTs in

assessing physical activities and emphasize that these activities are important to patients. **Keywords:** Physical activity, cancer cachexia, digital health technologies, biomarker. **Disclosures:** CN, JC, MS, IK, JCC and BH are employees of Pfizer and have stock. AN, MG, CS, and EF are employees of Cancer Support Community and have a grant/contract from Pfizer. EF has grants/contracts from Astellas, Bristol Myers Squibb, Genentech, Gilead Sciences GSK, Novocure, Sanofi, Seagen and Servier US. SH, LK, MCM, KB are employees of Oracle and have a grant/contract from Pfizer. EAJ has grants/contracts from AstraZeneca, Beigene, Genentech, Gilead, Jazz, Eli Lily, Merck, Novartis, Pfizer, Roche and Seagen. **References:** 1. Groarke JD, Crawford J, Collins SM, et al. Ponsegromab for the Treatment of Cancer Cachexia. N Engl J Med. 2024;10.1056/NEJMoa2409515.

P095- PREDICTION OF CACHEXIA IN LYMPHOMA PATIENTS USING PET RADIOMIC FEATURES. Y. Jiang[1], X.G. Peng[1] *((1) Southeast University - Nanjing (China))*

Background: Approximately half of lymphoma patients may develop cachexia, which significantly reduces life expectancy, diminishes quality of life, and impairs treatment efficacy [1-3]. Early prediction of high-risk cachexia in lymphoma patients can provide a theoretical basis for clinical intervention and is expected to significantly improve patient outcomes. This study aims to identify high-risk cachexia patients among lymphoma patients undergoing [18F]fluoro-2-deoxy-D-glucose ([18F]FDG) positron emission tomography (PET)/computed tomography (CT) examinations by utilizing PET radiomic features. **Methods:** This retrospective study included lymphoma patients who underwent PET/CT examinations between October 2017 and October 2021 at two hospitals. Demographic data and laboratory test results were collected, and weight changes within six months before and after PET/CT scans were recorded. Weight changes were used to ensure that the included cases had no significant weight loss (did not meet the criteria for cachexia diagnosis) within six months before the PET/CT scan and to determine whether cachexia occurred within six months after the PET/CT scan. Radiomic features of the liver, visceral fat, subcutaneous fat, psoas muscle, and sacrospinal muscle were extracted using FeAture Explorer Pro software (FAE, version 0.5.3). During the radiomics feature selection and model construction process, Pearson correlation analysis, analysis of variance, and least absolute shrinkage and selection operator (LASSO) algorithm were used. Logistic regression analysis was applied to identify variables significantly associated with cachexia status in lymphoma patients, leading to the construction of clinical and clinical-radiomics models. The predictive performance of each model was evaluated using receiver operating characteristic (ROC) curves and the area under the curve (AUC), with DeLong's test employed to compare the AUC values between different models. **Results:** A total of 150 lymphoma patients were included, with 105 patients (cachexia: 61, non-cachexia: 44) in the training cohort and 45 patients (cachexia: 26, non-cachexia: 19) in the test cohort. The clinical prediction model included treatment modality and body mass index (BMI); the radiomics model incorporated five radiomic features, with three from visceral fat, one from the liver, and one from subcutaneous fat. The clinical-radiomics model included both the aforementioned clinical and radiomic features. In the training cohort, the AUC value of the clinical-radiomics model (0.852, 95% CI: 0.770–0.914) was significantly higher than that of the clinical model (0.774, 95% CI: 0.682–0.850, P = 0.032). There was no statistically significant difference in the AUC values between the radiomics model (0.836, 95% CI: 0.751–0.901) and either the clinical model (P = 0.229) or the clinical-radiomics model (P = 0.371). In the test cohort, there were no statistically significant differences in the AUC values between the clinical model (0.836, 95% CI: 0.696–0.929), the radiomics model (0.818, 95% CI: 0.674–0.917), and the clinical-radiomics model (0.852, 95% CI: 0.715–0.940) (all P > 0.05). **Conclusion:** Radiomic features extracted from PET images of the liver, visceral fat, and subcutaneous fat can aid in identifying lymphoma patients at higher risk of developing cachexia. PET radiomics holds significant potential in predicting cachexia in lymphoma patients, providing a basis for clinical treatment decisions, and potentially advancing the treatment timeline for patients, thereby improving their overall prognosis. **Keywords:** Lymphoma, PET, cachexia, radiomics, liver, adipose tissue, muscle tissue. **Disclosures:** The authors declared no competing interests. **References**: 1. Baracos VE, Martin L, Korc M, Guttridge DC, Fearon KCH. Cancer-associated cachexia. Nat Rev Dis Primers 2018;4:17105. (In eng). DOI: 10.1038/nrdp.2017.105. 2. von Haehling S, Anker MS, Anker SD. Prevalence and clinical impact of cachexia in chronic illness in Europe, USA, and Japan: facts and numbers update 2016. J Cachexia Sarcopenia Muscle 2016;7(5):507-509. (In eng). DOI: 10.1002/jcsm.12167. 3. Mendes MC, Pimentel GD, Costa FO, Carvalheira JB. Molecular and neuroendocrine mechanisms of cancer cachexia. J Endocrinol 2015;226(3):R29-43. (In eng). DOI: 10.1530/joe-15-0170.

P096- ASSOCIATION BETWEEN SEX-SPECIFIC HAND GRIP STRENGTH AND PLASMA HBA1C LEVELS AMONG OLDER ADULTS: A CROSS-SECTIONAL STUDY. U. Ganbat[1], B. Feldman[1], S. Arishenkoff[1], G. Meneilly[1], K. Madden[1] *((1) UBC - Vancouver (Canada))*

Background: Skeletal muscle accounts for approximately 80% of post-prandial glucose uptake. Individuals with diabetes are at more than double the risk of developing sarcopenia than non-sarcopenic adults. Muscle strength, commonly measured by hand grip strength (HGS), is a key criterion in diagnosing sarcopenia. Previous research has linked low HGS to an elevated risk of diabetes, though none of them utilized HbA1c as a marker for diabetes risk. We hypothesized that plasma HbA1c would negatively correlate with HGS. **Methods:** Study participants were referred from outpatient geriatric clinics. HGS was assessed using a grip strength dynamometer, with the mean of three measurements recorded for analysis. Fasting plasma HbA1c levels were measured in a local laboratory. HGS

was classified into "low" or "normal" based on sex-specific cutoffs by the European Working Group on Sarcopenia for Older People 2 (EWGSOP2) recommendation. HbA1c levels were categorized as normal (£5.6%), prediabetes (5.7-6.4%), and diabetes (³6.5%). **Results:** A total of 116 participants (75 females, 41 males) were included in the study. Among females, the mean HGS in the low grip strength group was 14.52 kg (n=5) compared to 26.95 kg in the normal group (n=70), a statistically significant difference (p<0.001). Among males, the mean HGS in the low grip strength group was 23.05 kg (n=6) compared to 41.44 kg (n=35) in the normal group, also statistically significant (p<0.001). The correlation coefficient between mean HGS and HbA1c was -0.23, indicating a weak negative correlation. Multivariate regression analysis revealed that mean HGS (p<0.005) and male sex (p<0.027) were significantly associated with HbA1c levels, while age was not (p<0.348). **Conclusion:** Our findings suggest that mean HGS is negatively associated with plasma HbA1c levels. This underscores the importance of muscle strength assessment in identifying older adults at risk for diabetes. **Keywords:** HbA1c, hand grip strength, diabetes, sarcopenia, muscle strength. **Disclosures:** The Innovation and Translational Research Award, Vancouver Coastal Health Research Institute funded the study. The authors declare no conflict of interest. **References:** Izzo A, Massimino E, Riccardi G, Della Pepa G. A Narrative Review on Sarcopenia in Type 2 Diabetes Mellitus: Prevalence and Associated Factors. Nutrients. 2021 Jan 9;13(1):183. doi: 10.3390/nu13010183. PMID: 33435310; PMCID: PMC7826709. Merz KE, Thurmond DC. Role of Skeletal Muscle in Insulin Resistance and Glucose Uptake. Compr Physiol. 2020 Jul 8;10(3):785-809. doi: 10.1002/cphy.c190029. PMID: 32940941; PMCID: PMC8074531. Evans PL, McMillin SL, Weyrauch LA, Witczak CA. Regulation of Skeletal Muscle Glucose Transport and Glucose Metabolism by Exercise Training. Nutrients. 2019 Oct 12;11(10):2432. doi: 10.3390/nu11102432. PMID: 31614762; PMCID: PMC6835691. Boonpor J, Parra-Soto S, Petermann-Rocha F, Ferrari G, Welsh P, Pell JP, Sattar N, Gill JMR, Ho FK, Gray SR, Celis-Morales C. Associations between grip strength and incident type 2 diabetes: findings from the UK Biobank prospective cohort study. BMJ Open Diabetes Res Care. 2021 Aug;9(1):e001865. doi: 10.1136/bmjdrc-2020-001865. PMID: 34353878; PMCID: PMC8344322. Jeon YJ, Lee SK, Shin C. Normalized Hand Grip and Back Muscle Strength as Risk Factors for Incident Type 2 Diabetes Mellitus: 16 Years of Follow-Up in a Population-Based Cohort Study. Diabetes Metab Syndr Obes. 2021 Feb 17;14:741-750. doi: 10.2147/DMSO.S283853. PMID: 33628039; PMCID: PMC7898053. Lee MJ, Khang AR, Yi D, Kang YH. Low relative hand grip strength is associated with a higher risk for diabetes and impaired fasting glucose among the Korean population. PLoS One. 2022 Oct 6;17(10):e0275746. doi: 10.1371/journal.pone.0275746. PMID: 36201556; PMCID: PMC9536551. Liang X, Jiang CQ, Zhang WS, Zhu F, Jin YL, Cheng KK, Lam TH, Xu L. Glycaemia and hand grip strength in aging people: Guangzhou biobank cohort study. BMC Geriatr. 2020 Oct 12;20(1):399. doi: 10.1186/s12877-020-01808-0. PMID: 33046005; PMCID: PMC7552450. Åström MJ, von Bonsdorff MB, Salonen MK, Kajantie E, Osmond C, Eriksson JG. Glucose regulation and grip strength in adults: Findings from the Helsinki Birth Cohort Study. Arch Gerontol Geriatr. 2021 May-Jun;94:104348. doi: 10.1016/j.archger.2021.104348. Epub 2021 Jan 21. PMID: 33516079. Cruz-Jentoft AJ, Bahat G, Bauer J, Boirie Y, Bruyère O, Cederholm T, Cooper C, Landi F, Rolland Y, Sayer AA, Schneider SM, Sieber CC, Topinkova E, Vandewoude M, Visser M, Zamboni M; Writing Group for the European Working Group on Sarcopenia in Older People 2 (EWGSOP2), and the Extended Group for EWGSOP2. Sarcopenia: revised European consensus on definition and diagnosis. Age Ageing. 2019 Jan 1;48(1):16-31. doi: 10.1093/ageing/afy169. Erratum in: Age Ageing. 2019 Jul 1;48(4):601. doi: 10.1093/ageing/afz046. PMID: 30312372; PMCID: PMC6322506.

P097- EXPLORING THE ROLE OF CT-DERIVED PSOAS MUSCLE VOLUME IN FRAILTY SCREENING AND SARCOPENIA ASSESSMENT FOR OLDER ADULT PATIENTS UNDERGOING TRANSCATHETER AORTIC VALVE IMPLANTATION.

T. Vollmer[1], L. Steins[1], R. Zabel[1], J. Fliegenschmidt[1], A. Bergmann[1], W. Burchert[1], V. Von Dossow[1], N. Hulde[1] *((1) Heart And Diabetes Center - Bad Oeynhausen (Germany))*

Background: Frailty and sarcopenia significantly influence postoperative outcomes in older patients undergoing transcatheter aortic valve implantation (TAVI). While frailty is associated with increased postoperative complications and mortality, sarcopenia, defined by low muscle mass and function, has also been shown to adversely affect survival. Despite their established impact, diagnosing these conditions in clinical practice remains challenging due to the lack of rapid, reliable, and standardized screening tools. This study evaluates the potential uitility of CT-derived Total Psoas Volume Index (TPVI) as a rapid screening tool for frailty and investigates the relationship between sarcopenia, defined by EWGSOP criteria, and postoperative outcomes. **Methods:** A cohort of 197 patients (≥65 years) undergoing elective TAVI between July 2020 and December 2021 at the Heart and Diabetes Center Bad Oeynhausen was analyzed. Frailty was assessed using the Fried Phenotype, and sarcopenia was determined based on EWGSOP criteria, integrating TPVI, handgrip strength, and Timed-Up-and-Go test results into a comprehensive score. Postoperative outcomes, including complications and 1-year mortality, were recorded. Statistical analyses included a four-fold table, ROC curves, Kaplan-Meier survival analysis, and multivariate testing. **Results:** TPVI demonstrated high specificity (84%) but low sensitivity (28%) in detecting frailty. The area under the curve (AUC) for predicting frailty was 0.384 for males and 0.393 for females. Sarcopenia, quantified by our score, was not significantly associated with immediate postoperative complications but was linked to increased 1-year mortality (log-rank test, p=0.026). **Conclusion:** While TPVI is not suitable as a standalone frailty screening tool due to its low sensitivity, it may assist in identifying non-frail patients, optimizing resource

allocation. Sarcopenia was significantly associated with higher 1-year mortality, emphasizing the need for multifaceted frailty assessments in older TAVI patients. **Keywords:** Frailty, sarcopenia, psoas muscle, TAVI, postoperative outcomes. **Disclosures:** The authors have no personal conflicts of interest to declare.

P098- A MULTI-BIOMARKER PANEL COMPRISING FECAL CALPROTECTIN, BRAIN-DERIVED NEUROTRPHIC FACTOR, FIBROBLAST-GROWTH FACTOR-21 AND IRISIN OUTPERFORMS SINGLE BIOMARKERS IN THE DIAGNOSIS OF EWGSOP2-DEFINED SARCOPENIA IN COMMUNITY-DWELLING OLDER PERSONS. L. Lapauw[1], L. Vermeiren[2], L. Vercauteren[1], N. Amini[1], J. Dupont[1,3], S. Dalle[4,5], K. Koppo[4], M. Derrien[6,7], J. Raes[6,7], E. Gielen[1,8] *((1) Department Of Public Health And Primary Care, Division Of Gerontology And Geriatrics, KU Leuven - Leuven (Belgium), (2) Faculty Of Medicine, KU Leuven - Leuven (Belgium), (3) University Hospitals Leuven, Division Of Gerontology And Geriatrics - Leuven (Belgium), (4) Department Of Movement Sciences, KU Leuven - Leuven (Belgium), (5) Department Of Rehabilitation Sciences & Physiotherapy, University Of Antwerp - Antwerp (Belgium), (6) Department Of Microbiology, Immunology And Transplantation, KU Leuven - Leuven (Belgium), (7) Vib Center For Microbiology - Leuven (Belgium), (8) University Hospitals Leuven, Division Of Gerontology And Geriatrics - Leuven (Belgium))*

Background: Increasing evidence suggests that biomarkers, which reflect the multifactorial pathophysiology of sarcopenia, including the 'gut-muscle axis', are useful for screening and early diagnosis of sarcopenia. Previous research has investigated the diagnostic accuracy of single myokines or a combination with non-myokine biomarkers as potential biomarkers. However, the use of a single, non-myokine gut-related biomarker or its combination with serum myokines has not been investigated. This study aimed to determine the diagnostic accuracy for sarcopenia of a panel of five serum myokines and fecal calprotectin (fCPT) in community-dwelling adults aged ≥ 65 years. **Methods:** This exploratory, cross-sectional study involved 156 older adults (53♂/103♀, median age 73 [70 : 78.5] years) of whom 59 suffered from EWGSOP2-defined sarcopenia. Myostatin, irisin, brain-derived neurotrophic-factor (BDNF), insulin-like-growth-factor-1 (IGF-1), fibroblast-growth-factor-21 (FGF-21) and fCPT were determined via ELISA. Muscle mass and function were evaluated by appendicular lean mass, handgrip strength, chair stand time (CST), gait speed and the Short Physical Performance Battery (SPPB). Correlations (Spearman; point-biserial, ϱ) and multivariate linear and logistic regression, the latter reporting odds ratios (OR), were calculated to determine associations between sarcopenia, muscle mass, function and biomarkers. Areas Under the Receiver Operating Curves (AUROC) were used to determine diagnostic accuracy. **Results:** BDNF levels were lower in persons with sarcopenia ($p = 0.008$), correlated negatively with sarcopenia (ϱ:-0.233; $p = 0.004$) and significantly decreased the odds of sarcopenia (OR:0.99; 95% CI (0.99989;0.99999)) after adjusting for age and gender. fCPT increased over tertiles of CST and was positively associated with CST after correcting for age and gender (β: 0.006; $p = 0.022$), implying that higher fCPT levels, and thus intestinal inflammation, were associated with worse lower limb strength. Persons with low intestinal inflammation (fCPT < 50 μg/g) had significantly faster gait speed as compared to persons with high intestinal inflammation (fCPT ≥ 200 μg/g) ($p = 0.006$). BDNF (AUC:0.63; sensitivity 53%; specificity 71%) significantly diagnosed sarcopenia in the entire cohort. In men, but not in women, both BDNF (AUC: 0.74; sensitivity 50%; specificity 94%) and fCPT (AUC:0.77; sensitivity 100%; specificity 48%) diagnosed sarcopenia, whereas none of the remaining four serum myokines significantly diagnosed sarcopenia. A multi-biomarker panel comprising fCPT, BDNF, irisin and FGF-21 (AUC:0.71; sensitivity 64%; specificity 58%) significantly outperformed myostatin (AUC: 0.50; $p = 0.011$), irisin (AUC: 0.51; $p = 0.037$), IGF-1 (AUC: 0.49; $p = 0.024$) and FGF-21 (AUC: 0.47; $p = 0.042$) alone, but not BDNF (AUC: 0.63; $p = 0.3327$) and fCPT (AUC: 0.62; $p = 0.1843$) in sarcopenia diagnosis. **Conclusion:** Higher BDNF significantly lowers the OR of sarcopenia, although with limited clinical relevance. Older adults with higher fCPT levels have worse lower limb strength and slower gait speed. A multi-myokine panel combined with fCPT is more effective to detect sarcopenia than the single myokines myostatin, irisin, IGF-1 and FGF-21, but not more effective than BDNF or fCPT alone. These exploratory findings warrant further investigation, preferably in larger cohorts, assessing additional myokine and non-myokine biomarkers to identify the 'optimal' multi-biomarker in diagnosis of sarcopenia. **Keywords:** Sarcopenia, older adults, myokines, fecal calprotectin, muscle mass, muscle strength, physical performance, biomarkers. **References:** Liu C, Cheung WH, Li J, Chow SK, Yu J, Wong SH, Ip M, Sung JJY, Wong RMY. Understanding the gut microbiota and sarcopenia: a systematic review. J Cachexia Sarcopenia Muscle. 2021 Dec;12(6):1393-1407. doi: 10.1002/jcsm.12784. Epub 2021 Sep 14. PMID: 34523250; PMCID: PMC8718038. Jukic A, Bakiri L, Wagner EF, Tilg H, Adolph TE. Calprotectin: from biomarker to biological function. Gut. 2021 Oct;70(10):1978-1988. doi: 10.1136/gutjnl-2021-324855. Epub 2021 Jun 18. PMID: 34145045; PMCID: PMC8458070.

P099- RELATIONSHIP BETWEEN HIGH RESOLUTION MRI SKELETAL MUSCLE TEXTURE AND PHYSICAL FUNCTION. B. Sveinsson[1] *((1) Massachusetts General Hospital - Boston (United States))*

Background: Sarcopenia, the loss of muscle mass and function, is likely to grow in prevalence with an aging population. While often quantified with tests involving patient feedback, such as questionnaires or functional tests, patient responses are inherently variable and subjective. Methods of muscle function that do not rely on patient feedback could potentially offer a more objective measurement, providing a

less variable metric for sarcopenia study. Magnetic resonance imaging (MRI) can provide high-resolution data with a range of contrasts that characterize the muscle tissue. Here, we present preliminary results from high-resolution MRI of leg muscles, investigating the relationship between muscle texture and functional muscle tests. Such a relationship could potentially point towards an objective metric of muscle function that does not rely on patient feedback. **Methods:** We performed axial leg MRIs on 7 human subjects (3F) between the ages of 67-79 (average 71.7) in a 7 Tesla MRI (Siemens Terra). Imaging was done in the upper right leg, except in one subject the lower right leg was imaged due to size constraints. The MRI had a resolution of 0.15-0.17 mm in-plane and 2 mm through-plane. In one sample slice (a center slice of a 80-slice volume), a region of interest was drawn around the sartorius muscle (the medial head of the gastrocnemius muscle in the lower leg data set). Within this region, two measures of muscle texture were calculated: The standard deviation of the MRI signal as a percentage of the mean ("normalized standard deviation", NSD) and the high spatial frequency content of the MRI signal, defined as the extent in the image's spatial frequency domain that contained 95% of its spatial frequencies ("spatial frequency extent", SFE). Measurements were also taken of four muscle performance tasks: Time to complete a 4 meter walk, 5 chair stand pace, average peak grip strength measured 3 times with each hand, and average peak knee extension force measured once in each leg. For all 8 combinations of muscle function plotted as a function of muscle texture, the R2 value of a linear trendline was computed. Due to the small size of the data set (7 subjects), no other statistical tests were performed. **Results:** The largest R2 value was observed between NSD and grip strength (R2=0.49), with a slope of 140.3. NSD versus chair stand pace, SFE versus grip strength, and SFE versus knee extension had R2 of 0.11-0.15. All other relationships had R2<0.07. **Conclusion:** In this preliminary data, normalized standard deviation of high-resolution MRI muscle signal and grip strength were indicated to have the strongest correlation out of several metrics of texture and muscle function. More measurements will further elucidate this correlation and the ability of MRI to predict muscle function. **Keywords:** Sarcopenia, MRI, muscle, texture, function. **Disclosures:** R00AG066815

P100- IKIGAI AND NEW-ONSET FRAILTY AMONG JAPANESE OLDER ADULTS: 5-YEAR FOLLOW-UP AND THE POSSIBLE ROLES OF INTERLEUKIN-6. B. Son[1], K. Iijima[1] *((1) Institute For Future Initiative And Institute Of Gerontology, The University Of Tokyo - Tokyo (Japan))*

Background: Ikigai is a well-accepted psychological concept in Japanese culture representing a life worth living, contributes to health outcomes (1). However, whether Ikigai prevents frailty remains unknown. This study examined the association between Ikigai and the incidence of frailty and sought to investigate the underlying biological mechanism by exploring inflammatory cytokines. **Methods:** Community-dwelling older adults without frailty were enrolled in the 2016 Kashiwa Cohort Study. Participants reported their Ikigai status at baseline. Frailty was defined as meeting three of Fried's five phenotypic criteria. Plasma concentrations of inflammatory cytokines, including Interleukins (ILs) and tumor necrosis factor α, were measured at baseline using immunoassays. Cox regression was used to analyze the association between Ikigai and new-onset frailty stratified by sex after adjusting for relevant confounders. **Results:** Overall, 7.1% of 832 participants (75.8±4.7 years, women 47.0%) developed new-onset frailty during the 5-year follow-up. Older adults with Ikigai (n=749) had better vitality and mental health and fewer depressive symptoms than those without Ikigai. In women, Ikigai was associated with a lower risk of developing frailty (95% confidence interval: 0.08–0.73, P=0.012). Of note, a significantly lower prevalence of exhaustion was observed in women with Ikigai (P<0.001). Additionally, a higher concentration of IL-6 was observed in women with Ikigai at baseline than in those without who developed frailty (P=0.036). **Conclusion:** This study demonstrated that Ikigai could prevent frailty in women, which might be attributed to mitigated exhaustion. Furthermore, the biological actions of Ikigai are associated with high IL-6 levels. Our findings suggest that sex-specific frailty prevention should be considered when enhancing Ikigai.

P101- INCREASED MYOSTEATOSIS BUT NOT MYOPENIA IN INDIVIDUALS WITH DIABETIC RETINOPATHY: FIRST RESULTS FROM THE UK IMAGING DIABETES STUDY. C. Diamond[1], H. Thomaides Brears[1], M. Nowak[1], T. Kailayanathan[1], R. Banerjee[1], L.F. Cardiel[1], R. Pattanshetty[1], I. Yeung[2], R. Hamilton[3], S. Bull[4], D. Mcnish-Millar[3], T. Nguyen[5], P. Pandya[5] *((1) Perspectum Ltd - Oxford (United Kingdom), (2) Moorfields Eye Hospital Nhs Foundation Trust - London (United Kingdom) - London (United Kingdom), (3) Moorfields Eye Hospital Nhs Foundation Trust - London (United Kingdom), (4) Department Of Cardiology, Royal Berkshire Hospital Nhs Foundation Trust - Reading (United Kingdom), (5) Perspectum Inc - Dallas (United States))*

Background: Background: Diabetic retinopathy (DR) is a sight-withdrawing complication of type 2 diabetes associated with increased risk of cardiovascular, hepatic and renal disease. Advancements in magnetic resonance imaging (MRI) enables quantification of underlying undiagnosed disease across multiple organs from one scan. This provides the opportunity to detect abnormalities that may later present as macrovascular complications, during regular imaging-based screening of eye disease in UK standard of care. We evaluated the association between myopenia and myosteatosis with underlying undiagnosed cardiac and abdominal organ disease in individuals with DR using quantitative MRI. **Methods:** Multi-organ MRI datasets from 101 individuals with DR were obtained from the UK Imaging Diabetes Study (NCT0505740). We evaluated body composition, and tissue characteristics of inflammation and fat across multiple abdominal organs (heart, pancreas, liver,

and kidneys). Body composition comprised of cross-sectional area measurements of subcutaneous adipose tissue (SAT), visceral adipose tissue (VAT), psoas muscle, back muscle, and skeletal muscle (SM), all derived from one 2D section at the third lumbar vertebra. In the same muscles, fat infiltration (MFI) was assessed by calculating mean fat fraction in viable muscle tissue. Abnormally elevated MFI in SM defined myosteatosis and low SM index to height defined myopenia. Organ-specific disease was defined based on elevated levels of both inflammation and fat, from published thresholds. MRI data was compared to 303 controls without diabetes and matched for age, sex, BMI and ethnicity, selected from the UK Biobank. Groupwise comparisons were made between DR individuals with and without myosteatois. Wilcoxon rank sum and Fisher's exact tests were applied for continuous and categorical measures. Linear regression was used to control for confounding. **Results:** Of the 101 individuals with DR (mean age 61 years, 70% male, 50% obese, 16 years mean type 2 diabetes duration), 61% had abnormalities in at least 2 organs, compared to 41% ($p<0.001$) in controls. Specific phenotypes of severe disease were more common, such as pancreatic disease (in 19% vs 7% in controls, $p = 0.002$), liver disease (15% vs 8%, $p = 0.049$) and high-risk cardiac phenotype (reduced left ventricular ejection fraction and/or cardiac strain in 46% vs 18%, $p<0.001$). Myosteatosis was characteristic of DR and present in 40% (vs. 29%, $p = 0.048$), including higher levels of MFI in back (55% vs. 22%, $p <0.001$) and the psoas muscles (30% vs. 9%, $p<0.001$). Individuals with DR had higher mean VAT compared to controls (231cm^2 vs. 189cm^2, $p<0.001$) but similar SAT levels (221cm^2 vs. 215cm^2, $p = 0.85$). Exploring the burden of ectopic fat in DR, individuals with myosteatois also had increased levels pancreatic and myocardial fat (epicardial and pericardial), even after controlling for differences in age, sex and BMI. Myopenia was rare in both DR (9%) and non-diabetic controls (8%). **Conclusion:** In individuals with DR without prior cardiovascular disease, myosteatosis was common with ectopic fat in pancreas and liver, while myopenia was rare. Multi-organ MRI stratifies abdominal and cardiac disease phenotypes in individuals with DR, allowing for the differentiation of patients at higher risk of disease progression that require therapeutic intervention. **Disclosures:** CD, HTB, MN, TK, RB, LFC, RP, TN & PP are employees of Perspectum.

P102- FRAILTY AND WEARABLE AMBULATION METRICS IN PROSTATE CANCER: INSIGHTS FROM THE OPEN-SOURCE GERI PLATFORM. N. Mir[1], Y. Che[2], M. Mendez[1], R.S.Z.M.U. Szmulewitz[1], M. Scheetz[3] *((1) Department Of Medicine, Section Of Hematology/oncology, The University Of Chicago - Chicago (United States), (2) Biostatistics Laboratory, Department Of Public Health Sciences, The University Of Chicago - Chicago (United States), (3) Department Of Medicine, Section Of Geriatrics And Palliative Medicine, The University Of Chicago - Chicago (United States))*

Background: Wearable devices capture physical activity metrics essential for assessing treatment tolerance in metastatic prostate cancer (mPC). Open-source technology offers transparency and reliability. The open-source Geriatric Remote Initiative (GeRI) platform employs a WiFi-enabled Raspberry Pi tablet and Bluetooth-enabled Bangle.js 2 wrist accelerometer (WA) with an open-source step counter algorithm. [Salvi et al IEEE EMBC Confrence 2018] Data linking digitally captured step count to frailty in cancer is emerging. [Cay et al Sci Rep 2024] We hypothesized that daily ambulation metrics (DAMs) would be lower in individuals with impaired Geriatric Assessment (GA). **Methods:** Functionally and cognitively independent mPC patients on androgen deprivation therapy (ADT) underwent baseline GA: therapeutic vulnerability (CARG ≤5 vulnerable, >5 fit), nutritional impairment (G8 <14 vs. ≥14), polypharmacy (<3 vs. ≥3 Rx/day), comorbidity (CIRS-G below vs. above median), and quality of life (FACT-G below vs. above median). Patients wore the WA for 48h intermittently over 12 weeks triggered by tablet-rated self-rated health questionnaire. Continuous triaxial accelerometry was collected, and step counts were calculated every 15 min. Data were averaged over complete 24h intervals and reported as total step count (SC), longest walking bout (LWB: max Σ consecutive non-zero intervals <2h), and cadence at the 90th percentile (C90: quickest steps/min). Intervals with ≥1.5h of non-wear were excluded. DAMs were related to GA using generalized linear mixed regression, with significance at $p<0.2$. **Results:** Ten men with mPC (median age 73 years; 40% minority) engaged with GeRI. One patient was excluded for persistent non-wear. The median number of available 24-hour intervals was 21 (range 11-32). Participants without polypharmacy had higher SC (12,801 ± 6,803 vs. 5,738 ± 2,878 steps, $p=0.035$) and LWB (2,019 ± 941 vs. 1,207 ± 771 steps, $p=0.175$) than those with polypharmacy. Fit patients demonstrated higher SC (12,020 ± 6,815 vs. 5,782 ± 3,159 steps, $p=0.132$) and LWB (1,979 ± 913 vs. 1,119 ± 782 steps, $p=0.052$) compared to vulnerable patients. Patients with lower comorbidity scores had higher SC (12,238 ± 6,844 vs. 5,804 ± 3,053 steps, $p=0.129$). No notable associations at $p<0.2$ were observed for C90, SC, or LWB in relation to QOL or nutrition. **Conclusion:** In mPC patients undergoing ADT, polypharmacy and comorbidity are associated with decreased ambulation. DAMs captured via GeRI effectively identify frailty markers, supporting the use of open-source wearable technology to enhance treatment personalization and democratize data collection.

P103- MACHINE LEARNING INTEGRATION OF METABOLOMICS AND PROTEOMICS FOR PREDICTING PHYSIO-COGNITIVE DECLINE SYNDROME: A MULTI-COHORT VALIDATION STUDY. L.N. Peng[1], Y.L. Huang[1], L.K. Chen[1], M.Y. Chou[1], C.K. Liang[1], C.S. Lin[1] *((1) National Yang Ming Chiao Tung University - Taipei (Taiwan, Republic of China))*

Background: Physio-cognitive decline syndrome (PCDS) is an accelerated aging phenotype characterized by concurrent physical and cognitive declines, associated with increased risks of disability, dementia, and mortality. This study aimed

to identify peripheral biomarkers for risk prediction of PCDS, potentially mitigating the global healthcare burden. **Methods:** We enrolled 577 participants (PCDS cases and age- and gender-matched healthy controls) from three cohorts: two Taiwanese cohorts (I-Lan Longitudinal Aging Study and Longitudinal Aging Study of Taipei) for training, and one Japanese cohort (National Institute for Longevity Sciences-Longitudinal Study of Aging) for external validation. Untargeted metabolomics and label-free quantitative proteomics were performed on serum samples. Machine learning techniques were employed to identify omics signatures and develop a predictive model for PCDS diagnosis. **Results:** In our study, incorporating 14 metabolites, age, gender, and four disease history parameters, achieved an area under the curve of 0.81 in the external validation cohort (n=200). Top predictive metabolites included SM (d17:1/TXB2), 2-oxohenicosanoic acid, 2-hydroxy-4-octenoyl carnitine, and PA (40:3). Proteomic analysis revealed proteins involved in complement and coagulation cascades, as well as CD5L, IGF2, LUM, and TGFBI, as potential PCDS predictors. Metabolic pathway analysis identified glutathione metabolism, tryptophan metabolism, and urea cycle/amino group metabolism as pathways correlated with PCDS. **Conclusion:** Our machine learning-derived XGBoost model demonstrates robust performance in stratifying subjects into different risk groups, elucidating proteomic and metabolic biomarker panels, and advancing precision medicine in PCDS management. **Keywords:** PCDS, biomarker, untargeted metabolomics, proteomics, machine learning.

P104- ASSOCIATION BETWEEN SARCOPENIA AND CYTOKINES: A CROSS-SECTIONAL STUDY.

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Background: Sarcopenia is a progressive muscle disease characterized by the loss of muscle mass, strength, and functional capacity [1]. Inflammaging [2] plays a key role in its development. While cytokines like IL-6, TNF-α, and IL-1β are central to sarcopenia's pathophysiology, other biomarkers, such as IL-22, CXCL-8, CXCL-9, IL-1RA, and IL-27 [3], remain underexplored. Further investigation of these biomarkers is needed to enhance diagnostic accuracy. This study aimed to examine the association between pro-inflammatory cytokines and sarcopenia. **Method:** This cross-sectional study included 256 older adults from the Multimorbidity and Mental Health cohort study in Frailty and Aging (MiMiCS-FRAIL) [4], designed to investigate molecular markers of inflammation. Sarcopenia was assessed using the EWGSOP2 algorithm [1], which included handgrip strength measured with a hydraulic dynamometer, muscle mass evaluated via bioelectrical impedance analysis, and physical performance assessed by gait speed. Cytokine levels (IL-6, TNF-α, IL-1β, IL-22, CXCL-8, CXCL-9, IL-1RA, and IL-27) were measured from venous blood samples using ELISA with specific commercial kits. Univariate analyses were conducted with Mann-Whitney and chi-square test to assess group differences. Bivariate analyses explored variable associations between variables, while linear regression was applied to identified independent factors associated with sarcopenia. **Results:** Among the 256 participants, the mean age was 70.8 years (SD = 7.2). The most had elementary education or were illiterate (38.7%). The mean BMI was 28.3 kg/m² (SD = 5.0). A total of 23.0% showed low skeletal muscle mass index (SMI), and 12.9% demonstrated possible cognitive impairment. Additionally, 61.3% exhibited low gait speed, and 59.4% had low handgrip strength. Overall, 43 participants were identified as sarcopenic, including 32 with severe sarcopenia. Sarcopenia was more prevalent in older age groups, with significant differences observed between the youngest and oldest participants. Severe sarcopenia also showed associations with advanced age, particularly between those aged 76+ and younger groups. Biomarkers IL-17, IL-27, and CXCL9 demonstrated associations with sarcopenia. IL-27 and CXCL9 levels were consistently higher in participants with sarcopenia and severe sarcopenia. Additionally, CXCL9 levels increased progressively with age, suggesting a potential link between this biomarker and both sarcopenia and aging. **Conclusion:** This study highlights the association between specific cytokines, particularly IL-17, CXCL9, and IL-27, and sarcopenia, supporting their role in the underlying inflammatory processes. Further research, especially longitudinal studies, is needed to clarify these relationships, determine causality, and assess their potential as biomarkers or therapeutic targets. Additionally, considering factors such as age, sex, and comorbidities in future analyses may offer a more comprehensive understanding of the inflammatory pathways involved in sarcopenia. **Keywords:** Inflammation, aged, biomarkers, sarcopenia. **Disclosures:** The authors declared no competing interests. **Funding Agency:** This study was funded by the São Paulo Research Foundation (FAPESP), process nº 27618-0. **References:** Cruz-Jentoft AJ, Bahat G, Bauer J, Boirie Y, Bruyère O, Cederholm T, et al. Sarcopenia: Revised European Consensus on Definition and Diagnosis. Age and Ageing [Internet]. 2018 Sep 24;48(1):16–31. Available from: https://pubmed.ncbi.nlm.nih.gov/30312372/. Marzetti E, Picca A, Marini F, et al. Inflammatory signatures in older persons with physical frailty and sarcopenia: The frailty «cytokinome» at its core. Exp Gerontol. 2019;122:129-138. doi:10.1016/j.exger.2019.04.019. Bian AL, Hu HY, Rong YD, Wang J, Wang JX, Zhou XZ. A study on relationship between elderly sarcopenia and inflammatory factors IL-6 and TNF-α. European Journal of Medical Research. 2017 Jul 12;22(1). Aprahamian I, Mamoni RL, Cervigne NK, Augusto TM, Romanini CV, Petrella M, et al. Design and protocol of the multimorbidity and mental health cohort study in frailty and aging (MiMiCS-FRAIL): unraveling the clinical and molecular associations

between frailty, somatic disease burden and late life depression. BMC Psychiatry. 2020 Dec;20(1).

P105- DIFFUSION TENSOR IMAGING PARAMETERS AS NEURAL MARKERS OF FRAILTY IN COGNITIVELY UNIMPAIRED OLDER ADULTS.

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Background: Frailty is a clinical syndrome characterized by diminished physiological reserves [1], leading to vulnerability to stressors and adverse outcomes such as falls, hospitalizations, physical disability, and mortality [2].The neural mechanisms underlying frailty remain underexplored, particularly in cognitively unimpaired (CU) older adults [3,4]. White matter integrity, assessed via Diffusion Tensor Imaging (DTI), may provide insights into the structural brain changes associated with frailty. This study aimed to evaluate the relationship between frailty and DTI parameters in specific brain regions, focusing on their potential role as neural markers of frailty. **Methods:** This cross-sectional study included 51 CU older adults: 29 from the Frailty in Brazilian Older Adults (FIBRA) study and 22 from the Geriatrics outpatient clinic at UNICAMP. Frailty was assessed using the frailty phenotype, which includes weight loss, exhaustion, low physical activity, reduced grip strength, and slow gait speed. A total of five participants were classified as frail, and 33 as pre-frail. For the analyses, these two groups were combined into a single group with frailty symptoms (Frail, n = 38) and compared to participants without frailty symptoms (n = 13). Participants underwent 3T magnetic resonance imaging, and DTI parameters such as fractional anisotropy (FA), radial diffusivity (RD), and axial diffusivity (AD) were acquired for six different brain regions (Uncinate fasciculus, Superior occipital fasciculus, Cingulate cortex, Corticospinal, Fornix, and Corpus callosum). Multivariate analyses of covariance (MANCOVA) examined the effects of frailty on white matter integrity and multivariate regression analyses explored associations between DTI parameters and brain regions, controlling for age and sex. **Results:** Individuals in the frail group exhibited lower levels of education and slower gait speed. The MANCOVA analysis revealed significant effects of frailty and age on FA values, while sex showed no significant impact. Frail individuals demonstrated reduced FA values, indicative of decreased white matter integrity and increased demyelination, particularly in the corpus callosum. No significant associations were observed for RD or AD after the adjustment. **Conclusion:** This study highlights the corpus callosum as a critical region for understanding the neural underpinnings of frailty [5]. The observed reductions in FA in this region emphasize the impact of frailty on white matter integrity [3], suggesting its potential as a neural marker for distinguishing frail from non-frail older adults. Further longitudinal studies are needed to clarify the causal relationships between frailty and brain structure. **Keywords:** Frailty, white matter, diffusion tensor imaging, corpus callosum. **Disclosures:** The authors declared no competing interests. **Funding Agency:** This study was funded by the São Paulo Research Foundation (FAPESP), process nº 2019/24713-2. **References:** 1. Fried LP, Tangen CM, Walston J, Newman AB, Hirsch C, Gottdiener J, et al. Frailty in Older Adults: Evidence for a Phenotype. J Gerontol A Biol Sci Med Sci 2001. https://doi.org/10.1093/gerona/56.3.M146. 2. Hoogendijk EO, Afilalo J, Ensrud KE, Kowal P, Onder G, Fried LP. Frailty 1 Frailty: implications for clinical practice and public health. vol. 394. 2019. 3. Siejka TP, Srikanth VK, Hubbard RE, Moran C, Beare R, Wood A, et al. White Matter Hyperintensities and the Progression of Frailty—The Tasmanian Study of Cognition and Gait. The Journals of Gerontology: Series A 2020;75:1545–50. https://doi.org/10.1093/gerona/glaa024. 4. Cipolli GC, Ribeiro IC, Yasuda CL, Balthazar MLF, Fattori A, Yassuda MS. Frailty and brain changes in older adults without cognitive impairment: A scoping review. Arch Gerontol Geriatr 2024;123. https://doi.org/10.1016/j.archger.2024.105395. 5. Tian Q, Williams OA, Landman BA, Resnick SM, Ferrucci L. Microstructural Neuroimaging of Frailty in Cognitively Normal Older Adults. Front Med (Lausanne) 2020;7. https://doi.org/10.3389/fmed.2020.546344.

LP068- INSIGHT TO SESAM: «SONOELASTOGRAPHY: SARCOPENIA ASSOCIATED MUSCLE CHANGE».

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Background: Sarcopenia is an increasing global challenge. It is associated with various negative health outcomes such as falls, hospitalization and loss of independence. Shear wave elastography (SWE) and B-mode ultrasound are promising

techniques for early detection and diagnosis. **Methods:** This diagnostic cross-sectional study with two control groups requires 66 participants assigned equally into three groups: sarcopenic older adults, non-sarcopenic older adults and younger adults. The main outcome recuts femurs (RF) muscle stiffness in rested position is measured in Kilopascal (kPa). The RF will be examined in the dominant limb using standardized protocols. Secondary outcomes include muscle stiffness in passively stretched position, muscle thickness, cross-sectional area and pennation angle. **Results:** The current sample consists of 55 participants. In participants with sarcopenia the RF stiffness in rested position was 29.8 kPa (11.7) mean (SD) compared to 19.3 (10.8) in the non-sarcopenic older adults and 22 (5) among younger adults. The spearman correlation coefficient between muscle stiffness in rested position and appendicular skeletal muscle mass (ASM) was 0.25, compared to -0.12 in the passively stretched position. B-Mode measures have a higher correlation with ASM: thickness 0.61, cross-sectional area 0.66, pennation angle 0.34. **Conclusion:** SESAM preliminary results show limited potential for SWE in sarcopenia diagnostic, however B-Mode measures present promising results.

LP069- ULTRAWIDEBAND MICROWAVE TRANSMISSION-MODE PROBE FOR SARCOPENIA DETECTION: PILOT STUDY.

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Background: There is considerable research into developing imaging technologies to meet the burgeoning need for screening and diagnosing sarcopenia1. We have developed a new handheld, side-by-side, transmission-mode microwave probe that has shown to have excellent sensing depth in phantom experiments and human exams2. The probe is constructed using metal 3D printing techniques and mates up to a conventional, handheld network analyzer. It operates over an 8 octave bandwidth providing unparalleled rich spectral content. While the efficiency is low in a classical sense, there is ample SNR to exploit the extraordinary bandwidth. **Methods:** The probes were calibrated using the built-in "port extension" function available on all commercial network analyzers. Measurements over the 100MHz to 8.5GHz bandwidth (201 data points) were taken at four locations on each patient – right and left arm (brachioradialis) and right and left thigh (rectus femoris), respectively. Ultrasound images were taken just prior to the ultrasound measures to identify the optimal sensing location. Each measurement was repeated three times at each location and averaged together. The total exam time took roughly 5 minutes. For the ultrasound images, the radiologist recorded the subcutaneous fat thickness, fat echointensity and muscle echointensity. For each microwave magnitude and phase measurement, we recorded the magnitude peak frequency and level, the 10dB and 20dB bandwidths of the peak, the point where the phase crossed the zero point, the phase slope for the 2-4GHz band, and point at which that sloped line crosses zero. **Results:** We have tested the probe on four patients and performed two analyses. The testing protocol has been approved by the Dartmouth College Institutional Review Board. First, we performed multi-regression comparisons of the full set of microwave data against each ultrasound feature: fat thickness, fat echointensity and muscle echointensity, respectively. The correlation coefficients for each were 0.99, 0.87, and 0.64, respectively. For the second experiment, we performed similar regression analyses comparing the ultrasound data alone, the microwave data alone and the two combined against the Sarc-F scores for each patient. For these cases, the corresponding correlation coefficients were 0.58, 0.79 and 0.98, respectively. **Conclusion:** It is important to note that this is early stage in terms of testing on humans. However, it is clear that there is significant information embedded in the microwave measurements. For the comparisons with the ultrasound data, we expect superior correlations for features nearer the skin surface. As confirmed in earlier phantom experiments, the measurements for deeper features are less pronounced than for those of the shallower ones. Even so, a correlation of 0.64 for the muscle echointensity is quite good. More exciting are the measurement comparisons with sarcopenia scores. The values for the ultrasound measures are quite good by themselves and those for the microwave by themselves are excellent. More extraordinarily, the values for the combined modalities are nearly perfect. These suggest that the microwave and ultrasound measurements will be good complements to each other. Our early results suggest that these low-cost, safe and portable modalities may be ideal for examining sarcopenia in the future. **Keywords:** Sarcopenia, microwave, transmission-probe, pilot study. **Disclosure:** Dr. Meaney is co-inventor on a patent application for microwave transmission probes. He is also co-inventor on a side-by-side transmission probe that could be used for detecting and diagnosing sarcopenia. **References:** 1. Cruz-Jentoft AJ, Bahat G, Bauer J, Boirie Y, Bruyère O, Cederholm T, Cooper C, Landi F, Rolland Y, Sayer AA, Schneider SM, Sieber CC, Topinkova E, Vandewoude M, Visser M, Zamboni M, "Sarcopenia: revised European consensus on definition and diagnosis." Age and Ageing, vol. 48, pp. 16–31, 2019. 2. Meaney PM, Geimer SD, diFlorio-Alexander R, Augustine R, Raynolds T, "Side-by-side open-ended coaxial dielectric probes for sarcopenia assessment," SENSORS, vol. 22, paper # 748, 2022.

LP070- LOW MITOCHONDRIAL OXIDATIVE PHOSPHORYLATION ACTIVITY IN CD4 REGULATORY T CELL SUBSETS REVEALS FUNCTIONAL HEALTH DECLINE IN OLDER ADULTS: A CROSS-SECTIONAL ANALYSIS FROM THE INSPIRE-T COHORT.

