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ABSTRACTS

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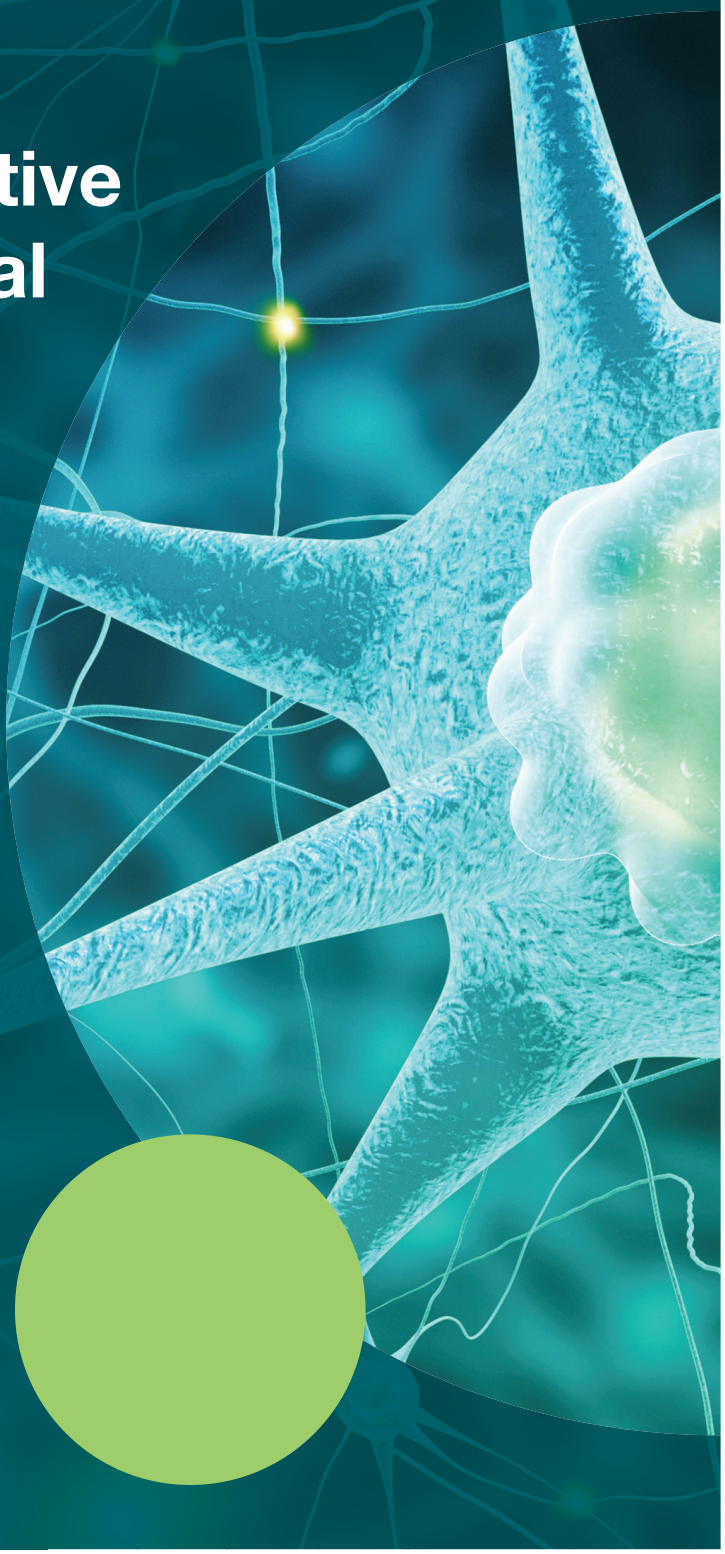

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POSTER

FRAILTY IN CLINICAL PRACTICE AND PUBLIC HEALTH

P2- PILOT STUDY ON CHANGES IN GRIP STRENGTH, TIME UP AND GO, PROMIS-PHYSICAL FUNCTION BEFORE AND AFTER BONE MARROW TRANSPLANT FOR HEMATOLOGIC MALIGNANCIES: FRAILTY AND SARCOPENIA RESEARCH IMPLICATIONS.

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Background: There has been growing interest in integrating frailty and sarcopenia research advances into medical specialties. In oncology, the clinical value of geriatric assessment in bone marrow transplant (BMT) patients, particularly disability indices obtained before BMT, has been established and is now recommended by professional societies for risk assessment/prognosis. Whether insight into changes in physical frailty-related measures before and after a major stress such as BMT could be useful to enhance the identification of vulnerabilities not routinely captured by traditional assessments, and novel intervention opportunities remain to be studied. **Objectives:** To explore pre- vs. post BMT changes in grip strength (GS) and time-up-and-go (TUG), traditional measures, and correlations of GS and TUG changes with general physical function (PF) status modifications. **Methods:** Secondary data analyses using information from 8 patients who underwent BMT in the Miami Cancer Institute, Florida, between June 2018 and April 2019. Standardized Patient-Reported Outcomes Measurement Information System (PROMIS)-PF scores, GS, and TUG data were abstracted analyzed. Pre- and post-BMT measures were obtained 1.5 months (median time) before and 6.1 months after BMT, respectively. Pre- vs. post-BMT differences were assessed using t-tests for paired data, and Pearson's correlation coefficients calculated. **Results:** Patient age range was 45-70 (mean $\pm$ standard deviation: 57.5$\pm$9.2) years old. There was a positive correlation between age and PROMIS-PF scores (r=.80, p=.019), with those above 60 years old experiencing the most improvement in PF (PROMIS-PF scores increased 7.9 points; 95% confidence interval: 5.0-10.8; p=.007). Mean grip strength of patients declined 4.4 (1.2- 7.6; p=.014) Kg in the same period. Post-BMT prevalence of probable sarcopenia (GS<27 [men] and <16 kg [women]) was 50%. There was no significant pre- vs. post-BMT change in TUG (p=.399). **Conclusion:** PF improved after BMT, particularly in adults 60 years and older, despite concomitant muscle strength loss. Our results raise the hypothesis, which is yet to be formally tested, that early PF improvement post BMT might result from the correction of deficits not linked to muscle dysfunction, and that GS monitoring might be useful for identification and treatment of clinically meaningful and potentially modifiable sarcopenia after BMT for optimization of health status.

P3- A 'SNAP-SHOT' VISUAL ESTIMATION OF HEALTH IS ASSOCIATED WITH FRAILTY IN OLDER WOMEN.

Patrik Bartosch[1,2], Linnea Malmgren[1,2,3], Jimmie Kristensson[4,5], Fiona E. McGuigan[1,2], Kristina E. Akesson[1,2] *(1. Department of Clinical Sciences, Lund University, Malmo, Sweden; 2. Department of Orthopaedics, Skane University Hospital, Malmo, Sweden; 3. Department of Geriatrics, Skane University Hospital, Malmo, Sweden; 4. Department of Health Sciences, Proactive an integrated care research unit, Faculty of Medicine, Lund University, Lund, Sweden; 5. The Institute for Palliative Care, Lund University and Region Skane, Lund, Sweden)*

Background: In every patient meeting, an instant visual assessment by the clinician helps to form an estimation of health, vital for treatment decisions. Our study compares this "clinical eye" with a quantitative measure of frailty. **Objectives:** Firstly, describe frailty in women looking healthy and unhealthy, and determine the correlation between estimated and quantified health status. Secondly, determine what proportion of variation in the frailty index is reflected in a visual estimation. Thirdly, explore the impact on mortality from combinations of visual health and frailty. **Methods:** The Osteoporosis Prospective Risk Assessment cohort (OPRA) consists of 1044 community-dwelling women all aged 75 at inclusion, followed up to 15-years. At baseline a visual estimation of health status (VHS) was assessed within 15s from first sight; stratified into tertiles 'Poor', 'Intermediate' and 'Good' VHS. A 13-variable frailty index (FI) was also created; stratified into tertiles representing 'Frail' (FI>0.22), 'Pre-frail' (0.13-0-21) and 'Robust' (0.00-0.12). To test the overall relationship between VHS and frailty, linear regression and correlation were used. To examine 10-year mortality based on combinations of VHS and frailty, cross tabulation and chi-square were used. **Results:** In women with 'Poor' VHS, median frailty was higher (FI 0.22(0.01-0.40)) than in those with 'Good' VHS (0.12(0.02-0.67), p<0.001). Of women with 'Poor' VHS, 53% were classified as frail, and 52% of women with 'Good' VHS, were robust. VHS correlated with frailty but was strongest in those looking unhealthy (rs=0.424, p<0.001) and weakest in those looking healthy (rs=0.129, p=0.021). VHS accounted for 21.7% of the variation in the frailty index (p<0.001). In women with 'poor' VHS, being frail was associated with higher 10-year mortality compared to pre-frail and robust, 49.2% vs 34.4%, p=0.005. In other combinations no association was found. **Conclusion:** Our study shows that a 'snap-shot' visual estimation of health was associated with quantified frailty, particularly in women looking unhealthy. Results also indicate that women who look unhealthy should have frailty assessed, as a possible way to identify those at highest risk of adverse outcomes.

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P4- MEAN MORNING HOURLY ACTIVITY AND VARIANCE PREDICT 5-YEAR FRAILTY DECLINE IN A NATIONAL SAMPLE. Megan Huisingh-Scheetz[1], Kristen Wroblewski[2], L. Philip Schumm[2], Donald Hedeker[2] *(1. University of Chicago, Geriatrics and Palliative Medicine, Chicago, USA; 2. University of Chicago, Public Health Sciences, Chicago, USA)*

Background: High resolution wearable accelerometry may allow remote assessment and monitoring of frailty in the community. Whether and which aspects of mobility patterns meaningfully predict frailty decline are unknown. In a nationally representative sample of community-dwelling older adults, we have previously shown that frail adults are differentiated uniquely by their low morning hour activity and by their high between- and within-subject (WS) hourly activity variance across awake hours of the day in cross-section. **Objective:** The objective of this study was to determine whether mean morning hourly activity and WS morning hourly activity variance were related to 5-year frailty progression in a national sample. **Methods:** Using free-living wrist accelerometry data collected from respondents participating in the 2010-11 and 2015-16 rounds of the National Social Life, Health and Aging Project (n=471), we first employed a mixed-effects location scale model to generate mean morning (7:00am-11:00 am) hourly activity z-score (counts per minute) and WS morning hourly activity variance z-score for each participant, adjusted for time of day, day of week and month of wear. Second, the 5-year adapted frailty phenotype scores (range 0-4) were then regressed on baseline frailty scores, mean morning hourly activity z-scores, WS morning hourly activity variance, demographics and comorbidities (adapted Charlson's comorbidity index). **Results:** After adjusting for baseline frailty and covariates, lower mean morning hourly activity significantly predicted worse frailty scores 5 years later (β=-0.13, p=0.02). Lower morning hourly activity WS variance independently predicted worse frailty 5 years later (β=-0.12) but at a significance level of p=0.10. **Conclusions:** These findings indicate that lower and consistently lower morning activity of community-dwelling older adults accelerates frailty progression. These findings further lend support to the complexity and potential value of biometric data like wrist accelerometry for remote frailty monitoring.

P6- ASSOCIATION BETWEEN FRAILTY STATUS AND CPR OUTCOMES IN OLDER VETERANS. Dominique Tosi[1], Lorena Burton[2], Marlena Fernandez[2], Iriana Hammel[1,2], Andrew Quartin[1,3,4], Jorge Ruiz[2,3,4] *(1. University of Miami/Jackson Health System, FL, USA; 2. Miami VAHS GRECC, FL, USA; 3. Bruce W. Carter Miami VAMC, Medical Service, USA4U of Miami Miller School of Medicine, Miami, FL, USA)*

Background: Frailty is characterized by an increased vulnerability to stressors due to multisystemic dysfunction and diminished reserve that increases the risk for hospitalizations and mortality. Hospitalized frail older adults may be more likely to suffer in-hospital cardiac arrests (IHCA) leading to a lower likelihood of return of spontaneous circulation (ROSC), and higher post-CPR in-hospital mortality. **Objectives:** Determine the association between frailty status and ROSC and post-ROSC in-hospital mortality in older Veterans. **Methods:** Retrospective cohort study of Veterans aged >=60 years who underwent CPR after IHCA at a VA Medical Center from 2017-2020. Veterans were followed until hospital discharge or death. A 31-item VA Frailty Index (VA-FI) was generated from electronic health records (EHR). Veterans were categorized as non-frail (FI<0.21) and frail (FI>=0.21). The number of Veterans surviving CPR was determined by whether they achieved ROSC. Proportions of Veterans who survived CPR among frail and non-frail were compared using a chi-square test. Of those who survived CPR, in-hospital mortality was determined by reviewing EHR. After adjusting for age, gender, race, ethnicity, and BMI, we performed two multivariate binomial logistic regression (BLR) models and odds ratios (OR) with 95% confidence intervals (CI): 1) ROSC as dependent and frailty as independent variables; 2) Post-ROSC in-hospital mortality as dependent and frailty status as independent variables. **Results:** A total of 116 veterans had IHCA and underwent CPR, mean age 72.60 (SD=7.2) years, 96.55% (n=112) male, 51.72% (n=60) Caucasian, 91.37% (n=106) non-Hispanic, 31.03% (n=36) non-frail and 68.97% frail (n=80). ROSC was achieved in 63.79% (n=74). There were no group-based differences in ROSC according to frailty status: non-frail (69.44%, n=25) and frail (61.25%, n=49), p=0.395. Among CPR survivors, in-hospital mortality was higher in the frail (n=35, 71.3%) as compared to the non-frail (n=13, 46.4%) group (p<0.034). However, in BLR frailty was not associated with ROSC, adjusted OR:0.73 (95%CI=.28-1.90), p=.521, nor post-ROSC in-hospital mortality adjusted OR:2.54 (95%CI=.75-8.55), p=.133. **Conclusion:** Frailty was not associated with ROSC. Although there was a higher post-ROSC in-hospital mortality in the frail group, the association was not significant. Future studies should determine other factors that might influence cardiac arrest survival and outcomes.

P7- SIGNIFICANT PSYCHOSOCIAL INFLUENCE IN FRAIL PEOPLE LIVING WITH HIV IN MALAYSIA. Siti Azdiah Abdul Aziz[1], Meng Li Chong[2], Megan McStea[2], Pui Li Wong[3], Sasheela Ponnampalavanar[3], Iskandar Azwa[3], Adeeba Kamarulzaman[3], Shahrul Bahyah Kamaruzzaman[4], Reena Rajasuriar[5] *(1. Faculty of Pharmacy, National University of Malaysia (UKM), Kuala Lumpur, Malaysia; 2. Centre of Excellence for Research in AIDS (CERiA), University of Malaya, Kuala Lumpur, Malaysia; 3. Infectious Disease Unit, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia; 4. Geriatric Unit, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia; 5. Department of Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia)*

Background: Antiretroviral therapy usage has increased the lifespan among people living with HIV (PLWH). However, high incidence and early appearance of aging-related conditions

such as frailty, pose as a new threat to this population. **Objectives:** We aimed to characterize frailty by comparing health domains consisting of psychosocial, functional and physical deficits between frail PLWH and matched controls; identify associated risk factors and the impact on negative health outcomes including mortality risk score, quality of life, healthcare utilization, functional disability and history of falls in non- predominantly young and virally suppressed PLWH. **Methods:** Individuals on follow-up at an infectious disease clinic in a tertiary institution aged >25 years, on suppressive antiretroviral therapy > 12 months, not pregnant and without acute illness were recruited. Frailty instruments included Frailty phenotype (FP), FRAIL scale (FS) and Frailty index (FI). FI health deficits were categorized into health domains (psychosocial, functional and physical) and used as standard comparator to characterize frailty. Health domains of frail PLWH were compared with frail matched controls. Regression analyses were applied to explore associated risk factors and health-related frailty outcomes. **Results:** We recruited 336 PLWH. Majority were male (83%), Chinese (71%) with CD4+ count 561 (397-738) cells/μl. Frailty prevalence among PLWH were 7% (FP); 16% (FS) and 22% (FI). Proportions of health domains were similarly distributed among frail PLWH measured by different frailty instruments. When compared with HIV-uninfected controls, only psychosocial dominance was obvious among the PLWH, but not in functional and physical domains. Identified frailty risk factors included poor nutritional status, higher baseline CD4+ count, depression, metabolic syndrome, higher hsCRP and history of AIDS-defining illness. Frailty influenced the risk for negative health outcomes including increased mortality risk scores, poor QOL, frequent healthcare utilization and increased functional disability ($p<0.05$). **Conclusion:** This study highlighted the importance of psychosocial influence in frailty among treated PLWH in a multi-ethnic, Asian setting.

P8- COMPARISON OF THE FRAILTY JUDGMENT CRITERIA BY GRIP STRENGTH MEASUREMENT THAT ALLOWS FOR REACTION TIME. Yasuo Suzuki[1,2], Yasumoto Matsui[2], Yuji Hirano[2], Izumi Kondo[2], Tetsuya Nemoto[2], Masanori Tanimoto[2], Hidenori Arai[2] *(1. Nihon Fukushi University, Japan; 2. National Center for Geriatrics and Gerontology, Japan)*

Background: We have developed a new method of measuring the time response of grip strength and have evaluated the motor function in the geriatric population. Not only the maximum muscle strength but also the agility of the motion should affect the judgment of frailty, but the time response of grip strength has not been adequately examined. **Objectives:** To assess the extent to which the time response of grip strength is related to the Fried and the "Kihon Checklist" (KCL) frailty criteria commonly used in Japan. **Methods:** A total of 248 patients (94 males and 154 females with an average age of 78.2±6.0 years) who visited the Integrated Healthy Aging Clinic (Locomo-Frail outpatient clinic in Japanese) of our Hospital were included in the study. The reaction starting time (RST), time constant (TC), slope of force rise (FRS), and maximum value of the force (MVF) were measured as four indicators of grip force reaction. The relationships between these 4 indicators and the judgment of the Fried and KCL frailty criteria were examined by ANOVA. **Results:** Among the indicators of grip strength, the MVF was significantly different in all categories of the Fried criteria for both the left and right hands in both males and females. However, a significant difference was shown only for the left hand in the KCL frailty criteria. In the Fried frailty criteria, RST was different between frail and pre-frail for the right hand in males, and TC was different between frail and pre-frail for the right hand in females. Furthermore, FRS was different between frail and robust for both the left and right hands in both males and females and was different between pre-frail and robust for the left hands in females. However, in the KCL frailty criteria, FRS was significantly different for the left hand in both males and females. **Conclusion:** Compared to the Fried frailty criteria, the KCL frailty criteria tends to show differences in the index of grip strength of the left hand. With time-dependent grip strength items, differences tend to appear between the frail and the pre-frail.