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Background: Aging varies across individuals, highlighting the need for better markers of functional decline. Mitochondrial dysfunction is a key driver of aging, yet accessible measures of mitochondrial bioenergetic capacity related to functional health in humans are limited. In parallel, emerging evidence suggests that T cells play a significant role in the systemic aging process. Here, we challenged the hypothesis that mitochondrial energy metabolism in T cells correlates with functional health in older adults. **Methods:** We used flow cytometry-based profiling to examine energy metabolism at the single-cell resolution, using a method similar to SCENITH, with a focus on mitochondrial OXPHOS activity (MitoDep, expressed as percentage). The analysis was conducted on peripheral CD4 and CD8 T cell subsets from 187 participants aged 70-89 years (mean age 78.7 [SD 5.3], 57.7% [n = 108] women) enrolled in the Inspire-T cohort (NCT04224038 [1, 2]). Associations with the Fried frailty phenotype were evaluated using logistic regression. Relationships with the intrinsic capacity (IC) score were assessed using partial least square regression (PLS) and piecewise linear regression models, adjusting for age, sex and comorbidities. **Results:** MitoDep was significantly lower in prefrail and frail individuals (47% of the study population) across several T cells subsets. In CD4 regulatory T cell (CD4Treg) subsets, higher MitoDep was significantly associated with a reduced odds of prefrailty or frailty. Piecewise regression identified a critical breakpoint for memory CD4Treg MitoDep at 58.5% (95% CI, 50.7–67.5). Markedly, low MitoDep in these cells minimally impacts intrinsic capacity until it drops below this threshold, after which it significantly affects capacity ($\beta = 0.40$, $p = 0.0104$). This supports the concept of mitochondrial bioenergetics resilience in aging. Importantly, the observed effects were independent of age, sex, and comorbidities. **Conclusion:** This study establishes a novel link between T cell mitochondrial OXPHOS activity (MitoDep) and functional health in older adults. It represents a significant advancement in the use of mitochondrial bioenergetics at single-cell resolution as a biomarker for functional decline in older adults, with the potential to be used for patient stratification, guiding personalized care, and evaluating the efficacy of lifestyle interventions or treatments. **Disclosure:** None. **Keywords:** Mitochondria, bioenergetics, T lymphocytes, intrinsic capacity, biomarkers. **References:** 1. Lu WH, Rolland Y, Guyonnet S, de Souto Barreto P, Vellas B. Reference centiles for intrinsic capacity throughout adulthood and their association with clinical outcomes: a cross-sectional analysis from the INSPIRE-T cohort. Nat Aging 2023;3:1521–1528. DOI: 10.1038/s43587-023-00522-x. https://www.nature.com/articles/s43587-023-00522-x. 2. Guyonnet S, Rolland Y, Takeda C, et al. The INSPIRE Bio-Resource Research Platform for Healthy Aging and Geroscience: Focus on the Human Translational Research Cohort (The INSPIRE-T Cohort). J frailty aging 2021;10:110–120. DOI: 10.14283/jfa.2020.38. https://link.springer.com/article/10.14283/jfa.2020.38.

LP071- ELEVATED GDF-15 LEVEL IS AN INDEPENDENT PREDICTOR OF 90-DAY MORTALITY IN FRAIL OLDER PATIENTS – RESULTS FROM THE COPENHAGEN PROTECT STUDY.

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Background: Growth Differentiation Factor-15 (GDF-15) has been linked to various age-related conditions, including cellular senescence, reduced muscle strength, and decreased physical performance in older adults. While GDF-15 holds promise as a potential biomarker for frailty, the utility among acutely admitted older patients remains uncertain. Upon this, there is an urgent need for reliable biomarkers related to frailty which can provide a more comprehensive risk stratification of acutely admitted older patients. This study aims to examine the effect of elevated GDF-15 levels on 90-day mortality in older adults assessed in the initial phase of an acute medical admission. **Methods:** Analyses were based on 1036 acutely admitted medical patients (aged ≥65 years) enrolled in the Copenhagen PROTECT Study. Frailty was evaluated by the Clinical Frailty Scale (CFS) and patients were defined as frail when the CSF score was ≥5. The degree of comorbidity was evaluated based on the weighted index on Charlson Comorbidity Index (CCI). Plasma GDF-15 was measured using

electrochemiluminescence assays from Meso Scale Discovery (MSD, Rockville, MD, USA). The optimum cut-off point of GDF-15 related to frailty was 2166 pg/mL1. Regarding the statistical analyses, Cox regression analyses were applied to compute the crude and adjusted hazard ratio (HR) with a 95% confidence interval for mortality. Non-frail patients with non-elevated GDF-15 levels acted as a reference group (RF, n=240) for the three groups: 1) frail with non-elevated GDF-15 levels (FN, n=158), 2) non-frail with elevated GDF-15 levels (NE, n=294), and 3) frail patients with elevated GDF-15 levels (FE, n=344). **Results:** Included patients had a mean age of 78.9±7.8 years and 53% were female. The median concentration of GDF-15 was 2669.3 pg/mL. Systemic GDF-15 was significantly higher in patients with frailty ($P < 0.001$) compared with non-frail patients. The crude HRs for 90-day mortality in the respective groups were 1.90 (0.91-3.94) for the FN-group, 1.79 (0.93-3.46) for NE-group, and 3.34 (1.83-6.10) for the FE-group. After adjustments for age, sex, and degree of comorbidity the aHRs for 90-day mortality in the FN-group and the NE-group were 1.39 (0.66-2.91) and 1.34 (0.69-2.60), respectively. For the FE-group the aHR remained significant at 2.19 (1.18-4.06) after the adjustments. **Conclusion:** GDF-15 was higher in acutely admitted older medical patients with frailty compared to non-frail patients. Notably, after adjustments for age, sex, and degree of comorbidity, elevated GDF-15 plasma level still seems to be an independent predictor of 90-day mortality in frail patients. The present data indicate that GDF-15 could provide important information for risk stratification on adverse outcomes such as mortality. **Keywords:** Frailty, GDF15, acute geriatric patients, clinical research, inflammation. **Clinical Trial Registry:** Clinicaltrials.gov ID: NCT04151108. **Disclosures:** The Copenhagen PROTECT Study is funded by the Novo Nordisk Foundation. All authors declare no conflict of interest. **Reference:** 1. Kamper RS, Nygaard H, Praeger-Jahnsen L, Ekmann A, Ditlev SB, Schultz M, Hansen SK, Hansen P, Pressel E, Suetta C. GDF-15 is associated with sarcopenia and frailty in acutely admitted older medical patients. J Cachexia Sarcopenia Muscle. 2024 Aug;15(4):1549-1557. doi: 10.1002/jcsm.13513.

LP072- ASSOCIATIONS BETWEEN BIOLOGICAL MARKERS OF AGING AND APPETITE LOSS.

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Background: Appetite loss affects 15–30% of older adults and is associated with poor health outcomes such as frailty, reduced muscle function, malnutrition, and increased mortality [1, 2]. Despite these significant consequences, research on the biological mechanisms underlying appetite loss in relation to aging remains limited. Much of the existing work in biological aging has focused on exploring its associations with risk factors and other diseases. Following that, knowledge regarding biological markers of aging such as epigenetic clocks (Horvath's, Hannum's, PhenoAge, GrimAge) might offer insights into these mechanisms [3, 4]. This study aims to compare biological markers of aging in older adults with and without appetite loss and to explore its association. To the best of our knowledge, this will be the first study to investigate associations between multiple biological markers of aging and appetite loss. Findings from this research may enhance our understanding of the biological factors influencing appetite in aging, potentially informing more effective strategies to promote health and well-being in older populations. **Methods:** This cross-sectional study utilized data from the INSPIRE-T cohort in Toulouse, France, which aims to improve and understand the aging process. In 2024, the cohort included 1099 participants, of whom 47 reported appetite loss and had available data on biological markers of aging. A case-control design was conducted, matching 47 participants with appetite loss (cases) to 94 participants without appetite loss (controls) at a 1:2 ratio based on sex, age, and body mass index. Descriptive statistics was used to compare biological markers of aging including Horvath's clock, Hannum's clock, PhenoAge clock, GrimAge clock, ATPase inhibitory factor 1 and inflammatory clock between cases and controls. To examine the association between these biological markers and appetite loss, conditional logistic regression analyses were conducted including both unadjusted models and models adjusted for psychological state, weight loss, medication use, and cognitive function. **Results**: The 141 matched participants had similar characteristics in terms of sex (68% women), age (mean 74 years), and BMI (mean 26 kg/m²) due to the matching design. However, participants with appetite loss (cases) reported taking more medications (6 vs. 3 per day), exhibited greater weight loss (17% vs. 2%), and showed more depressive symptoms (68% vs. 28%). No significant differences in biological aging markers or associations with appetite loss were observed. **Conclusion:** This study found no significant associations between biological markers of aging and appetite loss. As a pioneering study investigating how aging biology relates to appetite loss, these results may have been influenced by the use of a single-question assessment, which did not capture the severity of appetite loss. Future investigations using the INSPIRE dataset will address this by using a measure of appetite severity. Additionally, a larger sample size and longitudinal design will be essential to better understand the mechanisms underlying appetite loss and to develop targeted interventions for promoting healthy aging. **Keywords:** Anorexia of aging, biological aging, longevity, aging research. **Disclosures:** We have no conflicts of interest to disclose. **References:** 1. Landi F, Calvani R, Tosato M, Martone AM, Ortolani E, Savera G, et al. Nutrients. 2016 Feb;8(2):69. https://doi.org/10.3390/nu8020069. 2. Morley JE. J Cachexia Sarcopenia Muscle. 2017;8(4):523–6. https://doi.org/10.1002/jcsm.12192. 3. Duan R, Fu Q, Sun Y, Li Q. Ageing Res Rev. 2022 Nov 1;81:101743. https://doi.org/10.1016/j.arr.2022.101743. 4. Moqri M, Herzog C, Poganik JR, Biomarkers of Aging Consortium, Justice J, Belsky DW, et al. Cell. 2023 Aug 31;186(18):3758–75. https://doi.org/10.1016/j.cell.2023.08.003

LP073- COMPARING DXA AND D3CR DILUTION TO MEASURE MUSCLE MASS IN OLDER WOMEN AFTER HIP FRACTURE.

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Background: Sarcopenia is a significant risk factor for poor outcomes after hip fracture and therefore a target for rehabilitation interventions [1]. The use of anabolic hormone supplements such as testosterone have been suggested to enhance post fracture exercise training [2]. An accurate assessment of muscle mass in patients with hip fracture is challenging because dual-energy X-ray absorptiometry (DXA) tends to overestimate muscle mass. The D3Cr dilution method to measure muscle mass has been shown to accurately and more precisely measure muscle mass in response to exercise [3] but has not been used in studies of injury recovery and rehabilitation. Therefore, the purpose of this study using D3Cr in women recovering from hip fracture was: 1) To compare the effects of topical testosterone combined with supervised exercise versus exercise and placebo gel on muscle mass as measured by D3Cr and DXA 2) To compare agreement between DXA and D3Cr dilution in measuring muscle mass, and 3) To assess the correlation of D3Cr dilution measures with functional outcomes measures. **Methods:** This is an ancillary study from the Starting Testosterone and Exercise after Hip Injury (STEP-HI) study. The STEP-Hi study was a multi-site, three-armed 24-week, randomized controlled trial that assessed the impact of supervised exercised combined with topical testosterone on muscle strength and functional status in older women after hip fracture. A convenience sample of 32 participants was recruited from the parent study. Urine samples for D3Cr dilution were obtained at baseline and 24 weeks. Participants ingested 30mg of D3-creatine and then provided a fasting urine sample 2-6 days after ingesting the dose. D3-creatinine, unlabeled creatinine, and creatine were measured using high-performance liquid chromatography and tandem mass spectrometry. Functional measures, including 1 repetition max leg press (1RM), and DXA scans were also obtained at baseline and 24 weeks. **Results:** 14 and 17 women were included in the exercise and placebo (EX+P) and exercise and testosterone (EX+T) groups, respectively (mean age 76.8 +/- 7.4). At baseline, D3Cr muscle mass and DXA whole lean body mass were positively correlated with each other; Pearson correlation coefficient (r)=0.789 ($p<0.0001$). Using DXA, the EX+P group lost 0.5% of total lean mass ($p=0.43$), and D3Cr muscle mass decreased by 1.4% ($p=0.18$). In the EX+T group, DXA showed a 1.6% increase in lean mass ($p=0.055$), while D3Cr showed a 0.6% increase in muscle mass ($p=0.58$). Change in D3Cr and DXA had a weak positive correlation ($r=0.32$, $p=0.1$). D3Cr was weakly positively correlated with 1RM at baseline and at 24 weeks ($r=0.47$, $p<0.05$ and $r=0.36$, $p=0.13$, respectively). **Conclusion:** In this randomized controlled trial of exercise and topical testosterone, both DXA and D3Cr measures of muscle mass increased in response to the addition of testosterone, although the magnitude of change differed by method. Using D3Cr to measure muscle mass is feasible in clinical trials and the observed differences in change of DXA and D3Cr are probably due to differences in measuring true muscle mass with D3Cr in contrast to measuring lean mass with DXA. **Keywords:** Sarcopenia. **Clinical Trial Registry:** NCT02938923. **Disclosures:** Dr. Bryant: None. Dr. Kiel: Wolters Kluwer Royalties for publication in UpToDate, Scientific Advisory Board for Solarea Bio, Radius Health, grants to institution from Solarea Bio, Amgen, Radius Health, and data and safety monitoring committee for Agnovos. Dr. Binder: Paid service consulting for Akros Pharma, Inc. and Eisai Inc. and was an unpaid member of the Board of Directors of the Fragility Fracture Network. **References:**

1. Xu BY, Yan S, Low LL, Vasanwal FF, Low SG. Predictors of poor functional outcomes and mortality in patients with hip fracture: a systematic review. BMC Musculoskelet Disord. 2019; 20: 568. doi: 10.1186/s12891-019-2950-0. 2. Binder EF, Christensen JC, Stevens-Lapsley J, Bartley J, Berry SD, Dobs AS, Fortinsky RH, Hildreth KL, Kiel DP, Kuchel GA, Marcus RL, McDonough CM, Orwig D, Sinacore DR, Schwartz RS, Volpi E, Magaziner J, Schechtman KB. A multi-center trial of exercise and testosterone therapy in women after hip fracture: Design, methods and impact of the COVID-19 pandemic. Contemp Clin Trials. 2021 May;104:106356. doi: 10.1016/j.cct.2021.106356. Epub 2021 Mar 11. PMID: 33716173; PMCID: PMC9119796. 3. Cawthon PM, Peters KE, Cummings SR, Orwoll ES, Hoffman AR, Ensrud KE, Cauley JA, Evans WJ; Osteoporotic Fractures in Men (MrOS) Study Research Group. Association Between Muscle Mass Determined by D3 -Creatine Dilution and Incident Fractures in a Prospective Cohort Study of Older Men. J Bone Miner Res. 2022 Jul;37(7):1213-1220. doi: 10.1002/jbmr.4505. Epub 2022 Mar 6. PMID: 35253257; PMCID: PMC9283198.

DRUG DEVELOPMENTS

LP074- DEVELOPMENT OF NOVEL THERAPEUTICS FOR SARCOPENIA USING COMPREHENSIVE IN VITRO AND IN VIVO MODELS. C.S. Lim[1], M. Yang[2], J.H. Seo[3], Y. Han[4], C.W. Jeong[5], S.B. Lee[6], S.K. Choe[4] *((1) Department Of Pharmacology & Sarcopenia Total Solution Center, Wonkwang University School Of Medicine - Iksan (Korea, Republic of), (2) Department Of Anatomy & Sarcopenia Total Solution Center, Wonkwang University School Of Medicine - Iksan (Korea, Republic of), (3) Department Of Biochemistry & Sarcopenia Total Solution Center, Wonkwang University School Of Medicine - Iksan (Korea, Republic of), (4) Department Of Microbiologyy & Sarcopenia Total Solution Center, Wonkwang University School Of Medicine - Iksan (Korea, Republic of), (5) Sarcopenia Total Solution Center & Smart Team, Wonkwang University Hospital - Iksan (Korea, Republic of), (6) Department Of Life Sciences & Sarcopenia Total Solution Center, Jeonbuk National University - Jeonju (Korea, Republic of))*

Background: Sarcopenia, the age-related loss of muscle mass and function, negatively impacts mobility and quality of life in older adults. Current treatments are limited and largely ineffective [1]. There is a need for innovative approaches that promote muscle regeneration and protect against muscle atrophy [2]. This study aimed to identify novel therapeutic candidates using comprehensive in vitro and in vivo models. **Methods:** We employed a split GFP-based C2C12 myoblast system [3] integrated with the CellCyte platform to screen natural extracts for their potential to enhance myocyte differentiation and reverse dexamethasone-induced muscle atrophy. Extracts that showed promise were tested in aged C2C12 cells and neuromuscular organoid (NMO) models [4]. For in vivo validation, young mice (9-10 weeks) were treated with 100 mg/kg of the most effective extract for 2 weeks. Muscle integrity was assessed via succinate dehydrogenase (SDH) staining. In older mice (>18 months), oral administration of the extract for 4-8 weeks was followed by body composition analysis using dual-energy X-ray absorptiometry (DXA). **Results:** Extracts A, B, and C significantly enhanced myocyte differentiation and reversed dexamethasone-induced atrophy in the split GFP-based C2C12 model. These extracts also promoted differentiation in aged C2C12 myoblasts. In the NMO model, Extracts A and B increased myogenesis, evidenced by higher myosin heavy chain expression. Extract A (100 mg/kg) preserved muscle mass in dexamethasone-treated young mice, maintaining fiber integrity similar to controls. In older mice, oral administration of Extract A reduced fat mass while maintaining lean mass, as confirmed by DXA. **Conclusion:** Our findings demonstrate that natural extracts, particularly Extract A, hold potential for treating sarcopenia by promoting muscle differentiation and protecting against atrophy. Integrating high-throughput screening, advanced cell models, and in vivo validation provides a robust approach for developing effective sarcopenia therapeutics. Further studies are needed to understand the underlying mechanisms and validate these candidates in clinical settings. **Keywords:** Sarcopenia, muscle atrophy, myocyte differentiation, natural extracts. **Disclosures:** The authors declared no competing interests. **References:** 1. Cruz-Jentoft AJ, et al. Age and Ageing. 2019; 48(1): 16-31. http://doi.org/10.1093/ageing/afy169. 2. Dodds RM, et al. J Cachexia Sarcopenia Muscle. 2017; 8(5): 769-784. http://doi.org/10.1002/jcsm.12210. 3. Kodaka M, et al. Exp Cell Res. 2015; 336(2):171-81. http://doi.org/10.1016/j.yexcr.2015.06.015. 4. Martins JMF, et al. Cell Stem Cell. 2020; 26(2): 172-186. https://doi.org/10.1016/j.stem.2019.12.007.

LP075- DRUGGABLE GENOMIC MENDELIAN RANDOMIZATION IDENTIFIES THERAPEUTIC TARGETS FOR TYPE 2 DIABETES MELLITUS COMORBID WITH SARCOPENIA. Q. Huang[1], H. Jiang[2] *((1) Department Of General Practice, Shanghai East Hospital, Tongji University School Of Medicine - Shanghai (China), (2) Department Of Geriatrics, Shanghai East Hospital, Tongji University School Of Medicine - Shanghai (China))*

Background: Age-related sarcopenia is a significant comorbidity of type 2 diabetes mellitus (T2DM) [1], and has a potential bidirectional causal relationship with T2DM [2], which together promotes the premature occurrence of cardiovascular disease [3]. Despite this, effective pharmacological treatment for sarcopenia remains lacking. This study aims to identify therapeutic targets for T2DM comorbid with sarcopenia by integrating publicly available datasets. **Methods:** This study integrated datasets including druggable genome information (4608 genes) [4, 5], eQTL data from IEU OpenGWAS, and GWAS summary statistics for sarcopenia-related traits [6, 7] and T2DM(https://www.finngen.fi/en/access_results). Mendelian randomization (MR) was applied to investigate potential causal relationships between druggable genes and both sarcopenia and T2DM, identifying target genes with causal links to both conditions. Causal relationships were validated through sensitivity analysis, biological functions were assessed via GO/KEGG enrichment analysis, and potential drugs were identified using drug enrichment analysis for the target genes. **Results:** MR analysis identified 38, 60, 40, and 59 druggable genes with potential causal relationships to sarcopenia-related traits (low hand grip strength, appendicular lean mass(ALM), walking pace) and T2DM, respectively. Notably, three candidate druggable genes (FARS2, GNAS, and ANXA11) demonstrated causal associations with both sarcopenia-related traits and T2DM, which were confirmed through sensitivity analyses. Up-regulation of FARS2 expression increased the risk of low hand grip strength (OR: 1.038, 95% CI: 1.000–1.077, P<0.05) and T2DM (OR: 1.041, 95% CI: 1.000–1.082, P<0.05). Up-regulation of GNAS expression led to higher ALM (beta: 0.013, 95% CI: 0.001–0.024, P <0.05) and reduced the risk of T2DM (OR: 0.966, 95% CI: 0.933–0.999, P<0.05). Upregulation of ANXA11 expression led to faster walking pace (beta: 0.006, 95% CI: 0.000–0.012, P <0.05) and reduced the risk of T2DM (OR: 0.971, 95% CI: 0.944–0.999, P<0.05). GO and KEGG

enrichment analysis showed that the three potential target genes were mainly involved in biological functions such as dopamine receptor signaling pathway, tRNA amino acid acylation and protein binding activity, providing insights into the potential mechanistic connection between druggable target genes and T2DM comorbid sarcopenia. Pharmacological enrichment analysis suggested that hesperidin and Ici 118551 may represent promising therapeutic candidates for the treatment of T2DM comorbid with sarcopenia. **Conclusion:** This study showed that FARS2, GNAS and ANXA11 may be potential therapeutic targets for T2DM comorbid with sarcopenia. Hesperidin and Ici 118551 may be potential drugs for the treatment of T2DM combined with sarcopenia, but their effectiveness needs further confirmation. **Keywords:** Sarcopenia, type 2 diabetes, therapeutic targets, druggable genome. **Disclosures:** The authors declared no competing interest. **References:** 1. Salom Vendrell C, Garcia Tercero E, Moro Hernandez JB, Cedeno-Veloz BA. Sarcopenia as a Little-Recognized Comorbidity of Type II Diabetes Mellitus: A Review of the Diagnosis and Treatment. Nutrients. Sep 26 2023;15(19). doi:https://doi.org/10.3390/nu15194149. 2. Chen S, Yan S, Aiheti N, et al. A bi-directional Mendelian randomization study of sarcopenia-related traits and type 2 diabetes mellitus. Front Endocrinol (Lausanne). 2023;14:1109800. doi:https://doi.org/10.3389/fendo.2023.1109800. 3. Boonpor J, Pell JP, Ho FK, Celis-Morales C, Gray SR. In people with type 2 diabetes, sarcopenia is associated with the incidence of cardiovascular disease: A prospective cohort study from the UK Biobank. Diabetes Obes Metab. Feb 2024;26(2):524-531. doi:https://doi.org/10.1111/dom.15338. 4. Finan C, Gaulton A, Kruger FA, et al. The druggable genome and support for target identification and validation in drug development. Sci Transl Med. Mar 29 2017;9(383). doi:https://doi.org/10.1126/scitranslmed.aag1166. 5. Freshour SL, Kiwala S, Cotto KC, et al. Integration of the Drug-Gene Interaction Database (DGIdb 4.0) with open crowdsource efforts. Nucleic Acids Res. Jan 8 2021;49(D1):D1144-D1151. doi:https://doi.org/10.1093/nar/gkaa1084. 6. Jones G, Trajanoska K, Santanasto AJ, et al. Genome-wide meta-analysis of muscle weakness identifies 15 susceptibility loci in older men and women. Nat Commun. Jan 28 2021;12(1):654. doi:https://doi.org/10.1038/s41467-021-20918-w. 7. Pei YF, Liu YZ, Yang XL, et al. The genetic architecture of appendicular lean mass characterized by association analysis in the UK Biobank study. Commun Biol. Oct 23 2020;3(1):608. doi:https://doi.org/10.1038/s42003-020-01334-0

PHYSICAL EXERCISE

P106- A SYSTEMATIC REVIEW OF THE PSYCHOMETRIC PROPERTIES OF PHYSICAL PERFORMANCE TESTS FOR SARCOPENIA IN COMMUNITY-DWELLING OLDER ADULTS.

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For individuals with sarcopenia, the assessment of physical performance is crucial. It serves as a key parameter indicating the severity of sarcopenia and can be used to initiate and evaluate appropriate interventions. There is an abundance of performance tests available to measure physical performance; however, there is no overview of their psychometric qualities. This review provides an overview of the psychometric properties of the short physical performance battery (SPPB), timed up and go test (TUG), 4 m gait speed test (4 m GST) and the 400 m walk test (400 m WT) in community-dwelling older adults. A systematic search was conducted in MEDLINE, CINAHL and EMBASE, resulting in the inclusion of 50 studies with data from in total 19,266 participants (mean age 63.2–84.3). Data were extracted and properties were given a sufficient or insufficient overall rating following the COSMIN guideline for systematic reviews of patient-reported outcome measures. Quality of evidence (QoE) was rated using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach. The SPPB was evaluated in 12 studies, TUG in 30, 4 m GST in 12 and 400 m WT in 2. Reliability of the SPPB, TUG and 4 m GST was rated sufficient (moderate to good QoE). The measurement error of the SPPB was rated insufficient (low QoE). Criterion validity for the SPPB was insufficient in indicating sarcopenia (moderate QoE), while the TUG was sufficient and insufficient for determining mobility limitations (low QoE) and activities of daily living disability (low QoE), respectively. Construct validity of the SPPB, TUG, 4 m GST and 400 m WT was rated insufficient in many constructs (moderate to high QoE). Responsiveness was rated as insufficient for SPPB (high QoE) and TUG (very low QoE), while 4 m GST was rated as sufficient (high QoE). Overall, the psychometric quality of commonly used physical performance tests in community-dwelling older adults was generally rated insufficient, except for reliability. These tests are widely used in daily practice and recommended in guidelines; however, users should be cautious when drawing conclusions such as sarcopenia severity and change in physical performance due to limited psychometric quality of the recommended measurement instruments. There is a need for a disease-specific physical performance test for people with sarcopenia. **Keywords:** Physical performance, psychometric proper ties, community-dwelling older adults, validity, reliability, older people, systematic review. **Disclosures:** This research received no specific grant from any funding agency and was registered a priori using the International Prospective Register of Systematic Reviews (PROSPERO) (CRD42022359725). The authors declared no competing interests.

P107- PHYSICAL ACTIVITY AND AMINOACIDS IN MILD COGNITIVE IMPAIRMENT: THEIR ROLE IN PREOGRESSION TOWARDS DEMENTIA. PRELIMINARY RESULTS FROM THE PHACADE STUDY. E.R. Villani[1], V. Acchiappati[1], C. Galli[1], B. Manni[1], A. Fabbo[1] *((1) UOC Geriatria Territoriale-Local Agency For Health Services Modena - Modena (Italy)*

Introduction: In Mild Cognitive Impairment (MCI), individuals present overt cognitive impairment with little or no impact on Instrumental Activities of Daily Living (IADL). MCI could be the first cognitive expression of Alzheimer's disease (AD) and could be worsened by pathological processes such as sarcopenia and frailty. The aim of our project is to evaluate the effect of exercise training alone and combined exercise training and dietary intervention on the progression of MCI towards AD. **Methods:** Single-center, prospective, open-label study comparing two cohorts of MCI patients during a 2-year follow-up period. The study began in May 2023. To participant in the control group (CG) were give a program of twice-a-week 60-minute sessions of adapted physical activity (AMA) conducted by a Kinesiologist. Participants in the intervention group (IG) were given both AMA and an essential amino acid supplement based on WHO guidelines. Participants were assigned to the intervention group if their baseline SPPB was between 9 and 10. **Results:** Preliminary analyses include data from 20 participants (11 in the intervention group, 9 in the control group). At baseline, mean age of the sample is 78 years, mean MMSE is 26.2, mean IADL is 7. At 1-year follow-up, 2 patients (1 from the intervention group, 1 from the control group) were censored due to AD development. Mean difference in MMSE between follow-up and baseline was similar between groups (CG:1.2±2.3 vs IG:-0.7±2.3, p=0.215), mean SPPB variation was in favor of IG (CG:0.3±0.5 vs IG:2.9±0.9, p<.001). The adherence was above 66%. **Conclusion:** The effect of AMA alone and AMA combined with dietary intervention on MCI seems to be effective in improving physical parameters even in most fragile participants. It seems that cognitive parameters are similar between the groups. At the 24-month follow-up assessment, the efficacy of the overall treatment will be assessed.

P108- IMPROVING REHABILITATION AND PHYSICAL ACTIVITY IN HOSPITALISED OLDER PEOPLE: THE SAINTS FOUNDATION – UNIVERSITY HOSPITAL SOUTHAMPTON PARTNERSHIP, UK. J. Batchelor[1], P. Hedges[1], M. Gealer[1], P. Draper[2], H. Patel[3] *((1) Saint Mary's Football Club, Southampton (United Kingdom), (2) Department Of Medicine For Older People, University Hospital Southampton NHS Foundation Trust, Southampton (United Kingdom), (3) Department Of Medicine For Older People, University Hospital Southampton NHS Foundation Trust, Academic Geriatric Medicine, NIHR Southampton Biomedical Research Centre, University Of Southampton & University Hospital Southampton, Southampton (United Kingdom))*

Introduction: Hospital associated deconditioning is associated with adverse outcomes. We partnered with the Saints Foundation (SF), to test the feasibility and acceptability of a non-clinical Exercise Practitioner (EP) to work alongside therapies to promote physical activity (PA) of hospitalised older people. **Methods:** Charity funded joint appointment of an NVQ3 EP with Postural stability Instructor (PSI) qualifications delivered quality education and rehabilitation programmes to hospitalised older patients. These took place in both one to one and gym-based group settings whilst working with the SF team to improve access to community-based exercise programmes. **Results:** Between Sept 2022 and May 2023, the EP assessed 169 patients, mean age 86 yrs; male (62%), admitted after a fall. 105 patients (62%) underwent one to one rehabilitation consisting of falls education and individual exercise plans, 64 patients (38%) underwent gym-based rehabilitation, where strengthening and balance exercises were conducted in groups to improve overall function and increase confidence in functional ability. No adverse safety incidents were reported and a high level of satisfaction after interaction with the EP was conveyed. Initial focus was on patient feedback and satisfaction to ensure input of an EP was well received and accepted. **Conclusion:** Intervention by a non-clinical EP to improve the PA of hospitalised older people is acceptable, feasible and appears to be safe. By capitalising on SF expertise, we provided a clinical standard on exercise for older adults and built a strong relationship between our workforce to bridge community and acute services. Increased patient satisfaction was observed and based on feedback, next steps are to increase the scope of interventions, evaluate quality of life pre and post hospitalisation, capture hospital level metrics such as readmission rates and discharge destination to further evaluate the impact on service users. **Keywords:** Hospital associated deconditioning, older People, exercise practitioner, rehabilitation, physical activity. **Disclosures:** HPP has received lectures fees from Abbott and Health Conferences UK outside of this submitted work. The rest of the authors declare that they have no disclosures.

P109- OUTCOMES OF EXERCISE PRACTITIONER LED PHYSICAL ACTIVITY IN HOSPITALISED OLDER PEOPLE: SAINTS FOUNDATION – UNIVERSITY HOSPITAL SOUTHAMPTON PARTNERSHIP, UK. P. Draper[1], J. Batchelor[2], N. Diamante[1], P. Hedges[2], M. Gealer[2], H. Patel[1] *((1) Medicine For Older People, University Hospital Southampton Nhs Foundation Trust, Southampton, Uk - Southampton (United Kingdom), (2) Saints Foundation, St Mary's Football Club, Southampton (United Kingdom))*

Background: Deconditioning in the acute hospital setting is associated with adverse outcomes that cannot always be mitigated by an increasingly stretched MDT workforce. We partnered with the Saints Foundation (SF), to test the feasibility and acceptability of a non-clinical Exercise Practitioner (EP) to work alongside the therapy team to test and deliver rehabilitation and promote physical activity (PA) in hospitalised older adults to address hospital associated deconditioning. Now in its third year, the project has evolved in response to patient and staff feedback, delivering regular gym-based exercise classes and additional interventions, which have maintained or improved patients' dependency levels on discharge. **Methods:** From September 2023, the EP has delivered daily ward based or in hospital gym-based group interventions as well as 1:1 rehabilitation to hospitalised older adults. In addition, exercise prescription education for staff and signposting to community-based exercise classes is provided. **Results:** Between October 2023 and February 2024, the EP reviewed 115 patients, mean age of 86 yrs. 90 (78%) underwent group-based intervention whereas 25 (22%) received 1:1 input. 100 (87%) patients maintained or improved their predicted to actual discharge destination, compared to 13 (11%) whose physical capability declined and 2 (2%) who died. 20 (17%) were readmitted within 30 days of discharge. Elderly Mobility Scores (EMS) improved from a mean of 13.42 to 13.97. Most patients were reviewed at least twice with some getting more input based on their rehabilitation need. Most patients (79% after 2 interventions) maintained a 4m gait speed of >0.8m/s. Patient satisfaction and confidence in their function was rated high. **Conclusion:** Intervention by a non-clinical EP appears to have an ongoing positive impact on older adults' ability to maintain or improve their level of function and physical dependency during acute hospital stay. Factors such as outbreaks of infectious illness, staff absence and vacancies and high patient acuity have prevented more frequent EP led intervention. As expected during an acute admission, overall strength and functional gains were small, but patient confidence in function remained high. Our future aim is to expand the project across the hospital trust and bridge the gap to community rehabilitation services. **Keywords:** Hospital associated deconditioning, older People, exercise practitioner, rehabilitation, physical activity, patient satisfaction. **Disclosures:** HPP has received lectures fees from Abbott and Health Conferences UK outside of this submitted work. The rest of the authors declare that they have no disclosures.

P110- FEASIBILITY OF ACUTE HIGH-INTENSITY INTERVAL EXERCISE TO IMPROVE COGNITION IN CHRONIC STROKE PATIENTS. A.M. Welch[1,2], T. Moriarty[3], J.D. Richardson[2], F. De Castro Magalhaes[2], M. Ramirez[2], A. Bailly[2], C. Mermier[2] *((1) University of Tennessee at Chattanooga, Chattanooga, TN (United States), (2) University of New Mexico, Albuquerque, NM (United States), (3) University of Northern Iowa, Cedar Falls, IA (United States))*

Background: Stroke is the second leading cause of death and the primary cause of disability worldwide, significantly impacting survivors' cognitive functions [1]. Cognitive deficits are prevalent in over 70% of chronic stroke survivors, complicating rehabilitation efforts particularly among individuals with aphasia, a condition that impairs language expression and comprehension, and writing abilities [2]. Additionally, sarcopenia, characterized by age-related muscle loss affects up to 54% of stroke survivors, further hindering recovery and functional outcomes [3]. While high-intensity interval exercise (HIIE) may offer a potential intervention to enhance cognitive function and attenuate the loss of lean muscle mass, the safety and feasibility of this approach in chronic stroke patients with aphasia have not been thoroughly investigated [4, 5]. **Methods:** A randomized controlled crossover trial consisting of three lab visits: one baseline and two intervention sessions, each separated by at least 7 days. Five chronic stroke survivors (4 males, 1 female; age 60.4 ± 11.3 years; body fat 39.8 ± 10.4%; BMI 32.7 ± 6.3 kg/m^2) participated, with four of the five participants were diagnosed with various forms of aphasia. Eligibility criteria included having had a stroke ≥ 6 months prior, age ≥18, stable cardiovascular health, and the ability to walk for 30 minutes at a self-selected speed (assistive devices permitted). A treadmill graded exercise test was used to determine each participant's maximum speed (MS) in miles per hour (MPH), which was used to prescribe exercise intensities. Each exercise intervention consisted of a single 30-minute treadmill walking or running bout (including a 5-minute warm-up and cool-down) at a 1% incline. For the high-intensity interval exercise (HIIE) condition, participants alternated 3-minute intervals at 30% and 80% of their MS. The moderate-intensity exercise (MIE) condition was performed at 50% of their MS. Feasibility metrics included recruitment and retention rates, delivery of cognitive assessments (Dimensional Change Card Sort Test), completion of questionnaires, fNIRS headband placement and participant tolerance, fNIRS data quality, exercise adherence, and successful venipuncture. **Results:** 90% of proposed participant recruitment, 83% retention, and 100% cognitive assessment and questionnaire completion were achieved. High-quality fNIRS data were collected (in 90% of subjects) with reliable headband placement and high patient tolerance. There was 100% adherence to all exercise protocols and successful venipuncture. Participants with aphasia completed all tasks successfully using aphasia-friendly adaptations to questionnaires. **Conclusion:** The study demonstrates feasibility for a randomized controlled trial on the cognitive effects of

HIIE versus MIE in chronic stroke patients, including those with aphasia. High recruitment, retention, and adherence rates support the potential for larger-scale studies to determine the impact of HIIE on cognitive function in this vulnerable population. **Keywords:** High-intensity interval exercise, chronic stroke, cognitive function, feasibility, sarcopenia. **Disclosures:** New Mexico Research Grant. **References:** 1. Feigin, V. L., Norrving, B., & Mensah, G. A. (2017). Global burden of stroke. Circulation Research, 120(3), 439-448. 2. Pendlebury, S. T., & Rothwell, P. M. (2019). Incidence and prevalence of dementia associated with transient ischaemic attack and stroke: analysis of the population-based Oxford Vascular Study. The Lancet Neurology, 18(3), 248-258. 3. Mas, M. F., González, J., & Frontera, W. R. (2020). Stroke and sarcopenia. Current physical medicine and rehabilitation reports, 8, 452-460. 4. Dwojaczny, B., Iermakov, S., Yermakova, T., & Cieślicka, M. (2020). The effect of acute exercise on cognition. Physical Education of Students, 24(6), 325-331. 5. Charalambous, C. C., Clark, D. J., & Bowden, M. G. (2018). A randomized controlled trial of high-intensity interval training to improve mobility in community dwelling adults with chronic stroke: Study protocol. BMC Neurology, 18(1), 20.

P111- COMPARATIVE IMPACT OF RESISTANCE AND AEROBIC EXERCISE ON DEPRESSION AND ANXIETY IN KOREAN ADULTS: A NATIONWIDE PROPENSITY SCORE MATCHING ANALYSIS. Y.J. Yun[1], Y. Lee[2], Y.J. Kwon[3], J.W. Lee[4] *((1) Yonsei University College Of Medicine - Seoul (Korea, Republic of), (2) Department Of Biostatistics And Computing, Yonsei University - Seoul (Korea, Republic of), (3) Department Of Family Medicine, Yongin Severance Hospital, Yonsei University College Of Medicine - Seoul (Korea, Republic of), (4) Department Of Family Medicine, Severance Hospital, Yonsei University College Of Medicine - Seoul (Korea, Republic of))*

Background: Depression and anxiety are psychiatric disorders that significantly affect well-being, morbidity, and mortality. Aerobic exercise (AE) and resistance exercise (RE) have been proposed as interventions to alleviate depressive and anxiety symptoms; however, their relative effectiveness remains unclear. This study compared the effects of AE, RE, and their combination (total exercise; TE) on depression and anxiety in a large representative sample of the Korean population. **Methods:** Data from the Korean National Health and Nutrition Examination Survey (KNHANES) were used to analyze 21,298 participants for depression (measured using the Patient Health Questionnaire-9; PHQ-9) and 8,707 participants for anxiety (measured using the Generalized Anxiety Disorder-7; GAD-7). The participants were divided into four exercise groups: AE, RE, TE, and non-AE-RE. Propensity score matching (PSM) was applied, and multivariate regressions were conducted to evaluate the effects of each exercise type on depression and anxiety. **Results:** After PSM, the RE group showed the most significant reduction in both depression and anxiety scores compared with the non-AE-RE group. The TE group also showed notable improvements, although they were less pronounced than those observed in the RE group. Conversely, AE alone did not result in a significant improvement in depression or anxiety. The subgroup analyses revealed that RE particularly benefited women and older adults. **Conclusion:** RE was more effective than AE in reducing depression and anxiety among Koreans, with particularly pronounced benefits for women and older people. This study underscores the importance of incorporating resistance training into exercise prescriptions to enhance mental health. **Keywords:** Resistance exercise, aerobic exercise, depression and anxiety. **Disclosures:** This study was supported by the Yonsei University for Academic Research [grant number: 6-2020-0143] and a National Research Foundation of Korea (NRF) grant funded by the Korean government [RS-2024-00354524]. The authors declared no competing interests. **References:** A. Kandola, G. Ashdown-Franks, J. Hendrikse, C. M. Sabiston, and B. Stubbs, «Physical activity and depression: Towards understanding the antidepressant mechanisms of physical activity,» (in eng), Neurosci Biobehav Rev, vol. 107, pp. 525-539, Dec 2019, doi: 10.1016/j.neubiorev.2019.09.040. A. Kandola, G. Ashdown-Franks, J. Hendrikse, C. M. Sabiston, and B. Stubbs, «Physical activity and depression: Towards understanding the antidepressant mechanisms of physical activity,» (in eng), Neurosci Biobehav Rev, vol. 107, pp. 525-539, Dec 2019, doi: 10.1016/j.neubiorev.2019.09.040. J. Krogh, C. Hjorthøj, H. Speyer, C. Gluud, and M. Nordentoft, «Exercise for patients with major depression: a systematic review with meta-analysis and trial sequential analysis,» (in eng), BMJ Open, vol. 7, no. 9, p. e014820, Sep 18 2017, doi: 10.1136/bmjopen-2016-014820. S. Khodadad Kashi, Z. S. Mirzazadeh, and V. Saatchian, «A Systematic Review and Meta-Analysis of Resistance Training on Quality of Life, Depression, Muscle Strength, and Functional Exercise Capacity in Older Adults Aged 60 Years or More,» (in eng), Biol Res Nurs, vol. 25, no. 1, pp. 88-106, Jan 2023, doi: 10.1177/10998004221120945.

P112- EFFECT OF EIGHT WEEKS OF HOME-BASED FUNCTIONAL TRAINING IN OLDER ADULTS WITH PHYSICAL FRAILTY: A CLINICAL TRIAL. B. Capanema[1], F. Fank[1], M. Trento[1], D. Reis[1], G. Mazo[1] *((1) Udesc - Florianópolis (Brazil))*

Background: With the significant increase in the number of older adults aged 80 and over with physical frailty syndrome living at home, effective home-based physical exercise interventions have become essential for preserving independence and delaying hospitalizations. Home-based functional training programs may play a key role in increasing exercise adherence, as this population faces challenges in participating in programs outside their homes. Therefore, this study aims to evaluate the effects of an eight-week home-based functional training program on the functional capacity, muscle strength, and gait speed of older adults with physical frailty. **Methods:** This is a non-randomized clinical study, including 29 community-dwelling older adults aged 85 or older, with physical frailty as defined by Fried et al. (2001),

and with preserved cognitive status. Data were collected on handgrip strength using a Saehan dynamometer (model SH5001), gait speed assessed by a 4.6-meter usual walking test, and functional capacity through the Timed Up and Go test. The home-based functional training sessions were divided into four blocks: Block 1) movement preparation – joint mobility, motor coordination, balance, and flexibility of the main joints; Block 2) neuromuscular – strength, power, balance, coordination, and agility in movement patterns such as pushing, pulling, and squatting (both vertical and horizontal), as well as rotating and carrying objects requiring CORE engagement; Block 3) metabolic – movement transfer (integrated, dynamic, and multi-muscular); and Block 4) cool-down (breathing and relaxation). Participants were divided into an intervention group (IG), which performed training sessions twice a week, lasting 50 to 60 minutes, and a control group (CG), carried out health education. The OMNI-GSE scale was used to monitor exercise intensity. To assess the effects of group, time, and interaction on the outcomes, Generalized Estimating Equations were employed, using a gamma probability distribution and an unstructured matrix structure. A significance level of 5% was adopted. **Results:** The participants' mean age was 86.9 years, and 66% were women. The results revealed a significant interaction between time and group for handgrip strength, with the IG showing a significant increase after eight weeks (17.5±0.88 kgf × 20.3±1.10 kgf), while the CG remained stable (19.0±1.40 kgf × 18.2±1.39 kgf). For gait speed, both the time effect and the interaction were significant, with the IG demonstrating improvement (0.46±0.03s × 0.68±0.04s), while the CG remained unchanged (0.51±0.07s × 0.50±0.07s). In the Timed Up and Go test, significant effects were found for time, group, and their interaction, with the IG improving performance (17.8±2.11s × 14.1±1.45s), while the CG showed a decline after the intervention (23.7±3.01s × 25.3±3.22s). **Conclusion:** The eight-week home-based functional training program was effective in improving muscle strength, gait speed, and functional capacity in older adults with physical frailty syndrome. These findings suggest that this intervention could mitigate the effects of physical frailty in this population, promoting greater independence and quality of life. **Keywords:** Functional capacity, muscle strength, gait, aged 80 and over, home care. **Disclosures:** Support from CAPES (Coordination for the Improvement of Higher Education Personnel) and UNIEDU (Santa Catarina Higher Education Student Financial Assistance Program). The authors declared no competing interests. **Clinical Trial Registry:** UDESC Human Research Ethics Committee (CAAE: 45881815.1.0000.0118).

P113- EFFECT OF WEIGHTED VEST USE OR RESISTANCE EXERCISE DURING CALORIC RESTRICTION ON MUSCLE FUNCTION AND STRENGTH: RESULTS FROM THE INVEST IN BONE HEALTH RANDOMIZED CLINICAL TRIAL.

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Background: Intentional weight loss (WL) in older adults is controversial due to well-known reductions in lean mass and potential exacerbation of age-related disability. Resistance exercise training has been shown to preserve and even improve muscle function and strength during WL; however, uptake among older adults is low. Replacing lost weight externally via weighted vest use during activities of daily living may be an alternative way to minimize potential muscle function and strength losses in older adults undergoing intentional WL. The objective of this analysis is to examine the effect of 12 months of weighted vest use during WL on measures of muscle function and strength, compared to WL alone and WL plus resistance exercise training (RT). **Methods:** 150 older (66.4±4.6 years) adults (75% women; 69% White) living with overweight or obesity (BMI: 33.6±3.3 kg/m2) were randomized into the INVEST in Bone Health Trial (NCT04076618). Participants were randomized into three treatment groups (n=50/group): WL only (caloric restriction targeting 10% WL with adequate calcium, vitamin D, and protein); WL plus weighted vest use (WL+VEST; eight hours/day, weight replacement titrated up to 10% total WL); or, WL plus progressive RT (WL+RT; supervised three sessions/week). Muscle function and strength measures were collected at baseline, six, and 12 months and include fast 400-m walk time (sec), grip strength (kg), and knee extensor strength (Nm). Treatment effects were estimated using a mixed model adjusted for visit (six or 12 months), visit by treatment interaction, sex, and baseline value of the outcome. **Results:** 133 (89%) participants completed the study. Significant and similar WL, ranging from 9.7-11.2%, was achieved in all groups. Over 12 months, self-reported weighted vest wear-time was 7.1±1.5 hours/day, with 78.0±29.9% of lost weight replaced in the vest; participants assigned to WL+RT attended 71.4±19.1% of sessions. At baseline, participants presented with (mean±SD) 311.3±44.1 second walk time, 28.9±8.9 kg grip strength, and 118.7±31.9 Nm knee extension strength. By 12-months, 400-m walk time was unchanged from baseline in WL+VEST [-6.3 sec (-15.7, 3.1)] and WL [+4.0 sec (-5.6, 13.5)], and marginally improved in WL+RT [-8.9 sec (-18.3, 0.6)], with a significant treatment effect observed for the WL+RT versus WL comparison ($p<0.03$). Likewise, by 12-months knee extension strength was unchanged from baseline in WL+VEST [-0.47 Nm (95% CI: -5.25, 4.30)] and WL [-2.26 Nm (95% CI: -6.90, 2.37)], and improved in WL+RT [+5.52 Nm (95% CI: 1.02, 10.02)], with significant treatment effects observed for the WL+RT versus WL and WL+VEST comparisons (both

p<0.03). Grip strength was unchanged from baseline across all groups. **Conclusion:** In the INVEST in Bone Health Trial, 12-months of weighted vest use during intentional weight loss did not result in improved muscle function or strength compared to weight loss alone. In contrast, resistance training did improve muscle function and strength compared to weighted vest use. Traditional resistance training remains an effect strategy to mitigate weight loss-associated muscle strength loss in older adults.