P9- FRAILTY AND HEALTHY-RELATED QUALITY OF LIFE IN PATIENTS WITH POLYMYALGIA RHEUMATICA. Sebastian E. Sattui[1], Deanna Jannat-Khah[1], Lindsay Lally[1,2], Sarah B. Lieber[1,2], Lisa A. Mandl[1,2], Robert F. Spiera[1,2] *(1. Hospital for Special Surgery, New York, NY, USA; 2. Weill Cornell Medicine, New York NY, USA)*

Background: Frailty and pre-frailty have been reported in 10% and 44% of community-dwelling elderly, respectively. Given older age and prolonged inflammation, patients with polymyalgia rheumatica (PMR) represent a population at high risk for frailty; however, there is no data on the prevalence in PMR patients. **Objectives:** To describe the prevalence of frailty in a single-center cohort of PMR patients and to determine the cross-sectional association of frailty with health-related quality of life (HRQoL), cognition, and sarcopenia. **Methods:** We recruited patients with a validated PMR diagnosis, ≤ 12 months from diagnosis and on glucocorticoids between 03/2019-03/2020. Disease activity was measured with the PMR activity score. Frailty was defined according to Fried frailty criteria. HRQoL was assessed using global Patient-Reported Outcomes Measurement Information System (PROMIS) computerized adaptive. Cognition was assessed using the Mini-Mental Standard Examination (MMSE), and sarcopenia was assessed by DXA. Descriptive statistics were employed to describe differences among groups, and univariate and multivariate linear regressions were used to describe the associations with frailty. **Results:** Forty-one patients were enrolled. Overall, patients had a low burden of comorbidities and high education level. Prevalence of frailty, pre-frailty, and robustness was 17%, 59%, and 24%, respectively. Frail patients were older and had longer duration of disease; however, these differences were not statistically significant. Of 27 patients with body composition analysis, 26% were sarcopenic. Frail

patients had worse physical function and more pain behavior and pain interference compared to pre-frail and robust patients. In the univariate analysis, frail patients were had clinically meaningfully worse physical function (β coefficient -9.15, p <0.05), and worse pain behavior (β coefficient 10.1, p <0.05) and pain interference (β coefficient 11.5, p <0.05) than robust subjects. Similar observations were seen in models adjusting for relevant covariates. No significant associations between either cognition or sarcopenia and frailty were observed. **Conclusion:** In this cohort of PMR patients, we found a higher prevalence of frailty and pre-frailty than community-dwelling elderly. Frailty was associated with worse physical function and increased pain behavior and interference, differences that were also clinically meaningful. These data suggest that frailty is common in PMR and that it is associated with clinical phenotypes.

P10- DEVELOPMENT OF A FRAILTY ASSESSMENT AND INTERVENTION PROGRAM IN EASTERN SINGAPORE- THE FRAIL TO FIT CLINIC. Gurinderjit Kaur Sidhu, Christine Yuanxin Chen *(Department of Geriatric Medicine, Changi General Hospital, Singapore)*

Background: In Singapore, amidst the 5.6 million population, 10% is aged 65 years and older. Our healthcare system has been excellent in addressing needs of the very frail Clinical Frailty Scale (CFS) 6-9 and the very fit CFS 1-3. However, there remains a lack of coordinated care for patients with CFS 4-5. **Objectives:** Our intervention, named Frail to Fit Clinic in our Geriatric Medicine Centre is novel to Singapore. It is conceptualized to (1) develop a coordinated effort to improve physical outcomes activity and performance measures in the mildly frail elderly and (2) reduce incidence of adverse health outcomes like falls and functional decline. **Methods:** A pilot run of Frail to Fit Clinic of 20 patients at Changi General Hospital, Singapore in 2021 is being launched. Collaborators include 2 geriatricians with an interest in frailty, a dietician and physiotherapists. Consented patients will be reviewed medically by the geriatrician in clinic, receive a dietician review on the same day and referral to an existing community exercise. This will be the Strengthening Programme at St Andrew's Day Rehabilitation Centre (DRC), which is situated conveniently on level 1 of our shared campus. Strengthening Programme is a 12 week, twice- weekly HUR gym equipment based programme that focuses on progressive muscle strengthening. The patients will be reviewed in clinic at enrolment, 1 month and 3 months for outcome measures- (1) primary outcome: clinical frailty scale; (2) secondary outcomes: gait speed, chair stands, hand grip strength, incidence of falls, Modified Barthel's Index, quality of life measure (EQ5D5L). **Results:** This multi-disciplinary team collaboration amongst both Changi General Hospital as well as St Andrew's Day Rehabilitation Centre is well poised to target the mildly frail elderly population in eastern Singapore. Such a novel coordinated effort and collaboration between an acute hospital and day rehab centre is a first to our knowledge. **Conclusion:** We firmly believe that such a coordinated effort will reduce the eventual dire consequences of frailty and improve quality of life for all elderly. This contends immense potential for a regional nationwide meaningful and sustainable frailty intervention programme that can could be up-scaled to regional healthcare systems.

P11- POINT PREVALENCE OF FRAILTY AND PAIN IN ADULT INPATIENTS OF AN AUSTRALIAN ACUTE PRIVATE HOSPITAL. Rosemary Saunder[1], Kate Crookes[1], Marcus Ang[1,2], Beverley Ewens[1], Olivia Gallagher[1], Renée Graham[1], Jeff Hughes[3], Debra Scaini[2], Karla Seaman[1], Christopher Etherton-Beer[4] *(1. Centre for Research in Aged Care, School of Nursing and Midwifery, Edith Cowan University, Joondalup, Western Australia, Australia; 2. Hollywood Private Hospital, Nedlands, Western Australia, Australia; 3. PainChek Ltd, Bentley, Western Australia, Australia; 4. School of Medicine and Pharmacology, University of Western Australia, Crawley, Western Australia, Australia)*

Background: Frailty and pain are associated with adverse patient clinical outcomes and increased healthcare system costs. Frailty and pain can interact, such that symptoms of frailty can make pain assessment difficult and pain can exacerbate the progression of frailty. The prevalence of frailty and pain and their concurrence in hospital settings are not well understood. **Objectives:** This study aimed to determine the point prevalence of frailty and pain in an acute care private metropolitan hospital in Western Australia. **Methods:** An observational, single-day point prevalence study of frailty and pain of all adult inpatients (excluding day surgery and critical care wards) was conducted. Frailty was assessed using the modified Reported Edmonton Frail Scale, with a score of 8 or more was considered frail. Pain was assessed using the numerical rating scale (NRS) and the PainChek® smart-device application that uses a combination of automated facial recognition and other clinical indicators to calculate a pain intensity score intended for use with patients who cannot self-report pain. Demographic and clinical information were also collected. **Results:** Of the 457 occupied eligible beds, 253 patients agreed to participate, 94 were excluded, 87 refused and 23 were missed. The prevalence of frailty was 26.7%. Frailty rates differed by speciality: medical 54.7%, surgical 7.1%, rehabilitation 42.9%, mental health 28.6%. All participants were able to self-report pain. Using the 0-10 NRS 68.1% of participants reported current pain (i.e., a rating greater than 0), the mean current pain score was 2.3 (SD 2.2). **Conclusion:** Frailty is highly prevalent in patients admitted under medical and rehabilitation specialties but less prevalent in surgical patients. Pain was also highly prevalent across the hospital. These findings are important for hospitals to consider in the allocation of resources and the directing of potential interventions.

P12- DIALYSIS OR CONSERVATIVE CARE FOR FRAIL OLDER ADULTS AND IMPLICATIONS OF CODE STATUS AND ETHICS OF DECISION-MAKING: CASE PRESENTATION. Sanaa Badour, Marcos Milanez *(Geriatric Medicine, University of Miami and Jackson Health System, Miami, FL, USA)*

Background: As a result of population aging, an increasing number of frail older patients are developing end-stage renal disease (ESRD). **Objectives:** We aim to highlight that pursuing a conservative approach must be paired with extensive patient education and careful determination of end-of-life goals. **Methods:** Case Presentation: this is a case of a 78-year-old male, with medical history significant for ESRD, who initially opted for conservative management. The patient declined dialysis on several occasions. He refused to complete advance directive, and his code status remained as full. The patient had decision making capacity with remarkable insight into his condition. He had multiple emergency department (ED) presentations, and was repeatedly managed conservatively without dialysis. A presentation, due to uremic encephalopathy, however, was to an ED outside our hospital where his wishes against pursuing dialysis were unknown. Consequently, the patient underwent emergency dialysis, and discharged off dialysis. He developed renal failure, and this time presented to our hospital. Patient at this point was full code, with altered mental status without decision making capacity. His daughter, next of kin, acted as his surrogate since a previously named surrogate could not be contacted. **Results:** At this point, the hospital's ethics committee was involved. The decision was made to pursue dialysis pending patient's further improvement. Case was taken to court, and daughter was named as guardian. Successively, the patient had great improvement in his mental and functional status. As his appointed guardian, the daughter denied the patient his wishes to live in his house and placed him in a nursing home despite his multiple objections to placement. After returning to his baseline mental status, the patient did not wish to revert the guardianship decision, and no longer objected to dialysis. **Conclusion:** Even when they are fully and adequately informed, frail older adults may not feel confident in their decision making. There is almost no evidence about which models of care and which communication interventions might be most beneficial in frail adults with ESRD. In this case study, we highlighted multiple communication attempts from different professional care givers that have failed to result in patient-desired satisfactory outcomes.

P13- THE FRAIL-NH SCALE: SYSTEMATIC REVIEW OF THE USE, VALIDITY AND CROSS-CULTURAL ADAPTATIONS FOR FRAILTY SCREENING IN NURSING HOMES. Shin J Liau[1,2], Samanta Lalic[1,3], Renuka Visvanathan[2,4], Laura A Dowd[1], J Simon Bell[1,2] *(1. Centre for Medicine Use and Safety, Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, Melbourne, Victoria, Australia; 2. National Health and Medical Research Council (NHMRC) Centre of Research Excellence in Frailty and Healthy Ageing, Australia; 3. Pharmacy Department, Monash Health, Melbourne, Victoria, Australia; 4. Adelaide Geriatrics Training and Research with Aged Care (GTRAC) Centre, Adelaide Medical School, Faculty of Health and Medical Sciences, University of Adelaide, Adelaide, South Australia, Australia)*

Background: The FRAIL-NH scale is an increasingly utilized 7-item frailty screening tool for nursing homes (NHs) with domains including: fatigue; resistance; ambulation; incontinence or illness; loss of weight; nutritional approach; and help with dressing. Each domain is assigned a score of up to 2 points, generating a total score of 0 (non-frail) to 14 (most frail). **Objective:** To investigate the prevalence of frailty, cross-sectional associations, predictive validity, concurrent validity, and cross-cultural adaptations of the FRAIL-NH scale. **Methods:** MEDLINE, EMBASE, CINAHL, and Cochrane Library were searched for primary studies that used the FRAIL-NH scale from January 2015 to June 2021. Articles were screened by two independent reviewers. **Results:** Overall, 40 studies conducted across 20 countries utilized the FRAIL-NH scale; majority in Australia (n=14), followed by China (n=6), and Spain (n=3). The studies were conducted in NHs (n=36), hospitals (n=3), and one study reported the scale translation. FRAIL-NH has been translated/back-translated into Brazilian Portuguese, Chinese, and Japanese. Various cut-offs and frailty descriptors have been used, with ≥2 and ≥6 being the most common cut-offs for frail and most frail, respectively. When defined using these cut-offs, frailty prevalence varied from 15.1-79.5% (frail) to 28.5-75.0% (most frail). FRAIL-NH scores were predictive of falls (n=2), hospitalization or length of stay (n=4), functional or cognitive decline (n=4), and mortality (n=9) over a median of 12 months follow-up. FRAIL-NH has been compared to 16 other scales, and was correlated with Frailty Index (FI), Fried's phenotype (FP), and FI-Lab. Four studies found fair to moderate agreements between FRAIL-NH and FI, FP, and the Comprehensive Geriatric Assessment. Ten studies assessed the sensitivity and specificity of different FRAIL-NH cut-offs, with ≥8 having the highest sensitivity (94.1%) and specificity (82.8%) for classifying frailty based on FI, while two studies reported the optimal cut-off of ≥2 using FI and FP, respectively. **Conclusion:** In seven years, the FRAIL-NH scale has been applied in 20 countries and adapted into three languages. Despite the range of cut-offs, FRAIL-NH demonstrated good predictive validity and agreement with other frailty scales. The association with adverse health outcomes highlights its value in guiding care for frail residents in NHs.

P14- A BAYESIAN NETWORK ANALYSIS OF FRAILTY STATE TRANSITIONS AMONG COMMUNITY-DWELLING ELDERLY JAPANESE. Kohei Tsukagoshi[1], Hiroto Yonenoh[2,3], Shinya Kuno[2,3], Yukihiko Okada[1] *(1. Faculty of Engineering, Information and Systems, University of Tsukuba, Japan; 2. Faculty of Health and Sport Sciences, University of Tsukuba, Japan; 3. R&D Center for Smart Wellness City Policies, University of Tsukuba, Japan)*

Background: Frailty is not an irreversible process; it is a dynamic process that can worsen or improve. Therefore, a deeper insight into frailty state transitions is important for clinical and public decision-making. Several studies have investigated the factors that contribute to frailty state transitions. However, those studies have not considered the interdependencies among such factors. **Objectives:** Using Bayesian network, we aim to identify the social and health factors that contribute to frailty state transitions and the probabilistic relationships among those factors. **Methods:** This study used the data obtained from medical checkups, receipts, and original questionnaires between 2015 and 2017, and analyzed 2787 samples of Japanese National Health Insurance insured elderlies (65-74 years). Frailty state was assessed with a modified version of Fried's phenotype criteria; participants were classified as frailty if they satisfied three or more of the five criteria, pre-frailty if they satisfied one or two of them were classified, non-frailty if they satisfied none of them. The constraint-based SI-HITON-PC algorithm was used for structural learning of the Bayesian network model. **Results:** Among a total of 2787 samples,1177 were females (42.2%), and the average age was 68.8 years old (SD=2.63). 14.4% improved their frailty states and 15.8% worsened their frailty states. Our analysis with the Bayesian network showed that "subjective sleep quality" and "fall experience in the past year" are the only antecedents to frailty state transitions. Participants with poor subjective sleep quality had relatively worsened frailty states, and they had a statistically significantly higher percentage of falls in the past year. Furthermore, as antecedents affecting subjective sleep quality, our analysis showed that personal activity and sarcopenia had a weak effect. **Conclusion:** The results showed that subjective sleep quality may be an important antecedent to frailty state transitions, and suggest that policies to increase personal activity and prevent sarcopenia may improve the subjective sleep qualities of individuals and avoid worsening frailty states.

P15- FRAILTY IN A POPULATION OF HIGH-NEED HIGH-RISK VETERANS IN FLORIDA. Natasha Resendes[1], Iriana Hammel[1,2,3], Christian J. Gomez[2], Remberto Rodriguez[4], Victor Cevallos[2], Michael J. Mintzer[2,3,5], Jorge G. Ruiz[1,2,3] *(1. University of Miami/Jackson Health System, USA; 2. Miami VAHS GRECC, USA; 3. University of Miami Miller School of Medicine, USA; 4. Miami VAHS Medical Service, USA; 5. FIU Herbert Wertheim College of Medicine, USA)*

Background: High-Need High-Risk (HNHR) patients are those at high risk for hospitalization and institutionalization. HNHR represents a heterogenous group which may include individuals with multi-morbidity, disability or frailty. HNHR overlooks medical and mental health conditions which may demand specific management strategies. Frailty is a common condition in older adults characterized by a vulnerability to stressors caused by multisystem dysfunction. **Objectives:** Determine clinical and prognostic differences of HNHR Veterans according to frailty status. **Methods:** Cross-sectional study of HNHR Veterans identified through quarterly reports generated by VA predictive analytic models. We included veterans enrolled in the Veterans Integrated Service Network 8 which comprises 7 hospitals in Florida and Puerto Rico. We compared Veterans with and without frailty in terms of sociodemographic characteristics, service connection, substance or alcohol abuse, and high-risk prognostic scores: CAN (Care Assessment Needs- highest risk of hospitalization or mortality), JFI (Jen Frailty Index- risk of institutionalization), and NOSOS (cost and utilization). Frailty was determined using a 31-item VA Frailty Index (VA-FI) generated as a proportion based on the number of items (morbidity, function, sensory loss, cognition/mood and other) present. We compared non-frail (robust=0–0.1, and pre-frail=0.11–0.20), and frail (mild=0.21–0.30), moderate=0.31–0.40), and severe=>0.4) categories. Continuous and categorical variables were compared with Mann Whitney and Pearson Chi-Square tests, respectively. **Results:** 11,169 HNHR Veterans were included, mean age 69.7(SD=12.0) years, 76.3% Caucasian, 77.3% Non-Hispanic and 94.6% male, 4.4%, 11.7%, 23.6%, 26.8% and 33.5% were robust, prefrail, mildly, moderately and severely frail, respectively. As compared with the non-frail, the frail groups were older (p=<0.001), and more likely to be unmarried (p=<0.001), service connected (p=<0.001), White (p=<0.001) and Hispanic (p=<0.003). HNHR frail had worse prognostic scores than non-frail: 95.56 (SD=5.04) vs 91.19 (SD=8.88), p=<.001, 7.30 (SD=1.18 vs 6.65 (SD=0.90), p=<.001, and 4.23(SD=4.28) vs 2.89(SD=3.62), p=<.001 for the CAN, JFI NOSOS scores respectively. **Conclusion:** Most HNHR Veterans were frail and had worse prognostic scores than the non-frail. Identifying and treating the HNHR patients with frailty may assist in targeting clinical strategies aimed at improving clinical outcomes while reducing utilization. Future research may clarify clinical trajectories of HNHR patients with and without frailty.

P16- PREVALENCE AND FACTORS ASSOCIATED TO FRAILTY IN HOSPITALIZED ELDERLY. Cloris Regina Blanski Grden, Danielle Bordin, Luciane Patricia Andreani Cabral, Karina Silveira de Almeida Hammerschmidt, Mariele katherine Jungles, Rodrigo Bordin, Everson Augusto Krum *(Universidade Estadual University of Ponta Grossa, Ponta Grossa Parana, Brazil)*

Background: Fragility is configured as a dynamic and progressive process, in which there is a reduction in physiological, psychological and social functions. It represents a potential public health problem, however, it can be reversed and avoided. **Objectives:** To analyze the prevalence and factors associated to frailty in hospitalized elderly. **Methods:** This is a cross-sectional, quantitative study, carried out with 217 elderly men and women, admitted to a public teaching hospital in Parana, Brazil. Data collection was performed, in the 2020-2021 interstice, at the medical clinic unit of a public teaching hospital. The validated instruments used were the Mini Mental State Examination for cognitive screening and the Functional Clinical Vulnerability Index (IVCF-20) to assess frailty. Frailty was considered as a dependent variable, stratified as: not fragile (0 to 6 points) and with some degree of fragility (>=7points). Chi-square test and logistic regression were performed. The explanatory capacity of the model was 79,6%. **Results:** There was a predominance of females (51.6%), with a mean age of 71 years and living with a partner (51.6%). For the health condition, most had suggestive of cognitive impairment (63.1%), did not use polypharmacy (65.9%), had less than 5 chronic diseases (86.1%) and was hospitalized less than 10 days (77.0%). Of the 217 participants, 82.9% (n=180) had some degree of fragility and only 17.1% (n=37) were not fragile. Gender ($p = 0.03$), age ($p = 0.05$), having a partner ($p=0.001$), cognition ($p<0.001$), polypharmacy ($p<0.001$), multimorbidity ($p = 0.009$) and hospitalization longer than 10 days ($p=0.001$). In the multivariate analysis, it was observed that elderly people with suggestive of cognitive impairment, without a partner and in use of polypharmacy present 4.3 (95% CI=1.8-10.0), 2.6 (95% CI=1.0-6,5) and 6.6 (95% CI=1.8-23.7), respectively more likely to have some degree of fragility. **Conclusion:** There was a high number of elderly people with some degree of fragility, as well as important factors associated to this condition. The results presented can contribute to the planning and implementation of interventions aimed at the prevention, care and rehabilitation of the elderly, with positive repercussions for their quality of life.