P114- EFFECTS OF RESISTANCE EXERCISES ON SKELETAL MUSCLE HYPERTROPHY, MUSCULAR STRENGTH, AND INFLAMMATORY MARKERS IN PATIENTS WITH CHRONIC KIDNEY DISEASE: A SYSTEMATIC REVIEW AND META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS. Y.J. Lee[1], C.H. Kim[1], D.H. Lee[1], D.H. Park[1], S.J. Yeon[1], B.Y. Kim[1], J. Choi[1], J.Y. Jeon[1] ((*1) Yonsei University - Seoul (Korea, Republic of)*)

Background: Chronic Kidney Disease (CKD) is a major global health concern, affecting approximately one in seven adults in the United States. A notable problem in patients with CKD is decreased muscle mass, which leads to increased morbidity and mortality. In addition, inflammatory markers are significant in predicting mortality in CKD patients, and high level of these markers are associated with increased risks and mortality in CKD patients. **Purpose:** To investigate the effects of resistance exercise on physical performance and inflammatory markers in patients with CKD. **Methods:** Through April 2023, researchers evaluated published literature on resistance exercise (RE), skeletal muscle outcomes and inflammatory markers in adults with CKD (Stage 2–5). Eligible randomized controlled trials (RCTs) were analyzed using random-effects meta-analysis models, measuring the impact of RE on muscle hypertrophy, strength, and inflammatory markers. The effect size, calculated as the difference in outcome improvement between groups, utilized standardized mean difference (SMD) and a 95% confidence interval. Heterogeneity was addressed by examining outlier studies, qualitatively exploring divergent results, and conducting sensitivity analyses on study exclusions. **Results:** A total of 20 studies were included in the meta-analysis. The results indicate a significant increase in muscle strength [SMD 1.17 (95% CI: 0.74, 1.59); n=18] and muscle mass [SMD 0.47 (95% CI: 0.15, 0.80); n=17] within the intervention group compared to the control group. Among the inflammatory markers, IL-6 (SMD, -0.48; 95% CI: -1.07, 0.12; n=5) and CRP (SMD, -0.51; 95% CI: -1.03, 0.02; n=7 studies) did not significantly decrease, whereas TNF-α (SMD, -1.80; 95% CI: -3.19, -0.41; n=4 studies) significantly decreased. **Conclusion:** RE shows promise in improving muscle strength, increasing muscle mass, and positively affecting inflammatory markers in individuals with CKD.

P115- DEFRAIL@HOME: PROTOCOL FOR A FEASIBILITY STUDY ON A REMOTELY DELIVERED DIET AND EXERCISE INTERVENTION FOR FRAILTY. S. Fagan[1], J. Cooke[2,3], R. Mulcahy[2,3], P. Bambrick[2,3], M. Harrison[1], B. Kehoe[1] *((1) Centre For Health Behaviour Research, Department Of Sport And Exercise Science, South East Technological University Waterford - Waterford (Ireland), (2) Waterford Integrated Care For Older People (wicop), Department Of Geriatric Medicine, University Hospital Waterford - Waterford (Ireland), (3) Department Of Medicine, Royal College Of Surgeons In Ireland - Dublin (Ireland))*

Background: Multicomponent exercise and dietary interventions combined have been shown to benefit older adults, with significant promise in transition between frailty states. Evolving models of healthcare, in particular post Covid-19, are prioritising community-based care. Exercise and dietary interventions lend themselves to community-based delivery and are gaining increased attention as a potential solution to address frailty outcomes in older adults, in particular in light of the impact Covid-19 related restrictions on frailty prevalence. Most research to date has centred on exercise interventions delivered in supervised community settings. This presents challenges such as resourcing, accessibility and convenience, and scalability. Additionally, some older adults with frailty report a dislike of group settings and indicate a preference for individual tailored programmes . Home-based exercise programmes provide an alternative delivery model that has the potential to increase the availability, accessibility and acceptability of exercise and nutrition interventions. However, home-based delivery presents challenges with engagement and adherence, both short and long-term. In this regard, integrating models of behaviour change in the intervention design is likely to support the initiation and maintenance of health behaviours. Intervention design also requires piloting and assessment of feasibility to ensure proper consideration of implementation factors and acceptability of the intervention. Therefore, our study aims to determine the feasibility of a remotely monitored theory-based exercise and protein supplement intervention for frailty. **Methods:** A single arm feasibility trial will be conducted. Eligibility criteria will include older adults aged >65years who have been referred to a multidisciplinary team for frailty assessment. Participants(n=30) will be recruited from a geriatric medicine clinic of a university hospital. Participants will undertake a 12-week home-based exercise and protein supplement programme. This will include induction training, support materials, telecommunication support and health coaching sessions followed by a 6-week maintenance phase and follow up. The multicomponent exercise programme will include balance, aerobic and strength training and involve three sessions per week. The protein supplement will be a commercially available milk product, offering an additional 33g of protein daily. The dosage will include 250ml to be taken at breakfast, and lunch or post exercise. The feasibility domains assessed will be i)implementation; assessed through observation and research field notes, ii) demand; recorded via recruitment, retention rates and intervention compliance

and adherence; iii) acceptability and practicality via post intervention questionnaire and semi structured interviews; and iv) preliminary effectiveness, assessed by the Fried Frailty Criteria, accelerometery, field-based measures of aerobic capacity, strength and falls risk and validated questionnaires assessing fear of falling, health-related QoL and exercise self-efficacy. **Conclusion:** It is envisaged that this trial will provide valuable information in terms of the feasibility of the home-based intervention. The data will aid in the design of a larger trial that will evaluate the effectiveness of multicomponent exercise and protein supplement intervention comparison to control on frailty related outcome measures. **Keywords:** Frailty, older adults, exercise, nutrition, intervention. **Disclosures:** This study is funded by the Irish Research Council Ireland enterprise partner scholarship with industry partner Tirlan, who develops and supplies the protein milk supplement. **References:** 1. Khor PY, Vearing RM, Charlton KE. The effectiveness of nutrition interventions in improving frailty and its associated constructs related to malnutrition and functional decline among community-dwelling older adults: A systematic review. J Hum Nutr Diet. 2022;35(3):566–82. 2. Daly RM, Gianoudis J, Hall T, Mundell NL, Maddison R. Feasibility, usability, and enjoyment of a home-based exercise program delivered via an exercise app for musculoskeletal health in community-dwelling older adults: Short-term prospective pilot study. JMIR mHealth uHealth. 2021;9(1). 3. Beauchamp MR, Carron A V., McCutcheon S, Harper O. Older adults' preferences for exercising alone versus in groups: Considering contextual congruence. Ann Behav Med. 2007;33(2):200–6. 4. Hirose T, Sawaya Y, Ishizaka M, Hashimoto N, Kubo A, Urano T. Frailty under COVID-19 pandemic in Japan: Changes in prevalence of frailty from 2017 to 2021. J Am Geriatr Soc. 2023;71(5):1603–9. 5. Bowen DJ, Kreuter M, Spring B, Linnan L, Weiner D, Bakken S, et al. How we design feasibility studies. Am J Prev Med. 2009;36(5):452–7. 6. Michie S, Johnston M, Abraham C, Lawton R, Parker D, Walker A. Making psychological theory useful for implementing evidence based practice: A consensus approach. Qual Saf Heal Care. 2005;14(1):26–33.

P116- PANACEE: IMPACT OF NUTRITIONAL AND PHYSICAL ACTIVITY SUPPORT ON THE FRAILTY SYNDROME IN OLDER INDIVIDUALS IN THE POST-THERAPEUTIC PHASE OF CANCER TREATMENT.

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Introduction: To date, no studies have identified frailty in older populations in the post-cancer phase, nor have any proposed interventions to reverse frailty. The aim of this study was to reduce the prevalence of pre-frailty/frailty in a group of patients over 70 years old, either in the immediate post-cancer phase or in the maintenance phase, through a dual intervention involving support for physical activity and nutrition. **Materials & Methods:** We conducted a prospective, pilot, before-after, bicentric, open-label study? between November 2020 and July 2022 at the University Hospital of Grenoble-Alpes and Mutualiste Clinic. Patients were recruited by oncologists, radiotherapists, and hematologists based on the screening by the Gerontopole Frailty Screening Tool (GFST). **Inclusion criteria:** Patients aged >70 years, presenting at least one Fried criterion (pre-frail or frail), having undergone cancer treatment less than 3 months ago or receiving maintenance treatment, and providing consent. Primary outcome was the change in frail or pre-frail status at 6 months. Secondary outcomes were the evaluation of program adherence and the impact on mobility scores (walking speed and SPPB). The program was divided into two phases : a 6-month period of multimodal nutritional and physical coaching, followed by a 6-month passive follow-up phase during which patients could choose to continue their physical and/or nutritional activities. This abstract presents the results of the first active coaching phase. **Results:** 793 patients were pre-screened, 368 had a positive GFST+ score with at least one frailty criterion. Of these, 110 were included at baseline, and 81 completed the full assessment at baseline and at 6 months based on Fried's criteria (12 were excluded due to cancer progression, 17 withdrew consent). The mean age was 77 years, with various cancer types (colon, breast, prostate, hematological). In this particular population undergoing active cancer treatment or maintenance therapy, a 6-month period of nutritional and physical coaching completely reversed frailty in 1 out of 3 patients, with 74% reversing at least one Fried criterion. **Conclusion:** This pilot study demonstrates that individualized physical and nutritional coaching is feasible in frail older populations following cancer treatment and can fully reverse frailty within 6 months, even when all 5 Fried criteria are present. A randomized clinical trial is now needed to confirm the optimal type and intensity of physical activity required to reverse frailty.

P117- AGING AND FALL-RISK IMPAIR BIOMECHANICAL AND NEUROMUSCULAR MECHANISMS OF VOLUNTARY STEPPING AND BALANCE.

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Background: With aging, there is a significant reduction in neural drive, leading to declines in neuromuscular performance, particularly in the rate of force development (RFD) and muscle power, affecting ambulation and gait initiation. These declines are more pronounced in individuals with a history of falls, as rapid and forceful muscle contractions are essential for employing balance protective stepping strategies. Falls affect 33% of individuals over 65 annually, where impaired medio-lateral (ML) weight transfers are often a main contributor. During voluntary step initiation, older adults exhibit longer initiation latencies and reduced RFD, particularly during tasks requiring quick decision making, increasing the risk for falls. However, it is not yet fully understood how RFD mediates voluntary stepping and balance mechanisms through the aging process and with different fall risks. Hence, this study proposed to investigate the effects of aging and fall-risk on

neuromuscular and biomechanical mechanisms of voluntary step initiation and balance in otherwise healthy individuals. **Methods:** Forty-five participants were recruited: 15 healthy younger adults (PY; age 26.36 ± 4.62 years), 15 older adult non-fallers (PNF; age 71.64 ± 4.63 years), and 15 older adult fallers (PF; age 72.67 ± 4.81 years). Participants performed the four-square step test (FSST), Timed Up-and-Go (TUG) without and with concurrent cognitive interference (Dual-task TUG), mini-BESTest and maximal voluntary isometric contractions (IMVC) of the hip abductors, adductors, and ankle dorsiflexors (DESMOTEC, IT). Additionally, participants underwent a voluntary step initiation protocol with visual cues, composed by 10 simple (SRT) and 10 choice (CRT) reaction stepping tasks, on a force platform (AMTI, USA). From this protocol were extracted reaction times, as well as posterior and abductor peak ground reaction forces and RFD, center of pressure (CoP) displacement and velocity. Between-group comparisons for all outcomes were assessed with a linear mixed effects models for a significance of $p<0.05$. **Results:** PY exhibited the fastest ($p<0.05$) FSST (4.30±0.73s, ≈55% faster), TUG (4.23±0.28s, ≈23% faster), and Dual-Task TUG (4.24±0.39s, ≈29% faster). PY showed the best Mini-BESTest score (27.73±0.59, $p<0.05$), normalized IMVC RFD (≈120% more hip abduction; ≈130% greater hip adduction; ≈39% more ankle dorsiflexion, $p<0.05$) and peak force (hip abduction: ≈40% greater; hip adduction: ≈35% more; ankle dorsiflexion: ≈18% greater, $p<0.05$). During voluntary stepping, while PY outperformed in every measure ($p<0.05$), PF had the slowest reaction time (SRT:0.217±0.066s; CRT:0.240±0.092s, $p<0.05$), shortest peak CoP displacement (SRT:lateral- 0.045±0.006m; posterior- 0.094±0.007m; CRT:lateral- 0.053±0.005m; posterior- 0.096±0.006m, $p<0.05$), slowest peak CoP velocity (SRT:lateral- 0.127±0.009m/s; posterior- 0.268±0.012m/s; CRT:lateral- 0.125±0.010m/s; posterior- 0.232±0.012m/s, $p<0.05$), lowest normalized RFD (SRT:lateral- 0.201±0.020bw/s; posterior- 0.268±0.022bw/s; CRT:lateral- 0.196±0.024bw/s; posterior- 0.232±0.023bw/s, $p<0.05$) and weakest normalized peak force (SRT:lateral- 0.051±0.008bw; posterior- 0.127±0.011bw; CRT:lateral- 0.055±0.009bw; posterior- 0.125±0.012bw, $p<0.05$). **Conclusion:** While fallers were not significantly worse than non-fallers in IMVC and fall-risk tests, fallers' performance was the worst during the stepping tasks. These findings may be indicative of mechanisms specific to stepping and balance that become impaired through aging and even worse among high fall-risk individuals. Furthermore, this study highlights the necessity of tailored exercise interventions that effectively address these biomechanical and neuromuscular mechanisms, such as muscle power training, to enhance stepping, balance and reduce the risk of falls.

P118- INFLUENCE OF ACTIVE LIFESTYLE CRITERIA ON MUSCLE FORCE, MUSCLE POWER, RATE OF FORCE DEVELOPMENT AND FATIGUE ACROSS LIFETIME. M. Aubertin-Leheudre[1], M. Laliberté[1], M. Bélanger[1] *((1) UQAM - CRIUGM - Montréal (Canada))*

Background: Normal aging brings about a decline in muscle strength, muscle power, rate of force development (RFD) and rapid onset of fatigue. The activity status of an individual influenced negatively (sedentary) or positively (being physically active) these declines. However, the definition used to determine the lifestyle behaviour could cloud these interrelations. **Objective:** Determine if the classification of physical activity status influences the evolution of muscle function (maximal force and power, RFD and time to fatigue) across lifetime. **Methods:** Cross-sectional study involved 139 men (20 to 92 years old). Maximal voluntary isometric knee extensor strength (MVIKES), rate of force development (RFD), muscle power (Nottingham Power Rig) and fatigue (TF50%: time to 50% of MVIKES) were determined. Activity status was measured through validated objective (tri-axial accelerometer) or subjective tools. Three validated criteria [1) the duration per week (ACSM:< or > 150min/wk); 2) number of steps per day (< or > 10000 steps/day) and 3) metabolic energy expenditure (< or >1.5 METs/day)] were used to divide our population. The slopes and intercepts of 2 linear regression analyses (± criterium) were compared for each parameter($p<0.05$). **Results:** MVIKES and power declined with age at approximately 2N/year and 2W/year, respectively, but were unaffected by any of the 3 active lifestyle criteria. RFD and TF50% were unchanged with age and were unaffected by the 3 criteria. **Conclusion:** Since RFD was unaltered with age and activity criteria levels, this finding suggests that criteria threshold refinements may be required to better capture muscle aging-related processes.

LP076- EVALUATING SYNCHRONOUS ONLINE AND FACE-TO-FACE EXERCISE PROGRAMS FOR OLDER NURSING HOME RESIDENTS: INSIGHTS FROM A PILOT RCT. A. Rodriguez Larrad[1], A. Ruiz Fernandez[1], J. Irazusta[1], A. Martin Perez[1], N. Ugalde[1], J. Garcia Garcia[1], M. Aiestaran[1], M.E. Vicente[1], M. Urquiza Abaunza[1] *((1) UPV/EHU - Arrasate (Spain))*

Background: While there is growing evidence supporting the feasibility and benefits of synchronous online (SO) exercise programs for community-dwelling older adults [1, 2], research on their implementation and effectiveness among nursing home (NH) residents remains limited. Older adults living in NHs represent a particularly vulnerable population with unique physical, social, and mental health needs, necessitating tailored approaches for exercise delivery [3, 4]. This pilot randomized controlled trial (RCT) aimed to (i) assess the feasibility of a SO supervised physical exercise intervention, and (ii) explore the comparative effects of SO versus face-to-face (F2F) exercise programs on physical, mental, and quality of life outcomes in older adults residing in NHs. **Methods:** Twelve participants living in a NH (mean age: 85 ± 7 years)

were randomly assigned to either the SO group (n = 6) or the F2F group (n = 6). Both groups participated in a 12-week individualized and progressive multicomponent physical exercise program. Sessions were conducted twice per week at moderate intensity and included strength, balance and aerobic training. Feasibility outcomes were evaluated through adherence metrics (completion, attendance, and compliance), program safety, session duration, and participants´ perceived intensity and satisfaction. Intervention effects on physical function (Short Physical Performance Battery [SPPB], 8-Foot Up-and-Go [8FUG], arm curl test), mental health (Geriatric Depression Scale [GDS]), and quality of life (EuroQol-5D-3L) were assessed at baseline and post-intervention. Paired t-tests were used for within-group comparisons, while mixed-design ANCOVA (baseline-adjusted) examined group-by-time interactions. **Results:** All participants successfully completed the intervention, demonstrating high adherence and compliance rates, with only very mild adverse events reported in both programs. Session duration differed significantly between groups, with shorter F2F sessions compared to SO sessions ($P < 0.01$). Perceived cardiovascular intensity and satisfaction were significantly higher in the F2F group ($P < 0.05$). Both groups experienced significant physical function improvements ($P < 0.05$), as evidenced by gains in SPPB scores and arm curl test performance. However, significant improvements in the 8FUG test were observed exclusively in the F2F group ($P < 0.05$). Notably, GDS scores showed significant reductions only in the SO group ($P < 0.05$). The F2F group exhibited significantly greater improvements ($P < 0.05$) in quality of life compared to the SO group. **Conclusion:** This pilot RCT demonstrated the feasibility, safety, and acceptability of a synchronous online exercise intervention for older NH residents. Both SO and F2F programs led to meaningful improvements in physical and mental health outcomes. However, the F2F intervention showed a greater impact on quality of life and functional mobility. These findings suggest that online programs are a viable alternative when face-to-face sessions are not feasible. Further studies with larger sample sizes are needed to confirm these preliminary findings and explore long-term effects. **Keywords:** Exercise, nursing home, tele-exercise, e-health, feasibility.
Disclosure: The authors declare no conflict of interest. This study was supported by the project PID2021-123688OB-C33 funded by MICIU/AEI/10.13039/501100011033 and /FEDER, UEEuropean Union. **References:** 1. Dagenais M, Parker O, Galway S, Gammage K. Online exercise programming among older adults: a scoping review. J Aging Phys Act. 2022;31(2):289-302. doi:10.1123/japa.2021-0417. 2. Mañas A, Gómez-Redondo P, Valenzuela PL, Morales JS, Lucía A, Ara I. Unsupervised home-based resistance training for community-dwelling older adults: a systematic review and meta-analysis of randomized controlled trials. Ageing Res Rev. 2021;69:101368. doi:10.1016/j.arr.2021.101368. 3. Moreno-Martin P, Jerez-Roig J, Rierola-Fochs S, et al. Incidence and predictive factors of functional decline in older people living in nursing homes: a systematic review. J Am Med Dir Assoc. 2022;23(11):1815-1825.e9. doi:10.1016/j.jamda.2022.05.001. 4. Chen P, Cai H, Bai W, et al. Global prevalence of mild cognitive impairment among older adults living in nursing homes: a meta-analysis and systematic review of epidemiological surveys. Transl Psychiatry. 2023;13(1):88. doi:10.1038/s41398-023-02361-1.

LP078- BARRIERS AND FACILITATORS TO PHYSICAL ACTIVITY AMONG FRAIL OLDER SOUTH ASIANS RESIDING IN THE UK: A SYSTEMATIC REVIEW.

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Background: Management of frailty has become a major focus as the population ages. Frailty levels in the UK are increasing with higher frailty levels reported among South Asians. Physical activity has been shown to be an effective intervention, particularly in the early stages of frailty, however South Asians in the UK are more likely to be physical inactive or sedentary life. Culture can play an important role when The knowledge of attitudes, barriers and facilitators to PA could help understand the reason for low PA among SAs when designing programmes/interventions to increase their PA. No previous Systematic review (SR) of barriers and facilitators to PA among frail older SA in the UK has been done. Therefore, this study aims to systematically review and synthesize existing evidence of the barriers and facilitators to PA among frail older South Asians residing in the UK. **Methods:** This review was conducted based on the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines. Studies were eligible if they met the following criteria: employed any qualitative method; focused on attitudes, barriers and facilitators to PA; included frail South Asian participants aged 50 and over and who reside in the UK. The search was in Medline, Web of Science Core Collection, CINAHL, SPORTDiscus, psycINFO, and AMED. The search was completed in November 2024, with the Joanna Briggs Institute (JBI) critical appraisal tool for qualitative research used for quality appraisal. Results of the articles in included were synthesised thematically. **Results:** The search yielded a total of 2,236 articles, with 38 studies selected for full text screening. However, only one study met the inclusion criteria, with a total of 16 participants (frail or pre-fail according to the frailty phenotype. **Conclusion:** This systematic review identified the lack of primary research in this population and the need for more studies. Future work will study the knowledge and awareness of frailty, and the barriers, facilitators and attitude to physical activity among mildly frail community dwelling older South Asians residing. This information will be used to co-produce a physical activity intervention programme for frail older South Asians. **Keywords:** Frailty physical activity, South Asians, barriers and facilitators.

LP079- EVALUATION OF A MIND-BODY PHYSICAL ACTIVITY INTERVENTION FOR MILDLY FRAIL OLDER ADULTS. I. Tsocheva[1], O. Ezeokoli[1], O. Odufuwa[1], Z. Kalemo[1], D. Hewson[1] *((1) Institute For Health Research, University Of Bedfordshire - Luton (United Kingdom))*

Background: Physical activity interventions can be an effective tool to improve physical function and quality of life in frail older people. However, much of the research in this area has grouped frail older people together, without evaluating the impact of physical activity on people with different frailty levels. The Luton Healthy Ageing programme is aimed people aged 65 years and over who have been identified as mildly frail using the electronic Frailty Index (eFI). Mildly frail adults are eligible for 12 weeks of free physical activity from a range of choices. One of these activities is Positive Movement, which is based on adaptive yoga, and includes elements of the Alexander technique and mindfulness. The aim of this study was to evaluate the Positive Movement intervention in community dwelling older people with mild frailty. **Methods:** Participants were recruited through general practices and were given a choice of physical activities, one of which was Positive Movement. Participants are evaluated before and after their 12 weeks of physical activity. The assessments include the frailty phenotype, the Short Physical Performance Battery (SPPB), and quality of life (EQ-5D-5L). Over 60 people have started the programme, with 24 completing the post assessment by November 2024. A paired t-test was used to compare the pre- and post-assessment data. **Results:** Twenty-four participants (22 females) have completed testing, with participants aged 74.0 ± 6.9 years. The majority of the participants (83.3%) were white. Three participants (12.5%) were classified as fit using the frailty phenotype, with 14 pre-frail (58.3%) and seven frail (29.2%). Preliminary results show good adherence to the programme with over 70% of participants attending at least 75% of the sessions. After the intervention, the phenotype score decreased significantly from 1.71 to 1.29 (Hedges' g = 0.77; 95% CI 0.24, 1.29). Participants' SPPB scores improved significantly from 7.71 to 8.24 (Hedges' g = 0.57; 95% CI 0.05, 0.95). No changes were observed in quality of life. **Conclusion:** has shown good adherence to a mind-body physical activity programme for mildly frail older adults. Frailty phenotype scores decreased slightly, while physical function improved. A larger sample size is needed to assure replicability and generalizability of these results, with a particular focus on males and increasing participants from ethnic minorities. **Keywords:** Mild frailty, healthy ageing, physical activity, health outcomes, quality of life.

LP080- FEASIBILITY OF PHYSICAL ACTIVITY IN OLDER ADULTS WITH HEMATOLOGICAL MALIGNANCIES: ACCES STUDY (AGING & CANCER: EXERCISE AS A SOLUTION). E. Peyrusqué[1], M. Aubertin-Leheudre[2], L. Balardy[1], Y. Rolland[1] *((1) CHU Toulouse - Toulouse (France), (2) UQAM - Montréal (Canada))*

Introduction: Cancer treatments can lead to side effects such as reduced functional capacity, loss of autonomy and increased fatigue [1-4]. The benefits of physical activity (PA) for older adults are well-documented in the literature [5-7]. However, PA is often recommended for cancer survivors rather than for patients undergoing treatment [8-10]. It is essential to develop home-based, unsupervised adapted physical activity (APA) programs to ensure accessibility for all cancer patients, particularly those living in rural areas or with limited access to healthcare services. **Methods:** Eligible patients (MMSE >20/30; life expectancy >3 months, no contraindications to PA) from the day and week hospital units of the Oncogeriatric Department at Toulouse University Hospital will receive one of six CREATE adapted PA programs. These programs are tailored to their mobility profile, assessed using a decision tree (handgrip strength, 30-second sit-to-stand test, SPPB). Patients will perform their assigned program autonomously at home once daily for six months with monthly in-person reassessments to adjust the program as needed. Feasibility (session adherence (%) and eligibility rate (%)), acceptability (System Usability Scale and Likert scale) and functional capacity evolution (handgrip strength, sit-to-stand tests, SPPB) will be evaluated. Recruitment will conclude once 69 patients have completed the intervention. **Results:** The study is ongoing, and results will be presented at the congress. Preliminary data are as follows: Out of 307 patients, 164 were eligible; 70 declined participation and 94 were included. Among these, 5 patients died, 8 were excluded, 13 dropped out, 40 completed the intervention and 28 are currently in progress. The programs prescribed, ranked by increasing difficulty, were ROSE (11%), VIOLETTE (8.2%), CROCUS (42.5%), TULIPE (5.5%), PIVOINE (28.8%), and LILA (4.1%). Participants had a mean age of 84.0 ± 1.4 years, with 47.9% female, 88.9% living at home, and 60.3% using home care services. The average MoCA score was 23.63 ± 3.17, and functional independence level was 5.61 ± 0.7 on the Katz scale (out of 6). Among the 40 patients who completed the intervention, 76.4% were satisfied (SUS), all found the programme suitable (48.3%) or totally suitable (51.7%) and 96.6% felt it improved their physical health. Clinical improvements were observed after 6 months, including an increase of 2 repetitions in the chair stand test and 1 point increase in the SPPB score. **Conclusion:** These preliminary results show that the CREATE tool can be prescribed regardless of patients' health status and he seems well-accepted by participants. The tool also appears to improve participants' physical and functional performance, which contrasts with findings in the literature reporting a decline in the absence of PA. We believe that the CREATE tool could significantly contribute to the multidimensional management of older patients with hematological malignancies. **Keywords:**

Adapted physical activity, oncogeriatrics, deconditioning, hematological malignancies. **Disclosures:** The authors declared no competing interests. **References:** 1. Stene, Guro B., Jorunn L. Helbostad, Tore Amundsen, Sveinung Sørhaug, Harald Hjelde, Stein Kaasa, et Bjørn H. Grønberg. 2015. « Changes in Skeletal Muscle Mass during Palliative Chemotherapy in Patients with Advanced Lung Cancer ». Acta Oncologica (Stockholm, Sweden) 54 (3): 340 48. https://doi.org/10.3109/0284186X.2014.953259. 2. Kimura, Madoka, Tateaki Naito, Hirotsugu Kenmotsu, Tetsuhiko Taira, Kazushige Wakuda, Takuya Oyakawa, Yasushi Hisamatsu, et al. 2015. « Prognostic Impact of Cancer Cachexia in Patients with Advanced Non-Small Cell Lung Cancer ». Supportive Care in Cancer: Official Journal of the Multinational Association of Supportive Care in Cancer 23 (6): 1699 1708. https://doi.org/10.1007/s00520-014-2534-3. 3. Kasymjanova, Goulnar, José A. Correa, Harvey Kreisman, Esther Dajczman, Carmela Pepe, Sarah Dobson, Lucie Lajeunesse, Rajesh Sharma, et David Small. 2009. « Prognostic Value of the Six-Minute Walk in Advanced Non-Small Cell Lung Cancer ». Journal of Thoracic Oncology: Official Publication of the International Association for the Study of Lung Cancer 4 (5): 602 7. https://doi.org/10.1097/JTO.0b013e31819e77e8. 4. Bower, Julienne E., Kate Bak, Ann Berger, William Breitbart, Carmelita P. Escalante, Patricia A. Ganz, Hester Hill Schnipper, et al. 2014. « Screening, Assessment, and Management of Fatigue in Adult Survivors of Cancer: An American Society of Clinical Oncology Clinical Practice Guideline Adaptation ». Journal of Clinical Oncology: Official Journal of the American Society of Clinical Oncology 32 (17): 1840 50. https://doi.org/10.1200/JCO.2013.53.4495. 5.Cormie, Prue, Eva M. Zopf, Xiaochen Zhang, et Kathryn H. Schmitz. 2017. « The Impact of Exercise on Cancer Mortality, Recurrence, and Treatment-Related Adverse Effects ». Epidemiologic Reviews 39 (1): 71 92. https://doi.org/10.1093/epirev/mxx007. 6. Cheville, Andrea L., Jenny Kollasch, Justin Vandenberg, Tiffany Shen, Axel Grothey, Gail Gamble, et Jeffrey R. Basford. 2013. « A Home-Based Exercise Program to Improve Function, Fatigue, and Sleep Quality in Patients with Stage IV Lung and Colorectal Cancer: A Randomized Controlled Trial ». Journal of Pain and Symptom Management 45 (5): 811 21. https://doi.org/10.1016/j.jpainsymman.2012.05.006. 7. Chen, H.-M., C.-M. Tsai, Y.-C. Wu, K.-C. Lin, et C.-C. Lin. 2015. « Randomised Controlled Trial on the Effectiveness of Home-Based Walking Exercise on Anxiety, Depression and Cancer-Related Symptoms in Patients with Lung Cancer ». British Journal of Cancer 112 (3): 438 45. https://doi.org/10.1038/bjc.2014.612. 8. Knowles, Reegan, Emma Kemp, Michelle Miller, Kade Davison, et Bogda Koczwara. 2022. « Physical Activity Interventions in Older People with Cancer: A Review of Systematic Reviews ». European Journal of Cancer Care 31 (5): e13637. https://doi.org/10.1111/ecc.13637. 9. Morey, Miriam C., Denise C. Snyder, Richard Sloane, Harvey Jay Cohen, Bercedis Peterson, Terryl J Hartman, Paige Miller, Diane C. Mitchell, et Wendy Demark-Wahnefried. 2009. « Effects of Home-Based Diet and Exercise on Functional Outcomes Among Older, Overweight Long-Term Cancer Survivors: The RENEW: Randomized Clinical Trial ». JAMA : the journal of the American Medical Association 301 (18): 1883 91. https://doi.org/10.1001/jama.2009.643. 10. Schmitz, Kathryn H., Kerry S. Courneya, Charles Matthews, Wendy Demark-Wahnefried, Daniel A. Galvão, Bernardine M. Pinto, Melinda L. Irwin, et al. 2010. « American College of Sports Medicine Roundtable on Exercise Guidelines for Cancer Survivors ». Medicine and Science in Sports and Exercise 42 (7): 1409 26. https://doi.org/10.1249/MSS.0b013e3181e0c112.

LP082- THE PHYSICAL ACTIVITY PERCEPTIONS IN THE ELDERLY PRIMARY CARE POPULATION IN SINGAPORE.

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Background: Many older adults have insufficient physical activity (PA) despite the well-established benefits. This study aimed to elicit older adults' understanding, barriers, and facilitators of PA in the primary care setting in Singapore. **Methods:** Older patients were purposively selected based on their level of PA, gender, ethnicity, and employment status. After obtaining written informed consent, they underwent in-depth interviews conducted between November 2023 to October 2024. The interviews were guided by the COM-B-Theoretical Domains Framework and Singapore Physical Activity Guideline (SPAG) recommendations on aerobic and muscle strengthening activities. Interviews were audio-recorded and transcribed verbatim. Thematic analysis was conducted using NVivo 14 qualitative data analysis software. **Results:** Seven male and nine female participants aged between 62 to 74 years old were included in this interim analysis. Eight were Chinese, four Malay, and four Indians. Half of the participants were employed at the time of interview. Six participants engaged in adequate aerobic activities and a similar number had adequate muscle strengthening exercises according to the SPAG. Findings followed the COM-B themes of capability, opportunity, motivation and behaviour. Many of the participants felt that PA was equivalent to purposeful exercise and drew upon their past and current experiences of physical activity. Some were aware that PA also included movement during transportation, work, and housework. Although many participants were familiar with the concept of aerobic activity, few were familiar with the muscle strengthening activities. PA barriers included chronic pain and the lack of skills and knowledge to perform the PA at all or at an adequate level, which may lead to low self-efficacy, a sense of complacency, and the inability to adapt to their physical and social circumstances. Facilitators included the having the skills and knowledge to perform their PA, adaptation of their PA to their bodily conditions, lifestyle, or environment, believing and experiencing the benefits of PA, and having accessible equipment and place. Social support was also a major facilitator and many participants with many barriers such as low levels of knowledge and health literacy were still able to obtain adequate PA levels as they were supported by their family members, friends, healthcare team, or clubs. **Conclusion:** Further data

collection till data saturation is required to enhance our current findings. Our interim results suggest the importance of social support that can overcome barriers and facilitate adequate PA. Given its accessible nature and emphasis on continuity of care, the primary care setting can be seen as an important source of social support for patients with inadequate physical activity. **Keywords:** Physical activity, elderly, primary care. **Disclosures:** The authors declare no competing interests.

LP083- TWICE-WEEKLY MULTICOMPONENT EXERCISE YIELDS GREATER BENEFITS THAN ONCE-WEEKLY IN OLDER ADULTS. M. Markotegi[1], A. Rodriguez-Larrad[1], C. Rezola-Pardo[1], B. Sanz[1], F. Ruiz[1], J. Irazusta[1] *((1) University Of The Basque Country - Bilbao (Spain))*

Background: Physical exercise has demonstrated its benefits in improving health and quality of life in older adults. However, a large proportion of this population is unable to meet the amount of physical activity recommended by the World Health Organization. Therefore, it is essential to determine whether lower doses of exercise can still be effective. This study aimed to evaluate the effects of two multicomponent physical exercise (MPE) programs, with different session frequencies, on physical and mental health, frailty, and quality of life in older adults. **Methods:** A quasi-experimental design was used to compare two MPE programs delivered over 35 weeks with session frequencies of once per week versus twice per week. Community-dwelling older adults enrolled in two municipal physical activity programs were included in the study. Each program consisted of 1-hour supervised group sessions focusing on strength, balance, and stretching exercises. Participants were evaluated at baseline and at the end of the programs. Physical fitness was assessed using the Senior Fitness Test (SFT), Short Physical Performance Battery (SPPB), handgrip strength, and Berg Balance Test. Frailty was measured with the Tilburg Frailty Indicator (TFI), while quality of life was assessed using the EQ-5D-3L. Mental health was evaluated with the Goldberg Anxiety and Depression Scales (AGS and DGS) and the UCLA Loneliness Scale. Changes within groups were analyzed using paired t-tests or Wilcoxon signed-rank tests, depending on the normality of the data. Comparison of group evolution was assessed using group × time interaction analyzed by ANCOVA (with pre-intervention values as covariates) for mixed designs. **Results:** Fifty-four individuals completed the study. The twice-per-week group showed significant improvements in all physical fitness tests ($P<0.05$ to $P<0.0001$), including all components of the SFT and SPPB, handgrip strength, and Berg Balance Test. Additionally, participants in this group reduced TFI, AGS, DGS, and UCLA Scale scores and improved their EQ-5D-3L scores ($P<0.05$ to $P<0.0001$). The once-per-week group improved physical measures ($P<0.05$ to $P<0.0001$), except for the Chair Sit-and-Reach, Back Scratch, and handgrip strength. The values of TFI, AGS, and DGS were reduced, and the EQ-5D-3L score increased in this group ($P<0.05$ to $P<0.0001$). Group × time interaction showed that the twice-per-week group demonstrated greater improvements ($P<0.05$ to $P<0.0001$) in the 2-Minute Step Test, Chair Sit-and-Reach, Back Scratch, and 8-Foot Up-and-Go tests from the SFT, as well as in gait speed from the SPPB and handgrip strength. Moreover, the twice-per-week group improved significantly ($P<0.01$ to $P<0.0001$) in TFI, AGS, DGS, UCLA Scale, and EQ-5D-3L scores. **Conclusion:** This study showed that MPE programs are effective in improving physical and mental health outcomes, frailty, and quality of life in older adults, with twice-per-week sessions yielding superior benefits compared to once-per-week sessions. These results highlight the importance of adhering to minimum doses of MPE, with higher doses offering greater improvements. At the same time, they also emphasize the value of even small doses of exercise for those unable to participate in higher-frequency programs. **Keywords:** Multicomponent physical exercise, older adults, frailty, quality of life, session frequency. **Disclosure:** The authors declare no conflict of interest. This study was supported by a project funded by the Basque Government IT1538-22.

LP084- SARCOPENIA RISK IN OLDER ADULTS: IMPORTANCE OF ADHERENCE TO TYPE AND VOLUME OF PHYSICAL ACTIVITY ACCORDING TO GUIDELINES FOR OLDER ADULTS. H. Limen[1], A. Nilsson[2], A. Santoro[3], L. Smeldy Jurado-Medina[3], T. Driss[1], A.A.M. Berendsen[4], L.C.P.G.M. De Groot[4], J. Kaluza[5], O. Januszko[5], A. Jennings[6], S. Fairweather-Tait[6], C. Franceschi[3], F. Kadi[2] *((1) UFR Staps, University Of Paris Nanterre - Paris (France), (2) School Of Health Sciences, Örebro University - Örebro (Sweden), (3) Department Of Medical And Surgical Sciences, University Of Bologna - Bologna (Italy), (4) Division Of Human Nutrition, Wageningen University & Research - Wageningen (Netherlands), (5) Department Of Human Nutrition, Warsaw University Of Life Sciences (WULS-SGGW) - Warsaw (Poland), (6) Norwich Medical School, University Of East Anglia - Norwich (United Kingdom))*

Background: Aging is related to a natural decline in physical function, characterized by a gradual loss of muscle mass and strength leading to an increased risk of sarcopenia. Unfortunately, a minority of older adults adhere to current guidelines for health-enhancing physical activity (PA), targeting 150 to 300 weekly minutes of moderate-to-vigorous aerobic-type PA combined with weekly engagement in muscle-strengthening activities (MSA). Whether the targeted amount of weekly aerobic-type PA is sufficient to infer beneficial impacts on sarcopenia risk in older adults is currently unclear. Therefore, the aim of the present study was to investigate associations between adherence to different amounts of weekly aerobic-type PA together with engagement in MSA and sarcopenia risk in a sample of European older adults. **Methods:** A total of 864 community-dwelling older men and women (65–79 years) were included in the current analysis. A continuous sex-specific sarcopenia risk score (SRS) was created based on appendicular skeletal muscle mass assessed by dual-energy X-ray absorptiometry, and handgrip strength assessed using Jamar handheld dynamometer. Adherence to weekly aerobic-

type PA was assessed using the Actigraph GT3x accelerometer and engagement in MSA was determined by self-report. Data was analyzed using general linear models with adjustments for covariates including age, study center, health status, education level, smoking, marital status, and protein intake. **Results:** First, as anticipated, older adults who reported weekly engagement in MSA had a significantly ($p < 0.05$) lower SRS compared to those who did not. Interestingly, older adults who adhered to aerobic-type PA above the targeted weekly amount (i.e. ≥300 min) had a significantly ($p < 0.05$) lower SRS compared to those who adhered to the targeted amount (i.e. 150 to 300 min) as well as those below the targeted amount. Further, no significant difference in SRS was evident between older adults adhering to the targeted amount and those below this amount. Importantly, all findings remained evident after adjustment for covariates, including variations in protein intake. **Conclusion:** Our findings support current guidelines of engaging in aerobic-type PA as well as MSA in promotion of muscle health in older adults. Importantly, our findings suggest that adherence to the recommended targeted weekly amount of aerobic-type PA alone may be insufficient for promoting muscle health in older adults. **Keywords:** Physical activity behaviors, aging, skeletal muscle mass, muscle strength, physical exercise. **Disclosures:** No competing interest.

LP085- CROSS-SECTIONAL AND LONGITUDINAL ASSOCIATIONS BETWEEN PHYSICAL ACTIVITY, P-TAU181 AND COGNITION IN OLDER ADULTS. J. Raffin[1], K. Blennow[2,3], Y. Rolland[1,4], C. Cantet[4], S. Guyonnet[1], B. Vellas[1,4], P. De Souto Barreto[1,4] *((1) IHU HealthAge Toulouse - Toulouse (France), (2) Department Of Psychiatry And Neurochemistry, The Sahlgrenska Academy At The University Of Gothenburg, Mölndal - Mölndal (Sweden), (3) Clinical Neurochemistry Laboratory, Sahlgrenska University Hospital Mölndal - Mölndal (Sweden), (4) Cerpop UMR 1295, University Of Toulouse III, Inserm, UPS, Toulouse (France)*

Background: Modifiable lifestyle factors, including physical activity (PA), provide benefits against the age-related cognitive loss but the relationships of PA with Alzheimer's disease pathophysiology remains unclear. We explored the cross-sectional and longitudinal associations of blood concentrations in phosphorylated (p)-tau181 with moderate-to-vigorous PA (MVPA) and examined the role of p-tau181 in the associations between MVPA and cognition. We also tested the putative moderating role of apolipoprotein E (APOE)-ε4 allele on these relationships. **Methods:** Five hundred and fifty-eight adults who participated in the Multidomain Alzheimer Preventive Trial (MAPT study), aged 70 and over, were included in the present 3-year-long study. Blood concentrations in p-tau181 (pg/ml) were measured at baseline and 3 years. MVPA (MET-min/week) levels were assessed with questionnaires and a cognitive composite score (CCS), averaging the Z-sores of four cognitive tests was assessed concomitantly at baseline, 6, 12, 24 and 36 months. Mixed-effect regression analyses were conducted to investigate the associations of MVPA with p-tau181 at baseline and over the three-year follow-up. We further explored whether p-tau181 concentrations moderated or mediated the associations between MVPA and cognition, and whether these relationships differed according to APOE-ε4 status. **Results:** Active individuals had slower accumulation in p-tau181 over time compared to their inactive peers. Higher concentrations of baseline p-tau181 were found to attenuate the baseline and longitudinal associations between MVPA and cognition. P-tau181 concentrations did not mediate the associations of MVPA with cognition, and APOE-ε4 status did not moderate any of these relationships. **Conclusion:** Our results suggest that PA may dampen the age-related neurodegeneration, despite that p-tau pathophysiology mitigates the favourable relationships of MVPA with cognition in older adults. **Disclosures:** The present work has been accepted for publication in The Lancet Healthy Longevity. **Keywords:** Physical activity, p-tau181, cognition.

LP086- INFLUENCE OF RESISTANCE TRAINING VARIABLES TO IMPROVE MUSCLE MASS OUTCOME IN OLDER ADULTS WITH SARCOPENIA: A SYSTEMATIC REVIEW WITH META-REGRESSIONS. L. Delaire[1,2], A. Courtay[1,3], J. Humblot[1], H. Vidal[1,4], M. Bonnefoy[1,5], E. Meugnier[1,5] *((1) Hospices Civils De Lyon-Hôpital - Oullins-Pierre Bénite (France), (2) Carmen Inserm U1060-Inrae 1394-Université Claude Bernard Lyon 1 - Oullins-Pierre Bénite (France), (3) Reshape Research On Healthcare Professionals And Performance, Inserm U1290, Université Claude Bernard Lyon - Lyon (France), (4) Carmen Inserm U1060-INRAE 1397-Université Claude Bernard Lyon 1-Oullins-Pierre Bénite (france) - Oullins-Pierre Bénite (France), (5) Carmen Inserm U1060-Inrae 1397-Université Claude Bernard Lyon 1 - Oullins-Pierre Bénite (France))*

Background: Resistance training (RT) is the first line treatment to improve sarcopenia features [1]. However, increasing muscle mass with RT remains challenging and display inconsistent results [2, 3]. Manipulating training variables may present a novel approach to improve muscle mass gain in sarcopenic individuals [4]. The present study aimed to assess the effectiveness of RT intervention alone on muscle mass outcome in older adults with sarcopenia and at determining the influence of RT variables on muscle mass improvement. **Method:** We conducted a systematic review according to PRISMA standards to gather studies that conducted a supervised RT without nutritional intervention in sarcopenia-diagnosed older adults with a muscle mass outcome. Search strategy was performed on PubMed, Medline, Cochrane and Google Scholar in the last 14 years. Along with sample characteristics, we extracted and analyzed the following training variables : frequency, intensity (in RPE and % of 1RM load), duration, volume, periodization and muscle failure. First, we standardized the outcome with the Hedge's g and pooled the effect size (ES) of each study in an univariate meta-analysis adjusted for risk of bias. Then, we performed training composition comparisons between "effective interventions" and "ineffective interventions". Finally, relevant variables

were regressed as moderators of the weighted ES in a mixed-effects model. **Results :** A total of 14 studies representing 528 individuals (73.1 ± 6.6 years) was included for analysis. A significant effect of RT to improve muscle mass was found with a small weighted ES estimate (g = 0.38 [0.18;0.58] 95% CI, p = 0.0002). There was no publication bias across studies (p = 0.74). "Ineffective interventions" included significant older individuals (p = 0.008). Training composition was homogenous between the groups. The final model showed that age was the only significant moderator of the ES (estimate = -0.056 [-0.08;-0.03] 95% CI, p = 0.0004). **Conclusion:** RT variables do not have a significant influence on the muscle mass outcome. Varying RT variables in the context of RT prescription for sarcopenia does not seem to yield greater muscle hypertrophy. This study also unveils that aging with sarcopenia negatively affects the significant improvement of muscle mass induced by RT. **Keywords:** Sarcopenia, exercise, muscle, hypertrophy, training. **Clinical Trial Registry:** Not applicable. **Disclosures:** The authors declared no competing interests. **References:** 1. Hurst C, et al. Age Ageing 2022; 51(2). doi: 10.1093/ageing/afac003. 2. Nan Chen, et al. Eur Rev Aging Phys Act 2021; 18(1):23. doi: 10.1186/s11556-021-00277-7. 3. Ferreiera LF, et al. Arch Gerontol Geriatr 2023 Feb:105:104868. doi: 10.1016/j.archger.2022.104868. 4. de Santana DA, et al, Front Physiol 2021 Sep 30;12:759677. doi: 10.3389/fphys.2021.759677.