P17- THE IMPORTANCE OF OBJECTIVE MEASURES (HAND GRIP STRENGTH) AND MULTIDIMENSIONAL ASSESSMENT OF THE FRAILTY SYNDROME IN ELDERLY PATIENTS. Katarzyna Lomper, Magdalena Lisiak, Marta Wleklik, Alicja Wisnicka, Anna Chudiak, Izabella Uchmanowicz *(Wroclaw Medical University, Department of Clinical Nursing, Wroclaw, Poland)*

Background: The occurrence of frailty syndrome (FS) is characteristic of elderly. FS affects the health and functioning of geriatric patients. One of the objective components of FS is hand grip strength (HGS). HGS can influence increased mortality and clinical outcomes in the elderly population. **Objectives:** To assess the importance of objective measures (hand grip strength) and multidimensional assessment of the frailty syndrome in elderly patients. **Methods:** The study involved 100 patients of age over 65 years, hospitalized in the University Clinical Hospital in Wroclaw. The study used the analysis of medical records in order to obtain basic sociodemographic and clinical data. The FS was evaluated using the Tilburg Frailty Indicator, a hand grip strength using a standardized dynamometer. **Results:** FS was diagnosed in 74.51% of respondents (mean score 6.54 pcts). In terms of the TFI questionnaire subscale, the following values were noted: social components 1.25 points, psychological components 1.48 points and physical components 3.81 points. The analysis of the TFI questionnaire showed a subjective feeling of lack of strength in the hands in 42% of patients. The average overall HGS score in the studied group was 30.39 points. Correlation analysis showed a significant negative effect of HGS result with total TFI result ($r=-0.344$, $p<0.001$) and its physical ($r=-0.293$, $p=0.003$) and psychological ($r=-0.299$, $p=0.003$) components. In addition, HGS was significantly higher in the group without subjective feeling of lack of strength in the hands (TFI); $p=0.001$. **Conclusion:** Frailty syndrome is a common phenomenon among elderly patients, and its occurrence has a negative impact on physiological reserves, including weakening of grip strength. Early diagnosis of FS and assessment of HGS should be implemented in daily practice to determine health care needs and patients' qualifications for interventions to minimize adverse outcomes.

P18- CONDITION OF FRAGILITY AND POLYPHARMACY IN THE ELDERLY IN A BRAZILIAN RURAL COMMUNITY. Cloris Regina Blanski Grden, Danielle Bordin, Midia Vanessa dos Santos Spekalski, Péricles Martim Reche, Mariele katherine Jungles, Rodrigo Bordin, Everson Augusto Krum *(Universidade Estadual University of Ponta Grossa, Ponta Grossa Parana, Brazil)*

Background: Frailty is considered a multidimensional geriatric syndrome that presents several risk factors, with emphasis on the use of medications. Polypharmacy comprises the use of five or more medications and can enhance the condition of frailty. **Objectives:** to analyze the relationship between frailty and polypharmacy in the elderly in a Brazilian rural community. **Methods:** This is a descriptive cross-sectional quantitative study carried out with 80 elderly men and women living in a rural area at Ponta Grossa city, Parana, Brazil. The research obtained a favorable opinion from the Research Ethics Committee of the State University of Ponta Grossa, Parana, Brazil (CAAE: 99995518.4.0000.0105). Data collection was carried out, at the 2018-2019 interstice, at home, individually, directly with the elderly, caregiver or family member who lived with the elderly. The validated instruments used were the Mini Mental State Examination, Functional

Clinical Vulnerability Index (IVCF-20) for assessing frailty and a structured questionnaire for pharmacological assessment. Frailty was considered as a dependent variable, stratified as: not fragile (0 to 6 points) and with some degree of fragility (>=7 points). For statistical analysis, the chi-square test and logistic regression were used. explanatory capacity of the model was 75.0%. **Results:** 80 elderly people participated in the study, with a predominance of females (52.5%), mean age of 71.1 years, married marital status (62.5%), white (76.2%) and with education incomplete primary education (66.2%). Among the elderly, 33 (41.2%) were pre-frail and 11 (13.8%) frail and 36 (45%) non-frail. 40.0% of the elderly used polypharmacy. There was a significant association between level of fragility and polypharmacy ($p \leq 0.001$). The multivariate analysis showed that elderly people with some degree of frailty were 4.9 times more likely to have polypharmacy use ($p = 0.006$) compared to non-frail elderly people. **Conclusion:** The condition of frailty showed a significant relationship with polypharmacy. The findings presented subsidize the health team and managers, for the development of strategies aimed at the prevention and intervention of frailty and polypharmacy in the elderly, aiming at non-pharmacological actions within the rural environment.

P19- FRAILTY PREVALENCE AND ITS ASSOCIATIONS IN A SUBACUTE GERIATRIC WARD IN SINGAPORE. Christine Yuanxin Chen[1], Thulasi Chandran[2], Kiat Sern Goh[1] *(1. Department of Geriatric Medicine, Changi General Hospital, Singapore; 2. Medical Services, Saint Andrew's Community Hospital, Singapore)*

Background: Our Subacute Geriatric Ward was set up to focus on care of elderly patients with continued medical, nursing and rehabilitation needs after an acute hospitalization episode or presentation to the emergency department. There is a higher burden of frailty in this population. **Objectives:** Our aim was to study the prevalence of frailty and its associated factors in this subacute geriatric ward. **Methods:** This was a cross-sectional study of 167 participants between June 2018 and June 2019. Baseline demographics, Mini Nutritional Assessment (MNA), Geriatric Depression Scale (GDS), Mini Mental State Examination (MMSE), Charlson's Comorbidity Index (CCI) and LACE index were obtained. Functional measurements such as Modified Barthel's Index(MBI) and Hand Grip strength (HGS) were performed. Frailty was assessed by Clinical Frailty Scale (CFS) and FRAIL scale (Morley). History of healthcare utilisation, medications, length of stay, selected blood investigations and presence of geriatric syndromes were also collected. **Results:** The prevalence of pre-frailty (CFS 4) and frailty (CFS >=5) were 16.2% and 63.4% respectively. There were significant associations between CFS and age (pre-frail vs non-frail OR: 1.14, 95% CI: 1.04, 1.25, p=0.006) (frail vs non-frail OR: 1.08, 95% CI: 1.01, 1.15, p=0.021); handgrip strength at discharge (frail vs non-frail OR: 0.90, 95% CI:0.82, 0.99, p=0.025); serum Albumin (frail vs non-frail OR: : 0.90, 95% CI: 0.82, 0.99, p=0.035) and the presence of urinary incontinence (frail vs. non-frail OR: 3.03, 95% CI: 1.19, 7.77, p=0.021). **Conclusion:** Frailty is highly prevalent in the subacute geriatric setting and has many associated factors. In this study, independent factors associated with frailty were age, handgrip strength at discharge, serum albumin, and urinary incontinence. This has implications on future resource allocation for frail elderly inpatients as well as help direct further research to study effectiveness of frailty-targeted interventions.

P20- CURRENT GUIDELINES AND CONSENSUS DOCUMENTS IN SPAIN FOR THE MANAGEMENT OF FRAILTY IN PRIMARY CARE. Inaki Martin Lesende[1], Soledad Justo Gil[2], Pedro Abizanda Soler[3], Ana Gorronogoitia Iturbe[4], Yolanda Herreros Herreros[5] *(1. Indautxu Primary Health Centre, Bilbao-Basurto Integrated Health Organisation, Basque Care Health Service (Osakidetza), Spain, Department of Medicine of the Basque Country University (UPV/EHU), Leioa, Bizkaia, Spain; 2. Subdirectorate General of Health Promotion, Prevention and Quality. Directorate General of Public Health. Spanish Ministry of Health, Spain; 3. Geriatrics Department, Albacete University Hospital, Spain, Faculty of Medicine of the University of Castilla-La Mancha, Spain, 4. Bizkaia Unit for Multi-professional Training in Family and Community Care, Spain; 5. Numancia Health Care Center, Barcelona, Catalonia Health System, Spain)*

Background: Frailty is a preferential topic in the care of the elderly being primary care (PC) the priority health site. **Objectives:** To describe main guidelines in Spain for frailty detection/management in primary care (PC). **Results:** 1. Consensus on frailty of the Prevention and Health Promotion Strategy of the Spanish NHS. **https://www.mscbs.gob.es/profesionales/saludPublica/prevPromocion/Estrategia/docs/Fragilidad/Frailtyandfalls_Elderly.pdf.** It recommends opportunistic screening in patients aged >70 without functional impairment (Barthel index >=90), and active screening for those already integrated in specific healthcare programs, ideally using one performance test (SPPB, Gait Speed, Timed Up&Go), followed up with a comprehensive geriatric assessment (CGA) to confirm diagnosis and direct intervention. 2. "Addressing Frailty in a situation of health crisis generated by COVID-19" 2021. **https://www.mscbs.gob.es/en/profesionales/saludPublica/prevPromocion/Prevencion/EnvejecimientoSaludable_Fragilidad/Covid19_Fragilidad.htm** It adapt the recommendations of the Spanish NHS Consensus on frailty to the health crisis generated by COVID-19. Screening in PC is highlighted as a key element from which the rest of the actions will derive. Considering the special conditions derived from the pandemic, it is intended to provide alternatives when face to face assessment is not possible, reinforcing support in community resources with subsequent referral to the health system. 3. Recommendations 2020 of the Programme of Preventive Activities and Health Promotion of the Spanish Society of Family and Community Medicine (PAPPS-semFYC). **https://doi.org/10.1016/j.aprim.2020.09.005** Two tables must be highlighted: that one synthesizing the most common tests/scales used to detect frailty, that providing diagnostic validity indices of the main

tools. 4. Fisterra "Frail elderly people: detection/management in Primary Care" guideline 2020. https://www.fisterra.com/guias-clinicas/persona-mayor-fragil-deteccion-manejo-atencion-primaria// It answers, based on the evidence, questions about concept, diagnosis and treatment/management of frailty. 5. ADVANTAGE Joint Action 2020. https://www.advantageja.eu/index.php/ Common European framework in the management of frailty, based on the "State of Art" and establishing a Frailty Prevention Approach to promote healthy ageing. Each member state elaborated its own Roadmap of actions to promote healthy ageing and address frailty. The Spanish Roadmap is available at https://advantageja.eu/images/FPA-Core-ADVANTAGE-doc.pdf. **Conclusion:** Main common aspects concerning frailty: It is a stage prior to disability. PC is the main healthcare site to address it. Active systematic diagnosis is recommended beginning with screening tools. CGA is most likely the best method to assess/confirm frailty and to establish interventions. Physical exercise (mainly multi-component exercise) is the main intervention.

P21- BZRA DEPRESCRIPTION ON ACUTE GERIATRIC UNITS. François-Xavier Sibille[1,2], Anne Spinewine[3,4], Didier Schoevaerdts[1,2], Ariane Mouzon[3], Marie de Saint-Hubert[1,2,5] *(1. Department of Geriatric Medicine, CHU UCL Namur, Yvoir, Belgium; 2. Institute of Health and Society, UCLouvain, Brussels, Belgium; 3. Department of Pharmacy, CHU UCL Namur, Yvoir, Belgium; 4. Louvain Drug Research Institute, UCLouvain, Brussels, Belgium; 5. NARILIS, Namur, Belgium)*

Background: Benzodiazepine receptor agonists (BZRA) use is highly prevalent in hospitalized frail elderly although they face numerous and serious related adverse events. BZRA deprescription can reduce the risk of harm associated with chronic BZRA use. **Objectives:** To measure the prevalence of BZRA deprescription in acute geriatric units (AGU) and its associated factors; to evaluate the occurrence of new prescriptions of trazodone or mirtazapine at discharge. **Methods:** We conducted a multicenter retrospective study. Eligible patients were aged 70 years and over, hospitalized in one of the three AGU of CHU UCL Namur, Belgium, in 2018 and taking >=1 BZRA on admission. BZRA deprescribing was evaluated at discharge, and defined as: 1) >=25% decrease of lorazepam-equivalent dosage on admission; or 2) withdrawal of any BZRA; or 3) cessation of a rescue prescription. Multivariate logistic regression was performed to evaluate the association between deprescribing and various factors (comorbidities, medications, or demographic). **Results:** In total 561 patients were included (mean age 85.3 years, 70% female and 73% community-dwelling patients). Deprescribing was observed in 240 patients (42.8%): 194 (34.6%) had a reduction of dosage of at least 25%, 85 patients (15.2%) stopped taking any BZRA, and 49 (8.7%) stopped taking one or more rescue BZRA. Factors positively associated with deprescribing included a BZRA related adverse event (Odds ratio (OR) 4.5; 95% confidence interval (95CI) [2.6; 7.9]) and a higher lorazepam equivalent dosage (OR 1.2; 95CI [1; 1.4]); factors negatively associated with deprescribing included the concomitant use of an antipsychotic drug (OR 0.5, 95 CI [0.3; 0.8]). Among patients with a deprescribed BZRA, 14 (6.0%) were newly prescribed trazodone, and only 6 (1.8%) among patients without BZRA deprescription (p=0.011). Mirtazapine was newly prescribed to 27 patients, distributed evenly between the groups with and without BZRA deprescription. **Conclusion:** BZRA deprescription accounted for 42.8% of AGU discharged patients. Future studies should investigate mid-term persistence of BZRA deprescription and evaluate patient- and heathcare professional-centered interventions to optimize hospital BZRA deprescription.

P22- AN ASSESSMENT OF THE TOULOUSE SAINT LOUIS UNIVERSITY MINI FALLS ASSESSMENT TOOL TO PREDICT INCIDENT FALLS AMONG OLDER ADULTS RESIDING IN NURSING HOMES: A 6-MONTH PROSPECTIVE STUDY. Médéa Locquet[1], Florence Bonnard[1], Charlotte Beaudart[1], Cécile Coendo[2], Sophie Gillain[3], Jean-Yves Reginster[1,4], Olivier Bruyère[1,2,5] *(1. WHO Collaborating Centre for Public Health Aspects of Musculoskeletal Health and Aging, Division of Public Health, Epidemiology and Health Economics, University of Liège, CHU-Sart Tilman, Liège, Belgium; 2. Physical, Rehabilitation Medicine and Sports Traumatology, SportS2, University Hospital of Liège, Liège, Belgium; 3. Geriatrics Department, University Hospital of Liège, Liège, Belgium; 4. Chair for Biomarkers of Chronic Diseases, Biochemistry Department, College of Science, King Saud University, Riyadh, Kingdom of Saudi Arabia; 5. Department of Sport Rehabilitation Sciences, University of Liège, Liège, Belgium)*

Background: Falls among older adults resulting in hospitalization represent a heavy burden on public health services. It is therefore imperative that those at the highest risk of falling are identified so that preventative measures can be put in place. The Toulouse Saint Louis University Mini Falls Assessment (TSLUMFA) tool has been designed to predict falls. It was initially validated in a geriatric clinic in 2018. **Objectives:** The primary objective was to evaluate the predictive capacity of the TSLUMFA for incident falls in older adults residing in nursing homes. The secondary objective was to determine the TSLUMFA optimal cut-off value identifying those older adults with a high-risk of falling. **Methods:** A longitudinal study of older adults in nursing homes was carried out over a period of six months. The TSLUMFA (made up of 7 criteria) was administered at baseline, and incident falls were recorded based on a registry of falls. Comparisons of TSLUMFA scores between fallers and non-fallers were performed using the U Mann-Whitney test or Chi2. Correlation between the total TSLUMFA score (/30 points) and incident fall(s) was explored using the Cox proportional hazard model. ROC analysis enabled an optimal cut-off value to be established to identify those adults at the highest-risk of falling. **Results:** In the study, 93 older adults (61.3% women) with a median age of 80 (69-87) years were included. The median total TSLUMFA score was 21 (19-24.5) points. During

the 6-month study period, 38 subjects (40.9%) experienced at least one fall. The total TSLUMFA score in older adults with incident fall(s) was significantly lower than in those who did not fall (20 (15.75-22.25) points versus 23 (20-25) points and a p-value of <0.001). For each 1-point higher score at the total TSLUMFA a 9% less chance of falling was observed during the study period (p-value = 0.006). The AUC was 0.736 (95%CI: 0.617-0.822) and p-value <0.001, clearly demonstrating its interesting performance as a screening tool. A score of ≤ 21 points was identified as the optimal cut-off to identify those older adults at a higher-risk of falling. **Conclusion:** The TSLUMFA performed well and successfully identified older adults with a high risk of falling in a nursing home setting. Further comparisons with existing tools are warranted.

P23- FRAIL- VIG INDEX AND MORTALITY AT 12 MONTHS OF FOLLOW- UP. Carmen Eliana Peralta Vargas, Maria Ahon Jiraldo, Claudia Valdivia Alcalde, Ian Falvy Bockos *(Central Hospital of the Peruvian Air Force, Lima Peru)*

Background: Frailty is related to health outcomes in older adults. The frail index (FI) is used to quantitatively measure frailty levels. FI share their multidimensional nature with Comprehensive Geriatric Assessment (VIG). **Objectives:** Know if the higher the frailty index, the higher the mortality, at the 12- months follow- up. **Methods:** Study descriptive, observational and prospective. Patients older than 59 years of age from the geriatric service of the Central Hospital of the Peruvian Air Force were included at the end of 2019. For two months, the Frail- VIG index was used at the different levels of care: acute unit, day hospital, outpatient clinic and home care. At twelve months of follow- up, mortality was evaluated. Patients who died due to coronavirus were excluded. To determine the association between Frail – VIG index and mortality, the Chi- square test and Student's T test were used. **Results:** 241 subjects were included, with a mean age of 85.08 years (61- 105 years); 65.97% were women. In the analyzed population: 55.19% Barthel index <20, 87.14% cognitive impairment, 34.02% delirium, 80.08% polypharmacy and 22.82% falls. It also highlights a high prevalence of chronic diseases: 59.33% neurological disease, 48.54% kidney disease, 47.71% cardiovascular disease and 26.97% respiratory disease; 14.51% had advance chronicity criteria according to NECPAL. In the population analyzed according to the Frail- VIG index, only 7.88% (n= 19) of the patients had a FI < 0.2; it's relevant to note that 92.12% (n= 222) of the patients were Frail (FI >= 0.2). Follow- up was carried out up to a maximum of 12 months or when death was verified and one- year mortality of 11.61% (n= 28) was observed. Of the 28 deceased subjects, 82.14% (n=23) had advance frailty (FI >= 0.56). When analyzing the association between mortality and the Frail- VIG, it was found that the higher the frailty index, the higher the mortality; with very significant differences (p=0.001). There wasn't association between age and mortality (p=0.95). **Conclusion:** The higher the frailty index, the higher the mortality at 12 months of follow-up.