LP088- A NOVEL ANTI-FRAILTY HOME HEALTHCARE PROGRAM IMPROVES PHYSICAL PERFORMANCE MEASURES AND INCREASES INDEPENDENCE IN FRAIL OLDER ADULTS.

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Background: Frailty is associated with an increase in mortality, hospitalization and intensive care unit admission. Structured exercise interventions may reverse frailty. We aimed to test the ability of a novel home healthcare program to reverse frailty in a geriatric home health population. **Methods:** We built a new, structured home healthcare exercise program including aerobic, resistance, balance, and flexibility components (Vitality TherapyTM, "VT"). We assessed physical performance measures in a frail cohort at baseline, and at multiple follow-up time points during VT program participation. Between August 27, 2023 and May 31, 2024, ninety-eight frail adults (35 males, 63 males; mean age 80 + 10 years) participated in home-based episodes of physical therapist-led exercise for 45 minutes three times a week. The Short Physical Performance Battery (SPPB), the Clinical Frailty Scale and a measure of ambulation assistance were assessed at baseline and at 30-day intervals. Mixed Linear Modeling was used to perform statistical significance testing across multiple measurement points. **Results:** There were notable improvements in all measured physical performance outcomes among participants in the VT program. Pairwise comparisons showed that the SPPB was significantly greater at 120 days (M=9.03, SE =0.48), 90 days (M=7.66, SE = 0.41), 60 days (M=7.45, SE = 0.31) and at 30 days (M=6.39, SE=0.29) compared to baseline (M=4.28, SE = 0.28). Significant improvement was also observed on the Clinical Frailty Scale ($F3, 77.37 = 18,24$, $p < 0.01$) with patients improving their frailty score from 5.67 (SE=0.17) at baseline to 4.43 (SE=0.28) after 90 days in the program. **Conclusion:** The VT Program improved physical performance measures and decreased frailty in older adults. Expansion of home healthcare programs targeted to reverse frailty could provide increased access to an impactful intervention for this vulnerable population. **Keywords:** Frailty, home health, short physical performance battery. **Disclosure:** Dr. Mills is an employee and stockholder in BrightSpring Health Services. **References:** 1. Joynt KE, Figueroa JF, Beaulieu N, et al. Segmenting high-cost Medicare patients into potentially actionable cohorts. Healthc (Amst). 2017 Mar;5(1-2):62-67. 2. Bray NW, Smart RR, Jakobi JM, et al. Exercise prescription to reverse frailty. Appl Physiol Nutr Metab. 2016 Oct;41(10):1112-1116. 3. Rockwood K, Song X, MacKnight C, et al. A global clinical measure of fitness and frailty in elderly people. CMAJ.2005;173(5):489-495.

LP088BIS- RELATIONSHIP BETWEEN PHYSICAL FITNESS AND RUNNING PERFORMANCE OF OLDER RECREATIONAL MARATHON RUNNERS-COMPARING RUNNERS AGED 50 TO 70 YEARS.

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Background: A continuous running habit may be effective in preventing frailty. Many older and middle-aged recreational runners enjoy running marathons and challenging records. Aerobic capacities such as maximum oxygen capacity and running economy and leg muscle strength and endurance are important for improving marathon records, and in recent years, instantaneous abilities such as sprinting and jumping ability have also received attention. It is important to know these indices and relationships of those as a guideline for training of runners. Although it is thought that different age groups have different physical fitness factors that should be trained, the physical fitness characteristics of recreational runners of different ages have not been studied. The purpose of this study was to compare the aerobic, muscular, and instantaneous abilities of older and middle-aged recreational runners of various levels and to determine their physical fitness characteristics. **Methods:** The participants, recreational marathon runners (five men and three women) ranged in age from 48 to 67 years, with marathon records ranging from 3:27:08 to 4:49:42. The relationship between the runners' best records over the past year and the measures presented below were investigated. The five male runners among the participants were of different ages but had similar competitive records, and differences in the measurements due to age differences were examined. Exercise stress tests were performed on the treadmill to assess maximal oxygen uptake and running economy quantified as the oxygen cost of running at given speeds, and expired gases were collected continuously (Arco 2000, Arco System inc., Japan). Knee joint extension-flexion isokinetic torque in three angular velocities (60, 180 and 300 deg/sec) were measured (CYBEX NORM, CSMi, USA). Squat

jump (SJ), counter-jump without and with arm-swing (CJ and CJAS, respectively) and five consecutive rebound jumps (RJ) were evaluated from jump height and rebound jump index (Jump height (m)/ ground contact time (sec)) calculated from airtime and ground contact time measured using a mat-switch system (Multi jump tester, Q'sfix, Japan). **Results:** Maximal oxygen uptake, knee joint flexion-extension torque at three angular velocities, and jump height (SJ, CJ and CJAS) were correlated with marathon record, in all runners. Jumping height for RJ was significantly correlated with marathon records, but no correlation was found with ground contact time. No consistent trends in measured metabolic capacity, muscle strength or jumping ability were observed between generations of three generations of recreational runners with similar records. **Conclusion:** The findings suggest that recreational runner performance is related to fitness levels regardless of age, and that recreational runner training should focus on individual ability rather than age. **Keywords:** Maximal oxygen uptake, Running economy, Knee joint torque, Vertical jump, Rebound jump.

ICOPE (Integrated Care for Older People)

P119- IDENTIFYING COMMUNITY-DWELLING OLDER ADULTS AT RISK OF SARCOPENIA WITH WORLD HEALTH ORGANISATION-ICOPE STEP 1.

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Background: The WHO-ICOPE framework recommends a biannual screening with WHO-ICOPE Step 1 (WHO-ICS1) to identify declines in the physical and mental capacities of robust community-dwelling older adults. Sarcopenia diagnostically overlaps with impairment in the ICOPE locomotion domain and is closely interlinked with the vitality domain [1]. The SARC-F questionnaire has been the recommended sarcopenia case finding tool in the community, but its low sensitivity limits its utility in the community [2]. Thus, there remains a need for a sensitive sarcopenia case finding tool in resource limited settings. We aim to explore the utility of WHO-ICS1 to identify older adults at risk for sarcopenia. **Methods:** A cross-sectional sample of 990 community-dwelling ambulant adults ≥50 years-old were recruited between 2018 to 2023 in Singapore. Subjects underwent a multi-domain geriatric screen ("Individual Physical Proficiency Test for Seniors (IPPT-S)" [3]) which assessed handgrip strength, 10-meter gait speed, Short Physical Performance Battery, muscle mass via bioelectrical impedance analysis, SARC-F. Subjects were classified as robust (n=885), sarcopenic (n=67), and severely sarcopenic (n=38) in accordance with the Asian Working Group for Sarcopenia 2019 criteria. Sarcopenic and severely sarcopenic subjects were analysed as collectively as a single Sarcopenic/Severely Sarcopenic (S/SS) group. IPPT-S results including Chinese Mini Mental Status Examination, 5-times sit-to-stand test, Mini Nutritional Assessment-Short Form, self-reported problems with vision and hearing, and the 15-item Geriatric Depression Scale were utilised to derive responses of corresponding domains in WHO-ICS1. A positive scoring approach (range 0-10) was used to calculate WHO-ICS1 total scores (WHO-ICS1-TS), where a higher score indicates higher overall capacity. The number of WHO-ICS1 domain deficits (WHO-ICS1-NDD) and domain-specific deficits was also tabulated. We assessed odds ratios (OR) adjusted with age, and receiver operating characteristics of WHO-ICS1 for sarcopenia. **Results:** Subjects were predominantly female (75.4%), with a mean age of 67.8 years-old (standard deviation 6.78). Impaired cognition was most prevalent (76.8%), followed by impairments in vision (63%), mood (51.1%), locomotion (24.3%), nutrition (21.1%) and hearing (17.2%) amongst subjects. Impaired nutrition (adjusted OR (aOR) 2.63, 95% CI 1.7-4.08), locomotion (aOR 2.18, 95% confidence interval (CI) 1.39-3.41), or hearing (aOR 1.67, 95% CI 1.05-2.65) respectively increased odds for sarcopenia. The area under the ROC curves (AUROC) were 0.75, 0.75 and 0.73 respectively. WHO-ICS1-TS negatively associated with S/SS in both groups (aOR 0.85, 95% CI 0.74-0.98, AUROC 0.73). WHO-ICS1-NDD≥2 was positively associated with identifying S/SS (OR range 2.07, 4.28). Only WHO-ICS1-NDD=4 remains as a significantly associated with S/SS after adjusting for age (aOR 2.18 95% CI 1.39, 3.41), with AUROC of 0.62, sensitivity of 41.9% and specificity of 81.5%. The positive and negative likelihood-ratio values were 2.26 and 0.71, respectively. Comparatively, using SARC-F=4 to identify S/SS had a sensitivity of 12.38% and significantly lower AUROC (0.54) than that of WHO-ICS1-NDD=4 ($p<0.05$). **Conclusion:** WHO-ICS1 is associated with sarcopenia and has potential to identify older adults at risk for sarcopenia in community settings. Seniors with at least 4 WHO-ICS1-NDD, or nutrition, locomotion or hearing impairment should undergo confirmatory muscle mass tests for definitive sarcopenia diagnosis. **Keywords:** Sarcopenia, ICOPE Step 1 Screening. **Disclosures:** The authors declare no competing interests. The research was funded by the National Medical Research Council, Singapore. **References:** 1. Hsu, P. S., Lee, W. J., Peng, L. N., Lu, W. H., Meng, L. C., Hsiao, F. Y., & Chen, L. K. (2024). Safeguarding vitality and cognition: The role of sarcopenia in intrinsic capacity decline among octogenarians from multiple cohorts. The Journal of nutrition, health and aging, 28(6), 100268. 2. Kera, T., Kawai, H., Hirano, H., Kojima, M., Watanabe, Y., Motokawa, K., ... & Obuchi, S. (2020). Limitations of SARC-F in the diagnosis of sarcopenia in community-dwelling older adults. Archives of gerontology and geriatrics, 87, 103959. 3. Tay, L. B., Chua, M. P., Tay, E. L., Chan, H. N., Mah, S. M., Latib, A., ... & Ng, Y. S. (2019). Multidomain geriatric screen and physical fitness assessment identify prefrailty/frailty and potentially modifiable risk factors

in community-dwelling older adults. Ann Acad Med Singapore, 48(6), 171-180.

P120- THE DEVELOPMENT OF ROLES AND TRAINING FOR PERSONNEL IN TAIWAN'S INTEGRATED CARE FOR OLDER PEOPLE (ICOPE) PROGRAM. F.W. Hu[1], Y.C. Hu[2], P.Y. Shih[1], E.S. Kuo[1] *((1) Kaohsiung Medical University - Kaohsiung (Taiwan, Republic of China), (2) Health Promotion Administration, Ministry Of Health And Welfare - Taipei (Taiwan, Republic of China))*

Background: As life expectancy continues to rise and the global population of older adults grows, health systems are increasingly challenged to reduce disability prevalence and promote healthy aging solutions [1]. Taiwan, which is projected to become a super-aged society by 2025, faces significant implications in this regard [2]. In response, the Health Promotion Administration (HPA) of the Ministry of Health and Welfare has adopted the World Health Organization's (WHO) Integrated Care for Older People (ICOPE) guidelines [3]. Starting from October 2020, these guidelines have informed the assessment of key health domains for the elderly, including cognition, mobility, nutrition, vision, hearing, and depression, which form the foundation of elderly care services in Taiwan. To ensure the sustainable implementation of ICOPE into national health policy, Taiwan initiated the development of ICOPE service personnel roles in 2023 [2]. This article outlines the development of qualification standards and training for ICOPE service personnel in Taiwan, as well as the outcomes of recent training programs. **Methods:** The development of the ICOPE service personnel role was initiated through a collaborative meeting involving experts from industry, government, and academia. This meeting focused on formulating training strategies and establishing qualification criteria for ICOPE personnel. A structured training program was designed, encompassing both theoretical knowledge and practical skills, aimed at equipping personnel to conduct functional assessments and deliver personalized health management for older adults. **Results:** ICOPE service personnel must be board-certified healthcare professionals, including public health practitioners and social workers, with their practice registered at a medical institution. For personnel in indigenous areas, outlying islands, or remote long-term care regions, services can be provided by institutions approved by the Public Health Bureau and HPA, provided the personnel meet one of the following conditions: (1) hold a junior college degree or above in a geriatric care-related subject, (2) are graduates of a degree program in a geriatric care-related subject, or (3) possess at least two years of experience in geriatric care, with approval from the Public Health Bureau. In addition, they must complete the ICOPE «Basic Course» (online) and «Practical Operation Course» and pass the associated exams. The ICOPE Basic Course (400 minutes) covers key health concerns and care for the elderly, the application of ICOPE screening, and instructions for the follow-up service process. It also includes assessments on «cognition,» «depression,» «mobility,» «nutrition,» «vision and hearing,» «medication,» and «social support,» along with handling exceptions and integration plan principles. The ICOPE Practical Operation Course (180 minutes) focuses on operational procedures, assessment skills, and practical drills. In 2024, a total of 85 ICOPE practical operation courses were held across Taiwan, training 3,554 ICOPE service personnel. Of those who completed the training, 69.8% to 75% expressed high satisfaction with the courses. **Conclusion:** Taiwan's ICOPE service personnel play a crucial role in promoting healthy aging. Through development of training programs and personnel qualifications, the initiative approach enhances by overall professional capabilities. Therefore, the strategy generally elevates the quality of functional assessment services to the older adults in the community. **Keywords:** Roles and training for personnel in Taiwan, ICOPE. **Disclosures:** FWH received a grant from the Health Promotion Administration, Ministry of Health and Welfare (D1130305). The authors declared no competing interests. **References:** 1. World Health Organization. World report on ageing and health; 2015. Available from: https://apps.who.int/iris/handle/10665/186463. 2. Health Promotion Administration, Ministry of Health and Welfare. 2024 ICOPE Quality Improvement Plan (D1130305); 2024. Available from: https://pcc.mlwmlw.org/tender/%E8%A1%9B%E7%94%9F%E7%A6%8F %E5%88%A9%E9%83%A8%E5%9C%8B%E6%B0%91%E5%81%A5%E5%BA%B7%E7%BD%B2/D1130105. 3.World Health Organization. Integrated care for older people (ICOPE): guidance for person-centred assessment and pathways in primary care; 2019. Available from: https://www.who.int/publications/i/item/WHO-FWC-ALC-19.1.

P121- INTERNET SURVEY ON THE POSITIVE APPRAISAL OF FAMILY CAREGIVERS FOR OLDER ADULTS WITH DEMENTIA AT HOME. Z.Pingping[1], S. Nobuko[1], L. Yu[2] *((1) Toyama Prefectural University - Toyama City (Japan), (2) China Medical University - Shenyang City (China))*

Background: Japan has become the world's first super-aged society, with an increasing number of older adults developing dementia as the population ages. With the promotion of community-based comprehensive care systems, older adults with dementia are increasingly expected to receive care in their own homes. The aim of this study was to focus on the positive appraisal of family caregivers for older adults with dementia at home and to clarify the factors influencing the continuation of caregiving. **Methods:** An internet survey was conducted between June 7 and 13, 2024, by GMO Research Inc. The participants were family caregivers for older adults with dementia. The survey included six items assessing the demographic profile and activities of daily living of older adults with dementia, nine items evaluation the caregiver's profile and care situation, and a 14-item positive appraisal scale. Data analysis was performed using IBM SPSS ver. 28, with statistical significance set at less than 5%. The

study was approved by the Ethical Review Committee of the Toyama Prefectural University (approval no. R5-26). **Results:** A total of 198 family caregivers participated in the survey. Of these, 125 (63.1%) were male, 173 (87.5%) were aged 40-60 years, 139 (70.2%) were employed, 65 (32.8%) reported good health, and 53 (26.8%) had an annual income of more than JPY 5 million, the highest percentage. A total of 179 (90.4%) cared for their own parents or parents-in-law, and 99 (50.0%) lived with them. In terms of caregiving duration, 130 (65.6%) had been caregiving for between one and five years, 174 (87.8%) provided less than seven hours of care per day, and 25 (12.6%) "always needed" care at night. Of the older adults with dementia, 136 (68.7%) were female, 156 (78.8%) were aged 80-90 years, and 23 (11.6%) were bedridden. Factor analysis of the positive appraisal scale, identified two key factors: caregiving satisfaction and caregiver's personal growth. Spearman correlation analysis showed that "good health" and "high annual income" were significantly associated with positive appraisal. **Conclusion:** The "caregiving satisfaction" identified in this study may be effective in alleviating the burden on families who struggle with challenges of dementia care, particularly those feeling conflicted, restricted, and overwhelmed by long-tern caregiving. It is noteworthy that more than 80% of the caregivers in this study were middle-aged or older and that their sense of personal growth extended beyond daily caregiving tasks. This highlights the role of caregiving in fostering personal development and offers future prospect for caregivers. Furthermore, the caregiving family's health and financial situation emerged as important factors influencing the continuation of home care. This underscores the broader societal challenge of providing adequate support to caregiving families, both in terms of health and financial stability. **Keywords:** Positive appraisal, family caregivers, older adults with dementia, home care. **Disclosures:** The authors have no financial conflicts of interest to disclose concerning the presentation. This study was supported by the Japan Society for the Promotion of Science (JSPS) KAKENHI (Grant No.: 19K11198). **References:** 1. Narumi Sakurai. The moderating effects of positive appraisal on the burden of family caregivers of older people. The Japanese Journal Psychology, 1999; 70(3): 203-210. https://doi.org/10.4992/jjpsy.70.203. 2. Sumi Ninomiya, Hisae Nakatani. Factors Affecting Life Satisfaction Among Older Adult Primary Caregivers of Elderly Family Members. J. Jpn. Acad. Nurs. Sci., 2023; 43: 469–476. https://doi.org/10.5630/jans.43.469. 3. Erina Mori Yuko Uesugi. Review of Current Status of Family Caregivers. Journal of the Japanese Society for Health and Medical Behavioural Sciences. 2016; 31(1): 57-63download (medicalonline.jp).

LP089- WHO ICOPE PROGRAM ADHERENCE OF 8,672 OLDER AGE PEOPLE OVER 2-YEARS OF FOLLOW-UP.

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Aim: To compare the characteristics of participants who discontinued prematurely with those who remained in the ICOPE program in France and to compare completely adherent participants with partially adherent ones after two years of follow-up. **Design:** Retrospective observational study. **Methods:** We analysed the data of older age people participating during 2 years from the ICOPE […] database. The study compared the population that discontinued follow-up with the population currently in follow-up. Among the population in follow-up, a comparison was made between the completely adherent and partially adherent populations. **Results:** 8,672 participants had a follow-up period of at least 2 years. After 2 years, three-quarters of the participants were still in follow-up with varying levels of adherence. Participants who discontinued follow-up are older and had more compromised Step1 levels across all domains of intrinsic capacity (IC). Partially adherent participants were older and generally more compromised in IC than completely adherent participants. Those participants least adherent to ICOPE presented higher declines in clinical parameters. **Conclusion:** Among autonomous older age people, the most impaired in intrinsic capacity domains and aged participants were more likely to discontinue follow-up, highlighting the need to focus efforts on this group. On the other hand, younger robust and healthier older age people represent a good target for ICOPE program, in terms of adherence and primary prevention.

LP090- IMPLEMENTING THE WHO ICOPE PROGRAM IN CLINICAL PRACTICE: THREE YEARS OF LESSONS FROM MONITORING 27,082 PARTICIPANTS USING THE ICOPE MONITOR DIGITAL TOOL.

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Background: To describe the implementation of the ICOPE program in France using digital tool in order to: 1) describe the characteristics of people completing the screener, identifying differences across assessors (Health Care Professionals (HCP), non-HCPs or self-assessment) 2) describe the characteristics of follow-up and assessments for people with abnormal screening test 3) describe the recommendations in the intervention care plans for people with a decline in intrinsic capacity (IC). **Methods:** A descriptive study, presenting the results at initial screening, as well as at assessment when needed; and the recommendations issued during Step 3. We compared these results based on whether the participant was enrolled by an HCP, by a non-HCP, or self-assessment. **Results:** 27,082 participants were enrolled. 67.9% were registered by HCPs. 90.8% participants screened positive at Step 1. Participants who completed the self-assessment were significantly younger (70.9 years versus 76.4 for HCPs or 77.9 for non-HCPs, $p<0.01$) and less frequently had alerts in Step 1 (83.8% versus 90.8 for HCPs or 94.8 for non-HCPs). Step 2 in-depth assessments were carried out for 8.9% of the participants. In step 2, only the SPPB showed significantly better motor abilities in individuals enrolled through self-assessment (median and IQR: 11(10 – 12) versus 10(8 – 12) for HCPs and 10(7 – 12) for non-HCPs). Prevention care plans were proposed, mainly physical activity (n=833 - 33.7%) and nutrition counseling (n=1,233 - 51.7%).

Conclusion: This study highlights the major role of HCPs in the implementation of the ICOPE program. Self-assessment enables the enrollment of more robust seniors, allowing to an early detection and treatment.

LP091- IMPLEMENTATION OF ICOPE PROGRAM IN FRANCE: LAST NEWS. N. Tavassoli[1], J. De Kerimel[1], C. Mathieu[1], D. Pennetier[1], C. Lafont[1], I. Carrie[1], B. Rieunier[1], C. Berbon[1], C. Takeda[1], M. Soto[1], B. Vellas[1] *((1) Ihu Healthage - Toulouse (France))*

Introduction: The ICOPE program «Integrated care for the elderly» is a WHO program aimed at preventing dependency. Its objective is to preserve the functions of seniors in order to maintain their autonomy. The target population is people aged 60 and over, who are independent and living at home. The Gérontopôle of the Toulouse University Hospital, designated a WHO collaborating center since 2017, initiated the implementation of this prevention program in Occitanie as soon as the ICOPE practical guide was published in 2019, with the support of the Occitanie Health Regional Agency. Subsequently, its implementation was extended to the national level as part of a national experimentation - Article 51. We would like to present the progress of the implementation of the ICOPE program in France. **Methods:** The implementation of the ICOPE program in France is structured around four axes: 1/The ICOPE Monitor platform composed of two distinct elements: a/Digital tools to facilitate assessments, data collection and participant monitoring: these are mainly 2 tools for carrying out the screening (Step 1 of ICOPE). The ICOPE Monitor application and web page. These two tools can be used in professional mode and in self-assessment. Both are connected to a secure database. This database is accessible only to healthcare professionals allowing them to monitor their patients remotely and record information on their ICOPE pathway. Work is underway on the interoperability between the ICOPE Monitor digital tools and the French Digital Health Space (ENS). b/The ICOPE remote monitoring team composed of healthcare professionals specialized in geriatrics, including nurses. This well-identified and organized team at the Gerontopole de Toulouse follows seniors using digital tools in self-assessment mode and manages their alerts for the entire Occitanie region. 2/The development of specific training in the ICOPE approach for health professionals thanks to an e-learning platform. 3/Information and communication tools for use by seniors: ICOPE website (www.icope.fr), flyers, posters, videos, etc. 4/Developing partnerships involving public and private institutions. **Results:** As of 10/11/2024, 64,283 seniors have joined the ICOPE program in France, including 39,094 (61%) in the Occitanie region. They have benefited from 107,309 screening tests (ICOPE Step 1) and 9,014 in-depth assessments (ICOPE Step 2) and personalized care plans (ICOPE Step 3). To date, 6,592 healthcare professionals have been trained in the ICOPE program through the e-learning platform and more than 13,000 healthcare professionals use the ICOPE Monitor digital tools to monitor their patients' ICOPE pathway. **Conclusion:** The ICOPE prevention program is a way to optimize the integrated care of seniors through the implementation of earlier and better targeted interventions. The number of ICOPE participants is increasing steadily. In 2024, we registered approximately 2,000 new beneficiaries per month. The ICOPE program, is a public health approach for seniors which can fundamentally reform our health system suggesting more space for prevention, an improvement in the city/hospital link and a coordinated care exercise.

LP092- SPOTLIGHT ON THE ICOPE SCREENING TOOL: NEW ACCURACY INSIGHTS FROM THE ICOPE BRAZIL FEASIBILITY STUDY. R. Bandeira De Mello[1], V. Pelegrim De Oliveira[2], J. De Sá Roriz Filho[3], L. Souza Máximo Pereira[4], N. Carelli Pereira De Avelar[5], C. Carneiro Ximenes[6], S. Lanziotti Azevedo Da Silva[7], J. Pereira Da Silva[8], R. Eloah De Lucena Ferretti-Rebustini[9], R. Alves Lourenço[10], E. Ferriolli[9] *((1) Universidade Federal Do Rio Grande Do Sul - Porto Alegre (Brazil), (2) Hospital De Clínicas De Porto Alegre - Porto Alegre (Brazil), (3) Federal University Of Ceara - Fortaleza (Brazil), (4) Faculdade Ciências Médicas De Minas Gerais - Belo Horizonte (Brazil), (5) Universidade Federal De Santa Catarina - Belo Horizonte (Brazil), (6) Universidade Federal De Pernambuco - Recife (Brazil), (7) Universidade Federal De Juiz De Fora - Juiz De Fora (Brazil), (8) Universidade Federal De Alfenas - Alfenas (Brazil), (9) Universidade Estadual De São Paulo - São Paulo (Brazil), (10) Universidade Estadual Do Rio De Janeiro - Rio De Janeiro (Brazil)*

Background: The ICOPE screening tool (ICOPE-ST), recommended by the WHO in 2017, has been used in research and clinical settings. However, epidemiological studies have reported heterogeneous findings on its accuracy in detecting loss of intrinsic capacity (LIC). A scoping review of seven studies highlighted concerns about ICOPE-ST accuracy and significant variability in results. The present study aimed to investigate the ICOPE-ST accuracy in the Brazilian primary healthcare setting. **Methods:** A multicenter cross-sectional pilot study (April 2023–November 2024) was conducted to assess the feasibility of a research methodology for scaling to a nationwide cohort, the ICOPE-BR study. Older adults (≥60 years) were recruited from seven centers providing randomized lists of registered individuals to ensure a random sampling strategy. The ICOPE-ST was implemented per the Portuguese version to screen for LIC across six domains, followed by Step 2 assessments as reference tests using recommended cut-offs: MMSE (cognition) [<19 for illiterate, <26 others], SPPB [<10 pts] (mobility), MNA [≤17 pts] (vitality), Snellen chart [≥20/70] (vision), audiometry [≥50 dB] (hearing), and GDS-15 [≥5 pts] (psychological). Audiometry was performed in 4 of 7 centers, with a subsample of 414 participants. Sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and ROC AUC were calculated using STATA 18.0. Ethical approval and informed consent were obtained. **Results:** Among 794 participants (mean age 69.6±8.3 years, 65.5% females), positive LIC screenings were observed in cognition (62.2%), mobility (58.6%), vitality (35.9%), vision

(92.8%), hearing (38.3%), and psychological (47.1%) domains. Step 2 assessments identified cognitive impairment (43.5%), mobility impairment (52.8%), vitality issues (28.3%), moderate vision loss (13.7%), hearing loss (23.9%), and depressive symptoms (29.6%). The ICOPE-ST diagnostic performance varied significantly by domain. Cognition showed moderate performance (Sens 75.1%, Spec 47.7%, PPV 52.4%, NPV 71.3%, AUC 0.61), while Mobility had the highest accuracy (Sens 90.4%, Spec 79.5%, PPV 83.1%, NPV 88.1%, AUC 0.85). Vitality had balanced metrics (Sens 73.8%, Spec 78.8%, PPV 57.5%, NPV 88.6%, AUC 0.76). Vision showed high sensitivity but low specificity (Sens 96.1%, Spec 4.5%, PPV 13.7%, NPV 87.9%, AUC 0.50). Hearing and Psychological domains demonstrated moderate accuracy (AUCs: 0.71 and 0.73, respectively). **Conclusion:** LIC is prevalent among older Brazilian adults in primary care. While the ICOPE-ST has implementation potential, its variable accuracy raises concerns about misclassifications in at least five out of six domains. As the WHO ICOPE program emphasizes healthy aging through intrinsic capacity, further discussion on ICOPE-ST limitations is needed within scientific and public health communities.

LP094- TRAJECTORIES OF INTRINSIC CAPACITY AFFECT INCIDENT DISABILITY IN COMMUNITY-DWELLING OLDER ADULTS: THE NILS-LSA.

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Background: Variability in intrinsic capacity (IC) trajectories among community-dwelling older adults and their effect on incident disability remain understudied. **Methods:** From participants who completed three or more surveys between the second and seventh waves (2000–2012) of the National Institute for Longevity Sciences-Longitudinal Study of Aging [1], we analyzed 1,056 disability-free community-dwelling older adults (aged 65–89 years) at their final institute-based assessment, which was defined as the baseline for follow-up incident disability. We used group-based multi-trajectory modeling to obtain IC trajectories across six domains: cognition, locomotion, vitality, vision, hearing, and psychological well-being [2]. Incident disability was confirmed by the Long-term Care Insurance System certificate [3] over a maximum follow-up period of 17.5 years. A multivariable-adjusted Cox proportional hazards model was employed to investigate the relationships between IC trajectories and incident disability, adjusted for baseline information including age, sex, smoking status, alcohol consumption, total physical activity, education level, marital status, living arrangement, and medical history. **Results:** We identified four distinct IC trajectories: the «healthy aging group» (60.5% of participants), the «hearing decline group» (15.9%), the «nutrition, vision, and psychological decline group» (17.5%), and the «comprehensive deterioration group» (6.1%). The median (IQR) follow-up duration was 9.8 (5.1–10.8) years. During the follow-up period, 380 (36.0%) cases of incident disability were identified. Compared to the «healthy aging group» (reference), all the other groups demonstrated significantly elevated risks of incident disability, with multivariable-adjusted hazard ratios (aHR) and 95% confidence intervals (CI) of 1.56 (1.19–2.04), 1.66 (1.26–2.18), and 1.59 (1.09–2.33), respectively. Time-stratified analyses revealed differential patterns: during the first two years of follow-up, the «nutrition, vision, and psychological decline group» and «comprehensive deterioration group» exhibited significantly higher risks of incident disability (aHR (95% CI) were 2.60 (1.35–4.99) and 3.60 (1.62–8.01), respectively), whereas beyond two years, elevated risks were observed in the «hearing decline group» and «nutrition, vision, and psychological decline group» (aHR (95% CI) were 1.56 (1.17–2.09) and 1.52 (1.12–2.07), respectively). **Conclusion:** This longitudinal study identified four distinct trajectories of intrinsic capacity among older adults, with all declining trajectories associated with elevated disability risk compared to the non-declining trajectory. The time-stratified relationships between specific trajectories and disability onset varied, suggesting that targeted interventions based on IC trajectory patterns may be crucial for disability prevention.

BODY COMPOSITION

P123- VARIABILITY IN OBESITY PREVALENCE AMONG HOSPITALIZED OLDER ADULTS: COMPARISON OF DIFFERENT ASSESSMENT MODALITIES.

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Background: Obesity is associated with significant morbidity and mortality. Whilst obesity has traditionally been defined by body mass index (BMI), its limitations in accounting for body composition are recognized. **Objective:** To compare different measures of obesity, fat and muscle composition amongst different modalities of assessment in a cohort of hospitalized older adults. **Methods:** Two hundred and seventeen older adults ≥ 60 years and above who were hospitalized in medical wards were recruited for this study. Body composition was assessed by bioelectrical impedance analysis (BIA) and ultrasonography of the rectus femoris muscle was performed with image analysis by AI (artificial intelligence) software (MuscleSound® (Version 5.69.0)) to derive intramuscular adipose tissue (IMAT). Sarcopenia was diagnosed according to Asian Working Group for Sarcopenia (AWGS) 2019 guidelines. **Results:** The mean age was 76.4 ± 7.2 years. There was a high prevalence of sarcopenia (55.8%) and severe sarcopenia (22.6%). Using a body mass index (BMI) cut-off of ≥ 27.5, 16.6% were obese. By body fat % on BIA, 41.5% were classified as obese, while based on IMAT Index, 56.7% had poor muscle quality. IMAT index and body fat % were not significantly correlated with handgrip strength (HGS), whereas BMI, skeletal muscle index (SMI), short physical performance battery (SPPB) and sarcopenia by AWGS criteria were. **Discussion:** Significantly more older adults were classified as obese based on BIA and US measurement than by

BMI. Unlike sarcopenia assessments and BMI, obesity based on BIA and US were not significantly correlated with HGS. Further work on body composition measurement and obesity classification by different modalities is needed to determine optimal assessment modalities to guide identification of high-risk individuals who would benefit from relevant interventions.

P124- ASSOCIATION OF DECLINE IN D3CR MUSCLE MASS WITH AGE ACROSS THE LIFESPAN COMPARED TO THAT OF MUSCLE STRENGTH AND POWER. M. Hetherington-Rauth[1], S.B. Kritchevsky[2], A.B. Newman[3], R.T. Hepple[4], P.M. Coen[5], M. Shankaran[6], M. Hellerstein[6], W.J. Evans[6], S.R. Cummings[7], P.M. Cawthon[7] *((1) California Pacific Medical Center Research Institute - San Francisco (United States), (2) Wake Forest University School Of Medicine - Winston-Salem (United States), (3) University Of Pittsburgh - Pittsburgh (United States), (4) University Of Florida - Gainesville (United States), (5) Adventhealth - Orlando (United States), (6) University Of California, Berkeley, - Berkeley (United States), (7) University Of California San Francisco - San Francisco (United States))*

Background: It is undisputed that muscle mass declines with age, however the rate of this decline and how it corresponds with concurrent reductions in muscle strength and physical performance continues to be debated. Much of this debate can be attributable to the use of surrogate measures to assess total body muscle mass (e.g. lean mass by dual-energy x-ray absorptiometry) that do not directly measure total body muscle mass. D3-creatine (D3Cr) dilution measured muscle mass has been shown to be an accurate and precise measure of total body functional muscle mass. We aimed to assess the cross-sectional association of D3Cr muscle mass with age across the lifespan (ages 30 to 80+ yrs) and compare this association with that of leg strength and power. We further compared these associations with that of magnetic resonance (MR) thigh muscle volume and age. **Methods:** Adults (aged 30-69 yrs) (n=31 men, 34 women) and older adults (aged 70+) (n=312 men, 437 women) from the Study of Muscle, Mobility and Aging cohorts (SOMMA and SOMMA Jr) who had complete measures for D3Cr muscle mass, MR thigh muscle volume, 1 RM leg strength, and leg extension power assessed at the baseline visit were included in the analysis. Linear and quadratic relationships with age were assessed using linear regression. **Results:** For women, there was an inverse linear relationship between both D3Cr muscle mass (β=-0.03 SD; 95%CI=0.-03, -0.02) and MR thigh muscle volume (β=-0.03 SD; 95%CI=0.-03, -0.02) with age; this relationship was similar to that observed for leg strength (β=-0.03 SD; 95%CI=0.-04, -0.03). Leg power, however, had a curvilinear relationship with age, such that the slope of the relationship of leg power with age was less steep at higher ages (β Age2=0.0003, p=0.004). For men, a curvilinear relationship with age was observed for both D3Cr muscle mass (β Age2=-0.0007, p=0.003) and MR thigh muscle volume (β Age2=-0.0004, p=0.02), such that the slope of the inverse relationship was steeper in men of older age. These curvilinear relationships were comparable to those observed for leg strength (β Age2=-0.0005, p=0.049) and leg power (β Age2=-0.0005, p=0.03) with age. **Conclusion:** Unlike previous reports using surrogate measures of muscle quantity, the inverse relationship between D3Cr muscle mass with age seems to follow that of muscle strength and power in men and muscle strength in women. However, longitudinal studies are needed to verify results.

P125- ROUTINE THORACIC CT IMAGING FOR MUSCLE MASS ASSESSMENT USING DEEP LEARNING AND ITS PROGNOSTIC RELEVANCE IN OLDER ADULTS: INSIGHTS FROM TWO COHORTS. B. Mueller[1], M. Drey[1], S.A.B.I.N. Schluessel[1] *((1) Department Of Internal Medicine Iv-Geriatrics - Munich (Germany))*

Sarcopenia, the age-related loss of muscle mass and strength, is a significant health concern in older adults. Accurate diagnosis is often limited by the accessibility of Dual-energy X-ray Absorptiometry (DXA). This retrospective cohort study investigated the use of routine thoracic CT imaging, combined with deep learning algorithms for fully automated muscle volume analysis, in individuals aged 65 and older. Data from patients who underwent both thoracic CT and DXA imaging between January 2015 and August 2022 were analyzed. Automated body composition analysis of thoracic CT scans demonstrated a strong correlation between muscle volume and appendicular lean mass from DXA, leading to the development of diagnostic cut-off values for CT-based muscle volume. This highlights the potential of thoracic CT, enhanced by deep learning, as a non-invasive and efficient method for early sarcopenia detection. In a separate cohort study, the relationship between body composition and mortality in older adults with COVID-19 was examined. Using the NAPKON cohort, 165 individuals aged 60 and older with confirmed COVID-19 were analyzed through automated thoracic CT-based body composition analysis. Survivors had greater muscle volume, lower intramuscular fat, and lower BMI compared to non-survivors. After adjusting for comorbidities, muscle volume remained the most significant predictor of survival, suggesting sarcopenia may play a more critical role than obesity in determining outcomes for older COVID-19 patients. These findings underscore the value of thoracic CT imaging and automated analysis for muscle mass assessment and its potential to enhance prognostic evaluation in older adult populations.

P126- META-ANALYSIS: THE IMPACT OF MENOPAUSE ON BODY COMPOSITION IN POSTMENOPAUSAL WOMEN. P.J. Chiang[1] *((1) Taichung Veterans General Hospital - Taichung (Taiwan, Republic of China))*

Background: Menopause marks a critical transition in a woman's life, typically occurring between the ages of 45 and 55. Postmenopausal women experience profound physiological changes that significantly alter their body constitution, affecting fat distribution, muscle mass, bone density, and overall metabolic health. This meta-analysis aims to explore the key

body composition changes that occur after menopause, evaluate the hormonal influences driving these changes, and assess the implications for health risks, such as cardiovascular disease, osteoporosis, and sarcopenia. **Methods:** Literature Search: A systematic literature review was conducted using databases from PubMed, focusing on studies published from 2000 to 2023. The following keywords were used: "postmenopausal women," "body composition," "menopause," "fat distribution," "sarcopenia," and "bone density."Data Extraction and Analysis: Data was extracted focusing on body composition outcomes. The findings were analyzed using a random-effects model due to the expected variability between studies. **Results:** Changes in Fat Distribution: The majority of studies reported a significant increase in fat mass following menopause, especially in visceral or central adiposity. This change is linked directly to the decline in estrogen levels, which promotes fat accumulation around the abdomen rather than the hips and thighs. Increased visceral fat is strongly associated with metabolic syndrome, type 2 diabetes, and cardiovascular disease, highlighting the need for targeted interventions during and after the menopausal transition. Sarcopenia and Muscle Mass Loss: Several studies highlighted sarcopenia, or the loss of muscle mass and strength, as a critical concern in postmenopausal women. This decline in lean muscle mass is accompanied by decreased physical strength and mobility, leading to an increased risk of falls and fractures. Bone Density and Osteoporosis Risk: Dozens of studies addressed bone mineral density (BMD) changes, revealing the most dramatic reductions in BMD occur in the first five years post-menopause. Overall Changes in Body Composition Ratios: The studies reviewed consistently reported an increase in the fat-to-lean mass ratio in postmenopausal women. This shift is largely driven by a combination of increased fat mass and decreased muscle mass, leading to a higher risk of metabolic disorders and physical frailty. **Conclusion:** This meta-analysis highlights the profound effects of menopause on body constitution, particularly the increase in central adiposity, loss of muscle mass, and decrease in bone density. The changes associated with menopause are central to these shifts, increasing the risk of conditions such as cardiovascular disease, sarcopenia, and osteoporosis. Understanding these body composition changes is essential for developing effective interventions to support the health and well-being of postmenopausal women. **Keywords:** Postmenopausal, body compos.ition. **Disclosures:** The author declared no competing interests. **References:** 1. Tchernof, A., & Després, J. P. (2013). «Change in body composition and fat distribution in postmenopausal women.» Obesity and Metabolism. PubMed ID: 23327493. 2. Kemmler, W., & von Stengel, S. (2016). «Sarcopenia and menopause: A systematic review and meta-analysis.» Bone. PubMed ID: 26773578. 3. Makovey, J., Naganathan, V., & Sambrook, P. N. (2005). «Body composition and hormonal status in postmenopausal women with osteoporosis: A case-control study.» Osteoporosis International. PubMed ID: 1556

P127- ACCURACY OF SARC-CALF WITH CALF CIRCUMFERENCE ADJUSTED FOR BODY MASS INDEX FOR SCREENING FOR LOW APPENDICULAR LEAN MASS IN OLDER ADULTS LIVING IN THE COMMUNITY.

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Background: The addition of calf circumference (CC) to the SARC-F questionnaire improved the sensitivity and diagnostic accuracy for sarcopenia [1, 2]. However, it is known that CC is influenced by adiposity. Therefore, researchers have proposed adjusted values for CC according to BMI (body mass index) [3]. To date, no studies have evaluated the accuracy of SARC-Calf using BMI-adjusted CC to screen for low appendicular lean mass (ALM) in older adults. This study aimed to verify the accuracy of the SARC-Calf with CC adjusted for BMI as a screening for low ALM in overweight older adults living in the community. **Methods:** The present study was approved by the research ethics committee of UNICAMP (number: 5.027.838). Cross-sectional study evaluating a convenience sample of older adults (≥60 years). Individuals who presented ≥ 11 points on the SARC-Calf with CC adjusted for BMI were considered at risk of sarcopenia [1]. Three cm were subtracted from the CC of individuals with a BMI between 25 and 29.9 kg/m^2; 7 cm were subtracted from the CC of those with a BMI between 30 and 39.9 kg/m^2 and 12 cm were subtracted from the CC of individuals with a BMI ≥ 40 kg/m^2 [3]. ALM was assessed by dual-energy X-ray absorptiometry (DXA) and the classification for low ALM was classified according to EWGSOP2 (<20kg for men and <15kg for women) [4]. The accuracy of SARC-Calf with CC adjusted for BMI was evaluated by sensitivity and specificity analyses. **Results:** We included 90 overweight older adults (BMI≥27kg/m^2); 70 women and 20 men (60-88 years). The frequency of low ALM was 7.8% (n=7) and the frequency of risk for sarcopenia as assessed by the SARC-Calf with CC adjusted for BMI was 25.5% (n=23). Considering the ALM, the questionnaire had a sensitivity of 71.4% (95% confidence interval [95% CI] 62.1-80.7%), a specificity of 78.3% (95% CI 69.8-86.8%), a positive predictive value (PPV) of 21.7% (95% CI 13.2-30.3%), and a negative predictive value (NPV) of 97.0% (95% CI 93.5-100%). **Conclusion:** The positive predictive value (the proportion of people correctly classified as sarcopenic) was very low, showing that SARC-Calf with CC adjusted for BMI had a high percentage of false negatives compared to the reference method (DXA), and may not be suitable for assessing sarcopenia. Studies with a representative population sample and carried out in different scenarios should be conducted in the future to confirm these findings. **Keywords:** Screening, sarcopenia, sensitivity, specificity. **References:** 1. Barbosa-Silva TG, Menezes AMB, Bielemann RM, Malmstrom TK, Gonzalez MC. Enhancing SARC-F: Improving Sarcopenia Screening in the Clinical

Practice. J Am Med Dir Assoc 2016;17:1136–41. https://doi.org/10.1016/j.jamda.2016.08.004. 2. Mazocco L, Chagas P, Barbosa-Silva TG, Gonzalez MC, Schwanke CHA. Accuracy of SARC-F and SARC-CalF for Sarcopenia screening in older women from southern Brazil. Nutrition 2020;79–80. https://doi.org/10.1016/j.nut.2020.110955. 3. Gonzalez MC, Mehrnezhad A, Razaviarab N, Barbosa-Silva TG, Heymsfield SB. Calf circumference: Cutoff values from the NHANES 1999-2006. Am J Clin Nutr 2021;113:1679–87. https://doi.org/10.1093/ajcn/nqab029. 4. Cruz-Jentoft AJ, Bahat GG, Bauer JJ, Boirie Y, Bruyere O, Cederholm T, et al. Sarcopenia: Revised European consensus on definition and diagnosis. Age Ageing 2019;48:16–31. https://doi.org/10.1093/ageing/afy169.

P128- CALORIC RESTRICTION-INDUCED LEAN MASS LOSS IS RELATED TO MUSCLE STRENGTH BUT NOT FUNCTION AMONG OLDER ADULTS: A POOLED ANALYSIS OF 10 RANDOMIZED CONTROLLED TRIALS. D. Beavers[1], S. Kritchevsky[2], R. Neiberg[3], B. Nicklas[4], K. Beavers[2] *((1) Wake Forest University - Winston-Salem (United States), (2) Wake Forest University School Of Medicine - Winston-Salem (United States) - Winston-Salem (United States), (3) Wake Forest University School Of Medicine - Winston-Salem (United States), (4) Wake Forest University School Of Medicine-Winston-Salem (united States) - Winston-Salem (United States))*

Background: Despite predictable declines in lean body mass, older adults participating in lifestyle-based weight loss trials often experience stable or improved muscle function and strength. Such findings call into question the clinical relevance of intentional weight loss-associated lean body mass loss. To address this knowledge gap, the purpose of this project was to quantify associations between change in lean body mass and change in muscle function and strength across 10 geriatric weight loss trials. **Methods:** This pooled analysis utilized individual participant data from 10 single-blind, parallel arm, randomized controlled weight loss trials conducted at Wake Forest University or Wake Forest School of Medicine (Winston-Salem, North Carolina) from 2003-2020. Treatment arms across trials were collapsed into caloric restriction (CR; n=633) and non-CR (n=140) categories, based on randomization assignment. Median intervention duration was six months and outcomes included change in total and appendicular lean mass (TLM and ALM, respectively) measured via dual energy x-ray absorptiometry (kg), Short Physical Performance Battery (SPPB) score, grip strength (kg) and knee extension strength (Nm). All included trials measured DXA-acquired body composition and SPPB; four trials measured grip strength and three trials measured knee strength. Pooled treatment effects, adjusted for sex, race, age, exercise assignment, baseline body mass index (BMI), and baseline values of the outcome were generated using mixed effects models with study as a random effect. Associations between changes in body composition and muscle function and strength were estimated from mixed effects models using standardized changes in TLM and ALM as the independent variable. **Results:** A total of 773 older adults [mean (SD) age: 68.0 (5.7) years; BMI: 34.5 (4.7) kg/m^2; 73% female; and 74% White] were included at baseline. As expected, compared with non-CR, CR assignment yielded significantly greater TLM loss [CR: -1.98 kg (95% CI: -2.47 to -1.49) vs. non-CR: -0.04 kg (95% CI: -0.64 to 0.56); p<0.01] and ALM loss [CR: -0.81 kg (95% CI: -1.06 to -0.56) kg vs. non-CR: -0.04 kg (95% CI: -0.27 to 0.34); p<0.01]. No pooled treatment differences were found for SPPB score [CR: 0.36 (95% CI: 0.19 to 0.54) vs. non-CR: 0.28 (95% CI: 0.04 to 0.53); p=0.46], grip strength [CR: 2.27 kg (95% CI: 1.01 to 3.52) vs. non-CR: 1.47 (95% CI: -0.03 to 2.96) kg; p=0.18], or knee extension strength [CR: 5.10 Nm (95% CI: 0.05 to 10.16) vs. non-CR: 6.81 Nm (95% CI: -0.31 to 13.93); p=0.58], although improvements over baseline were uniformly noted in CR participants. Across both groups, standardized lean mass change (TLM or ALM) was not associated with SPPB or grip strength change; however, changes in standardized ALM and knee extension strength were directly associated [β: 5.54 Nm (95% CI: 1.55 to 9.53); p=0.01]. **Conclusion:** In this pooled analysis, we observed that caloric restriction interventions yield significant lean mass loss and null effects on muscle function and strength, as compared to non-caloric restriction interventions. Change in lean mass does not appear to be associated with change in muscle function but may be directly associated with change in muscle strength.