P24- PREVALENCE OF SARCOPENIA AND ASSOCIATED FACTORS IN HOSPITALIZED ELDERLY. ClOris Regina Blanski Grden[1], Danielle Bordin[1], Rodrigo Bordin[1], Carla Luiza da Silva[1], Luciane Patricia Andreani Cabral[1], Lara Simone Messias Floriano[1], Karina Silveira de Almeida Hammerschmidt[2] *(Universidade Estadual University of Ponta Grossa, Ponta Grossa Parana, Brazil; 2. Federal University of Para, Brazil)*

Background: The aging process causes important musculoskeletal changes, which can predispose to sarcopenia. In turn, sarcopenia causes a decrease in muscle contraction, strength and coordination, contributing to functional decline in the elderly. **Objectives:** To analyze the prevalence of sarcopenia and associated factors in hospitalized elderly. **Methods:** This is a descriptive cross-sectional quantitative study carried out with 217 elderly men and women, admitted to a public teaching hospital in Parana, Brazil. The research obtained a favorable opinion from the Research Ethics Committee of the State University of Ponta Grossa, Parana, Brazil (CAAE: 99995518.4.0000.0105). Validated instruments were used: Mini Mental State Examination, for cognition and Clinical Functional Vulnerability Index (IVCF-20) for frailty and Katz index, for the degree of dependence on basic activities of daily living (BADL), in addition to a demographic characteristics instrument. The suggestive of sarcopenia was considered as a dependent variable, which considers body mass index, calf circumference, gait speed and unintentional weight loss. Chi-square test and logistic regression were performed. **Results:** The majority of the elderly were female (51.6%), with a mean age of 71 years, who lived with a partner (51.6%), had cognitive impairment (63.1%), some degree of frailty (82.9%), dependence on at least one BADL (67.3%), less than 5 chronic diseases (86.1%), and did not use polypharmacy (65.9%). The prevalence of indicative of sarcopenia in the elderly hospitalized was 70.0%. It was associated to the suggestive of sarcopenia: sex (p =0.007), cognition (p=0.005), hospitalization for more than 10 days (p=0.05), degree of dependence (p<0.001), frailty (p<0.001) and falls (p =0.04). Elderly people with dependence for one or more ABVD and with some degree of fragility, have 3.1 (95% CI=1.5-6.3) and 4.4 (95% CI=1.9-10.4), respectively, more likely to be sarcopenic. **Conclusion:** The high number of elderly people with evidence of sarcopenia was evidenced, as well as important factors associated to this condition, with emphasis on the frailty syndrome. The findings presented can support the planning of actions aimed at early screening, with the objective of preventing the onset and evolution of the syndrome.

P25- COGNITION AND FUNCTIONAL CLINICAL VULNERABILITY OF ELDERLY PEOPLE IN A RURAL COMMUNITY. Cloris Regina Blanski Grden[1], Danielle Bordin[1], Carla Luiza da Silva[1], Karina Silveira de Almeida Hammerschmidt[2], Luciane Patricia Andreani Cabral[1], Lara Simone Messias Floriano[1], Péricles Martim Reche[1] *(1. Universidade Estadual University of Ponta Grossa, Ponta Grossa Parana, Brazil; 2. Federal University of Para, Brazil)*

Background: Cognitive decline is a risk factor for frailty syndrome. Both conditions are associated to the occurrence of adverse outcomes such as the occurrence of falls, hospitalization and mortality, especially when they coexist. **Objectives:** To investigate the relationship between cognition and clinical functional vulnerability in the elderly in a rural Brazilian community. **Methods:** This is a descriptive cross-sectional quantitative study carried out with 71 elderly men and women, living in a rural area at Ponta Grossa city, Parana, Brazil. Data collection was carried out, at the 2018-2019 interstice, at home, individually, directly with the elderly, caregiver or family member who lived with the elderly. The validated instruments used were the Mini Mental State Examination for cognitive screening and the Functional Clinical Vulnerability Index to assess frailty. For the analysis, the chi-square test was used at the significance level of $p \leq 0.05$. The research obtained a favorable opinion from the Research Ethics Committee of the State University of Ponta Grossa, Parana, Brazil (CAAE: 99995518.4.0000.0105). **Results:** 71 elderly people participated in the study, with a predominance of females (56.3%), aged between 60 and 70 years (57.7%), married marital status (60.6%), white (76.1 %), with incomplete elementary education (66.2%) and income of up to 2 minimum wages (85.9%). It was found that 39.4% used polypharmacy, 21.1% reported a history of falls and 16.9% were hospitalized in the last year. Among the participants, 54.9% had suggestive cognitive impairment. For the functional clinical vulnerability index, 39.4% of the elderly were pre-frail, 15.5% were frail and 45.1% were robust. Suggestive cognitive impairment was significantly associated to clinical functional vulnerability ($p = 0.024$), where elderly people with suggestive of cognitive impairment had some degree of frailty. **Conclusion:** A significant association was identified between suggestive cognitive impairment and functional clinical vulnerability. The findings presented reinforce the importance of assessing, identifying and monitoring cognitive screening, especially in the elderly with some degree of fragility. The relevance of prevention and/ or treatment strategies by health professionals is highlighted in order to mitigate or reverse the incidence of these two conditions in the elderly population.

P26- IMPACT THE QUADRICEPS STRENGTH IN SUBJECTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE. Angela Maria Pereira[1,2,3] *(1. Physiotherapy Departement, Escola Superior de Saude Egas Moniz, Portugal; 2. Centro de investigaçao interdisciplinar Egas Moniz, Monte da Caparica, Portugal; 3. Hospital Garcia de Orta, Almada; Portugal)*

Background: Skeletal muscle dysfunction is well known in chronic obstructive pulmonary disease (COPD). The muscle strength is altered in various muscles variedly, particularly in lower-limb is very is a systemic manifestation of COPD which influences exercise limitation, quality of life and prognosis in most of the patients. **Objectives:** The aim of this study was to assess the correlation between respiratory parameters and the quadriceps strength in patients with COPD. **Methods:** An observational study was performed with inclusion of sixty-five men with moderate COPD, FEV1, $45.1 \pm 12.8\%$, 65.3 ± 7.8 years old; weight, 72.6 ± 11.5 kg; height, 170.2 ± 5.7 cm, effort subjective perception (ESP) 17.3 ± 1.8, and dyspnoea subjective perception (DSP) 5.43 ± 3.1. Spirometry and 1-RM were used as evaluation methods. Before initiation all subjects performed spirometry (DATOSPIR-120 Sibelmed, Spain) according to American Thoracic Society (ATS) guidelines and FEV1 was measured. The maximum voluntary contraction was assessed by the one repetition maximum (1-RM) strength test, which was performed using a resistance weight-lifting machine (Leg Extension, Salter®, Commercial Salter, S.A. Spain). The study was approved by the Ethics Committee of the Garcia de Orta Hospital. **Results:** Our results showed that as FEV1 and ESP increases, the quadriceps muscle strength also increase, with pearson correlation values of $r=0.661$ ($p<0.01$) and $r = 0.698$ ($p<0.01$), respectively. On the other hand, 1- RM was also influenced by DSP with pearson coefficient $r=-0.546$ ($p<0.01$). In relation to FEV1, as it increases, ESP and DSP tend to decrease their values, as evidenced by the coefficient of pearson values obtained $r=-0.702$($p<0.01$) and $r=-0.632$ ($p<0.01$), respectively. **Conclusion:** The study shows that there is quadriceps weakness in COPD patients, and pulmonary functions have a direct impact on skeletal muscle strength. the quadriceps weakness is related to the severity of airflow obstruction as measured by FEV1. We found significant correlations between quadriceps strength and FEV1. We concluded that as quadriceps strength increase, dyspnoea and effort subjective perceptions decrease, highlighting the need to include quadriceps training in rehabilitation programmes.

P27- RELATIONSHIP OF PHYSICAL FRAILTY IN ELDERLY PEOPLE WITH DEPRESSIVE SYMPTOMS IN PRIMARY HEALTH CARE.

Maria Helena Lenard[1], Susanne Elero Betiolli[1], Marcia Marrocos Aristides Barbiero[1], Cloris Regina Blanski Grden[2], Karina Silveira de Almeida Hammerschmidt[1], Maria Angélica Binotto[3], Ligia Carreira[4] *(1. Federal University of Parana, Brazil; 2. Estadual University of Ponta Grossa, Brazil; 3. Estadual University of Centro-Oeste, Brazil; 4. Estadual University of Maringa, Brazil)*

Background: Physical frailty and depressive symptoms are health conditions that share symptoms and risk factors, which imply damage to health and expose the elderly person to an increase in physiological vulnerability and changes in social behavior. Despite the high prevalence of frailty and depressive symptoms in the elderly, the relationship between these conditions is poorly investigated. **Objectives**: This study aimed to analyze the relationship between physical frailty in elderly people with depressive symptoms monitored in Primary Health Care. **Methods:** This is a quantitative, descriptive and correlational cross-sectional study. The research was carried out at the Basic Health Unit in Curitiba, Parana, Brazil. The sample consisted of 389 elderly people of both genders. The research given a favorable opinion by the Research Ethics Committee in the Universidade Federal do Parana, Brazil (n° 2918847/2018). Data were collected from January to October 2019, using a geriatric depression scale and tests to evaluate the phenotype of physical frailty. The statistical analyzes were performed using Chi-square or Mann Whitney test with a statistical significance level of $p \leq 0.05$ and logistic regression to analyze the association between frailty and depressive symptoms, with a 95% confidence interval. **Results:** Of the 389 elderly, 186 (47.8%) were pre-frail, 34 (8.8%) frail and 169 (43.4%) non-frail, 103 (26.5%) had depressive symptoms, among these 63 (61.2%) were pre-frail, 19 (18.4%) frail and 21 (20.4%) non-frail. There was an association between the condition of pre-frailty and frailty with depressive symptoms ($p \leq 0.001$) and markers of fatigue / exhaustion frailty ($p \leq 0.001$), reduced level of physical activity ($p \leq 0.001$) and unintentional weight loss ($p = 0.003$). The chance of a pre-frail elderly person developing is 3.6 times when compared to non-frail elderly people (OR 3.6 95%CI; 2.08-6.24). If frail, the chances are 8.9 times greater (OR 8.9 95%CI; 3.9-20.20). **Conclusion:** The condition of frailty was related to the depressive symptoms in the elderly. Knowledge of this relationship favors the establishment of reciprocal preventive measures, both for depressive symptoms and for physical frailty, in elderly people in primary health care.

P29- A FRAILTY INDEX BASED ON LABORATORY VALUES AND VITAL SIGNS (FI-LAB) IS ASSOCIATED WITH HIGHER INPATIENT MORTALITY IN HOSPITALIZED OLDER VETERANS.

Christian Gomez[1], Otoniel Ysea-Hill[1], Natalie Mansour[1], Kamal Wahab[2], Mihn Hoang[3,4], Mabel Labrada[3,4], Jorge G. Ruiz[1,2,3] *(1. Miami VAHS Geriatric Research, Education and Clinical Center (GRECC), USA; 2. University of Miami 2University of Miami/Jackson Health System, USA; 3. University of Miami Miller School of Medicine, 4Bruce W. Carter Miami VAMC Medical Service, USA)*

Background: Frailty is characterized by vulnerability to stressors and is associated with disability, morbidity, and mortality. Current frailty assessments may not accurately detect acute changes in frailty status. The FI-LAB, a validated index based on the deficit accumulation model, incorporates laboratory values and vital signs to assess frailty in acute care settings. Previous studies have shown an association between the FI-LAB and mortality in hospitalized older adults. However, there are no studies in Veterans, a population with high prevalence of physical and mental multimorbidity, disability and frailty. **Objectives:** This study aim was to determine whether the FI-LAB was associated with all-cause inpatient mortality risk in hospitalized older Veterans. **Methods:** A retrospective cohort study was conducted in a population of adults >=60 years old who were consecutively admitted to the Miami Healthcare System (VAHS) due to an acute medical illness 2011-2014. We constructed a 31-item FI-LAB including laboratory values and vital signs upon admission. FI-LAB scores were categorized as low (<0.25), moderate (0.25-0.40), and high (>0.40). At the end of follow-up, we aggregated data on inpatient mortality and compared the 3 FI-LAB groups using a chi-square test whereas the association of the FI-LAB with mortality was determined using a Cox proportional hazards model. **Results:** 1407 veterans were hospitalized, mean age of 72.70 (SD=8.98) years, Caucasian (67.80%), males (96.09%), and Non-Hispanics (85.50%). As per the FI-LAB, 46.98%(n=661), 41.01%(n=577), and 12.01%(n=169) were in the low, moderate, and high groups, respectively. Over a median follow-up period of 2 days (IQR=4), the high FI-LAB group had higher inpatient mortality (n=16,9.48%) than the low (n=4, 0.61%) and moderate (n=7,1.21%) groups, p<.001. As compared with the low FI-LAB group, the high FI-LAB group showed a higher risk for all-cause inpatient mortality, hazard ratio (HR) 16.56(95%CI:4.35-63.05), p<.001 whereas the moderate group was not significantly different, HR 1.48(95%CI:0.34-6.52), p=.60. **Conclusion:** Higher FI-LAB scores were associated with a higher risk of all-cause inpatient mortality in hospitalized older veterans. The FI-LAB may identify older patients at high risk of mortality in acute settings and assist clinicians in developing strategies to reduce mortality in hospitalized patients with frailty.

COGNITIVE FRAILTY

P32- EVALUATING ACCULTURATION STRESS AS PREDICTOR OF COGNITIVE FRAILTY IN VIETNAMESE IMMIGRANT PATIENTS OVER TELEHEALTH VISIT AT MEMORY CLINIC.

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Background: There are 1.1 million Vietnamese immigrants in US making them the 5th largest immigrant group. The exact impact of immigration status on incident dementia is unclear. Cognitive frailty has recently been identified as a separate entity that increases the risk for dementia and dependency. **Objectives:** We recently established a geriatrician led Cognitive Assessment Clinic (memory clinic) at our federally qualified health center (FQHC) to improve access to dementia care especially focused to serve those with language and cultural barriers, predominantly Vietnamese immigrants. We assessed predictors of cognitive frailty over telemedicine visit of our memory clinic patients seen January 2021 through March 2021. The patients will follow up for formal memory testing and physical exam in the ongoing memory clinic through August 2021. **Methods:** 52 telehealth visits were conducted for patients aged 55 years and above, referred with positive Mini-Cog, 6CIT (Six-item Cognitive Impairment Test) or self-reported memory loss. All patients were community dwelling with average age of 70 years and majority were female (n=41) and living with family (n-43). 36 patients identified themselves as immigrants and 31 spoke a language other than English, predominantly Vietnamese (n=23). We assessed for functional impairment with standard ADL (activities of daily living) and IADL (instrumental activities of daily living) questionnaire, screened for depression with PHQ-9 and obtained other social and medical history per routine. **Results:** While only 12 patients reported deficit in ADLs, 41 patients had impairment in IADLs most commonly managing finance, public transportation, driving and grocery or shopping. A high proportion of Vietnamese female immigrants had impaired IADLs (n=23), 22 of them also reported language barrier, 14 were illiterate and half of them also had a positive PHQ-9 with scores > 6. **Conclusion:** The study underscores the complex interaction between immigration, language barrier and lack of acculturation which can lead to functional and memory impairment as well as depression, which are all predictors of cognitive frailty. It also highlights the most vulnerable population at our clinic i.e., Vietnamese female immigrants for targeted interventions to improve assimilation, prevent cognitive frailty, improve community tenure and reduce caregiver burden.

P35- COGNITIVE IMPAIRMENT IN FRAIL STEMI PATIENTS: EFFECTS OF THROMBUS ASPIRATION.

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Background: Primary Percutaneous Coronary Intervention (PPCI) is the best therapeutic choice in frail older adults with ST-Elevation Myocardial Infarction (STEMI). Nevertheless, the incidence of mortality, re-hospitalization and disability remains elevated. Cognitive impairment is one of the most common disability after STEMI in frailty. **Objectives:** We hypothesized that thrombus aspiration (TA) before PPCI could be a useful treatment to reduce cognitive impairment after STEMI. **Methods:** We preliminarily evaluated PPCI alone (74 patients) vs TA + PPCI (70 patients) in frail STEMI patients. We examined a cohort of consecutive frail patients aged >= 65 years with first STEMI treated with PPCI between February 2008 and July 2015 at the Department of Cardiology of the "Cardarelli" Hospital in Naples, Italy. All patients have been evaluated with Montreal Cognitive Assessment (MoCA) test, before the discharge, and after 1-month follow-up. **Results:** The control group (PPCI alone) showed a small and significant improvement in the MoCA score after treatment (baseline MoCA: 23.9±0.5, follow-up MoCA: 24.1±0.5, p=0.016). At variance, TA + PPCI group showed a very significant improvement in the MoCA score (baseline MoCA=23.7±0.4, follow-up MoCA=24.8±0.4, p<0.001). **Conclusion:** Our preliminary results indicate that TA in addition to PPCI could reduce cognitive impairment in frail patients after STEMI.

COVID 19 & FRAILTY & SARCOPENIA

P37- FRAILTY AND MORTALITY IN COVID 19 HOSPITALIZED OLDER ADULTS.

Renato Gorga Bandeira de Mello[1,2], Vitor Pelegrim de Oliveira[1,2], Marina Butzke[1], Virginia Comis[1], Maria Fernanda Cizeski[1], Joana Rebesquini Teixeira[1], Andry Fiterman Costa[1], Roberta Rigo Dalacorte[1], Emilio Hideyuki Moriguchi[1] *(1. Hospital de Clinicas de Porto Alegre, Internal Medicine Division, Geriatric Unit, Porto Alegre, Brazil; 2. Universidade Federal do Rio Grande do Sul, Faculty of Medicine, Department of Internal Medicine, Brazil)*

Background: Older age is a major risk factor for mortality in COVID 19 patients. Pandemic outbreaks struggle the health care systems and push healthcare teams to difficult decisions regarding the priority of access to intensive care resources. **Objectives:** To investigate the association between the Clinical Frailty Scale (CFS) score and mortality among COVID-19 patients aged 70+ years. **Methods:** A prospective cohort study of 70 hospitalized older patients (70+years) with confirmed COVID-19 pneumonia was conducted between July 1st and September 30th, 2020. Demographic data, CFS, Charlson Index, medications and clinical data were extracted from electronic medical records. The outcomes were mortality during hospital stay and 90 days after discharge. We used a qui square

test and binary regression analysis to identify the associations between CFS score and mortality. **Results:** Mean age was 83,0 years old. Women represented 57.1% of the sample. The Charlson Index was 5 or greater in 68.5%. The CFS score was 5 or more in 47.1% of the patients. The CFS score of 5 or more was associated with mortality (OR 4.1; 95% CI 1.51-11.37; p=0.005). There was no significant association between mortality and other analyzed variables. **Conclusion:** The CFS score of 5 or more is associated with higher mortality risk. This tool can be useful as an outcome predictor helping healthcare teams to make better decisions.