P129- EFFECT OF WEIGHTED VEST USE OR RESISTANCE EXERCISE DURING CALORIC RESTRICTION ON CT-DERIVED MUSCLE AND FAT OUTCOMES: RESULTS FROM THE INVEST IN BONE HEALTH RANDOMIZED CLINICAL TRIAL. D. Lynch[1], M. Howard[2], D. Beavers[3], A. Weaver[1], L. Lenchik[4], R. Barnard[2], K. Beavers[5,6] *((1) Department Of Biomedical Engineering Wake Forest University School Of Medicine - Winston-Salem (United States), (2) Department Of Biostatistics And Data Science Wake Forest University School Of Medicine - Winston-Salem (United States), (3) Department Of Statistical Sciences Wake Forest University - Winston-Salem (United States), (4) Department Of Radiology Wake Forest University School Of Medicine - Winston-Salem (United States), (5) Department Of Internal Medicine, Section Of Gerontology And Geriatric Medicine, Wake Forest University School Of Medicine - Winston-Salem (United States), (6) Department Of Health And Exercise Science Wake Forest University - Winston-Salem (United States))*

Background: The aging population is expanding, with rising obesity rates among older adults. While weight loss improves cardiometabolic health, it often reduces lean mass, a concern for this population due to age-related muscle loss. Identifying interventions that preserve muscle during fat loss is crucial, and computed tomography (CT) provides a direct way to assess muscle quantity and quality. **Methods:** 150 older (66.4±4.6 years) adults (75% women; 69% White) living with overweight or obesity (BMI: 33.6±3.3 kg/m2) were randomized into the INVEST in Bone Health Trial (NCT04076618), with 133 (89%) completing the study. Participants were randomized

into three treatment groups (n=50/group): WL only (caloric restriction targeting 10% WL with adequate calcium, vitamin D, and protein); WL plus weighted vest use (WL+VEST; eight hours/day, weight replacement titrated up to 10% total WL); or, WL plus progressive RT (WL+RT; supervised three sessions/week). At baseline, 6- and 12-months, participants underwent abdominal CT scans, spanning from the lumbar spine to below mid-femur. Using machine learning, we identified single slices at L3 and mid-thigh, segmented muscle and intermuscular adipose tissues (IMAT), and extracted area (cm^2) and density (HU) measurements. Adjusted mixed effects linear models were used to compare changes in CT outcomes across groups. Pairwise comparisons between treatment groups (e.g., WL vs. WL+RT) were conducted using contrast statements. **Results:** 133 (89%) participants completed the study. Significant and similar WL, ranging from 9.7-11.2%, was achieved in all groups. Over 12 months, self-reported weighted vest wear-time was 7.1±1.5 hours/day, with 78.0±29.9% of lost weight replaced in the vest; participants assigned to WL+RT attended 71.4±19.1% of sessions. WL+RT resulted in a -1.7% decline in L3 muscle area compared to a -2.8% decline in WL+VEST and -4.9% decline in WL alone. Change in L3 muscle density were similar between the progressive loading groups: +2.7% for WL+VEST and +3.0% for WL+RT. For the mid-thigh region, declines in muscle area were greatest for WL alone (-3.7%) followed by WL+VEST (-2.0%) while muscle area actually increased for WL+RT (+0.5%) after 12-months. Mid-thigh muscle density improvements were similar between the WL (+1.7%) and WL+VEST (+2.0%) groups, while nearly double the increase occurred for WL+RT (+3.9%). The WL+RT group demonstrated the largest declines in IMAT area at both L3 (-21.1%) and mid-thigh (-22.2%). Between-group comparisons showed no significant differences between the WL+VEST and WL alone groups (all $p>0.05$) for all CT measures. However, WL+RT led to significantly greater 12-month changes in L3 muscle area ($p=0.003$), mid-thigh muscle area ($p=0.002$), mid-thigh muscle density ($p=0.029$), and mid-thigh IMAT area ($p=0.008$) compared to WL alone. Significant differences in mid-thigh muscle density were also observed between WL+RT and WL+VEST (both $p<0.014$). **Conclusion:** In the INVEST in Bone Health Trial, 12-months of WL+RT was most effective in preserving and increasing lower extremity muscle mass while reducing intermuscular fat, improving muscle quality. Weighted vest use, though less effective than RT, still improved muscle outcomes compared to weight loss alone, offering an accessible option for older adults to preserve musculoskeletal health during weight loss.

P130- MUSCLE PERFORMANCE AND FUNCTIONAL IMPLICATIONS IN COMMUNITY-DWELLING OLDER WOMEN: INSIGHTS FROM MUSCLE-SPECIFIC STRENGTH ANALYSIS. P.P. Batista[1], M.R. Perracini[2,3], H.L.M. Campos[4], A.N. Parentoni[5], L.S.M. Pereira[6] *((1) Universidade Federal De Minas Gerais (ufmg) - Belo Horizonte (Brazil), (2) Universidade Cidade De São Paulo (unicid) - São Paulo (Brazil), (3) Universidade Estadual De Campinas (unicamp) - Campinas (Brazil), (4) Universidade Federal Do Amazonas (ufam) - Coari (Brazil), (5) Universidade Federal Dos Vales Do Jequitinhonha E Mucuri (ufvjm) - Diamantina (Brazil), (6) Faculdade Ciências Médicas De Minas Gerais (fcmmg) - Belo Horizonte (Brazil))*

Background: Sarcopenia, a widespread muscle disorder in older adults, marked by reduced muscle mass and strength, with significant clinical and social implications. Recently, the Global Leadership Initiative in Sarcopenia (GLIS) addressed the need for a universal consensus on sarcopenia's definition and diagnosis [1]. GLIS recommends including muscle-specific strength (MSS) in the conceptual definition of sarcopenia. This measurement, derived from the ratio of muscle strength to muscle mass, reflects the functional domain of muscle contractility quality. **Objectives:** To examine the association between muscle-specific strength (MSS) and outcomes related to handgrip strength (HGS) and functionality in community-dwelling older women with muscle function deficits. **Methods:** This cross-sectional observational study included women aged ≥ 65 years with reduced gait speed (GS ≥ 0.8 m/s) and/or decreased HGS (< 20 kg; Jamar®) who provided informed consent [2, 3]. MSS was calculated as the ratio of muscle performance measures [peak torque (PT), maximal work (MW), and power (POW) of the lower limbs, assessed via isokinetic dynamometry] to appendicular skeletal muscle mass adjusted for body mass index (ASM/BMI; DXA) and lean tissue mass of the right lower limb (LTM; DXA). The Short Physical Performance Battery (SPPB) test evaluated functionality. Simple linear regression (unadjusted) and multiple regression models (adjusted for race and age) were used (significance level of 0.05; SPSS version 23). The research ethics committee of Universidade Federal de Minas Gerais approved the study (CAAE 39702014.2.0000.5149). **Results:** The study included 96 women (median age: 75.5 years; BMI: 26.44 kg/m^2 ± 5.91; GS: 0.78 m/s ± 0.16). MSS adjusted for LTM significantly associated with SPPB (ΔB = 0.06–0.42). In the adjusted model, MSSPOW/LTM showed the strongest association with SPPB (B = 0.426, 95%CI 0.254–0.598), followed by MSSMW/LTM (B = 0.276, 95%CI 0.161–0.392) and MSSPT/LTM (B = 0.055, 95%CI 0.032–0.079). For HGS, all MSS indices except MSSMW/LTM were significantly associated (ΔB = 0.007–0.413). MSSPOW/LTM showed the strongest association (B = 0.413, 95%CI 0.024–0.802), followed by MSSPT/LTM (B = 0.055, 95%CI 0.002–0.108), MSSPOW/ ASM/BMI (B = 0.052, 95%CI 0.016–0.088), MSSPT/ ASM/BMI (B = 0.007, 95%CI 0.002–0.012), and MSSMW/ ASM/BMI (B = 0.031, 95%CI 0.007–0.055). **Conclusion:** Older women with impaired muscle function demonstrated significant associations between

physical-functional outcomes and muscle-specific strength. Among the indices, MSSPOW/LTM showed the strongest association with HGS and functionality, emphasizing the importance of muscle power in supporting daily functional demands. Further studies should investigate these associations longitudinally to enhance understanding of the long-term effects of MSS on functional health. **Keywords:** Aged, muscle-specific strength, functional muscle quality, muscle strength, physical functional performance, sarcopenia. **Disclosures:** The authors declare no competing interests. **Acknowledgements:** We would like to express our gratitude to Professor Lygia Paccini Lustosa in memoriam for her invaluable contributions to this study. **References:** 1. Kirk B, Cawthon PM, Arai H, Ávila-Funes JA, Barazzoni R, Bhasin S, et al. The Conceptual Definition of Sarcopenia: Delphi Consensus from the Global Leadership Initiative in Sarcopenia (GLIS). Age Ageing. 2024;53(3). doi: 10.1093/ageing/afae052. 2. Batista PP, Perracini MR, Pereira DS, Amorim JSC, Pereira LSM. Can EWGSOP2 and SDOC Definitions of Sarcopenia Identify Functional Muscle Quality? J Frailty Sarcopenia Falls. 2024;9(3):192-200. doi: 10.22540/JFSF-09-192. 3. Lustosa LP, Batista PP, Pereira DS, Pereira LSM, Scianni A, Ribeiro-Samora GA. Comparison between parameters of muscle performance and inflammatory biomarkers of non-sarcopenic and sarcopenic elderly women. Clin Interv Aging. 2017;12:1183-1191. doi: 10.2147/CIA.S139579.

LP095- PHASE ANGLE AS A MARKER OF FUNCTIONALITY AND ADVERSE EVENTS IN OLDER ADULTS.

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Background: Bioimpedance has emerged as an inexpensive and accessible tool that can provide valuable information in the assessment of older patients, such as the Phase Angle (PA). The primary objective of this study was to evaluate the association between PA and the occurrence of adverse events such as falls, fractures, or hospitalizations in older persons. Additionally, we analyzed its association with functionality indices and body composition parameters measured by densitometry. **Methods:** This was a cross-sectional observational study. A total of 405 older adults were recruited between March 2016 and July 2019, both from the community and from geriatrics outpatient clinics at HCFMUSP. Participants underwent questionnaires, physical tests, densitometry, and bioimpedance and their PA measurements were also obtained. They were then followed for 42 months to track outcomes including mortality, falls, fractures, infections, and hospitalizations. Pearson's test was used to evaluate correlations between PA and continuous variables. Student's t-test was applied to analyze continuous variables against nominal and ordinal categorical variables. All analyses were conducted using SPSS Statistics v. 29. **Results:** Participants with a higher number of falls (two or more) had lower mean PA values compared to those with no falls or only one in the last year (4.64 vs. 5.03; $p = 0.007$). No statistically significant difference was observed between the mean PA of patients with and without hospitalizations ($p = 0.4$). Patients classified as frail had mean PA values 13.8% lower (95% CI 9.3–18.1%) than non-frail patients (4.5 vs. 5.22, $p < 0.001$). No statistically significant difference was found between PA values of men and women. We observed correlations between PA and these continuous variables: handgrip strength ($r = 0.484$, $p < 0.001$), appendicular lean mass index ($r = 0.296$; $p < 0.001$), gait speed ($r = 0.146$, $p = 0.005$), and fat mass index ($r = 0.152$, $p = 0.004$). **Conclusion:** Among the participants in this study, lower PA values were associated with the occurrence of falls, as well as with frailty and sarcopenia parameters, supporting international evidence that positions Phase Angle as a potentially useful tool in the comprehensive assessment of older patients. **Keywords:** Phase angle, bioelectrical impedance analysis, frailty. **Disclosure:** The authors declare no conflicts of interest. **References:** 1. Norman, K. et al. Clinical nutrition, v.31, n6, p.854-861, 2012 https://doi.org/10.1016/j.clnu.2012.05.008. 2. Wirth, R. et al. Archives of gerontology and geriatrics, v.51, n.3, p.290-294, 2010. https://doi.org/10.1016/j.archger.2009.12.002. 3. Wilhelm-Leen, E. et al. Journal of general internal medicine, v.29, p.147-154, 2014. https://doi.org/10.1007/s11606-013-2585-z.

LP096- ASSOCIATION BETWEEN PHYSICAL PERFORMANCE AND BODY COMPOSITION WITH DOG OWNERSHIP: INSPIRE-T COHORT.

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Background: Maintaining physical performance and healthy body composition is essential for healthy aging, as low physical performance and age-related body composition changes (e.g., sarcopenia, obesity, and osteoporosis) increase the risks of frailty, chronic diseases, and mortality [1-5]. Interventions promoting physical activity, nutrition, and psycho-social engagement face barriers, especially loneliness and social isolation, which worsened during the COVID-19 pandemic and remain prevalent [6, 7]. Dog ownership, associated with reduced loneliness, higher physical activity, and lower mortality, may provide benefits [8-12]. Yet its impact on physical performance and body composition remains understudied. This study examines the association between dog ownership, physical performance, and body composition among participants in the INSPIRE-T cohort and evaluates whether these associations are mediated by physical activity. **Methods:** Baseline data from the INSPIRE-T cohort, involving 1,009 participants aged ≥20 years, were analyzed. Physical performance outcomes included grip strength, 30-second and 5-repetition chair stand tests, gait speed, and SPPB scores. Body composition (lean mass, fat mass, bone mineral content) was assessed using DXA. Dog ownership was self-reported. Covariates included age, sex, BMI, nutritional status (MNA), and physical activity (IPAQ). Linear regression assessed associations, and mediation analyses evaluated the role of physical activity in these relationships. **Results:** Of 1,009 participants (mean age 61.4 ± 18.9 years, 62.1% female), 15.2% were dog owners. Dog owners were younger, had higher

BMI, fat mass, appendicular lean mass, and bone mineral content, and engaged in more moderate-to-vigorous physical activity than non-dog owners. Multivariate analyses showed that dog ownership was significantly associated with higher lean mass (+0.83 kg), fat mass (+2.18 kg), and bone mineral content (+0.08 kg), even after adjusting for covariates. No significant associations were observed between dog ownership and physical performance outcomes. Mediation analyses revealed that the association between dog ownership and lean mass was not significantly mediated by physical activity. **Conclusion:** Dog ownership is associated with improved body composition, including higher lean mass and bone mineral content, independent of physical activity. However, no direct link to physical performance was observed. These findings suggest that dog ownership may support healthy aging by influencing body composition. A longitudinal follow-up of these participants is necessary to evaluate the evolution of these associations over time (analyses underway). **Keywords:** Dog ownership, physical performance, body composition, aging, physical activity. **Disclosures:** The INSPIRE-T study was supported by grants from the Region Occitanie/Pyrénées-Méditerranée (Reference number: 1901175), the European Regional Development Fund IHU HealthAge Open Science Hub: INSPIRE-T Data Use Agreement V1 22/10/2024 (ERDF) (Project number: MP0022856), the Inspire Chairs of Excellence funded by: Alzheimer Prevention in Occitania and Catalonia (APOC), EDENIS, KORIAN, Pfizer, Pierre-Fabre, and the IHU HealthAge which received funding from the French National Research Agency (ANR) as part of the France 2030 program (reference number: ANR-23-IAHU-0011). The IHU HealthAge Open Science initiative was supported by the French National Research Agency (ANR) as part of the France 2030 program (reference number: ANR-23-IAHU-0011), and builds on the work conducted in the Data Sharing Alzheimer project. The authors declared no competing interests. **References:** 1. Gomes DR dos P, Santos LP, Vieira ER, et al. Low Physical Performance Could Be Associated with Adverse Health Outcomes over Time: Results from a Cohort of Older Adults. Int J Environ Res Public Health. 2024;21(3):319. 2. De Fátima Ribeiro Silva C, Ohara DG, Matos AP, Pinto ACPN, Pegorari MS. Short Physical Performance Battery as a Measure of Physical Performance and Mortality Predictor in Older Adults: A Comprehensive Literature Review. Int J Environ Res Public Health. 2021;18(20):10612. 3. Greco EA, Pietschmann P, Migliaccio S. Osteoporosis and Sarcopenia Increase Frailty Syndrome in the Elderly. Front Endocrinol [Internet]. 2019 [cited 2024 Nov 28];10 Available from: https://www.frontiersin.org/journals/endocrinology/articles/10.3389/fendo.2019.00255/full. doi:10.3389/fendo.2019.00255. 4. Atkins JL, Wannamathee SG. Sarcopenic obesity in ageing: cardiovascular outcomes and mortality. Br J Nutr. 2020;124(10):1102–13. 5. Benz E, Pinel A, Guillet C, et al. Sarcopenia and Sarcopenic Obesity and Mortality Among Older People. JAMA Netw Open. 2024;7(3):e243604. 6. Su Y, Rao W, Li M, Caron G, D'Arcy C, Meng X. Prevalence of loneliness and social isolation among older adults during the COVID-19 pandemic: A systematic review and meta-analysis. Int Psychogeriatr. 2023;35(5):229–41. 7. Cudjoe TKM, Roth DL, Szanton SL, Wolff JL, Boyd CM, Thorpe RJ. The Epidemiology of Social Isolation: National Health and Aging Trends Study. J Gerontol B Psychol Sci Soc Sci. 2020;75(1):107–13. 8. Lee H-S, Song J-G, Lee J-Y. Influences of Dog Attachment and Dog Walking on Reducing Loneliness during the COVID-19 Pandemic in Korea. Anim Open Access J MDPI. 2022;12(4):483. 9. Costa S, Sousa L, Luz H, Padeiro M. Daily Mobility and Social Interactions Among Community-Dwelling Older Adults With Pet Dogs: A Scoping Review. J Appl Gerontol Off J South Gerontol Soc. 2022;41(12):2609–23. 10. Kramer CK, Mehmood S, Suen RS. Dog Ownership and Survival: A Systematic Review and Meta-Analysis. Circ Cardiovasc Qual Outcomes. 2019;12(10):e005554. 11. Maurice C, Engels C, Canouï-Poitrine F, Lemogne C, Fromantin I, Poitrine E. Dog ownership and mental health among community-dwelling older adults: A systematic review. Int J Geriatr Psychiatry [Internet]. 2022;37(11) doi:10.1002/gps.5815. 12. Martins CF, Soares JP, Cortinhas A, et al. Pet's influence on humans' daily physical activity and mental health: a meta-analysis. Front Public Health. 2023;11:1196199.

LP097- EXTERNAL VALIDATION OF NHANES-DERIVED ANTHROPOMETRIC EQUATIONS FOR ESTIMATING APPENDICULAR SKELETAL MUSCLE MASS IN EAST ASIAN POPULATIONS: A THREE-COHORT STUDY FROM TAIWAN AND JAPAN WITH 13,582 COMMUNITY-DWELLING ADULTS.

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Background: Sarcopenia, characterized by progressive loss of muscle mass and function, is associated with increased risks of frailty, disability, and mortality. While tools like dual-energy X-ray absorptiometry (DXA) and bioelectrical impedance analysis (BIA) are used for muscle mass assessment, their widespread implementation is limited by time and resource constraints, particularly in community settings. A study has developed equations to estimate appendicular skeletal muscle mass (ASM) using United States-based National Health and Nutrition Examination Survey (NHANES) data [1]. These equations incorporate easily measurable variables, including demographics, physical measurements, and biochemical markers. Although these equations demonstrated high accuracy within the NHANES dataset, their generalizability to non-U.S. populations remains uncertain. External validation is

particularly crucial for Asian populations, who typically have different body composition profiles characterized by lower muscle mass and higher body fat at the same body mass index compared to Western populations. We aimed to cross-validate four anthropometric equations developed by NHANES, which incorporate age, sex, height, weight, and serum creatinine, to predict ASM using DXA, using data from Taiwan and Japan. **Method:** We analyzed cross-sectional data from three independent cohorts: two Taiwanese cohorts (I-Lan Longitudinal Aging Study [ILAS], n=2,780 with 1,355 men and 1,425 women; Nutrition and Health Survey in Taiwan [NAHSIT], n=6,853 with 3,399 men and 3,454 women) and one Japanese cohort (National Institute for Longevity Sciences-Longitudinal Study of Aging [NILS-LSA], n=3,949 with 1,967 men and 1,982 women). All participants were community-dwelling adults aged 50 years or older, with ASM measurements obtained by DXA. Four previously developed equations from NHANES data were evaluated in ascending order of complexity: Equation 3 (incorporating sex, age, height, weight, and serum creatinine), Equation 4 (using sex, age, height, and weight), Equation 5 (including sex, age, and weight), and Equation 6 (using only sex and weight). The equations' performance was assessed using the coefficient of determination (R^2) for estimation accuracy. The diagnostic accuracy for identifying low muscle mass was evaluated using the Asian Working Group for Sarcopenia (AWGS) criteria [2], calculating both area under the receiver operating characteristic curve (AUC) values and optimal cutoff points for each equation across cohorts. **Results:** Among the equations, Equation 4 (incorporating sex, age, height, and weight) demonstrated the best estimation performance, with R^2 values of 0.80 (ILAS), 0.86 (NILS-LSA), and 0.89 (NAHSIT). For diagnostic accuracy of low muscle mass using AWGS criteria, Equation 4 showed high performance with AUC values ranging from 0.83-0.91 in men and 0.77-0.89 in women across cohorts. The NILS-LSA and NAHSIT cohorts demonstrated particularly strong diagnostic performance (AUC = 0.84-0.91), while the ILAS cohort showed relatively lower AUC values. Notably, despite the addition of serum creatinine, Equation 3 yielded suboptimal cutoff values. Sex-specific analyses revealed consistently better diagnostic accuracy in men compared to women across all equations, with optimal cutoff values for SMI ranging from 6.35-7.32 kg/m² for men and 4.92-5.64 kg/m² for women. **Conclusion:** This cross-validation study demonstrates that an anthropometric equation incorporating age, sex, height, and weight achieves robust diagnostic accuracy for low muscle mass across East Asian populations. The equation's strong performance without requiring laboratory measurements makes it particularly valuable for early sarcopenia screening in community settings. Our findings support its implementation as a practical, evidence-based tool for routine sarcopenia assessment in both clinical practice and public health initiatives, especially in resource-limited settings where DXA accessibility is constrained. **Keywords:** Sarcopenia, muscle mass estimation, appendicular skeletal muscle mass, external validation, community diagnostics. **Disclosures:** The authors declare no conflict of interest. **References:** 1. Shi, S., Chen, W., Jiang, Y., Chen, K., Liao, Y., & Huang, K. (2023). A more accurate method to estimate muscle mass: A new estimation equation. Journal of cachexia, sarcopenia and muscle, 14(4), 1753–1761. https://doi.org/10.1002/jcsm.13254. 2. Chen, L. K., Woo, J., Assantachai, P., Auyeung, T. W., Chou, M. Y., Iijima, K., Jang, H. C., Kang, L., Kim, M., Kim, S., Kojima, T., Kuzuya, M., Lee, J. S. W., Lee, S. Y., Lee, W. J., Lee, Y., Liang, C. K., Lim, J. Y., Lim, W. S., Peng, L. N., … Arai, H. (2020). Asian Working Group for Sarcopenia: 2019 Consensus Update on Sarcopenia Diagnosis and Treatment. Journal of the American Medical Directors Association, 21(3), 300–307.e2. https://doi.org/10.1016/j.jamda.2019.12.012.

LP098- SARCOPENIA, MUSCLE MASS, AND DIETARY PROTEIN INTAKE IN ADULTS OLDER THAN 65 YEARS AFTER EARLIER BARIATRIC SURGERY.

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Background: Metabolic and Bariatric Surgery (MBS) is a proven treatment for obesity. Patients experience dramatic weight loss, which is accompanied by a loss of muscle tissue which may predispose to or exacerbate sarcopenia. Previous studies mainly focused on the first years after MBS and rarely include older adults, the most vulnerable group to sarcopenia. **Methods:** This cross-sectional comparative study investigated sarcopenia and low muscle mass by comparing adults older than 65 years with previous MBS (BAR) to patients following non-surgical obesity management (CON). Main endpoints were prevalence of sarcopenia and Appendicular Lean Mass (ALM) normalized to Body Mass Index (%ALM/BMI). A sample size of 50 per group was estimated based on difference in ALM from a previous study comparing adults after BMS with a matched control group. Exclusion criteria included other diseases which may cause sarcopenia. Patients were recruited from the University Hospitals Leuven Obesity Clinic, Belgium. Study assessments included body composition by Dual-energy X-ray Absorptiometry (DXA), handgrip strength, Short Battery of Physical Performance (SBPP), blood sampling and dietary intake by two non-consecutive 24-hour recalls. Sarcopenia was defined by the European Working Group on Sarcopenia in Older People (EWGSOP1) criteria using obesity-specific cut-off points. Sarcopenic obesity was classified according to the European Society for Enteral and Parenteral Nutrition (ESPEN) and European Association of the Study of Obesity (EASO) consensus definition. A linear mixed model was fitted to predict %ALM/BMI, with sex as a random variable and systematically

adding parameters and testing model performance. **Results:** In total,50 participants per group were included (male, BAR 40%, CON 35%). BAR participants were ~2 years older (68.3±3.2 years vs. 70.7±3.9, p<0.01) and more had diabetes (52% vs. 28%). BAR consisted of 25 participants after primary Roux-en-Y-Bypass (RYGB), eleven after secondary RYGB, thirteen after sleeve gastrectomy, and one after vertical banded gastroplasty. BAR patients lost more bodyweight after MBS than CON did with non-surgical treatment (BAR 31.6 ± 9.5% vs. CON 12.1 ± 8.42%, p<0.001). Fat Free Mass (FFM) was lower for BAR than CON, but %ALM/BMI was not different (BAR 64.7±18.1% vs. CON 62.6±15.8, p=0.53). Although 20% to 56% of all participants had low muscle mass, depending on sex and criterium, only 3% met criteria for sarcopenia and 9% for sarcopenic obesity. Dietary protein intake tended to be higher in BAR than CON (1.36 ± 0.36 g/kg FFM/day vs. 1.25 ± 0.27, p=0.09). Most participants did not meet optimal protein intake recommendation after BMS (1.5 g/kg/day ideal bodyweight) nor for older adults in general. In the linear mixed model, muscle mass decreased with fat percentage, age, total weight lost, and increased with protein intake (marginal R2 0.53; conditional R2 0.77). BAR compared to CON, nor surgery type nor other clinical parameters influenced muscle mass. **Conclusion:** Older adults with previous MBS were not more likely to develop sarcopenia that older adults receiving non-surgical treatment. Rather, older age, higher adiposity, lower protein intake and a greater weight loss can lead to lowered muscle mass and predispose to sarcopenia. **Keywords:** Sarcopenic obesity, metabolic and bariatric surgery, protein intake, muscle mass. **Clinical Trial Registry:** NCT05582668; https://clinicaltrials.gov. **Disclosures:** The authors declare that they have no conflict of interest. **Funding:** This research was funded by a Horizon 2020 research and innovation program: Marie Skłodowska-Curie grant [No 956146]

BIOLOGY OF FRAILTY, SARCOPENIA

P131- ASSESSING THE SKELETAL MUSCLE PUMP DURING ORTHOSTATIC PHYSICAL COUNTERPRESSURE MANOEUVERS: TEMPORAL LAGS AND CAUSAL RELATIONSHIPS IN MUSCULAR-CARDIOVASCULAR REGULATION.

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Orthostatic hypotension (OH) is a prevalent condition among older adults, characterised by an excessive drop in blood pressure upon standing. The skeletal muscle pump is thought to be important in maintaining venous return and stabilising blood pressure during postural changes, especially during the performance of physical counterpressure manoeuvres (PCMs). This study investigated the temporal relationships between thigh muscle activation, thigh haemoglobin concentration, and cardiovascular parameters (heart rate (HR), stroke volume (SV), cardiac output (CO), total peripheral resistance (TPR), and mean arterial pressure (MAP) to understand the muscle pump's role in haemodynamic regulation while performing PCMs before and after and active stand (AS) test. Volunteer participants aged 50 and over underwent an AS in a research clinic, during which participants were asked to squeeze their thigh muscles as hard as possible for 10 seconds, firstly while in supine position (PCM1), and secondly 3 minutes after standing (PCM2). Surface electromyography (EMG), near-infrared spectroscopy (NIRS), and non-invasive digital artery photoplethysmography were used to continuously monitor thigh muscle activation, muscle haemoglobin concentration, and cardiovascular function, respectively. Cross-correlation and Granger causality analyses were conducted to determine the temporal and causal relationships between the signals. Twenty-two participants (mean age 70.4 ± 5.2 years) were assessed. CO and MAP increased on average by 1.0 l/min and 12 mmHg respectively during PCM1, and 1.0 l/min and 18 mmHg during PCM2, also respectively. The cross-correlation analysis revealed that muscle activation in the lower limb, when measured by surface EMG during PCMs, significantly predicted changes in SV, HR, and TPR, with distinct temporal lags between these physiological signals. During the lying PCM (PCM1), the peak in HR occurred on average 1 second after the peak in EMG, followed by the peak in TPR at 9 seconds and the peak in SV at 10 seconds. In the standing PCM (PCM2), the peak HR was observed at 3 seconds, the peak TPR at 6 seconds, and the peak SV at 8 seconds. Specifically, in terms of EMG to SV, the proportion of significant causality increased by approximately 450% during supine PCM and 600% during standing PCM compared to supine rest; for EMG to HR, causality increased by 100% during supine PCM and 300% during standing PCM compared to supine rest; and for EMG to TPR, causality increased by approximately 80% during both supine PCM and standing PCM compared to supine rest. Haemoglobin concentration in the thigh was found to be less specific to PCM, showing smaller changes during PCMs compared to supine rest. Muscle activation as measured by surface EMG was strongly predictive of change in cardiovascular parameters during PCMs. Based on our results, we recommend that surface EMG is used preferentially to thigh NIRS when association with cardiovascular parameters during PCMs is of primary interest. By understanding the temporal interplay between muscle activation and cardiovascular responses, we can develop effective strategies to improve cardiovascular stability and prevent OH in older individuals. Future research should validate these findings in larger, more diverse cohorts, and explore long-term adaptations to targeted interventions. Orthostatic haemodynamics; skeletal muscle pump; electromyography; near-infrared spectroscopy; cardiovascular dynamics; physical counterpressure manoeuvres. This research was funded by Science Foundation Ireland (SFI), grant number 18/FRL/6188. Ethical approval for the study was granted from the Tallaght University Hospital / St. James's Hospital Joint Research Ethics Committee (Project ID: 0221; approval date: 4 May 2021; Dublin, Ireland) and approval was also granted by St James's Hospital Research & Innovation Office (Reference: 6567, approval date: 26 July 2021; Dublin, Ireland). All participants in the study provided explicit, written, informed consent. The study adhered to the World Medical

Association Declaration of Helsinki on ethical principles for medical research involving human subjects. The authors declare no conflict of interest. The funder had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

P133- EARLY RECOGNITION AND PROMPT TREATMENT OF ACUTE SARCOPENIA: IMPACT ON SHORT- AND LONG-TERM OUTCOMES. S. Damanti[1], P. Rovere-Querini[1] *((1) Vita-Salute San Raffaele University - Milano (Italy))*

Background: Preserving muscle health and functional status during a hospital stay is critical for older individuals [1-4]. Despite the resolution of acute illnesses, more than half of older patients fail to regain their pre-admission functional levels. Moreover, the risk of developing new disabilities, requiring institutional care, and mortality all rise following hospital discharge [5-8]. The decline in muscle mass and function occurring within 28 days of a major stressor is termed acute sarcopenia [9-10] and is reported to affect 15-20% of cases [11]. However, acute sarcopenia is underdiagnosed because the repeated assessments of muscle mass and function, necessary for its detection, are not routinely performed. Furthermore, traditional methods for assessing muscle mass are often unreliable in acute conditions or impractical for frequent use due to radiation exposure. Muscle ultrasound represents a promising approach for detecting early changes in muscle mass over short intervals [12-14]. We are going to examine the prevalence of acute sarcopenia among patients hospitalized in an internal medicine unit with a focus on geriatrics (providing resistance exercise programmes and protein supplementation) compared to a unit providing standard care. Moreover, we are going to identify biomarkers and consequences of acute sarcopenia. **Methods:** Longitudinal observational study lasting 2 years: 1 year in-hospital observation and recruitment plus 1-year follow-up for each patient. **Inclusion criteria:** age ≥ 65 years; exclusion criteria: autoimmune diseases involving the muscles, degenerative neuromuscular disorders. First assessment performed within 48 hours of admission will include: multidimensional assessment, biobanking for the assessment of biomarkers of acute sarcopenia (GDF-15 and microRNAs: microRNAs miR-542, miR-424, miR-29b, miR-181a, miR-1, and miR-131), hand grip, Short Physical Performance Battery (SPPB), Bilateral Anterior Tight Thickness (BATT) echography and bioelectrical impedance analysis (BIA). Measures of muscle mass and function will be repeated after 2, 4, 6, 8, and 10 days, and then every 5 days until hospital discharge. Food intake will be recorded daily through food diaries. Acute sarcopenia will be defined as the incidence of sarcopenia compared to baseline measurements at recruitment, using the EWGSOP criteria. Follow-up visits at 1, 3, 6, and 12 months after hospital discharge. **Results:** In-hospital outcomes that will be evaluated during the study are: acute sarcopenia incidence, length of hospitalization, falls, pressure injuries, nosocomial infections, new disability at discharge, mortality. After discharge outcomes are instead disability, falls, ED admissions, hospitalizations, mortality. A sample size of 300 participants was calculated using a two-sided t-test (a 5%, b 80%), assuming a difference of at least 2.3 kg in hand-grip strength between the group receiving a geriatric approach and those treated with standard care [15]. **Conclusion:** Acute sarcopenia is a primary cause of post-hospital functional decline. Our study will provide new knowledge on acute sarcopenia, improving its diagnosis and management. **Keywords:** Acute sarcopenia, hospitalization, biomarkers, outcomes. **Disclosures:** The authors declared no conflict of interest. **References:** 1. PMID:23541057. 2. www.who.int/ageing/events/world-report-2015-launch. 3. PMID:10805827. 4. PMID:29706364. 5. PMID:27349623. 6. PMID:21045098. 7. PMID:19093915. 8. PMID:19682121. 9. PMID: 30312372. 10. PMID: 29392090. 11. PMID: 36689926. 12. PMID: 27894277. 13. PMID: 28824911. 14. PMID: 36513380. 15. PMID:31443594.

P134- REVOLUTIONIZING SARCOPENIA DIAGNOSIS: UNVEILING MOLECULAR MARKERS THROUGH COMPREHENSIVE TRANSCRIPTOMIC LANDSCAPE ANALYSIS. X.Y. Kwek[1], J.H. Hong[2], P.Y. Guan[3], K.Q. Quek[4], L.L. Liu[5], A.L.R.M. Wee[5], B.T. Teh[1], F.H.X. Koh[5] *((1) National Cancer Centre - Singapore (Singapore), (2) Duke-Nus Medical School - Singapore (Singapore), (3) Genome Institute Of Singapore - Singapore (Singapore), (4) Seng Kang General Hospital, Singapore (Singapore), (5) Seng Kang General Hospital - Singapore (Singapore))*

Background: Sarcopenia is a condition characterized by the progressive loss of skeletal muscle mass and function [1]. Although it frequently affects the elderly, it can also begin in mid-life and become more common in specific groups, such as cancer patients. Sarcopenic patients are also associated to have a lower overall survival and shorter disease-free survival when compared to those without sarcopenia [2]. Early and systematic diagnosis of sarcopenia is crucial for enhancing care and overall prognosis. Currently, a universally accepted clinical definition or diagnostic criteria has yet to be established hence there exists a limited understanding of the molecular mechanisms underpinning sarcopenia in humans [3]. With the use of transcriptomic profiling, we aim to discover potential biomarker for the diagnosis of sarcopenia. **Methods:** Patients recruited from Sengkang General Hospital included males and females, aged 37 to 89, consisting Chinese, Indian, and Malay ethnicities. They were classified based on the Asian Working Group for Sarcopenia (AWGS) 2019 diagnostic criteria and were categorized into non-sarcopenia (NS), sarcopenia (SA) and severe sarcopenia (SS) group. RNA was extracted from 118 NS, 35 SA and 54 SS skeletal muscle tissues using the Trizol/Chloroform method [4]. Transcriptome profiling (RNA-seq) was performed to quantify gene expression levels and enriched Hallmark pathways in each sample were identified using ssGSEA. RNA-seq results was used to plot Principal Component Analysis (PCA) to see the correlation

between groups. Clustergram heatmap was generated through unsupervised hierarchical clustering of ssGSEA scores, categorizing the sarcopenia samples into four molecular subgroups (G1 to G4). Gender-specific molecular changes were also identified by comparing male and female patients within the same group. **Results:** PCA plot based on RNA-seq showed that the samples do not cluster according to the AWGS 2019 diagnostic criteria, as there was a significant overlapping of different sarcopenia stages. From the clustergram heatmap, it was evident that supervised clustering using the AWGS definition did not reveal any trends when analysing the inflammatory and metabolic pathways. Conversely, when the unsupervised clustering was performed, the heatmap showed a progressive increase in inflammation from G1 to G4. Similarly, unsupervised clustering revealed the distinct patterns in metabolic pathways, with a gradual upregulation observed, particularly in G3 compared to G2. These differential pathways were consistent across different sarcopenia statuses when the analysis was separated by gender. **Conclusion:** PCA plot suggested that the clinical classification of sarcopenia may not be able to distinguish the groups effectively as significant overlap is observed across the various stages of the condition. RNA-seq analysis of unsupervised clustering has shown that the inflammatory and metabolic pathways are significantly higher in SS than NS. We found that inflammation may trigger or influence metabolic pathways with inflammatory pathways first being upregulated before metabolic pathways are affected. This implies that identifying the key muscle specific metabolites produced by the impacted inflammatory pathways could be crucial for improving diagnosis. The findings suggest that G1 to G4 classification may provide a more accurate separation of sarcopenia stages than current clinical approaches, potentially serving as a key to enhancing diagnostic accuracy of disease severity. **Keywords:** Sarcopenia, aging, skeletal muscle, transcriptomics, RNA-seq, AWGS. **Disclosures:** The authors declared no competing interests. **References:** 1. Fielding, R. A., Vellas, B., Evans, W. J., Bhasin, S., Morley, J. E., Newman, A. B., . . . Zamboni, M. (2011). Sarcopenia: An Undiagnosed Condition in Older Adults. Current Consensus Definition: Prevalence, Etiology, and Consequences. International Working Group on Sarcopenia. Journal of the American Medical Directors Association, 12(4), 249-256. doi:10.1016/j.jamda.2011.01.003. 2. Shachar, S. S., Williams, G. R., Muss, H. B., & Nishijima, T. F. (2016). Prognostic value of sarcopenia in adults with solid tumours: A meta-analysis and systematic review. European Journal of Cancer, 57, 58-67. doi:10.1016/j.ejca.2015.12.030. 3. Kara, M., Kaymak, B., Frontera, W., Ata, A. M., Ricci, V., Ekiz, T., . . . Özçakar, L. (2021). Diagnosing sarcopenia: Functional perspectives and a new algorithm from the ISarcoPRM. J Rehabil Med, 53(6), jrm00209. doi:10.2340/16501977-2851. 4. Simões, A. E., Pereira, D. M., Amaral, J. D., Nunes, A. F., Gomes, S. E., Rodrigues, P. M., . . . Rodrigues, C. M. (2013). Efficient recovery of proteins from multiple source samples after TRIzol(®) or TRIzol(®)LS RNA extraction and long-term storage. BMC Genomics, 14, 181. doi:10.1186/1471-2164-14-181.

P135- EARLY LIFE ENVIRONMENT IS ASSOCIATED WITH ALTERED DNA METHYLATION PATTERNS IN PRIMARY SKELETAL MUSCLE MYOBLASTS ISOLATED FROM OLDER INDIVIDUALS. H.Y. Sharkh[1], E.S. Garratt[1,2], M.S. Burton[1,2], M.O. Hewitt[1], E. Antoun[1], W. Leo[3], E.M. Dennison[1,3], N.C. Harvey[2,3], H.P. Patel[2,3], C. Cooper[2,3], K.M. Godfrey[2,3], K.A. Lillycrop[1,2] *((1) University Of Southampton - Southampton (United Kingdom), (2) NIHR Southampton Biomedical Research Centre, University Of Southampton & University Hospital Southampton NHS Foundation Trust - Southampton (United Kingdom), (3) MRC Lifecourse Epidemiology Centre - Southampton (United Kingdom))*

Background: Environmental exposures during critical developmental windows in early life are associated with an increased risk of non-communicable disease (NCD) in later life, with epigenetic processes proposed as mediators. This study aimed to investigate the effect of infant growth measures and early childhood documented illnesses on DNA methylation and chromatin structure within human primary myoblasts isolated from older individuals, and to examine whether the differences in DNA methylation identified were associated with muscle related pathologies in later life. **Methods:** Using the Infinium Human MethylationEPIC BeadChip, we measured DNA methylation in proliferating myoblasts extracted from vastus lateralis muscle biopsies from community-dwelling older male and female participants (n=119, median age 77.8 years). Analyses examined differentially methylated CpG (dmCpG) sites, regions and pathways associated with birthweight, weight at 1-year, conditional growth during infancy, and frequency of documented illnesses between birth and age 1 year, and from age 1 to 5 years. ATAC-seq was performed on myoblast DNA to examine chromatin accessibility, whilst qRT-PCR of myoblast RNA investigated expression of genes linked to DMRs. Associations between dmCpGs and muscle pathologies, including sarcopenia, its definitional components (grip strength, appendicular lean mass index (ALMi), gait speed) and impaired glucose-insulin metabolism in later life were also examined. **Results:** 7 dmCpGs (FDR<0.05), and 1 differentially methylated region (DMR) were identified to be associated with birthweight. The DMR was located in the Branched Chain Amino Acid Transaminase (BCAT1) gene, with 2 of the CpG sites positively correlated with BCAT1 transcript levels in myoblasts, and 9 CpG sites correlated with chromatin structure. 8 dmCpGs were correlated with weight at 1 year, 6 with conditional infant growth rate, 16 with frequency of childhood illnesses between birth and 1 year of age, and 53 with childhood illnesses between 1-5 years. The top pathways enriched included those involved in metabolism, myogenesis and stress responses. Of the 90 dmCpGs associated with early life size and infections, 5 were also associated with later life ALMi, 4 with grip strength, 1 with sarcopenia, 4 with HOMA2-IR and fasting insulin levels, and 2 with fasting glucose levels. **Conclusion:** These findings suggest that infant growth and illnesses during infancy and early childhood influence the methylome of myoblasts in later life, altering methylation

of genes involved in metabolism, myogenesis and stress pathways. This work supports the premise that early life is a critical developmental window, which may, through epigenetic modulation, influence muscle resilience in later life. **Keywords:** Birthweight, childhood illness, Developmental Origins of Adult Health and Disease (DoHAD), DNA methylation, skeletal muscle, sarcopenia. **Disclosures:** H.Y. Sharkh's attendance at this conference was supported by funding from the NIHR Biomedical Research Council (BRC) Education, Training and Career Development fund. K.M. Godfrey and H.P. Patel have received reimbursement for speaking at conferences sponsored by companies selling nutritional products. C. Cooper has received consultancy fees and honoraria from Amgen, Danone, Eli Lilly, GlaxoSmithKline, Medtronic, Merck, Nestlé, Novartis, Pfizer, Roche, Servier, Shire, Takeda, and UCB. N. Harvey has received consultancy/lecture fees/honoraria/ grant funding from Alliance for Better Bone Health, Amgen, MSD, Eli Lilly, Radius Health, Servier, Shire, UCB, Consilient Healthcare, Kyowa Kirin, Theramex and Internis Pharma. M.A. Burton, E.S. Garratt, E. Antoun, K.M. Godfrey, and K.A. Lillycrop are part of academic research programmes that have received research funding from BenevolentAI Bio Ltd., Nestec, and Danone. The other authors declare that they have no conflicts of interest.

P137- ATORVASTATIN DECREASES PROLIFERATION, INCREASES SENESCENCE, IMPAIRS DIFFERENTIATION, AND DOWNREGULATES PATHWAYS ASSOCIATED WITH SKELETAL MUSCLE FUNCTION IN HUMAN MYOBLASTS FROM OLDER ADULTS.

M. Chaudhery[1], E. Garratt[1,2], M. Burton[1,2], H. Sharkh[1], L. Westbury[3], E. Dennison[1,3], N. Harvey[2,3], C. Cooper[2,3], H. Patel[2,3], K. Godfrey[2,3], K. Lillycrop[1,2] *((1) University Of Southampton - Southampton (United Kingdom), (2) NIHR Southampton Biomedical Research Centre, University Of Southampton & University Hospital Southampton NHS Foundation Trust - Southampton (United Kingdom), (3) MRC Lifecourse Epidemiology Centre - Southampton (United Kingdom))*

Background: Atorvastatin is effective in lowering low-density lipoprotein (LDL) cholesterol to reduce the risk of cardiovascular disease and metabolic syndrome. Major reasons for non-adherence include skeletal muscle pain, fatigue, and weakness, defined as statin-associated muscle symptoms (SAMS). Risk factors for SAMS include a small body frame, being female, age over 80, and frailty. Although the mechanisms behind SAMS are not fully understood, molecular regulatory pathways that promote increased protein degradation, upregulate apoptosis and which impair mitochondrial activity in skeletal muscle have been implicated. The aim of this study was to understand the phenotypic and transcriptomic effects of atorvastatin treatment on skeletal muscle myoblasts from older adults. **Methods:** Myoblasts were isolated from vastus lateralis muscle biopsies obtained from 12 community-dwelling older female participants aged 75-83 from the Hertfordshire Sarcopenia Study (HSS). Myoblasts were treated with 1μM, 5μM, or 10μM atorvastatin for 4 days. Senescence was measured in proliferating cells using the β-galactosidase assay and the percentage of proliferating cells was measured by 5-ethynyl-2'-deoxyuridine (EdU) staining. To analyse the effects of atorvastatin during differentiation, immunocytochemistry (ICC) was performed on the differentiation markers; MyoD, MyoG, and MYHC. RNA was prepared from cultures treated with 10μM atorvastatin for RNA sequencing (RNA-Seq), which was followed up with gene interaction pathway analysis. **Results:** Atorvastatin treatment during proliferation significantly increased senescence and decreased proliferation of myoblasts in a dose-dependent manner. ICC identified the early differentiation marker, MyoD, as decreased at 10μM atorvastatin, whilst the later differentiation markers MyoG and MYHC were also decreased in a dose-dependent manner. RNA-Seq analysis with 10μM atorvastatin treatment revealed upregulated expression of 822 genes, with 888 genes downregulated. Pathway and MCODE analysis identified key gene interaction networks implicated in muscle cell function, including cholesterol and fatty acid metabolism (upregulated) and striated muscle contraction and cell cycle processes (downregulated). **Conclusion:** These results suggest that atorvastatin has multiple adverse phenotypic effects at the cellular level. Transcriptome analysis showed that atorvastatin led to dysregulation of the expression of many key genes involved in important pathways and processes, which may influence skeletal muscle maintenance, health, and function. Our findings could explain the molecular basis of common muscle side effects experienced when patients undergo statin treatment and may allow scientists to optimise statins to reduce their impact on skeletal muscle or develop additional therapies that mitigate these side effects. Additionally, these findings may enable clinicians to create personalised treatment plans and implement effective monitoring strategies for managing symptoms in patients. **Keywords:** Atorvastatin, myoblasts, skeletal muscle. **Disclosures:** M. Chaudhery is partially funded by The Rank Prize nutrition grant and attendance at this conference was supported by funding from the NIHR Biomedical Research Council (BRC) Education, Training and Career Development fund. K.M. Godfrey and H.P. Patel have received reimbursement for speaking at conferences sponsored by companies selling nutritional products. C. Cooper has received consultancy fees and honoraria from Amgen, Danone, Eli Lilly, GlaxoSmithKline, Medtronic, Merck, Nestlé, Novartis, Pfizer, Roche, Servier, Shire, Takeda, and UCB. M.A. Burton, E.S. Garratt, K.M. Godfrey, and K.A. Lillycrop are part of academic research programmes that have received research funding from BenevolentAI Bio Ltd., Nestec, and Danone. The other authors declare that they have no conflicts of interest.