P38- EFFECTS OF COVID-19 ON FEAR OF FALLING AND SYMPTOMS OF ANXIETY AND DEPRESSION ON THE PHYSICAL FUNCTION OF PATIENTS AFTER HOSPITAL DISCHARGE. Camila Machado de Campos[1], Elizabeth Mendes da Silva[1], Erika Christina Gouveia e Silva[1], Caroline Gil de Godoy[1], Danielle Brancolini de Oliveira[1], Amislaine Cristina Gambeta[1], Celso Ricardo Fernandes de Carvalho[1], Ana Carolina Basso[1], Carolina Fu[1], Naomi Kondo Nakagawa[1], Clarice Tanaka[1], Carlos Toufen Junior[2], Carlos Roberto Ribeiro Carvalho[2], José Eduardo Pompeu[1] *(1. Department of Physical Therapy, Speech Therapy and Occupational Therapy. School of Medicine, University of Sao Paulo, Brazil; 2. Pneumology Division, Cardiopulmonary Department, Heart Institute (InCor), University of Sao Paulo, Brazil)*

Background: Severe COVID-19 can result in prolonged hospitalizations that negatively affects physical functions with repercussion in the independence in daily living activities. Psychological symptoms such as anxiety, depression and fear of falling would be associated with functional impairment in adults and older people after hospital discharge. Together, physical and psychological impairment can reduce mobility and physical activity, both hindering functional recover. **Objectives:** To analyze the association between physical and psychological outcomes in adults and older people after hospital discharge due to COVID-19. **Methods:** This study shows the preliminary results of a cohort study in which 91 adults and older people were evaluated after hospitalization due to severe COVID-19. Participants were recruited 30-45 days after hospital discharge from a highly complex hospital in Brazil. The psychological outcomes were fear of falling (Falls Efficacy Scale – International - FES-I) and anxiety and depression symptoms (Hospital Anxiety and Depression Scale - HADS). Physical outcomes were frailty (Clinical Frailty Scale - CFS), sarcopenia (SARC-F) and functionality (Barthel Index - BI). Statistical analysis was performed using the Spearman coefficient for correlations between variables, with a significance level of $p < 0.05$. **Results:** There was a positive correlation between FES-I / CFS ($r = 0.523$ / $p < 0.001$); FES-I / SARC-F (0.527 / $p < 0.001$); FES-I / HADS ($r = 0.569$ / $p < 0.001$) and HADS / SARC-F ($r = 0.530$ / $p < 0.001$); HADS / CFS ($r = 0.284$ / $p < 0.009$). There was a negative and moderate correlation between HADS / BI ($r = -0.332$ / p 0.002). **Conclusion:** Patients who are frail are at increased risk of sarcopenia, loss of functionality and the appearance of symptoms of anxiety and depression, and fear of falling.

P39- PROVIDING FRAILTY SCREENING IN COMMUNITY-DWELLING OLDER ADULTS DURING THE COVID-19 PANDEMIC. Liyue Hong, Li Feng Tan, Pauline Chong, Reysham Singh, Zhi Jun Chew, Xiu Hui Ng, Melvin Ng, Pee Fen Khor, Lee Mei Ong, Mei Shan Heng, Santhosh Seetharaman *(Division of Healthy Ageing, Alexandra Hospital, Singapore)*

Background: Frailty is an important geriatric syndrome. It is associated with an increased risk of adverse health outcomes including disability, hospitalisation, institutionalisation and death. Early identification of frailty allows for early intervention. **Objectives:** To evaluate the role of a geriatric service hub in identifying frailty, sarcopenia and other geriatric syndromes in community-dwelling older adults during the COVID-19 pandemic. **Methods:** Potential participants were referred by their primary care physicians or community partners from Jul 2020 to Jun 2021. Those who were already known to geriatric services were excluded. Screening for frailty and sarcopenia was performed using the FRAIL scale and the SARC-F questionnaire respectively. Comprehensive geriatric assessment was performed by trained nurses over virtual platforms to reduce risk of COVID-19 transmission. Participants were subsequently reviewed by a geriatrician in a clinic setting and recommended appropriate interventions with the multidisciplinary team. **Results:** Among the 129 participants enrolled, the average age was 80.9 (65 - 99) years with a female predominance (59%). 64 (50%) were pre-frail and 54 (43%) were frail. 55 (43%) were at risk of sarcopenia. Other geriatric syndromes identified include falls and cognitive impairment. 71% had moderate to high concerns of falling using the Falls Efficacy Scale International (FES-I) with 19% having 2 or more falls over the past 12 months. 32% had an Abbreviated Mental Test (AMT) score of less than 8, and 48% had a Mini-Mental State Examination (MMSE) score of less than 23. 88% were evaluated by a geriatrician and managed with individualised multidisciplinary intervention plans. 12% declined intervention and case management by the geriatric service hub. 92%, 72%, 58% and 49% of the participants received prompt interventions from the physiotherapist, occupational therapists, dietician and social worker respectively. **Conclusion:** There is role for a community based geriatric service hub during the COVID-19 pandemic to identify frailty, sarcopenia and other geriatric syndromes amongst community dwelling older adults. Early identification of frailty and sarcopenia facilitates early intervention, hence reducing adverse health outcomes. The appropriate utilisation of virtual platforms helps minimise risk of COVID-19 transmission without compromising on care of the patient.

P40- IMPACT OF THE HOSPITALIZATION DUE TO COVID-19 ON SARCOPENIA, FRAILTY AND FUNCTIONALITY IN ADULTS AND OLDER PEOPLE AFTER HOSPITAL DISCHARGE. Camila Machado de Campos[1], Elizabeth Mendes da Silva[1], Erika Christina Gouveia e Silva[1], Caroline Gil de Godoy[1], Danielle Brancolini de Oliveira[1], Amislaine Cristina Gambeta[1], Celso Ricardo Fernandes de Carvalho[1], Ana Carolina Basso[1], Carolina Fu[1], Naomi Kondo Nakagawa[1], Clarice Tanaka[1], Carlos Toufen Junior[2], Carlos Roberto Ribeiro Carvalho[2], José Eduardo Pompeu[1] *(1. Department of Physical Therapy, Speech Therapy and Occupational Therapy. School of Medicine, University of Sao Paulo, Brazil; 2. Pneumology Division, Cardiopulmonary Department, Heart Institute (InCor), University of Sao Paulo, Brazil)*

Background: COVID-19 is an infectious, highly contagious disease that affects several body structures and functions. Many patients requiring long hospital stays may suffer loss of muscle mass and functional impairment due to the primary consequences of COVID-19, which can be further intensified with the adverse effects of hospitalization, mainly in older people. As it is a current disease, the analysis of the impact of COVID-19 on the physical function of patients after hospital discharge is extremely important. **Objectives:** To analyze the impact of hospitalization due to COVID-19 on sarcopenia, frailty and functionality in adults and older people after hospital discharge. **Methods:** Preliminary results of a cohort study that evaluated 91 adults and the older people after hospitalization due to COVID-19. Participants were recruited 30-45 days after hospital discharge from a highly complex hospital in Brazil. The main outcomes were sarcopenia (SARC-F), frailty (Clinical Frailty Scale) and functionality (Barthel Index). Statistical analysis was done through the Repeated Measures ANOVA (RM-ANOVA) and the post-hoc test, adopting a significance level of $p < 0.05$. **Results:** Ninety-one patients were evaluated, 44 (48.4%) adults and 47 (51.6%) older people, 15 (34%) female adults and 26 (55.3%) older females. The results showed a worsening in sarcopenia, frailty and functionality, in adults and older people after hospital discharge (RM-ANOVA, $p<0.001$). The Barthel Index presented a time and group interaction effect (RM-ANOVA, $p= 0.045$), showing a more important functional loss in older people (Bonferroni post hoc test, p=0,009). **Conclusion:** Hospitalization due to COVID-19 caused sarcopenia, frailty and loss of functionality in adults and older people after hospital discharge, but with a higher impact in older people.

E-HEALTH, DIGITAL TOOL

P42- EVALUATION OF THE IMPACT ON SARC-F BY CHANGING THE RESPONSE METHOD TO VISUAL ANALOGUE SCALE (VAS). Naoki Tomita *(Department of Geriatric Medicine and Neuroimaging, Tohoku university hospital, USA)*

Background: The SARC-F questionnaire is a well-validated screening test for sarcopenia. There are 5 components (Strength, Assistance with walking, Rise from a chair, Climb stairs and Falls). The scores range from 0 to 10, with 0 to 2 points for each component. a score equal to or greater than 4 is predictive of sarcopenia and poor outcomes. However, the screening sensitivity performance of SARC-F was poor, though its specificity was high. **Objectives:** We aimed to investigate the comparative features of using visual analogue scale as response method, instead of the usual categorical answer. And also, we aimed at comparing 5 designs of VAS to find out the best design for improving sensitivity. **Methods:** For the evaluation of features, we conducted Online internet survey by using SARC-F with 5 different VAS design for the answer. The survey was carried out involving two groups as subjects, older people attending the outpatient clinics of the Tohoku university hospital, and monitors registered to the survey company. As we intended to treat monitors as control, the age requirement of the monitors was 20 years old or older. Subjects were asked to answer 5 versions of SARC-F with different VAS designs for answer. We randomized the order of these 5 versions of SARC-F. **Results:** There were 307 participants, including 300 monitors and 7 older people from outpatient clinic. The SARC-F questionnaire with VAS answers showed mostly the similar results consistent with the usual SARC-F with categorical answers. However, there was significant variation with the high end of VAS answer. **Conclusion:** We concluded that how to control answers near the upper limit is the most important issue, rather than differences in auxiliary lines and scales.

P43- MODELING OF COMPLEX III CATALYTIC ACTIVITY AND ROS PRODUCTION: A MULTI-OBJECTIVE OPTIMIZATION FOR PERSONALIZED MEDICINEE. Corentin Coustham[1,2], Noélie Davezac[2], Joël Bordeneuve-Guibe[2] *(1. ISAE SUPAERO, Université de Toulouse, France; 2. CNRS CRCA, Université de Toulouse, France)*

Background: The dysfunctions in oxidative metabolism would be one of the major keys of the molecular mechanisms involved in different neurodegenerative diseases, optic neuropathies or ageing. Thus, it is of major importance to establish predictive algorithms for these pathologies. Moreover, the case of optical neurodegenerative diseases is one of the main goals of our society with the development in term of public health, but also transport and accompanying processes (works in association with ageing and autonomy) or infrastructures. The ageing population will experiment an

increase of the number of optical degenerative diseases and our society needs tools to analyze and predict the evolution of this kind of pathologies to adapt the environment. **Objectives:** In this context, we develop algorithms of the mitochondrial respiratory chain with a focus on Complex I and Complex III responsible for 80% of production of Reactive Oxygen Species(ROS). Our aim is to provide a global algorithm able to give the rate of ROS production from Complex I and Complex III associated to their respective activity. The complex III algorithm is the object of this presentation. **Methods:** The method used is based on in vitro data referring to the activity and production of ROS in several operating configurations of complex III. These data are introduced in algorithms with normalization by Utopia and Nadir points. The molecular behavior is transcribed with the Michaelis and Menten equations of enzymatic kinetics of Complex III reactions. Several models are created with different levels of accuracy, thus increasing the number of parameters to be optimized (~10). After having generated a population of parameters randomly, each solution is passed in a differential evolution algorithm in order to generate an optimized solution population. The models are connected through a cascade structure and are called successively from the simplest model to the most accurate. **Results:** According to the algorithm, the selected set of parameters simulates the activity of complex III and the production of ROS at the same time with results qualitatively and quantitatively close to the input data. **Conclusion:** The latest results will be presented during the congress.

P44- ONLINE SELF-ASSESSMENT OF THE OLDER WORKERS WITH HUMAN HEALTH DATA PASSPORT IN COVID-19 CONDITIONS. Olena Tomarevska, Oleksandr Poliakov *(D.F. Chebotarev Institute of Gerontology of the National Academy of Medical Sciences of Ukraine, Kyiv, Ukraine)*

Background: Restriction of physical activity, psychological stress, anxiety, change in the life-style under quarantine leads to frustration and negative change of the health in COVID-19 conditions. **Objectives:** With a high burden on health care, a shortage of medical personnel and uncertainty about the strategy to combat COVID19, the need for urgent diagnosis of public health is increasing. In this situation, online health diagnostics opens up additional possibilities for managing the health of patients and medical staff and saves material resources and time for healthcare workers and outpatients. **Methods:** The study used the WHO-recommended intrinsic capacity assessment scales (ICOPE), the five-question scale (SARC-F) to detect muscle dysfunction in older persons, as well as some questions regarding residual performance, psychophysiological methods. The questionnaire is including 69 questions, 21 of them were assessed by 1 point for positive answer and zero for negative case. The screening was carried out online on social media by distributing a three-day PSA to Internet users aged 45 to 85). In the study, 123 respondents from Ukraine regions, mainly with higher education 75%, 25% secondary vocational, of which 76% work. **Results:** The Health Passport screening showed reliability (Cronbach alfa = 0.5394) correlation of the main estimated indicators r = .3595 to .4521. 51% need the help of a doctor. 41% of respondents need to pay attention to the proper organization of rest and work, as well as physical activity and breathing exercises, 8% are healthy. Correlation analysis of the scale results showed a significant relationship with age r = - .188, with static balancing, falls during the last 6 months, and the ability to sit and get up from a chair 5 times in 14 seconds. The right organization helps to reduce the environmental burden on nature with the cost of visiting a doctor, saves the doctor's time spent on an outpatient patient and reduces the risk of exposure and the spread of COVID19. **Conclusion:** The screening showed the existing reserves of training for health promotion, overstrain of the functional systems of the body in the working population - 41%.

P45- COMPARISON OF THE RELIABILITY AND AGREEMENT OF THE HANDGRIP STRENGTH VALUES MEASURED BY GRIPWISE AND JAMAR DYNAMOMETERS. Daniela Pane[1], Angela Faria *(1. Wisify Tech Solutions Lda, Portugal; 2. Gripwise Tech Lda, Portugal)*

Background: Muscle strength, which is known to decline with age, is significantly associated with adverse outcomes such as cognitive impairment, sarcopenia, frailty, morbidity, disability, falls, and increased hospitalization. Handgrip strength (HGS) is a convenient measure for clinical practice and public health research. However, this performance can be complex and time-consuming as most widely used dynamometers do not allow for automatic data integration and export. Gripwise is a new digital dynamometer based on a smart load cell that automatically communicates with a mobile app and a cloud platform. **Objectives:** Comparing the validity and reliability of HGS measurements obtained with Jamar and Gripwise dynamometers in elderly patients. **Methods:** A comparative study was conducted in four Portuguese nursing homes. The HGS of 85 elderly volunteer patients (25 male and 60 female) was evaluated. The assessment was performed following the American Society of Hand Therapists (ASHT) protocol. It was performed two HGS measurements on each hand with both dynamometers, in random order, for any patient. The maximum value of the two measurements was considered for the dynamometers' comparison. Test-retest reliability was explored for each patient and dynamometer using the Wilcoxon test. Reliability and agreement between Gripwise and Jamar were assessed using Intraclass Correlation Coefficients (ICC) and Bland Altman plots with the calculation of limits of agreement. **Results:** No statistically significant differences were found between the two measurements in each hand for both the Gripwise and Jamar dynamometers ($p < 0.001$, CI:95%). The correlation between the measurement of the highest grip strength obtained with the Gripwise and the Jamar for the right hand was excellent (ICC: 0.91, $p < 0.001$), and for the left hand was good (ICC= 0.85, $p < 0.001$). Bland Altman's analysis revealed that the mean differences between the maximum HGS obtained with Gripwise and Jamar for the right and left hand was 2.48 (limits of agreement: -2.12; 7.08) kgf and 3.31 (limits

of agreement: -2.24; 8.86) kgf, respectively. **Conclusion:** Gripwise measurements produced valid, accurate, and reliable results when compared with the current Jamar gold standard. Some variations found in the maximum HGS values could be explained by the different weights of the dynamometers.

OSTEOPOROSIS & FRAILTY

P49- IS THERE A CORRELATION BETWEEN MEASUREMENT OF THE CALF CIRCUMFERENCE AND THE BONE MINERAL DENSITY IN COMMUNITY DWELLING BRAZILIAN OLDER WOMEN. Rávylla Rúbia Lima[2], Geovana D. Alvarez[1], Leonardo A.C. Teixeira[2], Franciane P. Brant[2], Tamiris C. Duarte[2], Leani S. M. Pereira[3], Daniele Sirineu Pereira[3], Patrícia Parreira Batista[3], Pedro H. S. Figueiredo[4], Adriana N. Parentoni[4] (*1. Rehabilitation and Functional Performance Post Graduate Program, Departament of Physiotherapy, Universidade Federal dos Vales do Jequitinhonha e Mucuri (UFVJM) Diamantina, Minas Gerais, Brazil; 2. Undergraduate from the Departamentof Physiotherapy, Faculdade de Ciências Biológicas e da Saúde, Universidade Federal dos Vales do Jequitinhonha e Mucuri (UFVJM), Diamantina, Minas Gerais, Brazil; 3. Post graduate Program in Rehabilitation Sciences, Department of Physiotherapy, Universidade Federal de Minas Gerais (UFMG) Belo Horizonte, Minas Gerais, Brazil; 4. Department of Physiotherapy, Universidade Federal dos Vales do Jequitinhonha e Mucuri (UFVJM) Diamantina, Minas Gerais, Brazil)*

Background: Aging process may result in a decrease in skeletal and respiratory muscle strength (RMS), which, in turn, would directly affect the functional capacity and performance in the activities of daily living of the older persons. Obesity can worsen this situation, with an increase in intra and intermuscular fat. **Objective:** To analyze the correlation between fat mass and RMS in olders. **Methods:** After approval by the Research Ethics Committee/UFVJM (number: 1.461.306), older women (aged ≥65years), were included. Exclusion criteria were: cognitive impairment, using the medication digoxin, due to its positive effect on respiratory strength, impairments that made the tests unfeasible. Participants were evaluated for: body mass index (BMI), body composition (DXA), handgrip strength (HGS); Short Physical Performance Battery (SPPB) and gait speed (GS); RMS: Maximal inspiratory (MIP) and expiratory (MEP) pressures. **Results:** The 109 older women with a mean age of 73 years were included in the sample and divided according to the classification of Lipschitz (1994) as: underweight (UW - BMI <22;n=12), eutrophic (EU- BMI from 22 to 27;n=41) and overweight (OW - BMI> 27; n=56). There were significant differences between the three groups regarding: BMI, lean mass, total fat, trunk fat, visceral adipose tissue (VAT), MIP and MEP. In the total sample, there was a weak positive correlation between fat in the trunk with: MIP ($r = 0.242$; $p = 0.011$) and MEP ($r = 0.258$; $p = 0.007$) and between VAT with MEP ($r = 0.295$; $p = 0.002$), and also a moderate positive correlation between VAT and MIP ($r = 0.326$; $p = 0.001$). In the UW group, there was a moderate positive correlation between total fat and MEP ($r = 0.628$; $p = 0.029$) and trunk fat and MEP ($r = 0.613$; $p = 0.034$). **Conclusion:** The groups differed significantly in terms of fat parameters and RMS. The OW group had the highest values, suggesting that these larger adipose deposits increase the RMS and functionality of overweight older women. On the other hand, it is clear the need to evaluate and monitor these factors in low-weight older women, as they had worse respiratory muscle performance. Keywords: body composition, respiratory muscle strength, older woman

P51- PROTEIN INTAKE DISTRIBUTION IS LINKED TO HEALTHY BONES IN WOMEN. Nathaniel R. Johnson[1], Christopher J. Kotarsky[2], Kara A. Stone[3], Rachel Paryzek[1], Kyle J. Hackney[1], Wonwoo Byun[4], Sherri N Stastny[1] *(1. Health, Nutrition, Exercise Sciences, North Dakota State University, Fargo, ND, USA; 2. Health and Human Physiological Sciences, Skidmore College, Saratoga Springs, NY, USA; 3. Health and Exercise Science, Gustavus Adolphus College, St. Peter, MN, USA; 4. Health and Kinesiology, University of Utah, Salt Lake City, UT, USA)*

Background: Protein intake is essential for bone health, but high protein diets can increase calcium excretion, detrimental to bone. Though the effects of total protein intake on bone health are being explored, the distribution of protein intake (DPI), another important factor, has not been investigated. Women, due to lower maximum bone mineral density (BMD) and the effects of menopause on bone health, are at greater risk of bone loss compared to men. **Objectives:** We investigated the association of DPI on total bone mineral content (BMC) and density, controlling for age, body mass index (BMI), and moderate-to-vigorous physical activity (MVPA) as well as relative energy intake, and percent of energy from carbohydrates, fats, and protein in a cross-sectional sample of women. **Methods:** Multiple linear regression models were used to determine the relationship between DPI and bone health. A total of 192 women (aged 41.8 $\pm$ 18.0) were included. DPI was determined by first blocking the day into three periods: waking to 1130, 1131 to 1630 and after 1630. Protein intakes of 25 grams or more during one of these periods were recorded as 0, 1, 2, or 3 periods, and intakes across the periods were summed to create an ordinal variable with four levels. Whole-body (total BMC and BMD) were assessed using dual-energy X-ray absorptiometry. Dietary intake derived variables were determined using three-day food diaries. Age, BMI, and MVPA were also included in the analyses. MVPA was assessed using accelerometry. **Results:** Models explained 37.2 % of the variance in BMC ($F_{8,183} = 14.2$; $p < 0.001$) and 38.2% of the variance in BMD ($F_{8,183} = 13.6$; $p < 0.001$). Achieving more than 25 grams of protein during these periods was related to increased BMC ($\beta \pm$ S.E.; 0.148 ± 0.038; $p < 0.001$) and BMD ($\beta \pm$ S.E.; 0.045 ± 0.013; $p = 0.001$) when controlling for age, body mass index, physical activity, relative energy intake, and percent of energy from carbohydrates, protein, and fats. **Conclusion:** DPI is related to better bone health. More focus

should be placed on inclusion of dietary protein throughout the day.

P52- PATIENT PREFERENCES FOR QUALITY OF LIFE ASPECTS IN SARCOPENIA: A BEST-WORST SCALING STUDY. Anton Geerinck[1], Médéa Locquet[1], Mickaël Hiligsmann[2], Jean-Yves Reginster[1,3], Olivier Bruyère[1,4,5], Charlotte Beaudart[1] *(1. Division of Public Health, Epidemiology and Health Economics, University of Liège, Liège, Belgium, World Health, Organization Collaborating Center for Public Health aspects of musculo-skeletal health and ageing; 2. Department of Health Services Research, CAPHRI Care and Public Health Research Institute, Maastricht University, The Netherlands; 3. Chair for Biomarkers of Chronic Diseases, College of Science, King Saud University, Riyadh, Kingdom of Saudi Arabia; 4. Department of Sport Rehabilitation Sciences, University of Liège, Belgium; 5. Physical, Rehabilitation Medicine and Sports Traumatology, SportS2, University Hospital of Liège, Belgium)*

Background: Much has been learned about quality of life (QoL) in sarcopenia in recent years, both through generic questionnaires and sarcopenia-specific instruments such as the Sarcopenia Quality of Life (SarQoL®) questionnaire and its shorter version, the SF-SarQoL. However, an investigation into what older people themselves find the most and least important with regards to the different aspects of QoL in sarcopenia has not yet been performed. **Objectives:** The primary aim of this study was to assess the relative importance of the 14 QoL aspects represented in the SF-SarQoL questionnaire using a best-worst scaling (BWS) survey. **Methods:** Participants, aged 65 years or older and community-dwelling, who previously participated in the SarcoPhAge study, received a BWS survey via the mail. An object case BWS was selected in which participants completed 12 choice tasks each, picking the most and least important aspect from a list of 4 items for each task. Relative importance scores (RIS) were estimated using Hierarchical Bayes modelling and rescaled so that the sum of all RIS was 100. A two-step cluster analysis was also conducted to investigate whether several profiles with regards to QoL preferences were present. **Results:** A total of 163 participants completed the survey, with a median age of 75 (73-81) years old, and mostly women (n=107; 65.6%). Two items were found to be significantly more important than the others: "feeling a reduction of physical capacity" (RIS=11.26), and "having balance problems" (RIS=11.09). The least important items were "experiencing difficulty carrying heavy objects" (RIS=2.89), and "feeling a reduction in muscle mass" (RIS=3.82). We found a relatively weak structure with two clusters and cannot exclude the possibility of it being artificial. One cluster prioritized items related to falls where the second prioritized items related to feeling physically capable. **Conclusion:** This is the first study to demonstrate that not all aspects of QoL in sarcopenia are equally important to older people. The ranking established in this study could help in the interpretation of QoL data, or inform the choice of outcome for interventions deigned to treat sarcopenia.

P53- IGF-I/IGFBP3/ALS DEFICIENCY IN SARCOPENIA: LOW GHBP SUGGESTS GH RESISTANCE IN A SUBGROUP OF GERIATRIC PATIENTS. Michael Drey[1], Uta Ferrari[1], Ralf Schmidmaier[1], Theresa Jung[1], Martin Reincke[1], Sebastian Martini[1], Benedikt Schoser[2], Martin Bidlingmaier[1] *(1. Department of Medicine IV, University Hospital, LMU Munich, Munich, Germany; 2. Friedrich-Baur-Institute, Department of Neurology, University Hospital, LMU Munich, Munich, Germany)*

Background: Definition of etiological subgroups of sarcopenia may help to develop targeted treatments. Insulin like growth factor-I (IGF-I), Insulinlike growth factor binding protein 3 (IGFBP3), and acid labile subunit (ALS) build a ternary complex that mediates growth hormone (GH) effects on peripheral organs, such as muscle. Low GH binding protein (GHBP) as a marker of GH receptor number would hint toward GH resistance. **Objectives:** We aimed to analyze the association of IGF-I, IGFBP3, and ALS with sarcopenia. **Methods:** A total of 131 consecutively recruited patients of a geriatric ward were included in a single-center cross-sectional analysis. Nonsarcopenic patients served as controls. Measures included sarcopenia status by hand-grip strength measurement and Skeletal Muscle Index (SMI); IGF-I, IGFBP3, ALS, GH, GHBP; body mass index (BMI); Activity of Daily Living (ADL); Mini–Mental State Examination (MMSE); routine laboratory parameters. Data were analysed by regression modeling. **Results:** Compared with controls, sarcopenic patients did not differ regarding age, sex, ADL, MMSE, C-reactive protein, glomerular filtration rate, and albumin serum concentrations. However, sarcopenic patients had significantly lower IGF-I, IGFBP3, and ALS. IGF-I and ALS associated significantly with sarcopenia and low hand-grip strength, even after adjustment for age, sex, BMI, and albumin, but not with low SMI. GHBP serum was low in sarcopenic patients, but normal in geriatric patients without sarcopenia. Over 60% of patients with IGF-I/ALS deficiency patients showed GH resistance. **Conclusion:** Our data suggest that in geriatric patients, low IGF-I/IGFBP3/ALS could be evaluated for causative connection of the sarcopenia spectrum. Low GHBP points toward potential GH resistance as one possible explanation of this deficiency.

P54- OSTEOARTHRITIS KNEE AND FRAILTY: A CROSS-SECTIONAL STUDY AMONG RURAL OLDER ADULTS IN ODISHA, INDIA. Trilochan Bhoi, Jay Singh Kshatri, Shakti Ranjan Barik, Subrata Kumar Palo, Sanghamitra Pati, Odisha, India *(ICMR-Regional Medical Research Centre, Bhubaneswar, Odisha, India)*

Background: As lifespan is increasing, it will increase the opportunity to carry out many activities for themselves and also for the family and society, but it also impacts negatively due to the physical and psychological abnormalities. Osteoarthritis knee (OA knee) is the common degenerative musculoskeletal problem seen among the older adults which leads to functional

limitation in daily activities. Another geriatric syndrome that also affects functional dependency is frailty but the relationship between osteoarthritis and frailty is yet to find out. So this study is an effort to collect evidence of the association between OA knee and frailty among rural older adults. **Objectives:** To find out the association between Osteoarthritis knee and frailty among rural older adults in Odisha, India. **Methods:** This cross-sectional study was conducted among 725 rural geriatric (age > 60 years) community-dwelling population in state of Odisha, India. The frailty status of the elderly was assessed using prevalidated Frailty Index For Elderly (FIFE) tool and categorized them into frailty, at risk of frailty, and robust group. Previous medical history of arthritis diagnosed by a medical professional was taken as positive for osteoarthritis knee. Chi-square test was used for hypothesis testing and multinomial logistic regression was used to find out the association of OA knee with frailty. Data were analyzed using R statistical programming software version 3.6.3. **Results:** The overall prevalence of frailty and at-risk frailty were 58.6% and 37.1%. Among the older adults, 409 were suffering from OA knee. The factors such as Education level, Occupation, Socioeconomic status, Economic dependency, and BMI found to be statistically associated with Frailty. Osteoarthritis knee found to be significantly associated (P=0.001) with frailty and the older adults with OA knee were 2.24 (1.07-4.70) times higher odds of developing frailty. **Conclusion:** The number of OA knee were increasing with increase in age and both affecting the frailty status of the rural older adults where health care facility is poor. This study providing the evidence regarding association of OA knee with frailty which should be handle by early assessment in primary care level for better wellbeing of the rural geriatric population.

P61- OSTEOSARCOPENIA IS ASSOCIATED WITH FUNCTIONAL DISABILITY IN MEXICAN ADULTS 50 YEARS AND OLDER LIVING IN COMMUNITY. Miriam Teresa Lopez-Teros, Oscar Rosas-Carrasco, Sergio Sanchez-Garcia, Lilia Castro-Porras, Armando Luna-Lopez, Marcela Agudelo-Botero *(Universidad Nacional Autonoma de México, México)*

Background: Osteosarcopenia (OS) associate with functional disability (DF) in older people, early evaluation of these geriatric conditions could help prevent DF and thereby contribute to improving the quality of life of older people. **Objective:** To analyze the association between OS with functional FD in adults 50 years and older living in community. **Design:** Cross-sectional analysis of the Frailty, Dinapenia and Sarcopenia Study in Mexican Adults (FraDySMex). **Setting and Participants:** 825 people were included, 77.1% women, aged 70.3 ± 10.8 years. **Methods:** The OS was defined when the person was diagnosed with Sarcopenia (SP) plus osteoporosis, the SP diagnosis was evaluated in accordance with the criteria of the European Working Group for the Definition and Diagnosis of Sarcopenia (EWGSOP), and osteoporosis using the World Health Organization (WHO) criteria. Muscle mass and bone mass were evaluated using dual-energy X-ray absorptiometry (DXA). The FD was evaluated using the basic activities of daily living (BADL) and the instrumental activities of daily living (IADL). Additionally, other sociodemographic and health variables such as sex, age, schooling, cognitive status, depression, comorbidity, hospitalization, polypharmacy, urinary incontinence, and nutrition variables such as risk of malnutrition and obesity were included. Associations between OS with DF were evaluated using multiple logistic regression. **Results:** The average age was 70.3±10.8 years and 77.1% were women. The prevalence of OS and FD and OS was 8.9% and 8.9%, respectively. The OS is associated with significant FD [OR: 1.92; CI 95% 1.11-3.33]. **Conclusions and Implications:** Early evaluation of geriatric conditions associated with changes in body composition such as OS could help clinical staff prevent DF and thereby contribute to improving the quality of life of older people.

NUTRITION & AGING

P65- MALNUTRITION, ASSESSED BY THE GLIM CRITERIA BUT NOT BY THE MNA, PREDICTS THE INCIDENCE OF SARCOPENIA OVER A 5-YEAR FOLLOW-UP OF THE SARCOPHAGE COHORT. Laetitia Lengelé[1], Olivier Bruyère[1,2,3], Charlotte Beaudart[1], Jean-Yves Reginster[1,4], Médéa Locquet[1] *(1. WHO Collaborating Centre for Public Health Aspects of Musculoskeletal Health and Aging, Division of Public Health, Epidemiology and Health Economics, University of Liège, CHU—Sart Tilman, Quartier Hôpital, Liège, Belgium; 2. Department of Sport Rehabilitation Sciences, University of Liège, Liège, Belgium; 3. Physical, Rehabilitation Medicine and Sports Traumatology, SportS2, University Hospital of Liège, Liège, Belgium; 4. Biochemistry Department, College of Science, King Saud University, Riyadh, Saudi Arabia)*

Background: The capacity of malnutrition screening, using the Mini Nutritional Assessment (MNA), to predict the onset of sarcopenia remains unknown. **Objectives:** Our first objective is to explore the association between the screening of malnutrition and the incidence of sarcopenia and then, to assess the added value of the diagnosis of malnutrition to predict sarcopenia over a 5-year follow-up. **Methods:** Malnutrition was screened at baseline according to the MNA short-form (MNA-SF) and long-form (MNA-LF) and was diagnosed by the GLIM definition. Sarcopenia was defined using the European Working Group on Sarcopenia in Older People (EWGSOP2) criteria. Kaplan-Meier analysis and adjusted Cox regression were performed to explore the association between nutritional status and the incidence of sarcopenia. **Results:** A total of 418 participants were analyzed (median age 71.7 years (67.7 – 76.8), 60% women) for our first objective. Among them, 64 (15.3%) became sarcopenic during the follow-up period. In the adjusted model, the incidence of sarcopenia was non significantly associated with the risk of malnutrition for both forms of the MNA (MNA-SF: HR of 1.68 (95% CI 0.95 – 2.99); MNA-LF: HR of 1.67 (95% CI 0.86 – 3.26)). However,

among the 337 participants for which a GLIM assessment was possible, malnourished subjects had a higher risk than well-nourished participants of developing sarcopenia after 5 years, with an adjusted HR of 3.19 (95% CI 1.56 – 6.50). **Conclusion:** A full diagnosis of malnutrition seems more useful than a simple malnutrition screening to predict the incidence of sarcopenia over 5 years.

P66- ASSOCIATION OF THE RISK OF SARCOPENIA WITH THE RISK OF MORTALITY IN THE ELDERLY OF A PRIVATE BRAZILIAN HOSPITAL. Natalia Golin, Silmara Rodrigues Machado, Erika Suiter, Ariane Nadolskis Severine *(Department of Nutrition, Sirio Libanês Hospital, Sao Paulo, Brazil)*

Background: It is known that sarcopenia has a negative impact on health, which may result in limitations in physical capacity, fragility, falls, prolonged hospitalizations and death. In people aged 60 to 70 years, the prevalence is reported in 5% to 13%, and increases to 11% to 50% in people older than 80 years, depending on the criteria used for the diagnosis. **Objectives:** To relate the risk of sarcopenia with the risk of mortality in the elderly hospitalized in a Brazilian hospital. **Methods:** This was a retrospective observational cohort study, with elderly people over 60 years old, hospitalized in the last 72 hours between September and October 2019 and 2020. After approval by the Research Ethics Committee, demographic and clinical data were obtained from medical and nutritional records. Being the risk of sarcopenia obtained through the SARC-CalF score and the risk of mortality obtained through the classification made in the Clusters of Patients with Refined Diagnoses, based on criteria defined by specialists and divided into four levels (Low, Moderate, High and Extreme). The data were analyzed using measures of central tendency, absolute and relative frequencies. To verify the relationship, the Mann-Whitney and Analysis of Variance tests were used, with Tukey's post-test, with a significance level of 5%. **Results:** 132 patients were evaluated, with a mean age of 74 years, 60.6% (n=80) of the male gender and a mean hospital stay of 7.6 days. In the age group from 60 to 79 years old, the prevalence of the risk of sarcopenia was 13% (n=12) and 43% in the elderly over 80 years old. The most prevalent mortality risk was the Moderate risk with 37.1% (n=49). In the analysis of the association, the risk of sarcopenia showed a statistically significant difference with age ($p<0.001$) and with the risk of mortality ($p<0.001$). **Conclusion:** It is possible to conclude that the risk of sarcopenia can be considered a risk factor for hospital mortality, although this relationship is also influenced by the diagnosis and comorbidities, this study reaffirms the importance of assessing body composition in the elderly.

P67- PROTEIN INTERVENTIONS AUGMENT THE EFFECT OF RESISTANCE EXERCISE ON LEAN MASS AND STRENGTH IN OLDER ADULTS: A SYSTEMATIC REVIEWAND META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS. Richard Kirwan[1], Carmen Rodriguez Garcia[2], Mohsen Mazidi[3], Katie Lane[4], Tom Butler[5], Fatima Perez de Heredia[1], Ian G Davies[4] *(1. School of Biological and Environmental Sciences, Liverpool John Moores University, Liverpool, UK; 2. Department of Health Sciences, Faculty of Experimental Sciences, University of Jaén, Jaén, Spain; 3. Department of Twin Research and Genetic Epidemiology, King's College London, London, UK; 4. Research Institute of Sport and Exercise Science, Liverpool John Moores University, Liverpool, UK; 5. School of Applied Health and Social Care and Social Work, Faculty of Health, Social Care and Medicine, Edge Hill University, UK)*

Background: Increased protein intake is suggested as a strategy to slow or even reverse the age-associated loss of muscle mass and strength observed in sarcopenia. However, the diversity of study designs results in inconsistent findings on the effects of protein interventions in older adults. **Objectives:** We assessed the evidence on the effects of whole protein supplementation or higher-protein diets, without the use of essential amino acids or supplements known to stimulate hypertrophy, alone or in combination with resistance exercise interventions, on lean body mass and strength in older adults. We performed a systematic literature search using PubMed, Medline, Web of Science and Cochrane CENTRAL databases from January 1990 up to October 2019. We included randomized controlled trials assessing whole protein supplementation and/or higher-protein dietary interventions in older adults (mean age >= 50 years), on total lean body mass, appendicular lean mass, hand grip and knee extension strength. We used a random effects model (weighted mean difference [WMD]) and generic inverse variance methods were used to synthesize quantitative data, followed by a leave-one-out method for sensitivity analysis. **Methods:** Protein supplementation had a significant positive effect on total lean body mass [WMD:0.247, p=0.006, I2:14.2], appendicular lean mass [WMD:0.551, p=0.018, I2:0.0] and knee extension strength [WMD: 0.435, p=0.026, I2:63.9]; however, only when used concomitantly with resistance exercise. Neither protein nor resistance exercise intervention had significant effects on handgrip strength [WMD:0.126, p=0.141, I2:0.0]. Meta-regression revealed significant positive associations between baseline total lean body mass and change in total lean body mass (beta: 0.0034, p=0.013) and between per-meal protein dose and change in appendicular lean mass (beta: 0.016, p=0.041). **Results:** In older adults undergoing resistance exercise, increased protein intake leads to greater lean body mass, appendicular lean mass and knee extension strength, although no superior effect is seen with the use of additional protein alone.