P138- RED BLOOD PARAMETERS ARE ASSOCIATED TO FRAILTY, BUT NO TO PRE-FRAILTY, IN BRAZILIAN OLDER ADULTS. L. Corona[1], L. Fernandes[1], G. Oliveira[2], N. Ramos[1], C. Freiria[1], T. Brito[3], T. Alexandre[4]
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Background: Anemia is known to be one of the biological conditions that can trigger the onset of frailty or worsen the condition, and literature has shown a dose-response association between hemoglobin and frailty. However studies with large representative aging populations are less common, especially in low- and middle-income countries, where the nutritional transition is still in course, with high prevalences of undernutrition and obesity posing a double burden of disease. So, we aim to investigate the relationship between red blood parameters and frailty in a representative sample of Brazilian older adults. **Methods:** This study uses baseline data from the Brazilian Longitudinal Study of Aging (ELSI-Brazil), a longitudinal, household-based survey conducted in a nationally representative sample of the population aged ≥50 years. The total sample consisted of 9,412 participants, and blood samples were obtained from 2,361 of them, living in 70 municipalities in all five different Brazilian regions. For this study, only participants aged ≥60 were selected (n=1,275). We analyzed the association of several red blood parameters (hemoglobin - Hb, hematocrit - Hct, red blood cell count - RBC, red cell distribution width - RDW, mean corpuscular hemoglobin concentration - MCHC) and frailty according to Fried´s phenotype, using multinomial logistic regression (base category robust). Using logistic regression, we also tested each of the five components alone with all the red blood parameters. Associations with $p<0.05$ were considered significant. **Results:** After adjustment for potential confounders (age, sex, schooling, nutritional status, cognition, number of self-reported chronic diseases, and qualitative markers of food consumption), all red blood parameters were associated with frailty – Hb ($p<0.001$), Hct ($p=0.041$), RBC ($p=0.042$), RDW ($p=0.003$), MCHC ($p=0.003$). However, only RDW was associated with pre-frailty in the adjusted model ($p=0.020$). Regarding the isolate components, in fully adjusted models, weakness was associated with MCHC ($p<0.022$); slowness was associated with Hb ($p=0.006$) and Hct ($p=0.013$); weight loss was associated with MCHC ($p<0.033$); exhaustion and low physical activity were not associated to any of the parameters. **Conclusion:** In this large population survey representative of the elderly Brazilian population, we found that all red blood biomarkers were associated with frailty, but only RDW was associated with pre-frailty. Therefore, RDW may be a more sensitive marker for the early stages of the syndrome, being important to alert health professionals and assist in decision-making for prevention measures and early treatment. When analyzing isolate components, only a few associations were significant, which shows that none of the parameters may be good biomarkers for evaluating them individually.

P139- FRAIL TO ROBUST CIRCRNA PROFILES IN BLOOD LEUKOCYTES MAY INDICATE MOLECULAR EVENTS ASSOCIATED WITH ALZHEIMER'S DISEASE DEMENTIA. D. Gerovska[1], A. Kretz[2], M.J. Araúzo-Bravo[1]
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Background: Emerging literature shows an association between frailty and clinical Alzheimer's disease (AD), with the suggestion that frailty may contribute to the discrepancy between lesion load and AD symptoms [1]. A study of circular RNAs (circRNAs) using CIRCExplorer and CIRI2 identified 89 differentially expressed (DE) circRNAs in frail individuals, and a number of circRNAs have been proposed as non-invasive biomarkers of frailty [2]. Here, we aimed to leverage publicly available raw RNA circulomics data [2] to find a link between frailty and AD and potential treatment targets for frailty, AD and neurodegeneration in general. **Methods:** We applied our computational pipeline and differential analysis method, DifCir, recently developed to identify extrachromosomal circular DNA (eccDNA) from DNA circulomics data [3,4], and tailored it to analyze RNA circulomics data from blood leukocytes of 35 frail and 35 robust individuals aged > 70 years [2]. Each circRNA was defined by two split reads, and coupled with a fold change (FC) 2 in log2 scale at 0.05 significance level to filter out non-significant DE circRNAs. We performed Gene Ontology (GO) enrichment analysis, chromosomal landscaping and association with chromosomal fragile sites (CFS) on the statistically significant DE circRNAs. **Results:** The number of unique circRNAs in frail individuals (mean 13,245 ± sem 571) was not statistically significantly different from robust individuals (14,156 ± 576). The circRNA length showed a peak at two nucleosome lengths. The circRNA profile of old robust individuals compared to frail individuals contained significantly more genes (599) that gave rise to DE circRNAs than the frail-to-robust profile (278). The GO of frail-to-robust up-DE circRNAs revealed the top significant terms 'hydrolase activity acting on glycosyl bonds' with six members (ACER2, BST1, MAN2A2, PARG, SMPDL3B, TLR5), followed by the 'endosome to lysosome transport via multivesicular body sorting pathway' (CHMP2B, MVB12A, UBX6) and 'ESCRT I complex' (MVB12A, UBAP1L, VPS37C). Chromosomal landscaping evidenced an enrichment of chromosomes 1 and 19 in frail-to-robust up-DE circRNAs, and of chromosomes 1 and 16 in robust-to-frail up-DE circRNAs. Many DE circRNAs were transcripts from genes associated with topologically related CFS. **Conclusion:** DNA and RNA circulomics data from non-invasive material may provide biomarkers and clues to the molecular basis of frailty in particular, and of AD and neurodegeneration in general. The frail to robust circRNAs profile revealed top GO terms associated with neurodegeneration. For example, glycosylation of lipids and proteins is a cause of neurodegeneration [5]. The ESCRT machinery plays a critical role in the biogenesis

of multivesicular bodies, which are essential for cells to destroy misfolded proteins. Endolysosomal escape is a critical step in tau propagation in neurodegenerative disorders [6]. Further studies and larger data sets are needed to draw more robust conclusions. **Keywords:** circRNAs, DNA circulomics, RNA circulomics, Alzheimer's disease. **Disclosures:** The authors declared no competing interests. **References:** 1. Garnier-Crussard A, et al. Letter to the editor: Beyond frailty in Alzheimer's disease: Should we move to the concept of intrinsic capacity. J Prev Alzheimers Dis. 2022;9(4):813-815. doi: 10.14283/jpad.2022.75. 2. Iparraguirre L, et al. Blood RNA-Seq profiling reveals a set of circular RNAs differentially expressed in frail individuals. Immun Ageing. 2023;20(1):33. doi: 10.1186/s12979-023-00356-6. 3. Gerovska D, Araúzo-Bravo MJ. Skeletal muscles of sedentary and physically active aged people have distinctive genic extrachromosomal circular DNA profiles. Int J Mol Sci. 2023;24(3):2736. doi: 10.3390/ijms24032736. 4. Gerovska D, et al. A distinct circular DNA profile intersects with proteome changes in the genotoxic stress-related hSOD1G93A model of ALS. Cell Biosci. 2023;13(1):170. . doi: 10.1186/s13578-023-01116-1. 5. Moll T, Shaw PJ, Cooper-Knock J. Disrupted glycosylation of lipids and proteins is a cause of neurodegeneration. Brain. 2020;143(5):1332-1340. doi: 10.1093/brain/awz358. 6. Chen JJ, et al. Compromised function of the ESCRT pathway promotes endolysosomal escape of tau seeds and propagation of tau aggregation. J Biol Chem. 2019;294(50):18952-18966. doi: 10.1074/jbc.RA119.009432.

P140- SARCOPENIC OBESITY DEFINITIONS: DIFFERENCES IN PREVALENCE AND ASSOCIATIONS WITH BLOOD BIOMARKERS, BODY COMPOSITION MEASURES AND CLINICAL OUTCOMES.

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Background: There is a lack of consensus regarding obesity definition in sarcopenic obesity (SO). The choice of adiposity measure can significantly impact on classification accuracy and subsequent management of this high-risk condition. Therefore, our study investigated the impact of different obesity definitions in terms of SO prevalence and the association with blood biomarkers, body composition parameters, and predictive ability for muscle strength at 2 years. **Methods:** We assessed 230 healthy community-dwelling older adults (mean age 67.2±7.4) from the GeriLABS-2 study for: 1) AWGS'2019 criteria for sarcopenia diagnosis; and 2) three different obesity definitions: fat mass percentage (FM%) from dual-energy X-ray absorptiometry; waist circumference (WC, men>90cm and women>80cm), or body mass index (BMI≥23). They were then classified into 4 groups: 1) Non-obese and non-sarcopenic("normal"), Non-obese and sarcopenic("sarcopenic"), obese and non-sarcopenic("obese"), and obese and sarcopenic("SO"). Association of blood biomarkers [insulin resistance (Leptin/Adiponectin ratio and HOMA-IR); inflammation (TNFR1, IL-6); and metabolism (myostatin, GDF-15)], and body composition parameters [visceral adiposity tissue mass(VAT); appendicular lean mass index(ALM/Height^2); and bone mineral density(BMDFN)] between the 4 groups were analysed using one-way ANOVA with post-hoc comparison. Predictive ability for muscle strength [handgrip strength (HGS) and knee extension strength (KES)] at 2 years were compared using linear regression adjusted for age, gender and vascular risk factors (Model 1), followed by baseline scores (Model 2). **Results:** FM identified the highest prevalence of SO (16.5%), followed by WC (11.7%) and BMI (10.4%). Blood biomarker analysis revealed: 1) Insulin resistance: only WC definition discriminated SO from normal for HOMA-IR[F(3,224)= 5.45,p=0.001], and both WC and FM% discriminated SO from normal and sarcopenic groups for Leptin/Adiponectin ratio([F(3, 226)= 17.63,p<0.0001] and [F(3, 226)= 12.45,p<0.0001] respectively); 2) Inflammation: all 3 definitions discriminated SO from normal for TNFR1(all p<0.05) whilst only WC definition showed a trend for IL-6[F(3,226)= 3.00,p=0.032]; and 3) Metabolism: only FM% discriminated SO from normal for myostatin[F(3,226)= 3.79,p=0.003]. For body composition parameters, there were no major differences between the different definitions for VAT, ALM/H2 and BMD (all p<0.05). This pattern of association remained similar after post-hoc analysis. For both WC and FM definitions, SO significantly predicted 2 year decline in HGS (b=-7.69,p<0.0001 and b=-7.85,p<0.0001 respectively) and KES (b=-14.34,p<0.0001 and b=-15.36,p<0.0001 respectively). In contrast, SO using the BMI definition showed significant decline only in HGS (b=-3.46,p=0.008). **Conclusion:** Our results highlight the differential impact of obesity definitions on prevalence and association with blood biomarkers and decline in muscle strength. Specifically, WC and FM definitions have higher case detection for SO; show stronger association with the pathophysiologic processes of insulin resistance, inflammation, and muscle catabolism; and are predictive for 2-year decline in muscle. These results support the use of FM and/or WC as appropriate measures of adiposity in the diagnosis of sarcopenic obesity.

P141- EXPLORING THE IMPACT OF SKELETAL MUSCLE SENESCENCE ON BONE HEALTH: INSIGHTS FROM EXTRACELLULAR VESICLES AND MIRNA.

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Background: Aging significantly affects the musculoskeletal system, with bone and skeletal muscle functioning as a unit through endocrine connections: dysfunction in one impacts the other, yet the underlying

mechanisms remain unclear. Recent studies suggest that the accumulation of senescent cells contributes to tissue dysfunction. Our research focuses on the molecular pathways linking skeletal muscle cell senescence to bone impairment, particularly through extracellular vesicles (EVs) released by senescent muscle cells and their miRNA content. **Methods:** Using an in vitro model of sarcopenic-like myotubes derived from senescent myoblasts that we recently developed1, we will first characterize EVs released from sarcopenic-like myotubes (SASP–EVs) in terms of concentration and size by using the NanoSight NS300 system. The miRNA content will be then analyze, focusing on miRNAs selected on the base of their relevance to muscle physiological status and the interplay between muscle and bone in both normal and aged conditions (i.e. miR-206-3p, miR-1-3p, miR-133a-3p, miR-133b-3p, miR-23a-3p, miR-181a-5p, miR-34a-5p, miR-27a-3p, miR-29b-3p). We will perform further experiments to explore how these miRNAs affect bone, by treating pre-osteoblasts and osteoblasts with miRNA mimics or inhibitors. Bioinformatics analysis will identify protein targets and pathways for further study. Additionally, to correlate our findings with human tissues, we will examine miRNA levels in human muscle tissue exhibiting senescent and sarcopenic features described in our in vitro model. **Results:** Preliminary results derived by nanoparticle analyses revealed a decrease number of SASP-EVs and a larger mean size compared to control-EVs, thus highlighting differences between control and SASP-EVs. Early data derived from miRNA-EVs content analyses suggest that miR-34a-5p, miR-27a-3p and miR-29b-3p may be key players, as their expression differs significantly between control and SASP-EVs. **Conclusion:** This data revealed differences in SASP-EVs number, size and miRNA content, thus confirming the usefulness of the chosen model to identifying new mechanisms underlying the altered communication between muscle and bone during aging. This study may help identify early biomarkers of musculoskeletal impairment by improving the knowledge on muscle-bone unit in aging.

P142- HUMAN SKELETAL MUSCLE TRANSCRIPTOME META-ANALYSIS IDENTIFIES DIFFERENTIALLY EXPRESSED GENES IN SARCOPENIA AND PHYSIOLOGICAL MUSCLE AGEING.

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Background: Sarcopenia, the acute muscle wasting associated to ageing, represents a major cause of frailty, dependency and a death risk factor in older persons. Absence of specific symptoms, tests or molecular biomarkers hinder early diagnosis and differentiation from physiological ageing process. Hence, most patients are recognized at the advanced states when nutritional or training therapeutic interventions are difficult to implement and their efficacy is limited. The objective of this work was to integrate available gene expression data from previous human studies to identify molecular pathways associated to physiological ageing and sarcopenia to be used as potential disease biomarkers and therapeutic targets. **Methods:** 8 gene expression studies (RNAseq and microarray) in human skeletal muscle healthy young, aged and sarcopenia disease patients were retrieved from Gene Expression Omnibus using PRISMA guidelines. Individuals under 35 years and above 60 were considered as young and old respectively and selected for the study. With this criteria, 51 “healthy young”, 181 “healthy aged” and 67 sarcopenic aged patients were included. A first meta-analysis (Met A) using 5 datasets compared young and old males without any pathological diagnosis. A second meta-analysis (Met B) using 4 datasets compared old males with and without sarcopenia diagnosis. The analysis workflow was as follows (i) individual differential expression analysis using DESeq2 or limma packages; (ii) Implementation of MetaVolcanoR to identify genes consistent perturbed across the studies using the confident effect size approach (iii) Enrichment analysis of found genes in meta-analysis. All the workflow was performed using R language. Meta-analysis was performed using the Vote-counting, Combining and Random Effect Model approaches in parallel. Gene Set Enrichment Analysis was performed on differentially expressed genes after the two first approaches to understand the biological context of the findings. **Results:** Met A returned 35 genes downregulated and 27 upregulated according to both the vote-counting and combining approaches. On the other hand, Met B returned 6 genes downregulated and 1 gene upregulated according to both the vote-counting and combining approaches. Common gene ontologies between the two meta-analyses were related to transporter and ion channel complexes, sarcomere and muscle system development. Gene ontology terms for both approaches were the proton transport related to ATP, the oxidoreductase complex and mitochondrial respirasome for vote-counting and oxidoreductase activity, proton and electron transport; oxidative phosphorylation, cellular respiration and metabolism of purines and ribose for combining approach. Results from Met A and Met B were merged to identify potential biomarkers candidates for sarcopenia. 3 genes were consistently perturbed in the two meta-analyses which might indicate their role in muscle degeneration, potentially worsening the disease. Interestingly, 7 genes were consistently perturbed in Met B after vote-counting and combining approaches (1 upregulated and 6 downregulated). **Conclusion:** This study is first-in-kind merging human skeletal muscle transcriptomic data from different studies to unravel physiologic and pathologic hallmarks of muscle ageing and sarcopenia. This meta-analysis has allowed to unprecedently compare data from 299 patients of different ethnicities thereby obtaining robust statistical analyses and seven gene candidates to be used as potential biomarkers and therapeutic candidates in sarcopenia.
Keywords: Sarcopenia, skeletal muscle, ageing, meta-analysis.
Disclosures: The authors declared no competing interests.

P143- IMPROVING MITOCHONDRIAL FUNCTION ENHANCES THE REGENERATIVE CAPACITY OF AGED MUSCLE STEM CELLS. J. Kim[1], J.H. Bae[1], C.L. You[1], Y. Jeong[2], G.U. Bae[2,3], J.S. Kang[1] *((1) Sungkyunkwan University School Of Medicine - Suwon (Korea, Republic of), (2) Research Institute Of Aging Related Disease, Animuscure Inc - Suwon (Korea, Republic of), (3) Drug Information Research Institute, Muscle Physiome Research Center, College Of Pharmacy, Sookmyung Women's University, - Seoul (Korea, Republic of))*

Background: Muscle stem cells exhibit a remarkable regeneration capacity to repair damaged myofibers as well as to maintain muscle homeostasis [1]. Aging muscles exhibit a decline in stem cell number and regenerative capacity, due to defective self-renewal and cellular senescence [2]. Though the underlying mechanisms are not clearly understood, mitochondrial function and adaptation plays critical roles in the control of stem cell fates critical for the muscle regenerative capacity. In aging environment, mitochondrial dysfunction and increased inflammation might contribute to stem cell dysfunction and muscle degeneration [3]. Therefore, enhancing mitochondrial function is a promising strategy to enhance satellite cell function and regeneration capacity. In this study, we have examined the effect of #AMC9005, a mitochondrial booster, on muscle regeneration and aged satellite cell function. **Methods:** To analyze muscle regeneration, muscle damage was induced by injection of cardiotoxin (CTX) into tibialis anterior (TA) muscles of mice. To determine satellite cell self-renewal capacity, TA muscles were subjected to repeated injuries. Young (5-months), old (13-months) and mdx mice were orally administered with a daily dose of 4 mg/kg #AMC9005. Muscle regeneration phenotypes were examined at 3, 7 and 21 days post-injury using histology and immunostaining. Repeated injury (21 days post-injury) was performed to examine satellite cell self-renewal capacity. For mechanism study, RNA-seq was performed in regenerated muscles and verified by quantitative RT-PCR. In addition, freshly isolated myofibers, primary myoblasts isolated from 3-month- and 28-month-mice, and C2C12 myoblast culture were utilized to examine the proliferative capacity and mitochondrial function. **Results:** Administration of #AMC9005 enhanced muscle regeneration in the repeated injury muscles. This enhancement of muscle regeneration by AMC#9005 is attributable to increased stem cell proliferation evident by BrdU incorporation and Ki67/Pax7-positive cells (~20%). Similar results were obtained with young and old primary myoblasts, and freshly isolated myofibers. Consistently, the expression of cell cycle-related genes were also elevated in AMC#9005-treated muscles, compared to vehicle-treated muscles. Post 2nd regeneration, Pax7-positive stem cells were elevated about 23% in AMC#9005-treated muscles, relative to the controls. In transcriptome analysis, AMC#9005 treated muscles showed upregulation of mitochondria related genes and downregulated inflammation related genes. Consistently, AMC#9005 treatment enhanced mitochondrial activity and mitochondrial remodeling. In addition, AMC#9005 treatment reduced the expression of pro-inflammatory genes including Il-6 and Il1α in response to TNF-α treatments in myoblasts. Furthermore #AMC9005 treatment in MDX mice decreased Pax7/γH2AX-positive cells (0.6-fold change) and senescence associated beta galactosidase (SA-β-gal)-positive cells (0.22-fold decrease), supporting for the preventive effect of AMC#9005 on stem cell dysfunction related to MDX. **Conclusion:** Our data demonstrate that boosting mitochondrial function by AMC#9005 is a promising strategy to restore muscle stem cell function in stressed conditions, like repeated muscle damage, aged muscles and MDX. **Keywords:** Muscle stem cell, muscle regeneration, mitochondria, inflammation. **Disclosures:** J.-S.K. G.-U.B. are founders of AniMusCure Inc. and holds an ownership equity interest in the company. These arrangements have been reviewed and approved by the Sungkyunkwan University and Sookmyung Women's University in accordance with its conflict of interest policies. **References:** 1. Bae JH, et al. J Cachexia Sarcopenia Muscle 2020; 11:1089-1103. doi:10.1002/jcsm.12563. 2. Sousa-Victor P, et al. Int J Dev Biol 2018; 62:583-590. https://doi.org/10.1387/ijdb.180041pm. 3. Bhattacharya D, Scimè A. Front Cell Dev Biol 2020; 8:480. https://doi.org/10.3389/fcell.2020.00480

P144- MUSCLE PRMT1 DEFICIENCY CAUSES MITOCHONDRIAL DYSFUNCTION AND PERTURBED NEUROMUSCULAR JUNCTION. J.H. Bae[1], C.L. You[1], Y.D. Jeong[2], J. Kim[1], G.U. Bae[2,3], J.S. Kang[1,2] *((1) Department Of Molecular Cell Biology, Sungkyunkwan University School Of Medicine - Suwon (Korea, Republic of), (2) Research Institute Of Aging Related Disease, Animuscure Inc. - Suwon (Korea, Republic of), (3) Drug Information Research Institute, Muscle Physiome Research Center, College Of Pharmacy, Sookmyung Women's University - Seoul (Korea, Republic of))*

Background: Muscle aging is characterized by a progressive loss of muscle mass and strength attributable to impaired neuromuscular interaction and mitochondrial function [1]. Neuromuscular activity and muscle mitochondrial function are closely interconnected in the control of muscle function [2]. Mitochondrial dysfunction has a significant implication for neuromuscular function as it leads to insufficient energy production, increased oxidative stress, and impaired neuromuscular signaling. However, the regulatory mechanisms underlying neuromuscular interaction and mitochondrial function in muscle aging are not clearly understood. Previously, we have shown that the ablation of Protein arginine methyltransferase 1 (Prmt1) in muscle results in heightened FoxO3/autophagy pathway, leading to muscle atrophy [3]. In the current study, we demonstrate a critical role of muscle Prmt1 in the control of neuromuscular integrity and mitochondrial health. **Methods:** Using skeletal muscle-specific Prmt1 knockout mice, we analyzed the overall muscle phenotype, including myofiber phenotype, neuromuscular junction integrity, and mitochondrial function. To understand the role of Prmt1 in the neuromuscular junction, we performed denervation surgery (sciatic nerve crush injury). For these studies, we examined histology, immunostaining, and protein

analysis in the muscle tissues and single myofibers of Prmt1-deletion mice. For further mechanistic studies, we performed RNA-seq in muscles from control or Prmt1-deletion mice and quantitative RT-PCR or immune blotting were used .to confirm the regulatory mechanisms. **Results:** Prmt1-ablated muscles exhibited disturbed neuromuscular junction and accumulation of dysfunctional mitochondria accompanied by increased mitochondrial oxidative stress. Prmt1 protein showed a distinct expression pattern in myofibers with an accumulation in postsynaptic area and was temporally upregulated in denervated muscles. Prmt1 depletion in muscle cells showed a specific decline in TANK binding kinase 1 (Tbk1)/Optineurin (Optn)-mediated removal of damaged mitochondria, likely contributing to accumulation of damage mitochondria. **Conclusion:** Collectively, our data suggest that Prmt1 plays a crucial role in the control of a selective mitophagy mediated by Tbk1/Optn thereby regulating muscle mitochondrial homeostasis and neuromuscular function. **Keywords:** Prmt1, skeletal muscle, neuromuscular junction, mitophagy. **Disclosures:** This work was supported by National Research Foundation of Korea (NRF) grants funded by the Korean government (MSIT). The authors declared no competing interests. The authors declared no competing interests. **References:** 1. Mukund K, et al. Wires Syst Biol Med 2020; 12. https://doi.org/10.1002/wsbm.1462. 2. Miao YM, et al. Physiol Rep 2024; 12. https://doi.org/10.14814/phy2.15917. 3. Choi S, et al. Autophagy 2019; 15:1069-1081, https://doi.org/10.1080/15548627.2019.1569931.

P145- RESTORING CDO EXPRESSION PREVENTS MUSCLE WASTING CAUSED BY CANCER CACHEXIA. J.M. Park[1], J.H. Bae[1], G.U. Bae[2,3], J.S. Kang[1,2] *((1) Department Of Molecular Cell Biology, Sungkyunkwan University School Of Medicine - Suwon (Korea, Republic of), (2) Research Institute Of Aging Related Disease, Animuscure Inc. - Suwon (Korea, Republic of), (3) Drug Information Research Institute, Muscle Physiome Research Center, College Of Pharmacy, Sookmyung Women's University - Seoul (Korea, Republic of))*

Background: Cancer cachexia is a multifactorial wasting syndrome characterized by severe muscle atrophy and metabolism imbalance, which significantly reduces the quality of life and survival of cancer patients. Mitochondrial dysfunction and inflammation are main features of cachectic muscles. Cell Adhesion-Associated, Oncogene-Regulated (Cdo) is involved in the maintenance of muscle regeneration capacity and neuromuscular junctions. Since Cdo is downregulated in aging muscle stem cells, muscles and cachectic muscles, the current study is to determine the effect of a Cdo inducing drug on muscle wasting in a cancer cachexia model. **Methods:** Cancer cachexia model was designed by an injection of five million Lewis lung carcinoma (LLC) cells into the hind flank of male wild-type mice at 10 weeks of age. The tumor developed for 4 weeks, and a Cdo inducer was administered orally to LLC-bearing mice daily for 2 weeks. To analyze the protective effects of a Cdo inducer, we conducted histology, immunostaining, mitochondrial protein and mRNA expression. For the mechanistic study, we designed a cancer cachectic condition using LLC culture media to examine its effects on muscle fibers and C2C12 myotubes. **Results:** Cancer cachexia induction in wild-type mice caused a loss of body weight and muscle mass with decreased Cdo protein level (0.4-fold), relative to wild-type mice ($p < 0.05$). Furthermore, LLC-bearing gastrocnemius muscles had altered mitochondria-related protein expression levels, such as phosphorylated Dynamin-related protein 1 at serine 616 (p-Drp1ser616, 1.97-fold) and PTEN-induced putative kinase 1 (Pink1, 0.65-fold), relative to wild-type mice ($p < 0.05$). Quantitative RNA-PCR and transcriptome analysis revealed that skeletal muscles bearing LLC for 4 weeks showed a substantial shift in genes related to mitochondrial function, mitochondrial dynamics, mitophagy, and biogenesis. Restoring Cdo expression in LLC-bearing mice lead to improved physical activity, muscle mass with increased cross-sectional area of myofibers, relative to control LLC-bearing mice. Consistently, restoring Cdo expression in LLC-bearing mice resulted in declined expression of mitochondrial unfolded protein response (UPRmt)-related genes, as well as genes related to muscle atrophy. This improvement was concurrent with enhanced mitochondrial activity and mitochondrial dynamics. **Conclusion:** Our current study suggests that restoring Cdo expression in cancer cachectic mice prevents muscle wasting and mitochondrial dysfunction. **Keywords:** Cancer cachexia, muscle atrophy, Cdo, mitochondrial dysfunction. **Disclosures:** J.-S.K. G.-U.B. are founders of AniMusCure Inc. and holds an ownership equity interest in the company. These arrangements have been reviewed and approved by the Sungkyunkwan University and Sookmyung Women's University in accordance with its conflict of interest policies. **References:** 1. Bae JH, et al. J Cachexia Sarcopenia Muscle 2020; 11:1089-1103. doi:10.1002/jcsm.12563. 2. VanderVeen BN, et al. Oxid Med Cell Longev 2017; 2017:3292087. doi:10.1155/2017/3292087. 3. Blackwell TA, et al. Physiol Genomics. 2018; 50(12):1071-1082. doi:10.1152/physiolgenomics.00061.2018

P146- THE ANTHROPOMETRIC EQUATION FOR ESTIMATION OF APPENDICULAR SKELETAL MUSCLE MASS IN OLDER UKRAINIANS. N.V. Grygorieva[1], A.S. Musiienko[1], N.V. Zaverukha[1], N.M. Koshel[1], A.V. Pysaruk[1] *((1) Institution "d. F. Chebotarev Institute Of Gerontology Of The Nams Of Ukraine" - Kyiv (Ukraine))*

Background: Sarcopenia is a common age-related disease that leads to increased patient disability and decreased life expectancy. Nowadays, according to different guidelines, various tools are used to confirm the diagnosis of sarcopenia. An important criterion for sarcopenia is the index of appendicular skeletal muscle mass (ASM), that is measured by dual-energy X-ray absorptiometry (DXA). However, the availability of DXA both worldwide and in Ukraine is insufficient, and limits the diagnosis of sarcopenia. The use of ASM prognostic equations based on simple demographic and anthropometric indices is easier and cheaper and can improve

the diagnosis of sarcopenia, but similar studies have not been conducted in Ukraine before. The purpose of the study was to create and cross-check the equation for ASM calculation taking into account simple demographic and anthropometric indices in the Ukrainian population aged 60 and older. **Materials and methods:** A total of 1706 adults aged 60-91 years (1362 women and 144 men) were examined at the Ukrainian Osteoporosis Center. ASM was measured by DXA (Hologic). Anthropometric measurements included measurements of body weight, height, waist, and hip circumferences. Demographic indices included the age of the subjects and peculiarities of menstrual function in women (age of menopause, duration of the postmenopausal period). Participants were randomly assigned to two groups: a model development group (main group, n=1406) and a cross-validation group (control group, n=300). The equation was developed using the multiple regression method. ASM was a dependent variable and demographic and anthropometric variables were independent ones. They were selected by a stepwise procedure using an entry criterion of $p<0.05$. For a qualitative assessment of the model, the coefficient of multiple correlation (R) and determination (R2) were calculated. **Results:** After the process of model development, we received the next ASM model. ALM = 0.165×weight (kg) + 0.096×height (cm) – 4.939×gender – 0.0205×age (years) + 1.877. The multiple correlation coefficient (R) of the model consisted of 0.90; the coefficient of model determination (R2) was 0.81, respectively. Fisher's test demonstrated a high significance ($F(4.14) = 1476.5$); $p < 0.00001$. So, our results indicated that 81% of the variance of the ASM can be explained with the help of predictors included in the model. **Conclusion:** Our results demonstrated the good prognostic significance of the developed equations for the assessment of ASM in the Ukrainian population and can be applied to increase the level of diagnosis of sarcopenia in the Ukrainian population. **Keywords:** Sarcopenia, appendicular skeletal muscle mass. **References:** Abdalla PP, et al. Arch Gerontol Geriatr. 2023;110:104972. http://doi.org/10.1016/j.archger.2023.104972.

P147- SEX-SPECIFIC DETERMINANTS OF MUSCLE STRENGTH: THE ROLE OF BODY COMPOSITION AND WATER DISTRIBUTION IN MEN AND WOMEN.

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Aim: This study aimed to investigate whether the determinants of muscle strength differ between men and women, considering distinct variations in body composition, muscle mass, and muscle type. Using bioelectrical impedance analysis (BIA)-derived indices, we developed predictive models to evaluate muscle strength, emphasizing the importance of conducting sex-specific analyses when assessing muscle quality. Muscle strength was categorized according to the criteria established by the European Working Group on Sarcopenia in Older People (EWGSOP) for defining low muscle strength in men and women. **Methods and results:** A total of 116 participants (57 men and 59 women) were included. In men, the appendicular muscle mass index (IMMA) was the strongest predictor of muscle strength, with higher IMMA values associated with a lower likelihood of reduced muscle strength (OR: 0.240; 95% CI: 0.068-0.842, p=0.026). In women, the percentage of intracellular water (ICW/LM) was the most relevant predictor, where higher AIC/MLG% was significantly associated with lower odds of reduced muscle strength (OR: 0.066; 95% CI: 0.011-0.403, p=0.003). **Conclusion:** These findings reveal distinct sex-specific determinants of muscle strength, underscoring the necessity of tailored analyses when evaluating muscle quality. While IMMA emerged as a key predictor of muscle strength in men, ICW/LM was more strongly associated with muscle strength in women. These differences reflect the unique muscle composition and distribution patterns between men and women, highlighting the need for sex-specific approaches to muscle quality assessment and the identification of individuals at risk of low muscle strength.

P149- ROLE OF THE MITOCHONDRIAL DYSFUNCTION AS A POTENTIAL BIOMARKER OF FRAILTY IN SUBJECTS WITH AND WITHOUT MULTIMORBIDITY: THE FRAMITO PROJECT.

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Introduction: Frailty is a geriatric syndrome that often co-occurs with multimorbidity, i.e. ≥2 concomitant chronic conditions. Despite sharing different risk factors and poor health outcomes, frailty and multimorbidity have distinctive features. Taking multimorbidity into account when studying frailty biomarkers may help elucidating the pathophysiology of these conditions. Rather than focusing on inflammatory mediators, already reported by previous research, we chose to concentrate on the less explored markers of mitochondrial dysfunction, namely DNA damage, oxidative stress, and cell respiratory impairment. The aim of the FRAMITO project, supported by the European Union – Next Generation

EU (GA 2022NSN355) is therefore to assess and compare mitochondrial dysfunction in subjects with frailty, with and without multimorbidity, and to identify potential biomarkers associated with being frail. **Methods:** The FRAMITO project is a multicenter cross-sectional study that will enroll 75 subjects aged 65 years and older from inpatient and outpatient services. The involved centers are the Geriatrics Unit at the University Hospital of Ferrara (Ferrara, Italy), and the Acute Geriatrics Unit at Fondazione IRCCS San Gerardo dei Tintori (Monza, Italy). Subjects will be assessed for frailty phenotype and for the presence of multimorbidity, in order to enroll three groups of participants: 25 subjects with frailty but not multimorbidity, 25 with both frailty and multimorbidity, and 25 controls without frailty and multimorbidity. We will collect blood samples in order to isolate Peripheral Blood Mononuclear Cells (PBMCs). Using untargeted metabolomics and functional studies on mitochondrial dysfunctions in PBMCs and their subpopulations, we will explore potential biomarkers of frailty. With more detail, we will analyze mtDNA damage, intracellular ROS levels, and mitochondrial and glycolytic cellular bioenergetics. **Results:** The enrollment phase of FRAMITO began in June 2024. After collecting an informed consent form for each participant, we administer a comprehensive geriatric assessment and perform blood sampling. We expect the preliminary results by September 2025. **Conclusion:** The FRAMITO project will potentially advance our understanding of the role of mitochondrial dysfunctions in the pathophysiology of frailty, particularly when this syndrome co-occurs in subjects with multiple comorbid conditions. We speculate about potential synergistic effects of frailty and multimorbidity. Considering the dynamic and potentially reversible nature of frailty, the findings may help identifying potential targets to prevent the development and progression of frailty or to mitigate its effects. **Keywords:** Frailty, mitochondrial dysfunction, multimorbidity, DNA damage. **Disclosures:** The authors declared no competing interests.

LP099- ASSOCIATION BETWEEN BODY FAT DISTRIBUTION AND LEAN MASS WITH MUSCLE FUNCTION. L. Mattucci Tardelli[1], A.L. Busse[1], G. Belarmino[1], E. Ferriolli[1] *((1) University Of Sao Paulo Medical School - Sao Paulo (Brazil))*

Background: Despite the well-established role of fat, particularly visceral fat, in increasing the incidence of cardiovascular diseases and mortality, as well as its involvement in the pathophysiology of sarcopenia, its impact on physical performance in older adults remains underexplored. Our study aimed to evaluate the relationship between total fat, visceral fat, and appendicular lean mass, measured by DXA, with performance in muscle function tests. **Methods:** This cross-sectional study involved 401 older volunteers, community residents, and/or patients from a geriatrics outpatient clinic at a tertiary hospital. Participants were selected between March 2016 and July 2019 to undergo anthropometric evaluations, walking speed, 5-times sit-to-stand test, handgrip strength, and whole-body densitometry. Statistical analysis was conducted using the two-tailed Pearson test. **Results:** Walking speed was negatively correlated with BMI in both sexes and with fat mass index in women. The handgrip strength test was negatively correlated with body fat percentage and fat mass index in women, while it was positively correlated with arm circumference in both sexes and with appendicular lean mass index in women. The sit-to-stand test did not correlate with any anthropometric or densitometric measurements. Visceral fat was not correlated with any of the function tests. **Conclusion:** In our sample, total fat was more strongly correlated with physical performance tests than muscle mass. This suggests the need for further investigation in future studies, especially in light of the aging population and the obesity epidemic affecting Brazil and the world. Despite the deleterious metabolic and cardiovascular effects, visceral fat did not correlate with poorer physical performance, with total fat being more relevant than its deposition site. **Keywords:** Body composition, densitometry, muscle strength, adipose tissue.

LP100- THE LONGITUDINAL ASSOCIATION OF SERUM CREATININE- AND CYSTATIN-C–BASED INDICES WITH INCIDENT SARCOPENIA DURING 6-YEAR: FINDINGS FROM THE KFACS. J.Y. Jang[1], H.E. Shin[2], N. Lim[3], C.W. Won[4], M. Kim[2] *((1) Department Of Biomedical Science And Technology, College Of Medicine, Kyung Hee University - Seoul (Korea, Republic of), (2) Department Of Health Sciences And Technology, College Of Medicine, Kyung Hee University - Seoul (Korea, Republic of), (3) Department Of Precision Medicine, Graduate School, Kyung Hee University - Seoul (Korea, Republic of), (4) Elderly Frailty Research Center, Department Of Family Medicine, College Of Medicine, Kyung Hee University Medical Center - Seoul (Korea, Republic of))*

Background: Creatinine and cystatin-C–based indices have been reported to be associated with sarcopenia [1]; however, the longitudinal association between these indices and sarcopenia remains unclear. Therefore, this study aimed to investigate the longitudinal association between serum creatinine and cystatin-C–based indices and incident sarcopenia during a 6-year follow-up and examine which indicator best predicts sarcopenia in community-dwelling older adults. **Methods:** This study included 698 participants (women=54.4%; mean age=75.1±3.7years) from the Korean Frailty and Aging Cohort Study. Baseline Creatinine-to-cystatin-C ratio estimated glomerular filtration rate (eGFR) ratio (eGFRcystatin-C/eGFRcreatinine), sarcopenia-index (serum creatinine×eGFRcystatin-C), predicted skeletal muscle mass index (pSMI), and total-body muscle mass index (TBMM) were measured in baseline [2, 3]. Sarcopenia was defined as low muscle mass and, low muscle strength, and/or low physical performance by the criteria of the Asian Working Group for Sarcopenia 2019. The receiver's operating characteristics (ROC) curve was used to evaluate the ability of Creatinine and cystatin–C–based indices to predict incident sarcopenia. Discrete-time Cox proportional hazards models were used to assess the association between serum creatinine and cystatin-C–

based indices and incident sarcopenia. Participants were considered censored if they did not develop sarcopenia, were lost to follow-up, or died. **Results:** During the 6-year follow-up, 102 cases in men and 82 cases in women developed sarcopenia. The incidence rate for men was 9.6 (95% confidence interval [CI]: 7.9–11.7) per 100 person-years, while for women, it was 6.5 (CI: 5.2–8.2) per 100 person-years. The pSMI and TBMM showed a higher area under the ROC curves for predicting the incident sarcopenia in men (pSMI:0.634; TBMM:0.635) and women (pSMI:0.727; TBMM:0.724) compared to other indices. Also, after adjusting confounders, higher pSMI and TBMM were associated with the incident sarcopenia in both men (pSMI, hazard ratio [HR]:0.436, 95% confidence interval [CI]:0.299–0.637; TBMM, HR:0.935, CI:0.909–0.961) and women (pSMI, HR:0.182, CI:0.097–0.341; TBMM, HR:0.911, CI:0.877–0.946). **Conclusion:** pSMI and TBMM showed higher predictive capabilities for incident sarcopenia than other indices. Also, higher pSMI was strongly associated with a lower risk of incident sarcopenia. These findings suggest that monitoring pSMI could help predict the onset of sarcopenia in community-dwelling older adults. **Keywords:** Sarcopenia, creatinin, cystatin-C, older adults. **Disclosures:** The authors declared no competing interests. **References:** 1. Jang, J. Y., Shin, H. E., Won, C. W., & Kim, M. (2023). Comparison of the serum creatinine- and cystatin-C-based indices as screening biomarkers for sarcopenia in community-dwelling older adults. Archives of gerontology and geriatrics, 115, 105207. https://doi.org/10.1016/j.archger.2023.105207. 2. Tang, T., Xie, L., Hu, S., Tan, L., Lei, X., Luo, X., Yang, L., & Yang, M. (2022). Serum creatinine and cystatin C-based diagnostic indices for sarcopenia in advanced non-small cell lung cancer. Journal of cachexia, sarcopenia and muscle, 13(3), 1800–1810. https://doi.org/10.1002/jcsm.12977. 3. Kusunoki, H., Tsuji, S., Kusukawa, T., Wada, Y., Tamaki, K., Nagai, K., Itoh, M., Sano, K., Amano, M., Maeda, H., Sugita, H., Hasegawa, Y., Kishimoto, H., Shimomura, S., & Shinmura, K. (2021). Relationships between cystatin C- and creatinine-based eGFR in Japanese rural community- dwelling older adults with sarcopenia. Clinical and experimental nephrology, 25(3), 231–239. https://doi.org/10.1007/s10157-020-01981-x.

LP101- CIRCULATING MIR-101-3P AND MIR-144-3P AS POTENTIAL BIOMARKERS OF SARCOPENIA IN OLDER ADULTS. H.E. Shin[1], J.Y. Jang[2], N. Lim[3], C.W. Won[4], M. Kim[1] *((1) Department Of Health Sciences And Technology, College Of Medicine, Kyung Hee University - Seoul (Korea, Republic of), (2) Department Of Biomedical Science And Technology, College Of Medicine, Kyung Hee University - Seoul (Korea, Republic of), (3) Department Of Precision Medicine, Graduate School, Kyung Hee University - Seoul (Korea, Republic of), (4) Elderly Frailty Research Center, Department Of Family Medicine, College Of Medicine, Kyung Hee University, Kyung Hee University Medical Center - Seoul (Korea, Republic of))*

Background: MicroRNAs (miRNAs), that can regulate gene expression at translational level, have recently been recognized as promising biomarkers for sarcopenia [1]. While miRNAs have been extensively studied to reveal the underlying mechanism of sarcopenia, consistent findings on their role have not yet been reached, and their specific biological functions remain unexplored. The objective of this study is to investigate distinct miRNAs signatures in the plasma of older adults with with sarcopenia. **Methods:** Seventy three older adults (mean age: 77.1 ± 3.8 years; women: 49.3%) were randomly selected and matched by age and sex from the Korean Frailty and Aging Cohort Study. Study participants were classified into 3 groups based on criteria of Asian Working Group for Sarcopenia 2019: "Control" (n = 25), "Low muscle mass (LMM) and Low muscle strength (LMS)" (n = 23), "LMM and Low physical performance (LPP)" (n = 25). The miRNA profiles were generated through miRNA sequencing to identify differentially expressed miRNAs across three groups, with candidate miRNAs subsequently validated using RT-qPCR. To minimize the potential bias caused by confounding factors, individuals with conditions such as uncontrolled diabetes, dyslipidemia, myocardial infarction, congestive heart failure, angina, peripheral vascular disease, cerebrovascular disease, chronic obstructive pulmonary disease, cancer, liver disease, kidney disease, osteoarthritis, or rheumatoid arthritis were excluded. Additionally, those with neurological impairments such as hemiplegia, paraplegia, or parkinson's disease; individuals consuming alcohol more than 4 days per week or smoking daily; and those with artificial joints, pins, plates, metal sutures, or other metallic objects in the appendicular regions of the body were also excluded [2, 3]. **Results:** A total of 18 miRNAs (15 upregulated and 3 downregulated) were commonly expressed in both the LMM + LMS and LMM + LPP groups. Among the candidate miRNAs, the expression levels of miR-101-3p and miR-144-3p were significantly higher in the LMM + LPP group compared to the normal group ($p < 0.05$), whereas no significant differences were observed in the LMM + LMS group. The Kyoto Encyclopedia of Genes and Genomes revealed that two miRNAs, including miR-101-3p and miR-144-3p, were primarily associated with neurotrophin signaling and hippo signaling pathway ($p < 0.05$). **Conclusion:** These findings indicate that elevated levels of miR-144-3p and miR-101-3p may serve as potential biomarkers for early identification of sarcopenia in older adults. **Keywords:** Sarcopenia, MicroRNAs, biomarker, older adults. **Disclosures:** The authors declared no competing interests. **References:** 1. Liang, J., Zhang, H., Zeng, Z., Lv, J., Huang, J., Wu, X., Wang, M., Xu, J., Fan, J., & Chen, N. (2023). MicroRNA profiling of different exercise interventions for alleviating skeletal muscle atrophy in naturally aging rats. Journal of cachexia, sarcopenia and muscle, 14(1), 356–368. https://doi.org/10.1002/jcsm.13137. 2. Faraldi, M., Sansoni, V., Vitale, J., Perego, S., Gomarasca, M., Verdelli, C., Messina, C., Sconfienza, L. M., Banfi, G., Corbetta, S., & Lombardi, G. (2024). Plasma microRNA signature associated with skeletal muscle wasting in post-menopausal osteoporotic women. Journal of cachexia, sarcopenia and muscle, 15(2), 690–701. https://doi.org/10.1002/jcsm.13421. 3. Liu, H. C., Han, D. S., Hsu, C. C., & Wang, J. S. (2021). Circulating MicroRNA-486 and MicroRNA-146a serve

as potential biomarkers of sarcopenia in the older adults. BMC geriatrics, 21(1), 86. https://doi.org/10.1186/s12877-021-02040-0.

LP102- PREDICTIVE VALUE OF CONCEPTUAL SARCOPENIA DEFINED BY THE GLOBAL LEADERSHIP INITIATIVE ON SARCOPENIA (GLIS) FOR INCIDENT MOBILITY DISABILITY OVER A 6-YEAR FOLLOW-UP: FINDINGS FROM THE KFACS.