P73- THE RELATIONSHIP BETWEEN MINI-NUTRITIONAL ASSESSMENT AND HANDGRIP STRENGTH IN GERIATRIC PATIENTS WITH CHRONIC OBSTRUCTIVEPULMONARY DISEASE: A CROSS-SECTIONAL STUDY. Kuan-Yuan Wang[1], Chia-Ming Chang[1], Yung-Yun Chang[2], Jui-Yen Huang[3], Ming-Shyan Huang[4] *((1. Department of Geriatrics and Gerontology, National Cheng-Kung University Hospital, College of Medicine, National Cheng-Kung University, Tainan, Taiwan; 2. Department of Internal Medicine, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan; 3. Department of Pediatrics, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan; 4. Department of Internal Medicine, I-Da Cancer Hospital, Kaohsiung, Taiwan)*

Background: The muscle dysfunction and exercise impairment that occurs in patients with chronic obstructive pulmonary disease (COPD) can be explained by systemic inflammation arising from the lung and a decrease in the muscle mass of the lower extremities. Handgrip strength (HGS) is emerging as a promising tool to measure muscle strength and a proxy for functionality. **Objectives:** The aim of this study was to include nutritional and respiratory function assessment in older male COPD patients and determine their association with body composition and HGS. **Methods:** We recruited 40 older male patients (aged 63-97 years) with stable COPD attending the pulmonary medicine outpatient clinic of Kaohsiung Medical University Hospital. Muscle strength was determined by HGS, using a hand dynamometer. Body mass index (BMI) and appendicular skeletal muscle mass index (ASMI) was measured by bioelectrical impedance analysis device. The nutritional status was evaluated with the measurement of serum albumin level and the short-form Mini-nutritional assessment (MNA)-Taiwan Version. The obstruction of airways was measured by the forced expiratory volume in one second (FEV1). The symptom level was assessed by using the modified Medical Research Council (mMRC) dyspnea scale and the COPD Assessment Test (CAT). The level of C-reactive protein (CRP) and the inflammatory cytokine interleukin-6 (IL-6) were determined. **Results:** The average of the ASMI and HGS were 8.22±1.30 (kg/m2) and 30.22±5.52 (kg) respectively. The average of FEV1 in the subjects was 1.42±0.62 (L). Spearman's correlation analysis showed HGS was significantly associated with age, FEV1, BMI, ASMI, CAT, mMRC, albumin, and MNA score ($p<.05$). In the linear regression analyses, FEV1 and total MNA scores showed to be significantly and positively associated with HGS (($p<.05$), while only the MNA score positively correlated with ASMI ($p=.011$). **Conclusion:** Our results showed that the measurement of handgrip strength could be used as part of nutritional assessment. We proposed that the Mini-Nutritional Assessment be useful for assessing the nutritional status of older Taiwanese patients with COPD.

EPIDEMIOLOGY

P74- SARCOPENIA AND CARDIOMETABOLIC RISK FACTORS IN SOCIALLY ACTIVE OLDER PEOPLE: AN OBSERVATIONAL STUDY. Carolina Böettge Rosa[1,2], Karen Mello de Mattos Margutti[2,3], Valéria Baccarin Ianiski[2], Carla Helena Augustin Schwanke[1,2] *(1. Graduate Program in Biomedical Gerontology, School of Medicine, Pontifical Catholic University of Rio Grande do Sul (PUCRS), Porto Alegre, Rio Grande do Sul, Brazil; 2. Study Group on Cardiometabolic Risk, Aging and Nutrition (GERICEN), Institute of Geritrics and Gerontlogy, Pontifical Catholic University of Rio Grande do Sul (PUCRS), Porto Alegre, Rio Grande do Sul, Brazil; 3. Area of Knowledge of Life Science, University of Caxias do Sul (UCS), Caxias do Sul, Rio Grande do Sul, Brazil)*

Background: Sarcopenia is a multifactorial syndrome common in the elderly. Cardiovascular disease and cardiometabolic risk factors are also frequent, with some, such as obesity, being associated with sarcopenia. However, studies involving sarcopenia and cardiometabolic risk factors are still scarse. **Objectives:** To analyze the association between sarcopenia and cardiometabolic risk factors in socially active older people. **Methods:** A cross-sectional and retrospective study with 396 socially active community older individuals (>=60 years old) from southern Brazil. Older persons with low muscle strength associated with low muscle quantity were considered sarcopenic, as recommended by the European Working Group on Sarcopenia in Older People (EWGSOP2). Muscle strength was assessed using handgrip strength (hand dynamometer Jamar®); appendicular lean mass through bioelectrical impedance analysis (BIA-Biodinamycs 310e®), using the equation by Barbosa-Silva et al.; and physical performance by 4-meter walk gait speed test. The cardiometabolic risk factors investigated were smoking, low level of physical activity (assessed by the Internacional Physical Activity Questionnaire-IPAQ), low consumption of fruit/vegetable (assessed by the Mini Nutrition Assessment MNA®), diabetes (increased fasting glucose or undergoing treatment with oral hypoglycemic drugs and/or insulin), hypertension (hight blood pressure or undergoing drug treatment), dyslipidemia (high total cholesterol, LDL-cholesterol, triglycerides or decreased HDL-cholesterol or undergoing drug treatment), and obesity [overweight/obesity (body mass index), central obesity (waist circumference), fat mass index, and body fat percentage increased (BIA). The data were analyzed by Pearson chi-square test or Fisher exact test ($P<0.05$). **Results:** Most participants (85.4%) were female (N=338), and the average age was 70.27±6.41 years (60-84 years). Two hundred and fifty-one older persons were hypertensive (63.4%), 14.6% diabetics (N=58), and 56.6% overweight/obese (N=209). The frequency of probable sarcopenia was 18.4% (N=73), and sarcopenia was 10.4% (N=41, of which 51.2% were severe sarcopenic - N=21). Sarcopenia was associated with smoking ($P=0.028$), eutrophy ($P=0.05$), normal fat mass index and body fat percentage ($P=0.007$ for both), and absence of central

obesity (P=0.006). **Conclusion:** Sarcopenia was observed as prevalent in the sample and significantly associated with smoking and the absence of obesity. These results show the importance of tracking sarcopenia at all levels of care, even in socially active community older persons.

P75- LOW GAIT SPEED AS MARKERS OF DEPENDENCE REGARDING BASIC ACTIVITIES OF DAILY LIVING IN OLDER PEOPLE. Flavia Silva Arbex Borim[1,2], Juliana Carvalho Segato Marincolo[1], Mariana Reis Santimaria[3], Ivan Aprahamian[4,5], Anita Liberalesso Neri[1], Ligiana Pires Corona[1], Monica Sanches Yassuda[1,6] *(1. Faculty of Medical Sciences, State University of Campinas, Campinas, Brazil; 2. Department of Collective Health, School of Health Sciences, University of Brasilia – Brasilia (DF), Brazil; 3. Faculty of Physiotherapy. Pontifical Catholic University of Campinas, Brazil; 4. Group of Investigation on Multimorbidity and Mental Health in Aging (GIMMA), Geriatrics division, Jundiai Medical School, Jundiai, Brazil; 5. University of Groningen, University Medical Center Groningen, Department of Psychiatry, Groningen, The Netherlands; 6. School of Arts, Sciences and Humanities (EACH) – University of Sao Paulo, Sao Paulo, Brazil)*

Background: In Gerontology and Geriatrics, it is essential to identify predictors of negative outcomes. **Objectives:** To determine whether low gait speed increases the risk of disability in community-dwelling older people. **Methods:** Longitudinal study with 390 older adults participating in the Fragilidade em Idosos Brasileiros (FIBRA) Study. The variable of interest of the present study was functional capacity, which was assessed on the modified Katz Index; for the analysis of risk factors, we considered slow gait speed (≤ 8 m/s). Associations were determined using Pearson's chi-square test with a 5% significance level. Logistic regression analysis was performed to estimate crude and adjusted odds ratios (OR) and respective 95% confidence intervals (CI). **Results:** Increases in prevalence between baseline and follow-up were found for low slow gait speed (26.0 to 81.1%), and functional dependence (10.8 to 26.6%). Slow gait speed remained a predictor of dependence on basic activities of daily living (OR: 1.92; 95% CI: 1.08-3.43). **Conclusion:** Slow gait speed at baseline was found to be a robust predictor of functional dependence in the follow up. Thus, gait speed in older people is an important variable for screening for functional decline and it constitutes an important intervention target. These results can assist healthcare providers design directed interventions within a plan of comprehensive care that can contribute to greater levels of autonomy, independence, and wellbeing for the older population.

P76- IS QUADRICEPS ASSESSMENT ASSOCIATED WITH A LOSS OF MUSCLE MASS AND DECLINES IN MUSCLE STRENGTH AND MOTOR FUNCTION? Takafumi Mizuno[1,2], Yasumoto Matsui[3], Makiko Tomida[4], Yasuo Suzuki[3,5], Yukiko Nishita[4], Chikako Tange[4], Hiroshi Shimokata[4,6], Shiro Imagama[1], Rei Otsuka[4], Hidenori Arai[7] *(1. Department of Orthopaedic Surgery, Nagoya University Graduate School of Medicine, Nagoya, Aichi, Japan; 2. Department of Musculoskeletal Disease, National Center for Geriatrics and Gerontology, Obu, Aichi, Japan; 3. Center for Frailty and Locomotive Syndrome, National Center for Geriatrics and Gerontology, Obu, Aichi, Japan; 4. Department of Epidemiology of Aging, National Center for Geriatrics and Gerontology, Obu, Aichi, Japan; 5. Department of Human Care Engineering, Nihon Fukushi University, Mihama, Aichi, Japan 6. Graduate School of Nutritional Sciences, Nagoya University of Arts and Sciences, Nisshin, Aichi, Japan; 7. National Center for Geriatrics and Gerontology, Obu, Aichi, Japan)*

Background: The quadriceps femoris is one of the muscles most prone to age-related muscle mass loss, but its importance should be emphasized more because it is easily assessed using computed tomography (CT) and ultrasonography. Furthermore, muscle quality has been the focus of attention in recent years, and attempts have been made to evaluate muscle mass and quality in terms of cross-sectional area (CSA) and CT values (CTVs), respectively. However, the relationships among quadriceps muscle mass/quality, appendicular muscle mass, muscle strength, and physical function remain unclear. **Objectives:** The purpose of this study was to verify the diagnostic ability of CT of the quadriceps muscle to detect low muscle mass, low muscle strength, and low physical function based on the diagnostic criteria for sarcopenia. **Methods:** We measured the quadriceps CSA and CTV on mid-thigh CT of 472 subjects (254 men and 218 women; mean age, 62.3 years) who participated in the 7th wave of the National Institute for Longevity Sciences-Longitudinal Study of Aging. CSA x CTV was created as a composite index of muscle mass and quality. The subjects were classified as having low muscle function (grip strength <28 kg for men and <18 kg for women and/or walking speed <1.0 m/s) and low muscle mass (skeletal muscle index based on dual-energy X-ray absorptiometry <7.0 kg/m2 for men and <5.4 kg/m2 for women). The diagnostic performance was evaluated using the area under the curve (AUC) of the receiver operating characteristic curve. The diagnostic accuracy was evaluated such that 0.9–1.0 was considered high, 0.7–0.9 was considered moderate, and 0.5–0.7 was considered low based on the AUCs. **Results:** The AUCs of low muscle mass were 0.867 (CSA), 0.509 (CTV), and 0.814 (CSA x CTV) in men and 0.791 (CSA), 0.465 (CTV), and 0.737 (CSA x CTV) in women. The AUCs of low muscle function were 0.853 (CSA), 0.759 (CTV), and 0.868 (CSA x CTV) in men and 0.769 (CSA), 0.720 (CTV), and 0.810 (CSA x CTV) in women. **Conclusion:** Low muscle mass and low muscle function may be diagnosed with moderate accuracy by evaluating the quadriceps muscle, specifically using CSA and CSA x CTV.

P77- TRAJECTORIES AND TRANSITIONS BETWEEN FRAILTY STAGES AND ASSOCIATED FACTORS: SYSTEMATIC REVIEW. Angela Benjumea, Carmen Curcio *(Gerontology and geriatrics research group, Univesidy of Caldas, Manizales, Colombia, South America)*

Background: Frailty is a dynamic syndrome and may be reversible. Despite this, little is known about trajectories or transitions between different stages of frailty. **Objectives:** The aim of this study is to collect evidence in the literature of research studies about transitions between stages and trajectories of frailty and their related factors to improve their knowledge and current state. **Methods:** A systematic review was conducted, selecting studies between 2005 and 2020 that reported transitions and trajectories of frailty in people older than 60 years according to the PRISMA guidelines, a total of 25 articles are included in the present study. **Results:** The stage of frailty remained stable during the follow-up time in most of the group, the same for those who progressed between stages of frailty and a smaller number had regression between stages; this progression occurred mainly between adjacent stages and from pre-frail to frail. Among the related factors were: being a woman, older age, low educational and socioeconomic level, presence of chronic comorbidity. **Conclusion:** Frailty presents transitions and associated factors between stages of frailty and requires a methodological advance and development in the construction of trajectories that allow predicting the behavior, prognosis and results of those who present it.

P78- THE PREVALENCE OF SARCOPENIA AMONGST COMMUNITY-DWELLING ELDERLY IN JAMAICA. G.A. Nelson[1], P.M. Francis-Emmanuel[1], C. Osmond[2], M.S. Boyne[1], T. Forrester[3] *(1. Faculty of Medical Sciences, University of the West Indies, Kingston, Jamaica; 2. University of Southampton, United Kingdom; 3. Solutions for Developing Countries, University of the West Indies, Kingston, Jamaica)*

Background: The prevalence of sarcopenia in Jamaica is unknown. The muscle mass cut-off points used by leading sarcopenia interest groups are largely derived from young Caucasian reference populations. **Objectives:** To determine the cut off point for identifying decreased muscle mass in elderly, community-dwelling Jamaicans using a young Jamaican reference population, and to determine the prevalence of sarcopenia among the community-dwelling elderly in Jamaica. **Methods:** The study was approved by the research ethics committee. Data for determining appendicular lean mass index (ALMI), measured by dual energy X-ray absorptiometry (DXA), were retrospectively extracted from a reference population of 754 young Jamaicans (275 males and 479 females) aged 18-40 years. In accordance with the European Working Group for Sarcopenia in Older Persons (EWGSOP), the cut-off point for determining low muscle mass was taken as 2 standard deviations (SDs) below the sex-specific mean ALMI of the reference population. We screened relatively healthy seniors aged 60 years and older for sarcopenia using the EWGSOP1 algorithm. The ALMI was measured by DXA. **Results:** From the reference population (mean age 30.9 years), the mean ALMI were 8.97 kg/m 2±1.02 (men) and 7.51 kg/m 2±1.15 (women). Two SDs below the mean yielded ALMI cut-off points of 6.936 kg/m2 for men and women 5.21 kg/m2. A total of 1344 eligible seniors (418 men, 926 women; mean age 70.5±7.3 years) were screened. Application of cut-off points yielded sarcopenia prevalence estimates of 2.8%; 5.98% among men and 1.4% among women. **Conclusion:** Sarcopenia prevalence estimates are similar to those reported elsewhere for persons of African descent. These prevalence estimates should be applied with caution as convenience samples were used for the reference population and the screening population.

P80- HOW ARE FRAILTY, SARCOPENIA, AND MALNUTRITION INCLUDED IN U.S. STATE AGENCY ON AGING STRATEGIC PLANS? Jaime J. Gahche[1], Mary Beth Arensberg[2], Johanna T. Dwyer[1,3] *(1. National Institutes of Health, Office of Dietary Supplements, USA; 2. Abbott Nutrition Division of Abbott, USA; 3. Frances Stern Nutrition Center, Tufts Medical Center and Tufts University Schools of Medicine, Friedman School of Nutrition Science and Policy and Jean Mayer USDA Human Nutrition Research Center on Aging, USA)*

Background: The U.S. Older Americans Act (OAA) of 1965, requires that every few years State Agencies on Aging submit their strategic plans (State Plans) for spending OAA funds, including for support of community nutrition programs providing congregate and home delivered meals. OAA programs can help address frailty, sarcopenia, and malnutrition, all critical problems facing many older Americans. The 2020 OAA Act's reauthorization language further focused these aims by including malnutrition reduction and the 2020 Dietary Guidelines for Americans mention frailty, sarcopenia, and malnutrition as concerns for older adults. The State Plans provide an opportunity to gain insight into how State Agencies on Aging propose identifying and addressing these problems. **Methods:** In February 2021, we searched State Agency on Aging State Plans posted on the website advancingstates.org. We counted the number of times these words were mentioned: frail/frailty, sarcopenia, malnutrition/underweight/undernutrition and related terms: obesity/overweight, as well as some possible interventions including dietary supplements. Terms were first searched to determine if they occurred at all in the State Plans and then second if they were mentioned in the verbiage on goals/ objectives and strategies/action plans. **Results:** For the different State Plans (n=51), frailty was mentioned in 63%; however only 6% of plans mentioned frailty as part of a goal/objective and 16% as part of a strategy/action plan. No plans had any mentions of sarcopenia. For malnutrition, just 33% mentioned malnutrition; only 8% mentioned malnutrition as part of a goal/objective and 16% as part of a strategy/action plan. There were no significant differences in the frequency of terms mentioned in State Plans when they were examined by region of the country, by states having a larger percent population who were older adults, or by states with larger percentages of obese persons. **Conclusion:**

Frailty, sarcopenia, and malnutrition impact healthy aging and are significant contributing factors to poorer health outcomes for older adults. OAA programs can be important vehicles to help address these challenges at the community level. A critical future step is for more State Plans to specifically include the conditions as part of their measurable goals/objectives and defined strategies/action plans.

P82- FRAILTY IN THE NETHERLANDS: DEVELOPING A FRAILTY INDEX AND INVESTIGATING ITS PSYCHOMETRIC PROPERTIES USING ITEM RESPONSE THEORY. Nanda Kleinenberg-Talsma[1], Fons van der Lucht[1,2], Harriët Jager-Wittenaar[1,3], Wim Krijnen[1,4], Evelyn Finnema[1,5] *(1. Hanze University of Applied Sciences, Research Group Healthy Ageing, Allied Health Care and Nursing, Groningen, The Netherlands; 2. Centre for Health and Society, National Institute of Public Health and the Environment, Bilthoven, The Netherlands; 3. University of Groningen, University Medical Center Groningen, Department of Oral and Maxillofacial Surgery, Groningen, The Netherlands; 4. University of Groningen, Faculty of Science and Engineering, Groningen, the Netherlands; 5. University of Groningen, University Medical Center Groningen, Department of Health Science, Section of Nursing Research, Groningen, The Netherlands; 6. NHL Stenden University of Applied Sciences, Research Group Living, Wellbeing and Care for Older People, Leeuwarden, The Netherlands)*

Background: The proportion of frail older adults is increasing, and will continue to do so in the coming years, both globally as well as in the Dutch population. This poses a great challenge to public health care. To exactly determine the prevalence of frailty in a population, a frailty index (FI) is necessary. A FI is an accumulation model that encompasses a range of health deficits from multiple health domains. In frailty literature, it is stated that existing health surveys can be used to create a FI, since a FI is a flexible instrument which is fairly insensitive to the use of specific items. However, this statement is based on scale development using Classical Test Theory (CTT), whereas very few studies have investigated the psychometric properties of their FI using Item Response Theory (IRT). **Objectives:** To create a FI using data from a Dutch health survey: the Public Health Monitor 2016, and to investigate the psychometric properties of this FI using Item Response Theory (IRT). **Methods:** From the different items in the Public Health Monitor, 42 initial items were selected, encompassing three health domains, i.e., physical, psychological, and social. Psychometric properties were investigated by using an IRT model for polytomous response categories: the Graded Response Model (GRM). Items were evaluated with Cronbach's Alpha, Factor Analysis, Point Polyserial Correlations, and the Graded Response Model. **Results:** The analyses showed that all items demonstrated a positive association with the scale. However, five items did not fit well to the FI scale. From the physical domain these were body mass index and three items about adherence to physical activity guidelines: moderate activity per week; bone and muscle strengthening activities; balance exercises. From the psychological domain this was an item about a sense of control over one's own future. **Conclusion:** By using IRT, we showed that while 37 items were adequate and fitted the scale well, five items in our FI were redundant, indicating that it does matter which items are selected for a FI. IRT is a strong method for item selection and thus for creating a more concise Frailty Index.