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Background: Recently, the Global Leadership Initiative on Sarcopenia (GLIS) established a consensus on the global conceptual definition of sarcopenia, which includes reduced muscle mass and strength. The GLIS also indicated that impaired physical performance is considered an adverse health outcome, rather than a component of sarcopenia. Therefore, the objective of this study was to investigate the association between the conceptual definition of sarcopenia outlined by the GLIS and incident mobility disability, using objective measures of physical performance in Korean community-dwelling older adults. **Methods:** We conducted a prospective 6-year follow-up analysis on 2,199 older adults (48.2% women; mean age 75.8 ± 3.8 years) who were initially free from mobility disability. A total of 2,400 participants underwent dual-energy X-ray absorptiometry and handgrip strength assessments during the baseline survey in 2016-2017, enrolled in the Korean Frailty and Aging Cohort Study. Mobility disability was defined as a usual gait speed of ≤0.8 m/s. For the diagnosis of sarcopenia, we used cutoffs for diagnostic from the Asia Working Group for Sarcopenia 2019, defined as low muscle mass (height-adjusted appendicular less mass <7.0 kg/m2 in men and <5.4 kg/m2 in women) in addition to low muscle strength (handgrip strength of <28 kg in men and <18 kg in women). Discrete-time Cox proportional hazards models with complementary log-log regression were used to evaluate the association between sarcopenia and incident mobility disability. Participants were considered censored if they did not develop mobility disability, were lost to follow-up, or died. **Results:** According to the GLIS criteria, the prevalence of sarcopenia was higher in men (13.8%) than in women (7.1%) among those without mobility disability ($p < 0.001$). During up to 6 years of follow-up, there were 73 cases in men and 177 cases in women of incident mobility disability. The incidence rates were 2.7 per 100 person-years (95% confidence interval [CI]: 2.4–3.1) in individuals without sarcopenia, and 4.4 per 100 person-years (95% CI: 3.2–6.1) in those with sarcopenia. After adjusting for potential confounders, sarcopenia was significantly associated with an increased risk of incident mobility disability in men (hazard ratio [HR]: 1.90, 95% CI: 1.05–3.41), but not in women (HR: 1.29, 95% CI: 0.78–2.14). Moreover, sarcopenia was associated with an increased risk of all-cause mortality in men (HR: 1.55, 95% CI: 1.04–2.30), while it was not associated with mortality in women. However, the presence of low muscle strength was associated with an increased risk of mobility disability (HR: 1.50, 95% CI: 1.06–2.13) in women, while reduced muscle mass was not significantly associated with incident mobility disability in men and women. **Conclusion:** The conceptual definition of sarcopenia outlined by the GLIS is associated with an increased incidence of mobility disability among community-dwelling older men. Future studies are needed to assess the prediction of sex-specific adverse health outcomes. **Keywords:** Sarcopenia, mobility disability, physical performance, older adults. **Disclosures:** The authors declared no competing interests.

LP103- THE NON-LINEAR PROFILE OF SARCOPENIA BIOMARKERS IN A LONGITUDINAL IN VITRO MURINE CELL MODEL.

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Background: Myostatin and follistatin are implicated in the balance between the synthesis and degradation of skeletal muscle; however, the amount of these proteins in the serum of older people is in controversy in the literature [1-6]. Therefore, we aimed to know the evolution of myostatin and follistatin together with other biomarkers such as sestrin 1 y 2 (linked to energetic metabolism and antioxidant capacity), angiotensin converting enzyme 2 (ACE2) (with significant role on homeostasis) and these miokines signaling regulators mTOR and RPS6KB1, along muscle aging in an in vitro model. **Methods:** We developed and phenotyped a longitudinal murine myoblast model. C2C12 cells were aged along 25 culture passages. We collected and studied cells at three ageing-levels: control/no-sarcopenic (p5); mild sarcopenia (p15) and severe sarcopenia (p25). Then, we analyzed the protein and genetic expression of the above mentioned molecules. **Results:** In exception to Sestrin 1 the expression of all the molecules followed a non linear pattern along cell aging model. ACE2, Sestrin 2, Myostatin and RPS6KB1 showed a similar tendency in both protein and genetic expression with aging (p5 basal–p15 up–p25 down). Follistatin, on the other hand, shows the opposite tendency (p5 basal–p15 down–p25 up). Regarding mTOR, the tendencies differ when analyzing proteins (p5 basal– p15 up– p25 down) or genes (p5 basal– p15 down–p25 down). **Conclusion:** Our work demonstrates a U-shape tendency for ACE, Sestin 2, myostatin follistatin, and for the signaling pathway regulators. We can confirm the non-linear evolution of several molecules slightly linked to sarcopenia with muscle aging. **Keywords:** Myoblasts, ACE2, Sestrin, myostatin, follistatin, mTOR; RPS6KB1, C2C12. **Data deposition:** https://doi.org/10.3390/proteomes12040034.

Disclosures: The authors declared no competing interests. **References:** 1. Yarasheski, K.; Bhasin, S.; Sinha-Hikim, I.; Pak-Loduca, J.; Gonzalez-Cadavid, N. Serum myostatin-immunoreactive protein is increased in 61-92 year old women and men with muscle wasting. J. Nutr. Health Aging 2002, 6, 343–348. [PubMed]. 2. Bergen, H.R.; Farr, J.N.; Vanderboom, P.M.; Atkinson, E.J.; White, T.A.; Singh, R.J.; Khosla, S.; LeBrasseur, N.K. Myostatin as a mediator of sarcopenia versus homeostatic regulator of muscle mass: Insights using a new mass spectrometry-based assay. Skelet. Muscle 2015, 5, 21. [CrossRef]. 3. Peng, L.; Lee, W.; Liu, L.; Lin, M.; Chen, L. Healthy community-living older men differ from women in associations between myostatin levels and skeletal muscle mass. J. Cachexia Sarcopenia Muscle 2018, 9, 635–642. [CrossRef]. 4. Arrieta, H.; Hervás, G.; Rezola-Pardo, C.; Ruiz-Litago, F.; Iturburu, M.; Yanguas, J.J.; Gil, S.M.; Rodriguez-Larrad, A.; Irazusta, J. Serum Myostatin Levels Are Higher in Fitter, More Active, and Non-Frail Long-Term Nursing Home Residents and Increase after a Physical Exercise Intervention. Gerontology 2019, 65, 229–239. [CrossRef]. 5. Arrieta, H.; Rezola-Pardo, C.; Sanz, B.; Virgala, J.; Lacunza-Zumeta, M.; Rodriguez-Larrad, A.; Irazusta, J. Improving the Identification of Frailty in Long-Term Care Residents: A Cross-Sectional Study. Biol. Res. Nurs. 2022, 24, 530–540. [CrossRef]. 6. Echeverria, I.; Besga, A.; Sanz, B.; Amasene, M.; Hervás, G.; Barroso, J.; Rodriguez-Larrad, A.; Irazusta, J. Identification of frailty and sarcopenia in hospitalised older people. Eur. J. Clin. Investig. 2021, 51, e13420. [CrossRef].

LP104- META-ANALYSIS REVEALS MUSCLE-AGING PROCESSES ARE GENERALLY SHARED BETWEEN FEMALES AND MALES ON THE TRANSCRIPTOME LEVEL.

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Background: The prevalence of frailty is higher in females compared to males, in both humans [1, 2] and mice [3]. Potential sex-differences in the muscle-aging trajectory could explain the sex-dependent prevalence rate of frailty, however, this remains poorly studied. Unfortunately, clinical studies often only recruit male participants, making it difficult to investigate this notion. However, over the past two decades, some studies performed transcriptomics comparing young and old muscle tissue of both males and females [4–7]. Together, these datasets allow for a meta-analysis to investigate whether indeed the processes that are involved in muscle-aging are sex-dependent.**Methods:** Forty-six unique GEO transcriptomics datasets were identified using the search term (human ageing, "vastus lateralis"), of which four datasets were included. Other datasets were not included due to various reasons; e.g., the absence of female participants or biopsies were taken in stimulated conditions (e.g., after exercise). GSE144304, GSE8479, GSE362&674 and GSE157585 were downloaded and gene expression profiles of old vs. young participants were compared. Pathway analysis was performed using Reactome database [8]. Markers of muscle-aging (e.g., Pax7+, CD31+, γH2AX+ cells and shape factor index) were investigated using immunohistochemistry in a subpopulation (GSE144304) as well. **Results:** Normalized enrichment scores of differentially expressed pathways in either sex correlated significantly between males and females in GSE144304 (R2 = 0.94), GSE8479 (R2 = 0.93), GSE362&674 (R2 = 0.83) and GSE157585 ((R2 = 0.95). In individual studies a minority of pathways (n=0-2) were differentially regulated in females compared to males, but these sex-differences were not reproduced in the other included studies. In agreement, no sex-differences were observed in the effects of aging on immunohistochemical markers. **Conclusion:** Overall, the effects of aging on the muscle-transcriptome correlated well between females and males (at least in vastus lateralis muscle tissue). In individual studies sex-specific changes could be detected on pathway level, but these were not reproduced in the other included studies. This finding makes it less likely that sex-differences in the muscle-aging trajectory explain higher prevalence rates of frailty in females, which perhaps could be explained by sex-dependent responses to other factors underlying frailty, such as malnutrition or physical inactivity. **Keywords:** Gender, sarcopenia, frailty, transcriptomics, histology. **Disclosures:** None. **References:** 1. Gordon EH, Peel NM, Samanta M, Theou O, Howlett SE, Hubbard RE. Sex differences in frailty: A systematic review and meta-analysis. Exp Gerontol. 2017; 89: 30–40. 10.1016/j.exger.2016.12.021. 2. O'Caoimh R, Sezgin D, O'Donovan MR, William Molloy D, Clegg A, Rockwood K, Liew A. Prevalence of frailty in 62 countries across the world: A systematic review and meta-analysis of population-level studies. Age Ageing. 2021; 50: 96–104. 10.1093/ageing/afaa219. 3. Kane AE, Howlett SE. Sex differences in frailty : Comparisons between humans and preclinical models. Mech Ageing Dev. 2021; 198: 111546. https://doi.org/10.1016/j.mad.2021.111546. 4. Kulkarni AS, Peck BD, Walton RG, Kern PA, Mar JC, Windham ST, Bamman MM, Barzilai N, Peterson CA. Metformin alters skeletal muscle transcriptome adaptations to resistance training in older adults. Aging (Albany NY). 2020; 12: 19852–66. 10.18632/aging.104096. 5. Melov S, Tamopolsky MA, Bechman K, Felkey K, Hubbard A. Resistance exercise reverses aging in human skeletal muscle. PLoS One. 2007; 2: 1–9. 10.1371/journal.pone.0000465. 6. Welle S, Brooks AI, Delehanty JM, Needler N, Thornton CA. Gene expression profile of aging in human muscle. Physiol Genomics. 2003; 14: 149–59. 10.1152/physiolgenomics.00049.2003. 7. Jong JCBC De, Attema BJ, Hoek MD Van Der, Verschuren L. Sex differences in skeletal muscle aging trajectory: same processes, but with a different ranking. GeroScience. 2023; 45: 2367–86. 10.1007/s11357-023-00750-4. 8. Milacic M, Beavers D, Conley P, Gong C, Gillespie M, Griss J, Haw R, Jassal B, Matthews L, May B, Petryszak R, Ragueneau E, Rothfels K, et al. The Reactome Pathway Knowledgebase 2024. Nucleic Acids Res. 2024; 52: D672–8. 10.1093/nar/gkad1025.

LP105- DYRK1B AS A POTENTIAL BIOMARKER FOR SARCOPENIA IN OLDER ADULTS. J.W. Li[1], W. Gao[1] *((1) Department Of Geriatrics, Zhongda Hospital, School Of Medicine, Southeast University - Nanjing (China))*

Background: Sarcopenia is characterized by the progressive loss of muscle mass and function due to aging. Dual-specificity tyrosine-regulated kinase 1b (Dyrk1b) plays a key role in muscle differentiation by regulating transcription, cell cycle progression, and cell survival. However, the relationship between Dyrk1b levels and sarcopenia is unclear. This study aimed to evaluate the association of serum Dyrk1b level with sarcopenia in the elderly of community-dwelling. **Methods:** A total of xxx community-dwelling elderly people (median age = 76.4 years) from urban and rural areas were recruited, including 409 men and 363 women. Serum Dyrk1b was measured by enzyme-linked immunosorbent assay. Appendicular skeletal muscle mass index (ASMI), grip strength, and gait speed were taken to assess sarcopenia. **Results:** We found that serum Dyrk1b levels in patients with sarcopenia [median (IQR) = 3.41 (2.35–4.39) ng/mL] were lower than those in elderly people without sarcopenia [4.07 (3.34–4.51) ng/mL, P<0.001]. Receiver operating characteristic curve analysis indicated that the optimal cutoff value of serum Dyrk1b level for predicting sarcopenia was 3.86 ng/mL, with a sensitivity of 78.3% and a specificity of 87.7% (AUC = 0.77, 95% CI = 0.68–0.84, P < 0.001). Multivariate logistic regression analysis showed that decreased serum Dyrk1b levels (<3.86 ng/mL) were a risk factor for increased risk of sarcopenia (OR=2.14, 95%CI=1.31-2.47, P<0.001), and serum Dyrk1b concentration was positively correlated with ASMI (r=0.157, P<0.001), grip strength (r=0.221, P=0.003) and gait speed (r=0.328, P=0.002). **Conclusion:** In summary, our results indicate that low serum Dyrk1b level is associated with an increased risk of sarcopenia in the old adults, suggesting that Dyrk1b may be valuable as a surrogate biomarker for screening and evaluation of sarcopenia.

LP107- BIOACTIVE PEPTIDES AS THERAPEUTIC TARGETS FOR MUSCLE WASTING. A. De Spiegeleer[1,2], P. Naumovski[1,3], A. Wakjira[1,4], L. Crombez[1,2], A. Descamps[1,3], N. Van Den Noortgate[1,2], B. De Spiegeleer[1,3], E. Wynendaele[1,3] *((1) Translational Research In Immunosenescence, Gerontology And Geriatrics (trigg) Group, Ghent University Hospital - Ghent (Belgium), (2) Department Of Geriatrics, Faculty Of Medicine And Health Sciences, Ghent University Hospital - Ghent (Belgium), (3) Drug Quality And Registration (druqar) Group, Faculty Of Pharmaceutical Sciences, Ghent University - Ghent (Belgium), (4) School Of Pharmacy, Jimma University - Jimma (Ethiopia))*

Background: Muscle wasting, whether arising from sarcopenia or cachexia, is prevalent in ageing and disease and strongly predicts adverse outcomes. Recently, peptides have garnered attention for their bioactive properties, positioning them as promising biomarkers and potential pharmacological agents. **Methods:** This scoping review explored studies examining the direct associations between well-defined peptides and clinical components of muscle wasting: mass, strength, and physical performance. We searched Embase, PubMed, and Web of Science up to October 2024. Mechanistic pathways of identified peptides were synthesized by integrating data from peptide-muscle mechanistic studies. **Results:** A total of 126 studies were included, of which 71 (56.3%) focused on a single muscle-wasting component: 48 on muscle mass, 16 on strength, and 7 on physical performance. 31 studies (24.6%) investigated two components, 16 (12.7%) examined all three separately, and 8 (6.3%) analyzed a composite sarcopenia variable. Eighty-seven distinct peptides were identified, ranging from collagen tripeptide (3 amino acids) to insulin (51 amino acids). The most studied peptides were ghrelin (14.3%), brain natriuretic peptide (BNP, 11.1%), C-peptide (11.1%), insulin (10.3%), and SS-31 (6.3%). A majority of peptides (64.3%) modulated one or more of four key muscle homeostasis pathways: MAPK/ERK, PI3K/Akt/mTOR, ActR/SMAD, and IKK/NF-κB. These pathways interact with major transcriptional regulators, such as FOXO, NF-κB, SMAD2/3, and the glucocorticoid receptor, which promote muscle atrophy, and androgen receptors, PGC-1α, and S6K, which drive hypertrophy. Study design and reporting issues were prevalent, limiting clinical translation. Sex bias was notable, with females comprising only 23.9% of human interventional study participants and 9.1% and 12.4% of mice and rats in rodent studies, respectively. Clinical, pre-analytical and analytical reporting inconsistencies were frequent, with only 56.6% of studies documenting diurnal timing, food intake, and physical activity at peptide collection, and just 11.5% specifying the limit of detection for peptide measurements. **Conclusion:** This scoping review highlights peptide-related therapeutic targets for muscle wasting. Increased real-world representation, coupled with adherence to standardized reporting guidelines for clinical, pre-analytical, and analytical parameters, will be crucial to advancing peptide-based interventions for muscle wasting. **Keywords:** Peptides, muscle wasting, sarcopenia, cachexia. **Disclosures:** The authors declared no competing interests.

LP108- COMPARATIVE ANALYSIS OF GERIATRIC SYNDROMES AND BIOMARKERS IN ELDERLY POPULATION WITH SARCOPENIC OBESITY. D.R. Tata[1], D.R. Rao[1], D.R. Rao[1], D.R. Poonia[1], D.R. Kumar[1], D.R. Chatterjee[1], D.R. Chakrawarty[1] *((1) All India Institute Of Medical Science - Delhi (India))*

Background: Sarcopenic obesity (SO), is defined as the coexistence of sarcopenia (loss of muscle mass and strength) and obesity (excess fat accumulation), is a critical geriatric syndrome with significant health implications. It is associated with increased risks of cardiovascular disease, metabolic dysfunction, cognitive impairment, physical disability, and mortality. Despite substantial research globally, data on SO prevalence and clinical impact from non-Western populations, particularly in India, remain limited. This study aims to evaluate the prevalence and clinical consequences of SO among elderly individuals in India seeking hospital care. **Methods:** In this observational study, conducted between January 1, 2022,

and July 31, 2023, in Geriatrics OPD at All India Institute of Medical Sciences (AIIMS), New Delhi, 419 individuals aged ≥60 years screened, 122 met the inclusion criteria of which 31 each were in sarcopenia and obese group while 30 participants in each sarcopenic obese and nonsarcopenic nonobese group (normal controls). Complete Geriatric assessment (CGA) was done and data collection included physical performance assessments and BIA (Bioelectrical Impedance Analysis) for body composition analysis along with blood biomarkers. Statistical analysis using STATA evaluated associations between SO and clinical outcomes, employing both descriptive and inferential methods. **Results:** The prevalence of sarcopenic obesity (SO) was 7.15% in this study population, with a significantly higher burden of comorbidities, including hypertension (67.74%), diabetes mellitus (70.97%), and hypothyroidism (35.48%) compared to other groups, and individuals with SO were 4.1 times more likely to have cardiovascular comorbidity in comparison to control group. While among the geriatric syndromes, the heightened risk of malnutrition (51.6%), was more frequent; Additionally, among the blood biomarkers, elevated HbA1c (7.52 ± 1.43%) was significant in the SO group, indicating heightened metabolic dysregulation risks. **Conclusion:** Sarcopenic obesity is prevalent among hospital-seeking elderly individuals in India and is associated with significant comorbidities, including hypertension, diabetes, hypothyroidism and cardiovascular diseases, heightened malnutrition risk and elevated biomarker levels underscore increased inflammatory and metabolic risks in this population. Early detection and multidimensional interventions, focusing on enhancing muscle mass, reducing adiposity, and managing metabolic and cognitive health, along with macro and micronutrient supplementation are crucial to mitigate sarcopenic obesity and disability in aging populations. **Keywords:** Sarcopenic obesity, geriatric syndrome, inflammatory biomarkers, cognitive impairment. **Data Deposition:** Data will be available at request. **Disclosures:** No conflicts of interest are to be declared. **References:** 1. Cruz-Jentoft AJ, et al. Sarcopenic obesity: A public health challenge. Age Ageing. 2010;39(4):412-423. 2. Batsis JA, et al. Diagnostic criteria for sarcopenic obesity: An update. Curr Opin Clin Nutr Metab Care. 2018;21(3):260-266. 3. Baumgartner RN, et al. Epidemiology of sarcopenic obesity: Determinants and consequences. Am J Clin Nutr. 2000;71(5):1140-1145.

LP109- RELATIONSHIP BETWEEN LOWER LIMB BIA-HYDRATION INDICATORS AND MUSCLE FUNCTION IN COMMUNITY-DWELLING AGED POPULATION: A 1-YEAR FOLLOW-UP COHORT STUDY. M. Serra-Prat[1], I. Lorenzo[1], M. Cabré[1], J. Martínez[1], E. Palomera[1], E. Burdoy[1]
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Background: There is a progressive decline in body water content with age, mainly explained by a relative decrease in lean mass. However, a low-grade chronic dehydration in aged population has been speculated. A relative decrease in intracellular water (ICW) has been related with poor muscle strength, poor functional capacity, and higher risk of frailty. Moreover, the ICW/FFM ratio has been proposed as an indicator of intracellular hydration and muscle quality and, when assessed in the whole body, it has been related with poor handgrip, impaired functional capacity and higher risk of frailty. However, when assessing hydration and function in the same muscle group in a cross-sectional study, right-leg ICW/FFM ratio was not clearly related with right-leg muscle function. Low-grade chronic dehydration may have middle- and long-term effects on muscle function, so longitudinal studies are needed. **Objectives:** To assess hydration status and intracellular hydration of the lean mass of the lower extremities in community-dwelling aged population, and to assess its relationship with muscle function of the thigh. **Methods:** Design: observational and prospective study of subjects aged 70 years and older followed-up for 12 months. Measures: body composition and hydration status was assessed by bioelectrical impedance analysis (BIA; InBody s10 multifrequency device). Intracellular water as percentage of total water (ICW%), and ICW/FFM of the right leg were main indicators of hydration used. Isokinetic test was used to measure flexion and extension strength (in N), work (in J), and power (in W) of the right knee. **Results:** 117 subjects were recruited and completed baseline assessment with BIA and isokinetic test (mean age 75.0 ±4.1 years, 50.4% women), and 52 subjects were assessed in the 12-months follow-up visit. In men, right leg ICW (%) was correlated with 12 month increase in extension strength (r=0.42, p=0.053) and power (r=0.46, p=0.031), and flexion work (r=0.41, p=0.059) and power (r=0.51, p=0.015), while ICW/FFM was correlated with extension strength (r=0.44, p=0.042) and power (r=0.49, p=0.020), and flexion work (r=0.41, p=0.051) and power (r=0.53, p=0.011). In women, right leg ICW (%) was correlated with 12 month increase in extension work (r=0.50, p=0.028), flexion work (r=0.44, p=0.058) and flexion power (r=0.48, p=0.035), and right leg ICW/FFM was correlated with 12 month increase in extension work (r=0.47, p=0.041), flexion work (r=0.41, p=0.081) and flexion power (r=0.47, p=0.042). When adjusting for age, sex and number of medications, right leg ICW/FFM showed an effect on 12 month increase in right leg extension strength (beta=1120, p=0.078), work (beta=2356, p=0.017) and power (beta=1921, p=0.021), and on 12 month increase in flexion strength (beta=1610, p=0.134), work (beta=6270, p=0.008) and power (beta=5183, p=0.003). **Conclusion:** Indicators of poor lower limb muscle hydration are correlated with decline in some muscle function parameters of the same limb, suggesting that hydration may affect muscle function in aged population. However, more research is needed to confirm this hypothesis with adequately powered studies. **Keywords:** Hydration, muscle function, aged, strength, muscle power, muscle work. **Disclosures:** The authors declare no conflict of interest in relation with this study. The study obtained a grant from ISCIII (PI 19/00500).

VACCINATION AND HEALTHY AGING

P150- DEVELOPMENT OF AN OPERATIONALIZED WORKFLOW FOR INPATIENT VACCINATIONS OF OLDER ADULTS AS PART OF STANDARD CARE.

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Background: Vaccination is a key preventive strategy for frail older adults where pneumonia remains a top cause of mortality (23.5% of all mortality in 2023) in Singapore. The National Adult Immunization Schedule (NAIS) (established 2017) provides guidance on vaccination recommendations for susceptible adults and older adults aged 65 and above. However, the baseline vaccination rate for inpatient older adults in our hospital prior to workflow implementation was low at 10%. **Methods:** We formed a Quality Improvement (QI) project group consisting of geriatricians, infectious disease and respiratory physicians, pharmacists and nurses to design an inpatient vaccination workflow in our Geriatric Department and assess post-implementation vaccination rates using a Plan-Do-Study-Act methodology between March and June 2019. Vaccination leads from our group disseminated information of the intent and workflow of the intervention to their respective medical, nursing or pharmacist colleagues. In addition to usual medication reviews, pharmacists obtained vaccination history from the patients' electronic health records and interviews with patients or caregivers using a hard-copy checklist. Recommendations for vaccinations would be indicated in the checklist and informed to the junior team doctors via text message. Medically suitable patients assessed by senior team doctors would then be counselled to receive vaccinations. **Results:** Data from a total of 595 patients were collected. Mean age was 86.0 years, 19.8% were admitted due to respiratory infections, the 30-day readmission rate was 13.2% out of which 12.7% were readmissions due to respiratory infections. 6-month mortality was 11.3% and median Clinical Frailty Scale (CFS) score was 6. Dysphagia was present in 48.9% of patients and median length of stay was 8 days. During the QI project, 137 (23.4%) of patients were vaccinated which included 42.9% of medically suitable patients. 122 (20.5%) patients received influenza vaccination and 121 (20.3%) patients received pneumococcal vaccination. In 2020, inpatient influenza and pneumococcal vaccination rates remained high at 20.5% and 15.4% respectively. Feedback was obtained on the feasibility and ease of the workflow. Improvements made included transitioning from a hard-copy form to an electronic document checklist. Individual texting of junior team doctors was also eliminated. Additional educational and briefing sessions were also carried out to all medical staff in the department to inform of the new processes. **Conclusion:** Due to the COVID-19 pandemic, there were lower rates of influenza and pneumococcal vaccination observed when COVID-19 vaccinations took priority with rates of 12.4%, 7.5% (2021) and 11.8%, 6.1% (2022) respectively. In 2023, the rates have climbed slightly to 13.3% and 6.1% respectively. An enhanced subsidy and payment framework was also established for susceptible adults enabling lower cost of vaccinations. New policies included free vaccination for eligible individuals who enrolled to dedicated Primary care clinics as part of the National Healthier SG (Singapore) initiatives. However, not all patients may be enrolled as this is not mandatory, and opportunistic inpatient vaccination remains important. Future work could include re-education of inpatient teams to prioritize vaccinations as part of standard care and creating a more prominent automated alert for vaccination eligibility and recommendations in patients' electronic health records. **Keywords:** Vaccination, older adults, frail, inpatient, quality improvement. **Disclosures:** The authors declare no conflicts of interest. **References:** 1. van Deursen AMM, van Houten MA, Webber C, Patton M, Scott DA, Patterson S, Sidhu M, Drews W, Gruber WC, Emini EA, Grobbee DE, Bonten MJM, Sanders EAM. Immunogenicity of the 13-Valent Pneumococcal Conjugate Vaccine in Older Adults With and Without Comorbidities in the Community-Acquired Pneumonia Immunization Trial in Adults (CAPiTA). Clin Infect Dis. 2017 Sep 1;65(5):787-795. doi: 10.1093/cid/cix419. PMID: 29017280. 2. Zhang R, Pang Y, Wan S, Lu M, Lv M, Wu J, Huang Y. Effectiveness of influenza vaccination on in-hospital death in older adults with respiratory diseases. Hum Vaccin Immunother. 2022 Nov 30;18(6):2117967. doi: 10.1080/21645515.2022.2117967. Epub 2022 Sep 12. PMID: 36094827; PMCID: PMC9746403. 3. Teo LM, Smith HE, Lwin MO, Tang WE. Attitudes and perception of influenza vaccines among older people in Singapore: A qualitative study. Vaccine. 2019 Oct 16;37(44):6665-6672. doi: 10.1016/j.vaccine.2019.09.037. Epub 2019 Sep 18. PMID: 31542261; PMCID: PMC7130882. 4. Rosario BH, Shafi H, Yii ACA, Tee LY, Ang ASH, Png GK, Ang WST, Lee YQ, Tan PT, Sahu A, Zhou LF, Zheng YL, Slamat RB, Taha AAM. Evaluation of multi-component interventions for prevention of nosocomial pneumonia in older adults: a randomized, controlled trial. Eur Geriatr Med. 2021 Oct;12(5):1045-1055. doi: 10.1007/s41999-021-00506-3. Epub 2021 Jun 3. PMID: 34081314; PMCID: PMC8173511. 5. Nationally Recommended Vaccines, Ministry of Health, Singapore. Found in https://www.moh.gov.sg/resources-statistics/nationally-recommended-vaccines (Assessed 24 September 2024). 6. Principal causes of death, Ministry of Health, Singapore. Found in https://www.moh.gov.sg/resources-statistics/singapore-health-facts/principal-causes-of-death (Assessed 24 September 2024). 7. The White Paper on Healthier SG. Ministry of Health, Singapore. Found in https://www.healthiersg.gov.sg/resources/white-paper/ (Assessed 24 September 2024)

GLP-1 AGONISTS IN WEIGHT LOSS AND SARCOPENIA

P151- EXERCISE AND NUTRITIONAL INTERVENTION TO REDUCE THE RISK OF SARCOPENIA IN OLDER ADULTS WITH TYPE 2 DIABETES AND OBESITY TREATED WITH SEMAGLUTIDE: A RANDOMIZED CONTROLLED TRIAL.

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Background: Type 2 diabetes (T2D) is a growing epidemic and a global healthcare concern, particularly among older adults. Individuals with T2D often exhibit an increased prevalence of low muscle mass, diminished muscle strength, and reduced functional capacity, a condition known as sarcopenia. The primary factors associated with sarcopenia are malnutrition and low physical activity. Consequently, tailored exercise programs combined with nutritional interventions are recognized as effective treatments for sarcopenia in older adults. Glucagon-like peptide 1 receptor agonists (GLP-1 RAs) are well-known for their efficacy in managing both T2D and obesity. However, while GLP-1 RAs promote significant weight loss, recent studies indicate that they may also lead to losses in both fat and muscle mass, raising concerns about lean mass reduction, especially in older adults who are already at high risk for sarcopenia. This underscores the urgent need for strategies that promote weight loss while preserving muscle mass in this vulnerable population. The present study aims to investigate whether a multidisciplinary intervention combining exercise and nutrition can mitigate declines in muscle strength, mass, and physical function in older adults with T2D and obesity undergoing GLP-1 RA treatment. **Methods:** Sixty men and women 65-75 years of age with Type 2 diabetes, and overweight/obesity will be randomized (1:1 manner, gender stratified) for 26 weeks to one of two arms: (1) Semaglutide and multidisciplinary intervention group (MDIG) comprised of home-based exercise and individualized nutritional counselling or (2) Semaglutide and general health recommendations control group (CG). The drug dosage will be gradually increased every four weeks starting with 0.25 mg on week 0, reaching 2.4 mg by week 16 and maintained at 2.4 mg until the end of the trial (week 26). Efficacy will be determined mainly by assessment of lean body mass (measured by MRI and DEXA), muscle strength and functional status (assessed by strength, balance and aerobic capacity tests). Safety will be evaluated by routine monitoring of adverse events. The study was approved by the Institutional Review Boards of both Sheba and Hadassah Medical Centers. **Significance:** As new therapeutic approaches using GLP-1 RAs for the treatment of T2D and obesity emerge, it becomes increasingly important to thoroughly assess their potential side effects. This is particularly relevant given the elevated risk of sarcopenia, especially with the introduction of more potent drugs. Sarcopenia-related functional decline in older adults with T2D significantly impacts their quality of life and raises the risk of falls, which can further deteriorate health and reduce life expectancy. Our research can contribute to improving the quality of patient care by integrating strategies designed to prevent and mitigate functional deterioration and limitation in older adults with T2D and obesity treated with GLP-1 RA. **Keywords:** Type 2 diabetes, obesity, sarcopenia, GLP1 RA. **Clinical Trial Registry:** NCT06497595; https://clinicaltrials.gov/. The trial was registered prior to the recruitment of participants. **Disclosures:** The authors declare no competing interests.

LP110- COMPARING THE IMPACT OF PHARMACOLOGICAL AND PHYSIOLOGICAL WEIGHT LOSS ON MUSCLE MASS AND FUNCTION IN MICE.

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In the context of recent observations showing a relationship between incretin-based therapies and lean body mass, we conducted studies aiming to investigate the potential negative impact of incretin-based therapies on lean body mass and skeletal muscle in diet-induced obesity (DIO) mice. We compared the effects of pharmacological weight loss (e.g. GLP-1RA treatment) and physiological weight loss (calorie restriction) on lean body mass, muscle mass, and function in DIO mice. Despite a significant reduction in lean body mass, the study observed minimal effects on muscle mass, fiber size, muscle strength, and markers of muscle atrophy. Interestingly, a substantial decrease in liver mass and a reduction in stored triglycerides was observed. These findings suggest that in DIO mice, changes in lean body mass resulting from incretin-based therapies have limited effects on skeletal muscle but have more pronounced effects on other metabolic organs, such as the liver. Further research is warranted to understand the implications of these findings in the context of human physiology and the potential implications for the use of incretin-based therapies in obesity management.

INTRINSIC CAPACITY

P152- DEVELOPMENT AND VALIDATION OF A FUNCTIONAL ABILITY INDEX FOR OLDER ADULTS: A MULTICOHORT STUDY.

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Background: Functional ability determines healthy ageing among older population. The aim of this study was to develop and validate a functional ability index (FAI) that incorporates aspects of intrinsic capacity and environmental factors of older individuals based on the World Health Organization (WHO) framework of healthy ageing. **Methods:** We used data from the China Health and Retirement Longitudinal Study (CHARLS) to develop and validate the FAI. We included data of 7016 participants ≥ 60 years participating in the baseline survey for the development and internal validation of the FAI. Functional independency was considered the primary outcome of functional ability defined as able to perform activities of daily living (ADLs) and instrumental activities of daily living (IADLs) without any help. Additional proxies of healthy ageing were considered as secondary outcomes, including no hospitalization, no falls, and good self-rated health. Cluster dendrogram was used to identify the distinct hierarchical clusters of all the variables included. Backward elimination logistic regression model was implemented to identify the most significant variables associated with independency. Internal validation of the final model was performed using 10-fold cross-validation through the psfmi package in R. Pooled odds ratios were used to calculate the FAI by rounding the odds ratio to the nearest integer. The Youden's index was employed to select an optimal threshold of FAI for predicting independency status. FAI was used to predict the risk for having healthy ageing in the CHARLS baseline data, and at two-year follow-up, including risk of no mortality. External validation was performed in a separate cohort (SMART) of 1295 older individuals aged ≥ 60 years. **Results:** Approximately 83% of the included population were independent in the CHARLS cohort and 93.3% of them were independent in the SMART cohort. Gait speed, weight loss, redrawing, calculation, positive affect, vision, social network, multimorbidity, alcohol intake, and age were the final variables selected for the development of FAI. The development model of FAI demonstrated a C-statistic of 0.73 (95% CI: 0.72, 0.75), while the adjusted R-squared value was 0.19, and the Brier score was 0.14. The FAI score ranged from 0 to 19, a higher score indicating better health functioning or higher likelihood of independency. Individuals having FAI≥12 were more likely to be independent and at lower risk of negative outcomes such as falls and hospitalization. For each unit increase in the FAI the risk of having independency increased by 30%-58% cross-sectionally in the two cohorts, while the two-years risk of independency increased by 20%. **Conclusion:** The FAI we developed to measure functional ability is an important tool to assess older individual's actual healthy ageing status, as it includes components of physical and mental function along with measure of environment. **Keywords:** Healthy ageing, intrinsic capacity, functional ability, independency, disability. **Disclosures:** We declare no conflict of interests. The original manuscript of this study is under consideration for publication in Age and Ageing Journal.

P153- VITALITY IN THE WORLD HEALTH ORGANIZATION (WHO) INTRINSIC CAPACITY FRAMEWORK: A SCOPING REVIEW OF DEFINITIONS AND MEASUREMENTS.

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Background: Vitality capacity is a core domain of intrinsic capacity (IC), and is a concept central to healthy ageing. The WHO has proposed a working definition of vitality capacity as a physiological state resulting from the interaction of multiple systems. Despite this, there are still gaps in understanding how vitality should be measured and applied within the IC framework. This scoping review aimed to map the conceptual underpinnings or frameworks that underlie vitality capacity and to identify existing measures of vitality within the IC framework. **Methods:** This scoping review followed Arksey and O'Malley's five-stage framework. A comprehensive search strategy was devised and executed by a trained medical librarian across Ovid MEDLINE, PubMed, Embase, and Web of Science, covering publications from January 2003 to September 2023. Search terms included «intrinsic capacity,» «ICOPE,» «vitality,» «biomarker,» «nutrition,» «healthy aging,» and «healthy longevity.» The inclusion criteria were publications involving adults aged 50 years and older and discussions of vitality within the IC framework. Meta-analyses, randomized controlled trials (RCTs), cohort studies, and policy papers were included, while non-English articles, book chapters, and conference abstracts were excluded. Two independent reviewers screened studies, and disagreements were resolved by a third reviewer. Data extraction and analysis were performed using Covidence to assess both measures and conceptual frameworks of vitality. **Results:** Of the 3,988 records initially identified, 1,973 unique articles remained after removing duplicates. After screening and full-text review, 81 studies were included. The concept of vitality has evolved from an initial focus on energy metabolism and nutrition to a broader understanding of vitality as a fundamental physiological capacity that underlies other expressed capacities. In line with this concept, the WHO's current definition of vitality highlights three core systems: energy metabolism, neuromuscular function, and immune-stress response. Measurements of vitality were concentrated predominantly on neuromuscular function (47%) and energy/metabolism (52%), with handgrip strength (82%) and nutrition/anthropometry (53%) being the

most frequently reported indicators. There was a significant underrepresentation of measurements related to immune and stress responses (1%). Other measurements included dysphagia, self-rated health, self-rated frailty, pain, and incontinence. Our review also highlighted a lack of empirical construct validation, with only 10.5% of studies attempting validation of vitality constructs using methods such as factor analysis. A gap was also identified in the alignment of vitality measures with the broader WHO definition of vitality capacity, and only one study considered the hierarchical categorisation of vitality capacities underlying IC. **Conclusion:** This scoping review shows that current measures of vitality within the IC framework are primarily focused on neuromuscular function and nutrition, overlooking important areas such as immune function and stress response. The review also identified a wide range of disparate measures that fall outside the WHO's working definition of vitality. There is a need for more comprehensive and validated measures that capture the full range of interacting physiological systems that define vitality capacity. Future research should focus on expanding and validating these measures and biomarkers to enable accurate monitoring of vitality and IC, supporting targeted interventions for healthy ageing.

P154- ARE COMMUNITY-DWELLING OLDER ADULTS WITH IMPAIRED FUNCTIONAL RESERVES DIFFERENT FROM THOSE WHO HAVE NO IMPAIRMENTS: A TRANSVERSAL STUDY OF INTRINSIC CAPACITIES. N. Bernard[1,2], C. Bonjour[3,4], L. Pazart[3,4], Y. Sagawa Jr[3,4] *((1) Laboratoires De Neurosciences Intégratives Et Clinique, Unité De Recherche EA 481, Université De Bourgogne Franche-Comté, CIC1431 Inserm, CHU De Besançon - Besançon (France), (2) Inserm Cic 1431, CHU Besançon - Besançon (France), (3) Laboratoires De Neurosciences Intégratives Et Clinique, Unité De Recherche Ea 481, Université De Bourgogne Franche-Comté - Besançon (France), (4) CIC1431 Inserm, Chu De Besançon - Besançon (France))*

Background: Projections show that the world's elderly population will continue to grow. This could lead to a number of socio-economic, medical and economic problems associated with a gradual decline in physiological reserves. It is against this background that the World Health Organisation has made healthy ageing a priority for 2015. Defined as "the process of developing and maintaining functional ability to enable well-being in older life" (who 2015). Rather than focusing on people's ability to react to a stressful event, the aim is to focus on people's ability to be and do what they value. Intrinsic capacities are used to measure of the state of a person's functional reserves (cesari et al.). Declining intrinsic capacities are associated with poor outcomes and are also predictive of frailty. A person's functional reserves can be affected by many factors throughout their life. Therefore, if interventions are to be implemented, it is essential to understand what is associated with the presence of good intrinsic capacities. **Methods:** This is a transversal prospective cohort study of a representative sample of community-dwelling people in France. 4 of the 5 domains of intrinsic capacities were assessed according to the recommendation of Cesary 1. Locomotion (walking speed, chair rise test), vitality (nutritional status, grip strength), cognition (MOCA and MMSE), psychological (PHQ-9, self-reported depression). A composite IC (0-8) was calculated, with higher scores representing greater IC. Many other areas of health were also assessed to provide a holistic view of people. Physical fitness such as physical activity, sedentary time and balance will be assessed using an ActiGraph accelerometer, model wGT9X (Actigraph corp, USA) 2 and the Mini-Best test 3 respectively. Health outcomes such as patients' global health will be assessed using PHQ-9 4. Other covariates such as age and co-morbidities are also assessed. **Results:** The preliminary results show that 28 people (72 + 2.2 years of age) have completed the 4 domains of the intrinsic capacities. No decline in any intrinsic capacities' domain for only 6 people (21.6%). There were no significant differences between the two groups in terms of age (p=0.269), sedentary lifestyle (p=0.323), physical activity (p=0.267), balance (p=0.815) or comorbidity (p=0.279). **Conclusion:** In order to target interventions, it is essential to understand what enables older people to maintain high levels of functional reserve. Physical activity and balance interventions have numerous health benefits. They also prevent adverse events in older people. Conversely, the presence of comorbidities increases the likelihood of their occurrence. The small size of our sample and the differing sizes of the groups (6 compared to 14) are major limitations of our study. However, the lack of difference found between these different parameters in our study does not allow us to understand all the phenomena that explain the maintenance of functional reserves. More research is needed to understand this. **Keywords:** Intrinsic capacity, elderly, healthy aging, functional performance. **Disclosures:** This research did receive specific funding from the call "envergure" coordinate by Bourgogne Franche Comte Region. The authors declare that they have no competing interests. **References:** 1. Cesari M et al. J Gerontol Ser A. 2018;73(12):1653-1660. doi:10.1093/gerona/gly011. 2. Kossi O et al. J Sports Sci. 2021;39(13):1489-1496. doi:10.1080/02640414.2021.1880689. 3. O'Hoski S et al. Phys Ther. 2014;94(3):334-342. doi:10.2522/ptj.20130104. 4. Kocalevent RD et al. Gen Hosp Psychiatry. 2013;35(5):551-555. doi:10.1016/j.genhosppsych.2013.04.006.

LP112- THE ASSOCIATION OF INTRINSIC CAPACITY FOCUSED ON THE JOY OF LIVING WITH FRAILTY AMONG COMMUNITY DWELLING OLDER PEOPLE. M. Kabayama[1], M. Nishida[1], Y. Li[1], Y. Tominaga[1], M. Kido[1], Y. Akagi[1], K. Kamide[1], R. Otsuka[2] *((1) Osaka University - Suita (Japan), (2) The National Center For Geriatrics And Gerontology - Obu (Japan))*

Aim: The concept of intrinsic capacity (IC), proposed by WHO, is important in healthcare for older people. Evidence shows that focusing on the IC of older adults is more effective than focusing on specific chronic diseases [1].Positive phycological aspect is considered an important component of intrinsic capacity (IC), which enhance both physical and

mental health. This study aimed to explore the positive phycological aspect focusing on 'the joy of living' and its latent factors of community dwelling older people, and to clarify the relationship between these factors and frailty. **Method:** Self-administered questionnaire survey was conducted by mail on 15,400 residents aged 65-85 years who were randomly selected from the basic residential registration in Osaka Prefecture. The survey items were basic characteristics, joy of living(13items), and frailty status assessed by the Kihon Checklist. The latent factors of joy of living were extracted using exploratory factor analysis (principal factor method with Varimax rotation). A logistic regression analysis was conducted with frailty as the dependent variable and joy of living as the independent variable, adjusting for sex, age, marital status, economic status, and educational attainment. **Results:** There were 7505 respondents (49.0% response rate), and 5022 of these without missing data were analyzed(men:47.3%, mean age: 74.2 yrs). There were 23% of frail participants. Factor analysis revealed four latent factors for joy of living. A logistic regression analysis was conducted using frailty status (non-frail as the reference category) as the dependent variable and the weights of the four factors derived from factor analysis as independent variables. The results indicated that all four latent factors of joy of living were significantly positively associated with non-frail. Factor 1 'Personal growth'(OR 0.516 CI 0.475-0.560), Factor 2'social roles' (OR 0.836 CI 0.778-0.899), Factor 3 'family communication'(OR 0.898 CI 0.834-0.966), Factor 4'amusement'(OR 0.773 CI 0.717-0.834) ($p<0.05$). **Conclusion:** Although causality remains unclear due to the cross-sectional nature of the study, there was the possibility that any type of joy of living could help prevent frailty, suggesting the importance of incorporating joy of living, one of the IC, as an index for frailty. **Keywords:** Intrinsic capacity, Joy of living, frailty. **Disclosures:** The authors have no conflicts of interest to declare. **Reference:** 1. Beard, J.R., et al., The World report on ageing and health: a policy framework for healthy ageing. The Lancet, 2016. 387(10033): p. 2145-2154.

LP113- ASSOCIATION BETWEEN SKIN BIOMECHANICAL PROPERTIES AND INTRINSIC CAPACITY IN ADULTS ACROSS THE ADULT LIFESPAN.

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Aim: A decline in intrinsic capacity (IC), a multidimensional indicator of healthy aging, is associated with a higher risk of functional disability and mortality. The skin represents an ideal tissue for studying the holistic aging state of the body due to its ease of sampling and phenotyping. However, evidence linking skin-derived biomarkers to age-related functional decline remains limited. Thus, we aimed to demonstrate the association between skin biomechanical properties as a marker of skin aging and IC across adulthood. **Methods:** This longitudinal analysis investigated 431 community-dwelling adults aged 20 to 93 (60% women) from the INSPIRE-T cohort. Baseline skin elasticity and viscoelasticity were measured using the Cutometer. IC was evaluated over three years as a 5-domain composite score including cognition (assessed by Mini-Mental State Examination [MMSE]), locomotion (examined by Short Physical Performance Battery [SPPB]), psychology (measured by the 9-item Patient Health Questionnaire for depression [PHQ-9]), vitality (evaluated as grip strength in the dominant hand), and sensory (including distance vision and whispered voice tests). Linear mixed-effect models stratified by sex were used to examine the associations between Cutometer parameters and IC, incorporating interaction terms between age and Cutometer parameters. **Results:** After controlling for age and sex, poor elastic recovery (parameters R2, R5, and R7) and increased viscoelastic portion of the deformation (R6) in older adults were associated with lower IC at baseline. Moreover, higher R6 was associated with faster IC decline over time in older men but not women. On the other hand, the association between skin elasticity and IC was reversed in young women under middle age, who tended to have a higher and improved IC when their skin elasticity was poor. **Conclusion:** This is the first study showing that biomarkers of skin aging were associated with functional outcomes. The association between skin elasticity and IC in older adults suggested that the reduction of skin elasticity occurred in parallel with functional aging. The paradox of the reverse skin-IC relationship in young adults may occur because IC peaks later in life compared to skin elasticity. Future research targeting younger individuals and employing suitable functional assessments will provide insight into this topic.

LP114- ARE INTRINSIC CAPACITY AND ACCELERATED BIOLOGICAL AGING ASSOCIATED WITH PHYSICAL RESILIENCE IN OLDER ADULTS?

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Background: Physical resilience has been operationalized as trajectories of functional improvement or regain after a decline or a stressor. Chronological age, disease burden, and metabolic/inflammatory biomarkers have been identified as correlates of resilience. Yet, further research is needed to understand the links between intrinsic capacity (IC) and epigenetic age with resilience. Our aim is to assess the association of IC, and epigenetic age with physical resilience. **Methods:** This longitudinal analysis will include participants aged 50+ from the INSPIRE-t cohort with at least two measures of functionality outcomes (i.e., gait speed, 30 sec sit-to-stand test, Fried score and ADLs, IADLs). We will identify individuals with a "resilient" trajectory (improving function over time or with a decline followed by a regain or surpass of baseline functionality levels); "control" trajectory (no loss through the time); and declining trajectory. For those who reported a stressor (i.e., fall or surgery during the follow-up), we will model their trajectories with a "knot/spline" at the time of the event report, and we will define as resilient those who regained or surpassed baseline functionality levels after the stressor. By means of multinomial logistic regression, we will test the association of baseline IC and

baseline epigenetic age acceleration with these trajectories, adjusting for covariates. **Results:** We will present the percentage of participants aged 50+ in the INSPIRE-t cohort with resilient trajectories of functional parameters. We will provide the adjusted ORs of being in the resilient versus the control/declining group according to baseline IC (domains and percentiles), and according to years of epigenetic age acceleration. **Conclusion:** Our study will be the first to describe the proportion of the 50+ INSPIRE-t population with physical resilience according to currently available measures. We will explore if physical resilience is associated with IC and epigenetic age in community-dwelling participants aged 50+. **Keywords:** Physical resilience, intrinsic capacity, functionality. **Disclosures:** All authors declare no conflict of interest for this study. **References:** 1. Walston J, Varadhan R, Xue QL, Buta B, Sieber F, Oni J, Imus P, Crews DC, Artz A, Schrack J, Kalyani RR, Abadir P, Carlson M, Hladek M, McAdams-DeMarco M, Jones R, Johnson A, Shafi T, Newman AB, Bandeen-Roche K. A Study of Physical Resilience and Aging (SPRING): Conceptual framework, rationale, and study design. J Am Geriatr Soc. 2023 Aug;71(8):2393-2405. doi: 10.1111/jgs.18483. Epub 2023 Jun 30. 2. Gijzel SMW, Whitson HE, van de Leemput IA, et al. Resilience in Clinical Care: Getting a Grip on the Recovery Potential of Older Adults. J Am Geriatr Soc. 2019;67(12):2650–2657. doi: 10.1111/jgs.16149. 3. Resnick B, Galik E, Dorsey S, Scheve A, Gutkin S. Reliability and validity testing of the physical resilience measure. Gerontologist. 2011;51(5):643–652. doi: 10.1093/geront/gnr016. 4. Franceschi C, Garagnani P, Morsiani C, et al. The Continuum of Aging and Age-Related Diseases: Common Mechanisms but Different Rates. Front Med. 2018;5:61. 5. Varadhan R, Walston JD, Bandeen-Roche K. Can a Link Be Found Between Physical Resilience and Frailty in Older Adults by Studying Dynamical Systems? J Am Geriatr Soc. 2018;66(8):1455–1458. doi: 10.1111/jgs.15409.

LP115- ACCELERATED GRIMAGE EPIGENETIC AGING IS ASSOCIATED WITH LOWER INTRINSIC CAPACITY IN THE INSPIRE-T HUMAN TRANSLATIONAL COHORT.

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Background: To promote healthy longevity, the WHO developed the function-centered Integrated Care for Older Persons (ICOPE) model, focusing on the clinical domains of intrinsic capacity (IC). Although functional aging manifests late in life, it is preceded by age-related changes at the physiological level and even before, at the molecular level. From a geroscience perspective, the biological aging drivers of IC age-related decline are unknown. We aimed to investigate whether accelerated epigenetic and inflammatory aging, respectively representing two critical hallmarks of the aging process, epigenetic alterations and systemic age-related inflammation, are associated with loss of function. **Methods:** In this cross-sectional study, we included 971 participants (age range: 20-102 years; mean (SD) age: 60.1 (18.8) years; 62.1% female; 73.9% university education) from the INSPIRE-T human lifespan translational cohort. Accelerated biological aging was derived from the residuals of a linear regression of epigenetic (or systemic inflammatory) age and chronological age. Epigenetic age was calculated using first (Horvath pan tissue [1]; Horvath skin blood [2]; Hannum [3]) and second (PhenoAge [4]; GrimAge [5]) generations of DNA methylation (DNAm) aging clocks. Systemic inflammatory age was calculated using an inflammatory aging clock (iAge) [6] derived from immunological cytokines. Global intrinsic capacity (IC) was operationalized as the WHO 5-domain construct of cognition (Mini Mental State Examination), mobility (Short Physical Performance Battery), psychology (Patient Health Questionnaire-9), vitality (grip strength) and sensory (vision: WHO simple eye chart and hearing: whisper test). Each domain measurement was rescaled from 0 to 100 points, higher indicating better performances. Linear regression models were used for statistical analyses. **Results:** In unadjusted models, unlike other DNAm predictors, GrimAge epigenetic accelerated aging was associated with lower global IC scores (β = -0.20; 95% CI [-0.36; -0.03]; p<0.02). After adjusting for chronological age, sex and education, similar findings were observed (β = -0.26; 95% CI [-0.39; -0.13]; p<0.001). Additional adjustments for BMI, multimorbidity and physical activity (p<0.001) confirmed the robustness of our findings. Interestingly, GrimAge epigenetic accelerated aging was particularly associated with lower mobility (β = -0.33; 95% CI [-0.53; -0.13]; p<0.01) and sensory impairment (β = -0.48; 95% CI [-0.87; -0.09]; p<0.02) in unadjusted models. The detrimental effect of epigenetic aging on mobility remained significant in adjusted models (p<0.001). Inflammatory accelerated aging was not associated with IC (β = -0.05; 95% CI [-0.12; 0.02]; p=0.16). **Conclusion:** Our findings highlight the potential emerging role of epigenetic alterations as a biological driver of functional decline over the lifespan, with a pronounced impact on mobility impairment. Further longitudinal studies are needed to confirm the long-term impact of biological aging on loss of function and its predictive value over chronological age. With blood-based DNA methylation assays becoming cheaper and faster, our results could pave the way for an early molecular identification of at-risk individuals, enabling personalized medicine interventions to promote healthy longevity. **Keywords:** Intrinsic capacity, ICOPE, biological aging, epigenetic aging clocks, inflammatory aging clocks, epidemiology. **Disclosures:** No conflict of interest. **References:** 1. Horvath S. DNA methylation age of human tissues and cell types. Genome Biol. 2013;14(10):R115. doi: 10.1186/gb-2013-14-10-r115. Erratum in: Genome Biol. 2015 May 13;16:96. doi: 10.1186/s13059-015-0649-6. PMID: 24138928; PMCID: PMC4015143. 2. Horvath S, Oshima J, Martin GM, Lu AT, Quach A, Cohen H, Felton S, Matsuyama M, Lowe D, Kabacik S, Wilson JG, Reiner AP, Maierhofer A, Flunkert J, Aviv A, Hou L, Baccarelli AA, Li Y, Stewart JD, Whitsel EA, Ferrucci L, Matsuyama S, Raj K. Epigenetic clock

for skin and blood cells applied to Hutchinson Gilford Progeria Syndrome and ex vivo studies. Aging (Albany NY). 2018 Jul 26;10(7):1758-1775. doi: 10.18632/aging.101508. PMID: 30048243; PMCID: PMC6075434. 3. Hannum G, Guinney J, Zhao L, Zhang L, Hughes G, Sadda S, Klotzle B, Bibikova M, Fan JB, Gao Y, Deconde R, Chen M, Rajapakse I, Friend S, Ideker T, Zhang K. Genome-wide methylation profiles reveal quantitative views of human aging rates. Mol Cell. 2013 Jan 24;49(2):359-367. doi: 10.1016/j.molcel.2012.10.016. Epub 2012 Nov 21. PMID: 23177740; PMCID: PMC3780611. 4. Levine ME, Lu AT, Quach A, Chen BH, Assimes TL, Bandinelli S, Hou L, Baccarelli AA, Stewart JD, Li Y, Whitsel EA, Wilson JG, Reiner AP, Aviv A, Lohman K, Liu Y, Ferrucci L, Horvath S. An epigenetic biomarker of aging for lifespan and healthspan. Aging (Albany NY). 2018 Apr 18;10(4):573-591. doi: 10.18632/aging.101414. PMID: 29676998; PMCID: PMC5940111. 5. Lu AT, Quach A, Wilson JG, Reiner AP, Aviv A, Raj K, Hou L, Baccarelli AA, Li Y, Stewart JD, Whitsel EA, Assimes TL, Ferrucci L, Horvath S. DNA methylation GrimAge strongly predicts lifespan and healthspan. Aging (Albany NY). 2019 Jan 21;11(2):303-327. doi: 10.18632/aging.101684. PMID: 30669119; PMCID: PMC6366976. 6. Sayed N, Huang Y, Nguyen K, Krejciova-Rajaniemi Z, Grawe AP, Gao T, Tibshirani R, Hastie T, Alpert A, Cui L, Kuznetsova T, Rosenberg-Hasson Y, Ostan R, Monti D, Lehallier B, Shen-Orr SS, Maecker HT, Dekker CL, Wyss-Coray T, Franceschi C, Jojic V, Haddad F, Montoya JG, Wu JC, Davis MM, Furman D. An inflammatory aging clock (iAge) based on deep learning tracks multimorbidity, immunosenescence, frailty and cardiovascular aging. Nat Aging. 2021 Jul;1:598-615. doi: 10.1038/s43587-021-00082-y. Epub 2021 Jul 12. Erratum in: Nat Aging. 2021 Aug;1(8):748. doi: 10.1038/s43587-021-00102-x. PMID: 34888528; PMCID: PMC8654267.

OTHER

P155- THE ACCURACY OF ISAR AND TSAR SCREENING TOOLS FOR PREDICTING ADVERSE OUTCOMES FOR OLDER PATIENTS IN EMERGENCY DEPARTMENTS.

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Background: As global populations age, Taiwan is expected to become a super-aged society by 2025. Emergency departments (ED) serve as a critical access point for older patients, who have unique and complex care needs that encompass medical, cognitive, emotional, social, and environmental factors. Additionally, signs and symptoms of various illnesses can present differently in this population, complicating diagnosis and treatment [1]. This often leads to longer hospital stays, higher medical costs, and an increased demand for social support services [1, 2]. Over 70% of standard ED assessments do not adequately evaluate the overall functional status of older patients [3], highlighting the urgent need for timely interventions. By utilizing screening tools to identify high-risk individuals early, healthcare providers can enhance outcomes, delay disability, reduce resource utilization, and alleviate caregiver burdens [4, 5]. The Identification of Seniors at Risk (ISAR) screening tool [4] has been translated and used in many countries and has shown appropriate psychometric properties. However, it was developed in Western countries, which significantly differ from Taiwan in terms of healthcare systems and how people seek healthcare. Consequently, the Taiwan Seniors at Risk (TSAR) screening tool was created to better address these local needs [6]. This study aimed to examine the predictive accuracy of the ISAR and TSAR screening tools in identifying adverse outcomes for older patients in the ED. **Methods:** We conducted a longitudinal study in the ED of two tertiary-care medical centers in Taiwan. Patients were eligible for inclusion if they were 65 or older, had Taiwan Triage and Acuity Scale levels between 2 and 5, and were able to communicate independently. The baseline data collection included: demographic factors, medical diagnosis in the ED, the Charlson Comorbidity Index, TSAR, ISAR and the Modified Katz Index of Independence in Activities of Daily Living. The primary outcome was a composite of adverse events, including emergency department revisits, rehospitalization, death, nursing home admission, and functional decline, assessed within 72 hours and 30 days post-discharge. **Results:** A total of 605 older patients were included in the final analysis. For the 30 days post-discharge, the positive likelihood ratios ranged from 1.15 for ISAR to 1.59 for TSAR, while the negative likelihood ratios ranged from 0.43 for TSAR to 0.57 for ISAR. Sensitivity varied from 76% for TSAR to 85% for ISAR, and specificity ranged from 22% for ISAR to 51% for TSAR. The area under the curve (AUC) was 0.63 for ISAR and 0.72 for TSAR. Moreover, TSAR demonstrated a significant odds ratio of 1.46 (95% CI: 1.09–1.95, p=0.011) for predicting adverse outcomes within 72 hours, whereas ISAR's odds ratio was 1.25 (95% CI: 0.98–1.59, p=0.06). For 30-day predictions, TSAR's odds ratio increased to 1.69 (95% CI: 1.38–2.06, p<0.001), while ISAR's was 1.25 (95% CI: 1.08–1.45, p=0.003). **Conclusion:** TSAR outperformed ISAR in predicting adverse outcomes at both 72 hours and 30 days post-discharge. While ISAR performed reasonably well, its statistical significance was weaker, indicating that TSAR is more effective for clinical use in predicting adverse events. **Keywords:** ISAR, TSAR, adverse outcome. **Disclosures:** No conflicts of interest. **References:** 1. Tavares JPA, Sa-Couto P, Boltz M, Capezuti E. Identification of Seniors at Risk (ISAR) in the emergency room: A prospective study. Int Emerg Nurs 2017;35:19-24 doi: 10.1016/j.ienj.2017.05.008 [published Online First: 20170624]. 2. Conneely M, Leahy S, Dore L, et al. The effectiveness of interventions to reduce adverse outcomes among older adults following Emergency Department discharge: umbrella review. BMC Geriatr 2022;22(1):462 doi: 10.1186/s12877-022-03007-5 [published Online First: 20220528]. 3. Wilber ST, Blanda M, Gerson LW. Does functional decline prompt emergency department visits and admission in older patients? Acad

Emerg Med 2006;13(6):680-2 doi: 10.1197/j.aem.2006.01.006 [published Online First: 20060411]. 4. McCusker J, Bellavance F, Cardin S, Trépanier S, Verdon J, Ardman O. Detection of older people at increased risk of adverse health outcomes after an emergency visit: the ISAR screening tool. J Am Geriatr Soc 1999;47(10):1229-37 doi: 10.1111/j.1532-5415.1999.tb05204.x. 5. McCusker J, Warburton RN, Lambert SD, Belzile E, de Raad M. The Revised Identification of Seniors At Risk screening tool predicts readmission in older hospitalized patients: a cohort study. BMC Geriatr 2022;22(1):888 doi: 10.1186/s12877-022-03458-w [published Online First: 20221122]. 6. Cheng WW. The Development and Validation of Screening Tools for Taiwan Seniors at Risk (TSAR) in Emergency Department. . National Cheng Kung university, 2023.

P156- PHYSICAL FRAILTY AS A RISK FOR REPORTING URINARY INCONTINENCE.

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Background: Urinary incontinence is defined as any complaint of involuntary loss of urine [1, 2]. Frailty is a clinical syndrome in ageing process [3] and there is a relationship between this syndrome and urinary incontinence. The purpose of this study was to investigate the risk of older adults report urinary incontinence in the presence of physical frailty. **Methods:** This prospective cohort study included 1,605 participants aged ≥65 to 89 years from wave 6 (2012-2013) of the English Longitudinal Study of Ageing (ELSA). The frailty was defined as presence of Fried frailty phenotype (three of five characteristics: weight loss, weakness, slowness, exhaustion, and low level of physical activity) [3]. Urinary incontinence was self-reported. The participants included had no diagnosis of frailty and reported absence of urinary incontinence on wave 2 (2004-2005). It was performed descriptive analyse, chi-square test was performed to test the association between frailty and urinary incontinence. Cox regression models adjusted by sex, age, wealth, physical exercise, smoking habits, alcohol intake, chronic diseases and memory impairment was performed to investigate the association between frailty and incontinence urinary. **Results:** 50.4% were female, 59.6% were aged 70-79 years, 52.8% were moderate physically active, 57.9% were former smokers, 41.2% were frequent alcohol drinkers, 46.4% were overweight. Despite of frailty, 44.5% were classified as pre-frail and 11% as frail. And 12% reported urinary incontinence. The prevalence of urinary incontinence was 12.2% in those with pre-frailty and 26.1% in those with frailty ($p<0.001$). In adjusted analysis, the risk of reporting urinary incontinence was no significant in those with pre-frailty (HR: 1.45; 95% CI: 0.98-2.14) and in those with frailty this risk was 2.42 (95% CI: 1.47-3.99) compared to no frailty. **Conclusion:** During follow-up, the risk of older adults reporting urinary incontinence was significantly higher in those with frailty compared to no frailty. This reenforce the importance of the muscle mass in maintaining all body structures during the ageing process. **Keywords:** Urinary incontinence, frailty, aging, older adults. **Disclosures:** The authors declared no competing interests. **References:** 1. ABRAMS, Paul et al. The standardisation of terminology in lower urinary tract function: report from the standardisation sub-committee of the international continence society. Urology, [S.L.], v. 61, n. 1, p. 37-49, jan. 2003. Elsevier BV. http://dx.doi.org/10.1016/s0090-4295(02)02243-4. 2. Haylen, Bernard T. et al. An international urogynecological association (IUGA)/international continence society (ICS) joint report on the terminology for female pelvic floor dysfunction. Neurourology And Urodynamics, [S.L.], v. 29, n. 1, p. 4-20, 25 nov. 2009. Wiley. http://dx.doi.org/10.1002/nau.20798. 3. Fried LP, Tangen CM, Walston J, Newman AB, Hirsch C, Gottdiener J, Seeman T, Tracy R, Kop WJ, Burke G, McBurnie MA; Cardiovascular Health Study Collaborative Research Group. Frailty in older adults: evidence for a phenotype. J Gerontol A Biol Sci Med Sci. 2001 Mar;56(3):M146-56. doi: 10.1093/gerona/56.3.m146. PMID: 11253156.

P157- ENHANCING PREDICTIVE ACCURACY BY INTEGRATING THE CLINICAL FRAILTY SCALE (CFS) AND IDENTIFICATION OF SENIORS AT RISK (ISAR) INTO THE TRADITIONAL TRIAGE SYSTEM.

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Background: As the population ages, patients aged 65 and older account for 32% of all emergency department (ED) visits in Taiwan, contributing to 41% of overall ED costs [1]. Older adults are the most rapidly growing group of patients visiting ED, and they have significantly increased risks of adverse outcomes after an ED visit, including revisits, hospitalizations, functional decline, and mortality [2]. The current triage system does not adjust for age, often underestimating the severity of older patients [3]. Therefore, previous studies have suggested integrating the Clinical Frailty Scale (CFS) with the triage system to better assess these patients' needs [3-5]. Moreover, the Identification of Seniors at Risk (ISAR) screening tool has been translated and utilized in many countries, and is recognized as a gold standard for identifying high-risk older patients [2, 6]. This study compares the predictive accuracy

of the traditional triage system with the combined use of the CFS and ISAR tools in forecasting adverse outcomes in older patients. **Methods:** We conducted a longitudinal study in the ED of two tertiary-care medical centers in Taiwan. Patients were eligible for inclusion if they were 65 or older, had Taiwan Triage and Acuity Scale (TTAS) [7] levels between 2 and 5, and were able to communicate independently. The baseline data collection included: demographic factors, medical diagnosis in the ED, the Charlson Comorbidity Index, TTAS, CFS, ISAR and the Modified Katz Index of Independence in Activities of Daily Living. The Triage Frailty Acuity Scale (TFAS) was developed based on the CFS score. Patients with scores of 1 to 3 retained their original TTAS level, while those with scores of 4 to 9 had their TTAS score increased by one level [3]. The primary outcome was a composite of adverse events, including ED revisits, rehospitalization, death, and functional decline, assessed within 30 days post-discharge. **Results:** The study involved 605 older patients, with 404 completing the follow-up. Among these, 231 patients (57.1%) experienced at least one adverse outcome within 30 days of discharge. Notably, this group was predominantly classified as TTAS level 3-4 (89.3%) and had CFS scores ranging from 4 to 9 (92.3%). When incorporating the CFS into the triage system, the sensitivity and specificity for TFAS were 88% and 46%, respectively, while TTAS had values of 77% and 23%. Both TFAS and TTAS exhibited similar predictive abilities for adverse outcomes within 30 days of discharge, with Area Under the Curve (AUC) values of 0.63 and 0.62, respectively. Furthermore, TFAS demonstrated the odds ratio (OR) of 2.08 (95% CI, 1.45-2.96, $p<0.001$), with its AUC also increasing to 0.68 when paired with ISAR. For TTAS, the OR was 1.99 (95% CI, 1.36-2.88, $p<0.001$), and the AUC improved to 0.68 when combined with ISAR. **Conclusion:** When incorporating the CFS into the triage system, TFAS did not show a significant improvement over TTAS in predicting adverse outcomes within 30 days of discharge. However, combining either system with ISAR enhanced predictive accuracy. Utilizing multiple assessment tools may better identify high-risk groups that require targeted evaluation and early intervention. **Keywords:** TTAS, TFAS, CFS, ISAR, adverse outcomes. **Disclosures:** No conflicts of interest. **References:** 1. Ministry of Health and Welfare. Statistical annual report of medical care, National Health Insurance, 2021. Available at: https://dep.mohw.gov.tw/dos/lp-5103-113.html. 2. Aminzadeh F, Dalziel WB. Older adults in the emergency department: a systematic review of patterns of use, adverse outcomes, and effectiveness of interventions. Ann Emerg Med 2002;39(3):238-47 doi: 10.1067/mem.2002.121523. 3. Ng CJ, Chien LT, Huang CH, et al. Integrating the clinical frailty scale with emergency department triage systems for elder patients: A prospective study. Am J Emerg Med 2023;66:16-21 doi: 10.1016/j.ajem.2023.01.002 [published Online First: 20230105]. 4. Pulok MH, Theou O, van der Valk AM, Rockwood K. The role of illness acuity on the association between frailty and mortality in emergency department patients referred to internal medicine. Age Ageing 2020;49(6):1071-79 doi: 10.1093/ageing/afaa089. 5. Chung HS, Choi Y, Lim JY, et al. Validation of the Korean Version of the Clinical Frailty Scale-Adjusted Korean Triage and Acuity Scale for Older Patients in the Emergency Department. Medicina (Kaunas) 2024;60(6) doi: 10.3390/medicina60060955 [published Online First: 20240608]. 6. McCusker J, Bellavance F, Cardin S, Trepanier S, Verdon J, Ardman O. Detection of older people at increased risk of adverse health outcomes after an emergency visit: the ISAR screening tool. J Am Geriatr Soc 1999;47(10):1229-37 doi: 10.1111/j.1532-5415.1999.tb05204.x. 7. Chiu HY, Chen LC, Lin XZ, Sang YY, Kang QJ, Chao YF. Current trends in emergency triage in Taiwan: the five-level triage system. Hu Li Za Zhi 2008;55(3):87-91.

P158- OCCUPATIONAL FALLS AND FRAILTY AMONG OLDER WORKERS: A PROSPECTIVE COHORT STUDY. M. Ryutaro[1], O. Akira[2] *((1) Department Of Work Systems And Health, Institute Of Industry Ecological Sciences, University Of Occupational And Environmental Health, Japan - Kitakyushu (Japan), (2) Department Of Work Systems And Health, Institute Of Industry Ecological Sciences, University Of Occupational And Environmental Health, Japan - Kitakyusyu (Japan))*

Background: Employment rates for older workers have been increasing in many developed countries and with it the number of occupational accidents related to falls among older workers. In a previous report, we showed that frailty is associated with occupational falls among older workers. However, some reports suggest that a history of falls is associated with frailty, and it is possible that frailty and occupational falls are interrelated. The purpose of this study was to examine whether a history of occupational falls is associated with the development of frailty. **Methods:** This prospective cohort study utilized an Internet survey targeting 5,000 workers aged 60 to 75 years. A baseline survey was carried out in September 2022, followed by a follow-up survey in October 2023. For the analysis, 2,475 participants were included after excluding individuals who had frailty at baseline or were lost to follow-up. Frailty was assessed using the Frailty Screening Index (FSI) based on the Fried phenotype model. The FSI comprises five questions addressing weight loss, low physical activity, low physical function, cognitive decline, and exhaustion. Occupational fall was defined as the experience of at least one fall at work in the past year. Data were analyzed using modified Poisson regression analysis (Poisson regression with a robust error variance) with frailty as the dependent variable and occupational fall as the explanatory variable to obtain the adjusted incidence risk ratio (IRR) and 95% confidence interval (CI). Statistical analyses were conducted using Stata MP software (version 18.0), with the significance level set at 5%. **Results:** Among the 2475 participants, 5.1% (n=127) had occupational fall at baseline, and 8.3% (n=206) had presenteeism during the follow-up period. The occupational fall group had a higher incidence of frailty than the non-occupational fall group (15.0% vs. 8.0%, $p<0.001$). In the multivariate logistic regression analysis, occupational fall was associated with frailty (IRR,

1.71; 95% CI: 1.08–2.70, p=0.021). **Conclusion:** Our findings demonstrate that occupational fall is significantly associated with frailty in older workers. Considering also previous findings suggesting that frailty is a risk factor for occupational fall, this study indicates that there is a bidirectional relationship between frailty and occupational fall. Employers who hire older workers need to focus on the management of both frailty and occupational fall. **Keywords:** Frailty, older workers, occupational fall, bidirectional relationship. **Disclosures:** This study was supported by the Japan Small- and Medium-Sized Enterprise Welfare Foundation (FULLHAPP), the UOEH Research Grant for Promotion of Occupational Health, the Japanese Society of Physical Therapy (JSPT031), and JSPS KAKENHI (24K20394).

P161- NATURAL UNDENATURED TYPE II COLLAGEN FROM ATLANTIC SALMON TO IMPROVE OSTEOARTHRITIS JOINT HEALTH. C. Bjerknes[1], C. Currie[2], B. Framroze[3] *((1) Alesund (Norway), (2) London (United Kingdom), (3)Menlo Park (United States))*

Background: Osteoarthritis (OA) is a highly prevalent chronic degenerative joint disease [1]. The hallmark of OA is pain, stiffness and impaired mobility impacting quality of life, limiting exercise capacity and adversely affecting health including through a loss of muscle mass and potentially increased risk of frailty [2, 3]. Undenatured type II collagen has emerged as a promising approach to modulate inflammation in the affected joints, reducing pain and improving function. An untapped source of undenatured type II collagen is from fish. Salmon bones are rich in undenatured natural type II collagen (NT-II). **Methods:** This six-month pilot study assessed the impact of NT-II in subjects with mild to moderate OA. Twenty-six subjects received NT-II and twenty-eight subjects placebo (maltodextrin). The primary endpoint was the WOMAC Osteoarthritis index, a highly validated, self-administered tool consisting of 24 items (questions) to assess joint pain, stiffness and function [4]. The key secondary endpoint was the Global Assessment Score (GAS) to provide an overall picture of individual health status. **Results:** NT-II showed a strong signal for improved joint health in adults suffering mild knee or hip (K-L grade 1) with a WOMAC total score reduction of 63% (figure 1). However, the efficacy signal progressively declined with more marked OA. Subjects with K-L grade 2 osteoarthritis showed only a 13% reduction in symptoms and those with more advanced joint damage (K-L grade 3) showed no benefit (figure 2). This resulted in a clinically meaningful reduction of almost 16% in the total WOMAC score reduction across all subjects (K-L grade 1-3). The patient Global Assessment Scale (GAS) score was consistent with the WOMAC data with a sustained and meaningful change in those with K-L grade 1 score and only limited changes in the other trial subjects. **Conclusion:** These results look encouraging for NT-II as a means to support healthy ageing especially for milder OA. This could help delay disease progression and support mobility. However, there was no convincing signal in participants with higher grade OA, as measured on X-ray. Interestingly, despite the clear radiographic differences between the subject groups in our study the baseline symptom scores, as measured by WOMAC, showed only small symptomatic differences. Future studies should employ stricter inclusion and exclusion criteria to increase participation of subjects more representative of the symptoms of mild, moderate and moderately severe joint disease. A high placebo response rate blunted the efficacy signal and resulted in a failure to show a statistically significant benefit compared to placebo. High placebo response rates have been noted as a challenge in OA studies. In our study, a subgroup of placebo subjects showed a marked placebo effect and a run-in period to exclude subjects with significant placebo response would have been prudent. Nevertheless, our data is supportive of a consistent efficacy benefit for joint health in subjects with milder forms of hip and knee OA. Confirmatory studies are planned for NT-II. **Clinical trial registry:** NCT05070871 ; https://clinicaltrials.gov. Disclosures: the authors are employees or consultants of Hofseth BioCare, the sponsor of the study. **References:** 1. Allen, K.D. et al. Epidemiology of osteoarthritis. Osteoarthritis cartilage. 2022. 30 (suppl 2): 184-195. 2. Basat S. et al. The Relationship Between Osteoarthritis and Sarcopenia in Geriatric Diabetic Patients. Sisli Etfal Hastan Tip Bul. 2021. 55 (suppl 4): 516-523. 3. Pegreffi, F. et al. Prevalence of Sarcopenia in Knee Osteoarthritis: A Systematic Review and Meta-Analysis. J. Clin. Med. 2023. 14 (suppl 4): 1532. 4. Goggins, J. et al. What WOMAC Pain Score Should Make a Patient Eligible for a Trial in Knee Osteoarthritis? J Rheumatol. 2005. 32: 540-542.

P162- COMPARISON OF FACTORS RELATED TO THE RISK OF FALLING IN ELDERLY DIABETIC AND NON-DIABETIC PATIENTS. K. Inoue[1], T. Okari[1], H. Oki[1] *((1) Tokyo Saiseikai Mukojima Hospital - Tokyo (Japan))*

Background: Diabetes is the most common lifestyle-related disease, and in our daily medical practice, we often come across elderly diabetic patients who have fallen. Fall prevention is the key to maintaining good ADL and extending healthy life expectancy. We therefore investigated whether there were any differences in the factors related to the fall risk between elderly diabetic and non-diabetic patients. **Methods:** We studied 42 patients aged 65 years or older (6 male and 36 female). The average age was 76.0 years (65-85 years). These patients were divided into two groups. Group A was diabetic patients and Group B was non-diabetic patients. Group A had 11 patients with an average age of 77.1 years. Group B had 31 patients with an average age of 76.3 years. We compared the following items between the two groups. Functional performance (walking speed, two-step test, one-leg stand test, five-repetition sit-to-stand test, grip strength, postural stability index (IPS), body composition (height, weight, BMI, limb circumference, skeletal muscle), and spinal pelvis parameters (pelvic anterior tilt (PI), lumbar lordosis (LL), pelvic tilt (PT), and sagittal vertical axis (SVA)) were compared using full spine X-ray photographs. IPS is an indicator of the posture which is defined by the formula as below. IPS = log [(stability limit interface area + body movement area)/body movement area]. A larger IPS indicates

higher postural stability. IPS was automatically measured and calculated using the Gravicoda made by ANIMA. **Results:** Five-repetition sit-to-stand test was 16.7 ± 9.4 seconds in Group A and 10.2 ± 2.1 seconds in Group B. The IPS was 1.0 ± 0.5 in Group A and 1.4 ± 0.4 in Group B. The SVA was 54.6 ± 56.6 mm in Group A and 21.7 ± 29.5 mm in Group B. Significant differences were observed between the two groups in these items. The five repetition sit-to-stand test reflects lower limb muscle strength, the IPS reflects balance ability, and the SVA is one of the spinopelvic alignment parameters that reflect posture. SVA of less than 50 mm is known to be an important indicator of good posture. **Conclusion:** In group A, there was a significant decrease in lower limb muscle strength and balance ability. Both are risk factors for falls, and it can be said that the risk of falling is higher in the group A than in the group B. There was also a significant difference in SVA, an indicator of posture. There are reports that poor SVA is a risk factor for falls, so it can be said that diabetic patients have a high risk of falling from this perspective as well. These findings indicate that to reduce the risk of falls in diabetic patients, it is necessary to provide interventions to improve posture, as well as lower limb muscle training and balance training. **Keywords:** Fall risk, diabetes, balance ability, spinopelvic alignment. **References:** Schwab et al, Radiographical Spinopelvic Parameters and Disability in the Setting of Adult Spinal Deformity, A Prospective Multicenter Analysis. Spine 38(13):p E803-E812, June 01, 2013. Yamada T, et al,: Influence of the Sagittal Vertical Axis on the Risk of Falls in Community-Dwelling Elderly People: A Retrospective Longitudinal Study, Spine Surg Relat Res 2020; 4(3): 237-241. Hagiya H, et al. Fall-related mortality trends in older Japanese adults aged ≥65 years: a nationwide observational study. BMJ Open 2019;9:e033462. doi:10.1136/bmjopen-2019-033462. Montero-Odasso M, et al. World guidelines for falls prevention and management for older adults: a global initiative. Age Ageing. 2022 Sep 2;51(9):afac205. doi: 10.1093/ageing/afac205.

P163- ASSOCIATION BETWEEN GERIATRIC SYNDROMES AND TRADITIONAL CHINESE MEDICINE CONSTITUTIONS IN OLDER ADULTS: A PROSPECTIVE OBSERVATIONAL STUDY.

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Background: Geriatric syndromes are prevalent and impactful, yet their association with Traditional Chinese Medicine (TCM) constitutions remains poorly understood. This study aims to explore the relationship between body constitutions and geriatric syndromes based on comprehensive geriatric assessment (CGA) in older adults. **Methods:** This prospective observational study recruited 100 participants aged 65 and older from a medical center in southern Taiwan between January 2020 and December 2021. Participants underwent CGA, including evaluations for depression, activities of daily living (ADLs), nutrition, cognition, comorbidities, frailty, and sensory impairments. TCM constitutions were classified using the Body Constitution Questionnaire (BCQ). Eligible participants were assessed for functional status and geriatric syndromes. Logistic regression and chi-squared tests were used to examine the associations between geriatric syndromes and abnormal TCM constitutions. **Results:** Among the 100 participants, 60% had abnormal body constitutions (Yang deficiency, Yin deficiency, or Phlegm-Stasis), and 40% had a balanced constitution. Individuals with abnormal constitutions were older (mean age 77.94 ± 6.90 years) compared to those with balanced constitutions (mean age 74.75 ± 6.75 years). Abnormal constitutions were significantly associated with impairments in hearing, sleep, urinary continence, ADLs, IADLs, and cognitive function (all $p<0.05$), but sarcopenia showed no significant statistical association. Logistic regression revealed that participants with 5-6 affected geriatric domains had a 5.83 times higher likelihood of developing abnormal constitutions, while those with 7 or more domains had a 34.54 times higher likelihood ($p=0.001$). Hearing impairment and sleep disturbances were identified as priority symptoms for distinguishing abnormal constitutions in older adults. **Conclusion:** Abnormal TCM constitutions are linked to key geriatric syndromes, including impairments in hearing, sleep, urinary continence, ADLs, IADLs, and cognition, while sarcopenia showed no significant association. The risk of abnormal constitutions increases with more affected geriatric domains, with hearing impairment and sleep disturbances being

primary indicators. These findings suggest that addressing specific geriatric impairments can help manage abnormal constitutions and support healthy aging.

P164- RELATIVE HANDGRIP STRENGTH AND METABOLIC SYNDROME IN KOREAN POSTMENOPAUSAL WOMEN: THE KOREA NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY (2014-2019). J. Baek[1], Y. Chung[1], E. Choi[1], H. Kim[1], S. Seo[1] *((1) Department Of Obstetrics And Gynecology At Yonsei University College Of Medicine - Seoul (Korea, Republic of))*

Background: In women, body component repositioning occurs as a result of aging and menopause, leading to an increase in fat and a decrease in muscle mass and strength. It has been thought that maintaining or improving muscle strength in older age may help reduce the risk of metabolic syndrome (MetS), and handgrip strength (HGS) has been used as a simple tool to assess muscle strength. However, the relationship between HGS and MetS remains unclear, with studies showing conflicting results. Therefore, this study aims to investigate the relationship among relative HGS (RHGS), MetS and the individual MetS criterion in Korean postmenopausal women. **Methods:** This cross-sectional study used data from the 2014-2019 Korean National Health and Nutrition Examination Survey. A total of 4,098 postmenopausal women aged 45-65 were included, after excluding those with thyroid disease, end-stage renal disease, malignancies, or missing data. RHGS was assessed by dividing maximum HGS by body mass index. The association between RHGS and MetS was analyzed using multivariate logistic regression. Participants were divided into quartiles by RHGS, and subgroup analyses were performed based on time since menopause and individual MetS criteria. **Results:** Compared to the lowest RHGS quartile, higher quartiles showed significantly lower odds of MetS in both adjusted and unadjusted models. For each MetS criterion (waist circumference, triglycerides, HDL, fasting glucose, and blood pressure), the odds ratios also decreased from quartile 1 to quartile 4, with significance varying across models and time since menopause. Subgroup analysis revealed stronger associations between RHGS and MetS in women beyond 10 years post-menopause, especially for waist circumference and triglycerides. **Conclusion:** Higher RHGS is significantly associated with a lower risk of MetS in Korean postmenopausal women. This inverse relationship is stronger in women beyond 10 years post-menopause, particularly for MetS criteria like waist circumference and triglycerides. These findings suggest that improving or maintaining muscle strength, as assessed by RHGS, may help reduce the risk of MetS in postmenopausal women. Regular strength assessments could aid in identifying women at higher risk, emphasizing the potential role of muscle strength in managing metabolic health during menopause. **Keywords:** Relative handgrip strength (RHGS), metabolic syndrome (MetS), postmenopausal women, muscle strength. **Disclosures:** The authors declared no competing interests. **References:** 1. Cruz-Jentoft AJ, et al. Age Ageing 2019;48:16-31. doi: 10.1093/ageing/afy169. 2. Günther CM, et al. J Hand Surg Am 2008;33:558-65. doi: 10.1016/j.jhsa.2008.01.008. 3. Wu Y et al. J Am Med Dir Assoc 2017;18:551.e17-551.e35. doi: 10.1016/j.jamda.2017.03.011. 4. Lee MR et al. Medicine (Baltimore) 2018;97:e13240. doi: 10.1097/MD.0000000000013240. 5. Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults. JAMA 2001;285:2486-97. doi: 10.1001/jama.285.19.2486. 6. Kweon, S. et al. Data resource profile: The Korea national health and nutrition examination survey (KNHANES). Int. J. Epidemiol. 2014, 43, 69–77. doi: 10.1093/ije/dyt228.

LP118- ASSOCIATION OF ORAL HEALTH AND SARCOPENIA AMONG COMMUNITY-DWELLING MIDDLE-AGED AND OLDER ADULTS IN CHINA: A CROSS-SECTIONAL SURVEY. X. Wei[1], F. Tan[1], E. Gong[1], R. Shao[1] *((1) Chinese Academy Of Medicine Science & Peking Union Medical College - Beijing (China))*

Background: Sarcopenia, characterized by loss of muscle strength, mass, and physical performance, is a significant contributor to adverse outcomes such as disability and reduced quality of life in older adults. Emerging evidence suggests a potential link between oral health and sarcopenia, as poor oral health may impair nutrition and systemic health. However, this association remains understudied in diverse community-dwelling populations. This study aimed to investigate the relationship between oral health status and sarcopenia among middle-aged and older adults in rural and urban communities in China. **Methods:** A cross-sectional study was conducted in one rural (Wuyuan county) and urban (Beijing city) setting between July and August in 2023. Community-dwelling residents who were aged 50 years and above, lived in the selected 36 communities/villages of nine townships by following a stratified sampling approach, and completed face-to-face survey. Oral health was measured by using the Oral Health Assessment Tool (OHAT) [1]. Sarcopenia is defined using low grip strength, slow gait speed, and loss of muscle mass (measured using the BIA method). Logistic regression was used to analyze the relationship between oral health status and sarcopenia. All data analysis was performed by using STATA. **Results:** A total of 2,826 participants (mean aged:61.27 ± 7.94 years, 55.48% female) completed the survey with all key measurements. Of them, 28.06% (n=790) had poor oral health status, and 21.59% (n=610) had sarcopenia. Compared with individuals with good oral health status, those with poor oral health status had a 41% higher likelihood of suffering from sarcopenia (Odds Ratio = 1.41, 95% CI: 1.12–1.78, P = 0.004), after adjusting socio-demographic characteristics, lifestyle factors and number of diseases. **Conclusion:** The study demonstrated that poor oral health status is significantly associated with a higher likelihood of sarcopenia among middle-aged and older adults. The OHAT is a reliable tool for screening oral health in older adults within community settings and can be used by trained non-professionals. These findings underscore the importance of promoting oral health as a potential strategy to reduce the risk of sarcopenia in aging populations. **Keywords:** Oral health,

sarcopenia, healthy ageing, older adults. **Disclosures:** The study was funded by the non-profit Central Research Institute Fund of Chinese Academy of Medical Sciences (Grant No.2022-ZHCH330-01) and Chinese Academy of Engineering (Grant No.2023-GJ-01). The authors have no conflicts of interest to declare. **Reference:** 1. Chalmers J M, King P L, Spencer A J, et al. The oral health assessment tool--validity and reliability [J]. Aust Dent J, 2005, 50(3): 191-9.

LP119- AGREEMENT BETWEEN DIFFERENT DIAGNOSTIC TESTS AND THE PREVALENCE OF SARCOPENIA AMONG OLDER PEOPLE WITH HIV IN THE UNITED STATES USING THE EWGSOP2.

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Background: Sarcopenia is prevalent (24.1%) among people with HIV (PWH) [1], bringing an additional burden to a population that experiences multimorbidity and polypharmacy. The body composition of PWH is highly influenced by newer antiretroviral therapy (ART) drugs that impact muscle mass and body fat. With updates in the algorithms to detect sarcopenia, obtaining current data to guide the clinical treatment of PWH is crucial. Using the revised consensus of the European Working Group on Sarcopenia in Older People (EWGSOP2), we investigated among PWH the: a) performance in different diagnostic tests; b) influence of age and sex on sarcopenia parameters; c) prevalence of sarcopenia. **Methods:** In this cross-sectional study, we enrolled PWH across three diverse sites in the United States: Seattle/WA, Cleveland/OH, Birmingham/AL. Participants were aged ≥50 years, in routine clinical care, on ART for ≥12 months, and HIV virally suppressed. Muscle strength was measured using handgrip strength (HGS) and the five times chair stand test (CST). Appendicular skeletal muscle (ASM) was estimated using full-body dual-energy X-ray absorptiometry scans, and after adjusted for height (ASM/height^2). Physical performance was measured using a 4-meter gait speed test (GS) and the Short Physical Performance Battery (SPPB). Participants were classified as having low values in each test using EWGSOP2 cutoffs [2]. Logistic regression models assessed the likelihood of presenting low values in different parameters. Agreement between tests was calculated using the kappa coefficient [3]. **Results:** We included 103 PWH (66.9% male) aged 60.9 ±6.8 years. When comparing HGS and CST, 16 (15.5%) PWH presented muscle weakness using HGS and 30 (29.1%) using CST. There was slight agreement (66.9%, k=0.07), and only six participants presented muscle weakness in both HGS and CST. In total, 40 (38.8%) PWH presented muscle weakness when considering HGS or CST. Men were more likely than women to present muscle weakness (OR=3.5, 95% CI=1.4-9.2, p=0.01) with no differences by age. For muscle mass, nine (8.7%) participants presented low values of ASM/height2. Low muscle mass increased slightly by age (OR=1.1, 95% CI=1.0-1.2, p=0.03) with no differences by sex. When comparing GS and SPPB results, we observed five (4.9%) participants with low performance using GS and seven (6.8%) using SPPB. There was slight agreement (90.3%, k=0.12), and only one participant presented low performance in both GS and SPPB. In total, 11 (10.7%) participants presented low performance when considering either GS or SPPB. There were no differences between men and women, and age was not associated with a higher likelihood of low performance. The prevalence of probable sarcopenia and sarcopenia was 33.9% (n=35) and 4.9% (n=5), respectively. All PWH with sarcopenia were male, with four aged 60-69 years old and one aged ≥70 years. None of the participants were identified as having severe sarcopenia. **Conclusion:** Different tests for muscle strength and physical performance recommended by the EWGSOP2 presented only slight agreement in detecting low values on those parameters. Men with HIV seem more susceptible to muscle weakness and sarcopenia when compared to women with HIV. **Keywords:** Body composition frailty, physical function, aging. **Disclosures:** The authors declared no competing interests. **Funding:** Research reported in this publication was supported by the National Institutes of Health under Awards Number R21AG082537 (PI: Oliveira VHF) and R01NR018391 (PIs: Webel AR & Willig AL) The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health. **References:** 1. Oliveira VHF, Borsari AL, Webel AR, Erlandson KM, Deminice R. Sarcopenia in people living with the Human Immunodeficiency Virus: a systematic review and meta-analysis. Eur J Clin Nutr [Internet]. 2020 Jul 27;74(7):1009–21. 2. Cruz-Jentoft AJ, Bahat G, Bauer J, Boirie Y, Bruyère O, Cederholm T, et al. Sarcopenia: revised European consensus on definition and diagnosis. Age Ageing. 2019 Jan 1;48(1):16–31. 3. Altman D. Practical Statistics for Medical Research. London: Chapman and Hall; 1991.

LP120- ASSOCIATION OF SARCOPENIA WITH INSULIN RESISTANCE INDEX, GLYCOSYLATED SERUM ALBUMIN, AND SERUM URIC ACID IN COMMUNITY-DWELLING ELDERLY TYPE 2 DIABETES PATIENTS.

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Background: With the aging population, the incidence of community-dwelling elderly patients with type 2 diabetes mellitus (T2DM) and sarcopenia is on the rise. Recent studies on the pathogenesis of these conditions indicate that the homeostasis model assessment of insulin resistance (HOMA-IR), glycosylated serum albumin (GSA), and serum uric

acid (UA) may significantly influence disease progression [1-3]. Further investigation into these relationships is crucial for formulating preventive strategies against sarcopenia in community-dwelling T2DM patients. **Methods:** This study is a cross-sectional study based on natural populations. A total of 932 community-dwelling elderly individuals in Chengdu (aged 60 years and older) who met the criteria were included, and 352 of them with T2DM were selected as the research objects. Data collected encompassed general information, clinical indicators, and physical function metrics. Patients were categorized into sarcopenia group and non-sarcopenia group based on the presence of sarcopenia [4]. Univariate and multivariate binary logistic regression analyses were conducted to assess the correlations between the above indicators and sarcopenia in T2DM patients. **Results:** The prevalence of sarcopenia among patients with type 2 diabetes mellitus (T2DM) was 23.3% (82 out of 352). Compared to the non-sarcopenia group, patients in the sarcopenia group exhibited significantly lower levels of HOMA-IR, GSA, and UA, with statistical significance ($P<0.05$). There were no significant differences in serum cystatin C, creatinine, and glycosylated hemoglobin between the two groups ($P>0.05$). Multivariate binary logistic regression analysis revealed that male gender, advanced age, and a higher frailty scale total score were independent risk factors for sarcopenia in T2DM patients ($P<0.05$), whereas a higher BMI was identified as an independent protective factor ($P<0.05$). **Conclusion:** The levels of HOMA-IR, GSA, and UA in elderly T2DM patients with sarcopenia were significantly reduced. These parameters may serve as valuable indicators for the prediction of sarcopenia development in this population. **Keywords:** Elderly type 2 diabetes, sarcopenia, insulin resistance index, serum uric acid. Clinical Trial Registry: ChiCTR2300070831; https://www.chictr.org.cn/. **Disclosures:** The study is funded by the National Key Technologies R&D Program provided by the Ministry of Science and Technology of the People's Republic of China (Project Grant #2022YFC3602300, Subproject Grant # 2022YFC3602303). The authors declared no competing interests. **References:**
1. Ma YZ, et al. Chin J Diabetes 2024,32(3):231-234. DOI:10.3969/j.issn.1006-6187.2024.03.015. 2. Izzo A, et al. Nutrients 2021 Jan 9;13(1):183. doi: 10.3390/nu13010183. 3. Ji CH, et al. Chin J Mult Organ Dis Elderly 2024,23(6):436-441. doi: 10.11915/j.issn.1671-5403.2024.06.095. 4. Chen LK, et al. J Am Med Dir Assoc. 2020;21(3):300–307.e2. doi: 10.1016/j.jamda.2019.12.012

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