ANIMAL MODELS, PRECLINICAL STUDIES

P83- ADIPONECTIN RECEPTOR ACTIVATION IMPACTS SKELETAL MUSCLE AGING IN MICE. Katie Osterbauer[1], Anne Schaar[2], Timothy Rhoads[2], Alex Smith[2], Justin Lopez[3], Adam Kuchnia[1], Gary Diffee[3], Rozalyn Anderson[2,4] *(1. Department of Nutritional Sciences, University of Wisconsin, Madison, WI, USA; 2. Department of Medicine, Division of Geriatrics and Gerontology, School of Medicine and Public Health, University of Wisconsin, Madison, WI, USA; 3. Department of Kinesiology, University of Wisconsin, Madison, WI, USA; 4. Geriatric Research, Education, and Clinical Center, William S. Middleton Memorial Veterans Hospital, Madison, WI, USA)*

Background: The loss of skeletal muscle mass and function with age, known as sarcopenia, is accompanied by reduced muscle strength and physical performance, as well as increased risk for impaired mobility, falls, fracture, and mortality. Sarcopenia also has significant metabolic consequences including sarcopenic obesity, and with age is associated with risk for diabetes and cardiovascular disorders. Currently there is no effective pharmacological intervention for sarcopenia. Adiponectin is an adipose-tissue derived hormone that stimulates mitochondrial metabolism in target tissues and been linked to delayed aging by caloric restriction. AdipoRon, an adiponectin agonist, has been shown to stimulate metabolism in skeletal muscle in young mice; however, its effects on skeletal muscle in older mice is still largely unknown and its functional consequence has yet to be described. **Objectives:** The purpose of this study was to investigate if AdipoRon could be used as a novel agent to treat or reverse the effects of sarcopenia by preserving muscle metabolism, mass, and function. **Methods:** Male and female mice presenting with early (18 months) or late (24 months) stage sarcopenia were treated with AdipoRon in the diet (50mg/kg) for 4 months. Physical performance and body composition were assessed at baseline, 12 and 18 months, and after treatment. Metabolic testing included fasting glucose, glucose tolerance, and metabolic rate assessments. In ex vivo studies, mitochondrial respiration and muscle contractile force were performed in perfused fibers from muscle groups including gastrocnemius, extensor digitorum longus, and soleus. **Results:** At advanced age, AdipoRon lowered fasting glucose in both males and females and exerted similar effects on energy expenditure and respiratory exchange ratio. In males, age-related declines (24-28 months) in functional performance were attenuated with AdipoRon treatment. In females, functional measures were equivalent between 24 and 28 months, although

age-related loss in body weight and body fat was prevented by AdipoRon treatment. **Conclusion:** These data show sex dimorphism in skeletal muscle aging, with loss of function progressing throughout old age in males but not females, with beneficial metabolic effects in both sexes. AdipoRon has potential therapeutic clinical applications for functional and metabolic declines linked to sarcopenia.

P84- IMMOBILIZATION COMBINED WITH CALORIC RESTRICTION AS TRANSLATIONAL MOUSE MODEL FOR SARCOPENIA EXPRESSING KEY PATHWAYS OF HUMAN PATHOLOGY. Jelle CBC de Jong[1,3], Lars Verschuren[2], Martien PM Caspers[2], Nanda Keijzer[1], Nicole Worms[1], Joline Attema[1], Christa de Ruiter[1], Simone van der Drift-Droog[1], Arie G Nieuwenhuizen[3], Jaap Keijer[3], Aswin L Menke[1], Robert Kleemann[1], Anita M van den Hoek[1] *(1. Department of Metabolic Health Research, The Netherlands Organization for Applied Scientific Research (TNO), Leiden, The Netherlands; 2. Department of Microbiology and Systems Biology, The Netherlands Organization for Applied Scientific Research (TNO), Zeist, The Netherlands; 3. Human and Animal Physiology, Wageningen University, Wageningen, the Netherlands)*

Background: The prevalence of sarcopenia is increasing and effective interventions are required to prevent or reverse age-related muscle loss. However, it often is challenging, expensive and time-consuming to develop and test the effectiveness of such interventions and translational animal models that are adequately mimicking the underlying physiological pathways are scarce. **Objectives:** Strong predictors for the incidence of sarcopenia include a sedentary life-style and malnutrition. Therefore, our objective was to test the translational value of three potential mouse models for sarcopenia, namely partial immobilized, caloric restricted (CR) and a combination (immobilized & CR) model. **Methods:** C57BL/6J mice were calorically restricted (40%) and/or one hindleg was taped and immobilized for two weeks to induce muscle atrophy. Muscle mass, function and type 1 and 2 myofiber diameters were compared to those of young control (16 weeks) and aged mice (92 weeks). Transcriptome analysis of quadriceps muscle was performed to identify the underlying pathways and were compared with those of human aged vastus lateralis muscle biopsies using five different human studies. **Results:** CR induced overall loss of lean body mass (-15%, $p<0.001$), whereas immobilization decreased muscle strength (-28%, $p<0.001$) and muscle mass of hindleg muscles specifically (on average -25%, $p<0.001$). Type 1 and 2 myofibers decreased in diameter in immobilized mouse models, while in CR and aged mice only type 2 myofibers decreased in size. Surprisingly, on a transcriptional level, the underlying pathways of the combination model revealed more similarity with the human underlying pathways than the aged mice and recapitulated 73% of pathways that were differently expressed in aged human vastus lateralis muscle (vs. 45% in aged mice). These pathways included key pathways related to (mitochondrial) metabolism, cellular growth, protein degradation, extracellular matrix remodeling and oxidative stress. **Conclusion:** We demonstrate that a two-week period of CR is an effective way to induce muscle atrophy, while immobilization is required to induce loss of muscle strength. The combination model exhibited loss of both muscle mass and function and illustrated substantial similarity with human underlying pathways. We conclude that the combination model can be a suitable model for testing the effectiveness of muscle-ageing related interventions.

BIOMARKERS AND IMAGING

P86- COMPARISON OF SARCOPENIA CLASSIFICATIONS WITH QUADRICEPS ASSESSMENTS USING FEMORAL CT IMAGES. Yasumoto Matsui, Tsuyoshi Watanabe, Marie Takemura, Yuji Hirano, Shosuke Satake, Atsushi Harada, Keisuke Maeda, Izumi Kondo, Hidenori Arai *(National Center for Geriatrics and Gerontology, Obu Aichi, Japan)*

Background: Although evaluation of muscle quality by CT image has been mentioned in EWGSOP2, not many clinical research has been conducted. **Objectives:** To examine the usefulness of computed tomography (CT) images in diagnosing sarcopenia. **Methods:** A total of 382 patients who visited the Integrated Healthy Aging Clinic, 140 men and 242 women, with mean ages of 78.0 ± 6.4 and 76.6 ± 7.5 years, respectively were included in this study. The cross-sectional area and CT value of quadriceps femoris muscle were measured in CT cross-sectional images of the right mid-thigh using an image analysis software (Slice Omatic). In addition to normal (N), sarcopenia (S), and severe sarcopenia (SS) groups based on the Asian Working Group for Sarcopenia Again Working Group for Sarcopenia (AWGS) 2019 criteria, patients who exhibited declined muscle strength or physical functions, but not muscle mass were classified as the lower function (LF) group. Cross-sectional areas and CT values of these four groups were compared using one-way analysis of variance. **Results:** Cross-sectional muscle areas of the N, LF, S and SS groups were 42.7, 40.3, 37.4, and 32.4 cm2, respectively, with S and SS groups being significantly smaller than the N group ($p<0.05$, $p<0.01$, respectively), but we found no significant difference between the LF and N groups or between the LF and S groups. We also noticed that participants in the SS group had significantly lower values than those in the LF group ($p<0.01$). CT values of each group were 48.5, 44.7, 46.2, and 45.2 (HU), respectively, with LF and SS groups having significantly lower values than the N group (both $p<0.01$), whereas the S group did not show a significant decrease. There was no significant difference among LF, S and SS groups, either. Although the difference in the SS and S groups was not significantly different, there was a trend that the SS group had a lower value than the S group ($p=0.06$). **Conclusion:** CT assessments showed that the cross-sectional muscle area in the LF group was not different from that in the normal group, but the quality of muscle is lower. These results suggest that simultaneous evaluation of muscle mass and quality by CT could be useful in predicting adverse outcomes.

P87- RELATIONSHIP BETWEEN BIOIMPEDANCE PHASE ANGLE AND DEGREE OF FRAILTY OR FALL EXPERIENCE. Yasumoto Matsui, Yuji Hirano, Marie Takemura, Shosuke Satake, Tsuyoshi Watanabe, Naoki Ito, Izumi Kondo, Hidenori Arai *(National Center for Geriatrics and Gerontology, Obu Aichi, Japan)*

Background: Some reports state that the phase angle (PhA) measured by the bioimpedance method is related to sarcopenia and frailty. **Objectives:** The purpose of this study was to clarify the relationship between PhA and the degree of frailty or fall experience. **Methods:** Total 373 patients who visited the Integrated Healthy Aging Clinic (Locomo-Frail clinic in Japanese) were included in the study, with 136 males (78.1±6.3 years old), and 237 females (76.5±7.5 years old). PhA between both the lower limbs was measured with a body composition analyzer (MC-980A-N plus, Tanita Corporation, Tokyo, Japan). In addition, the frailty status was classified into three groups: robust, pre-frail and frail, according to the Fried criteria. Furthermore, patients were divided into two groups according to whether or not they experienced falls in the past year. Differences in the mean values between the groups were compared using ANOVA, with age as a covariate. **Results:** The PhA values for the 3 groups of 81 robust, 195 pre-frail, and 97 frail individuals were 4.25±0.7, 3.95±0.65, and 3.51±0.64, respectively, showing significant differences among all the groups (between robust and pre-frailty: $p<0.01$, and between pre-frailty and frailty, robust and frailty; both $p<0.001$). The PhA value decreased as the degree of frailty progressed. In contrast, based on the presence or absence of falls in the past year, the PhA value was 4.00±0.73 in 233 patients who had no history of falls, whereas it was 3.73±0.63 in 140 patients who had a history of falls. PhA was significantly lower in the group with a history of falls ($p =0.003$). **Conclusion:** PhA is considered to be a valid indicator of tissue normality. In this study, the value decreased as the degree of frailty increased, and it was lower in those who had fall experience. Thus, PhA may be a good indicator of the degree of frailty and susceptibility to fall.

P88- COMBINED HIGH-RESOLUTION ANATOMICAL AND QUANTITATIVE MAGNETIC RESONANCE IMAGING FOR DETECTION OF MICROSTRUCTURAL TISSUE CHANGES IN SKELETAL MUSCLE. Bragi Sveinsson[1,2], Matthew S Rosen[1,2] *(1. Athinoula A. Martinos Center for Medical Imaging, Department of Radiology, Massachusetts General Hospital, Boston, USA; 2. Harvard Medical School, Boston, USA; 3. Department of Physics, Harvard University, Cambridge, USA)*

Background: Proposed biomarkers for sarcopenia include measures such as grip strength and gait speed, but such measurements do not provide detailed information about the state of the muscle. Importantly, microscopic changes in muscle quality may precede loss of muscle mass. Measuring this through imaging could provide new opportunities for interventions to improve muscle function and prevent age-associated muscle loss. **Objectives:** Our objective is to develop advanced magnetic resonance imaging (MRI) techniques that can simultaneously provide high-resolution macrostructural images of skeletal muscle and high-quality quantitative microstructural tissue maps. These maps will show the spatial distribution of MRI tissue parameters such as T2 relaxation, associated with inflammation, diffusivity, and fat fraction. The experiments will be performed at a high magnetic field of 7 Tesla for optimal image quality. **Methods:** We use a 3D imaging technique known as double-echo in steady-state for imaging thigh muscles in a healthy volunteer. This technique allows efficient 3D high-resolution data at 7 Tesla without distortion, a common problem at high magnetic fields. By comparing the signals generated by this technique to theoretical signal models, we determine the tissue parameters that most likely generated the observed signal. This enables us to determine the T2 relaxation and diffusivity of the tissue. Furthermore, we estimate the muscle fat fraction by performing two measurements with different radiofrequency pulses, one measuring water and the other fat. The T2 can be estimated from a single application of the technique, while the diffusivity and fat fraction require an additional application each. **Results:** Preliminary results demonstrate the technique's capability to achieve both high-resolution anatomic information as well as microstructural measurements. The scan time for each scan was 11 minutes. A resolution of under 0.15x0.15x2 mm was achieved at 7 Tesla without imaging artifacts. In addition to the anatomical information, T2, diffusivity, and fat fraction were obtained at the same resolution and agreed well with literature values, and T2 was obtained without additional scan time. **Conclusion:** High-field MRI offers opportunities to investigate muscle tissue on a macro- and microstructural level at high resolution, facilitating more precise measurements of muscle tissue and its relationship to sarcopenia and associated biomarkers.

P89- CORRELATION OF SARCOPENIA WITH LENGTH OF STAY AS WELL AS RE-ADMISSION RATE IN ELDERLY PATIENTS ADMITTED TO HOSPITAL DUE TO FALL. David Doss *(Liverpool Hospital, Sydney, Australia)*

Background: Sarcopenia is associated with significant morbidity and mortality in the elderly population. Patients with sarcopenia have a greater likelihood of falls, disability, admission to nursing homes and generally have poorer quality lives. There are several described radiological methods involving a wide range of imaging modalities to aid in sarcopenia diagnosis. One of the described methods is the "psoas muscle index" where the cross area of the psoas muscle is calculated at the level of the L3 and adjusted for the patient's height. Such body composition information, though readily available through CT and potentially valuable to the physician, is often neither routinely assessed nor reported by the radiologist. **Objectives:** The primary objective is to determine if there is a correlation between sarcopenia (determined by psoas muscle index) and length of stay (LOS) in elderly patients

admitted to a geriatric ward in a tertiary referral hospital due to a fall related to de-conditioning. The secondary objective will be to assess rates of re-admission rate (secondary to a further fall) of patients in both arms of the study in the 6 months following the initial admission. **Methods:** Patients greater than 65 years of age who were admitted to Liverpool hospital due to a fall between January 2020 to June 2020 were identified through emergency department patient admission registry. Following identification of such patients, patients who underwent abdominal or lumbar spine CT imaging during that admission or in the 6 months prior were also identified. Exclusion criteria included patients admitted due to a cerebrovascular accident, patient who sustained a fracture and patient who underwent surgery during admission as these would have significantly increased LOS (aim of the study involves patients with fall due to de-conditioning rather than other causes). An axial slice at the level of the L3 vertebral body was used to calculate the psoas muscle area bilaterally through the use of the free hand outline tool on PACS. The psoas muscle index (PMI) cut offs to define sarcopenia are 414.5 mm2/m2 and 564.2 mm2/m2 for women and men, respectively (as described by Amini N et al). **Results:** 362 patients were included in the study including 189 male patients and 173 female patients. The average age was 81 (range 65-98). 152 patients (42%) met PMI criteria for sarcopenia, of which 56% were female. The average LOS for patients without sarcopenia was 2.3 days (range 1-24 days) while the average LOS for patients with sarcopneia was 6.5 days (range 1-31). Using a cut off of 3 day as a significant difference in LOS, there was a significant difference in LOS between the two patient groups ($p<0.05$). No correlation between sacopenia and re-admission rate was demonstrated. **Conclusion:** Sarcopenia increased the LOS of elderly patients admitted to hospital secondary to a fall. Reporting of such radiological data should be considered as it may be of benefit to the clinician.

P91- PROTEOMIC PROFILING REVEALS NEW PROTEIN BIOMARKERS OF LOW MUSCLE AND HIGH FAT MASS: A MACHINE LEARNING APPROACH IN THE KORA S4/FF4 STUDY.

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Background: The coexistence of low muscle mass and high fat mass, two interrelated conditions strongly associated with declining health status, has been characterized by only a few protein biomarkers. High-throughput proteomics enable concurrent measurement of numerous proteins, facilitating the discovery of potentially new biomarkers. **Objectives:** To identify new protein biomarkers of low muscle, high fat mass, and their combination. **Methods:** Data derived from the prospective population-based KORA S4/FF4 cohort study (median follow-up time: 13.5 years) included 1,478 participants (51.2% men) aged 55-74 years in cross-sectional and 608 participants (51.8% men) in longitudinal analyses. Appendicular skeletal muscle mass (ASMM) and body fat mass index (BFMI) were determined through bioelectrical impedance analysis at baseline and follow-up. At baseline, 233 plasma proteins were measured using proximity extension assay. We employed boosting with stability selection to identify new biomarkers. Prediction models developed from group lasso with 100x bootstrapping were evaluated by the area under the curve (AUC). **Results:** In cross-sectional analyses, we identified kallikrein-6 (KLK6), C-C motif chemokine 28 (CCL28), and tissue factor pathway inhibitor (TFPI) as previously unknown biomarkers for muscle mass [Association with low ASMM: odds ratio (OR) per 1-SD increase in log2, normalized protein expression (95% confidence interval (CI)): 1.63(1.37-1.95), 1.31(1.14-1.51), 1.24(1.06-1.45), respectively] and serine protease 27 (PRSS27) for fat mass [Association with high BFMI: OR(95%CI): 0.73(0.61-0.86)]. CCL28 and metalloproteinase inhibitor 4 (TIMP4) constituted new biomarkers for the combination of low muscle and high fat mass [Association with low ASMM combined with high BFMI: OR(95%CI): 1.32(1.08-1.61), 1.28(1.03-1.59), respectively]. The inclusion of protein biomarkers selected in >=90% of group lasso bootstrap iterations on top of classical risk factors improved the accuracy of models predicting low ASMM, high BFMI, and their combination [delta-AUC(95%CI): 0.16(0.13-0.20), 0.22(0.18-0.25), 0.12(0.08-0.17), respectively]. In longitudinal analyses, N-terminal prohormone brain natriuretic peptide was the only protein selected for loss in ASMM and loss in ASMM combined with gain in BFMI over 14 years [OR(95%CI): 1.40(1.10-1.77), 1.60(1.15-2.24), respectively]. **Conclusion:** Proteomic profiling revealed new biomarkers of muscle mass (KLK6, CCL28, and TFPI), fat mass (PRSS27), and their combination (CCL28 and TIMP4). Proteomics enable us to accelerate protein biomarker discoveries in muscle research.

PHYSICAL EXERCISE

P92- BIOMARKER AND COGNITIVE EFFECTS OF SINGLE BOUTS OF MODERATE-INTENSITY NEURO-EXERGAMING, HIGH-INTENSITY INTERVAL TRAINING (HIIT), AND FASTED EXERCISE FOR MILD COGNITIVE IMPAIRMENT: A CASE STUDY OF SERIAL INTERVENTIONS.

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Background: With both longevity and dementia on the rise, interventions are sought to prevent or ameliorate cognitive and physical frailty. Prior research has revealed greater cognitive benefit and concomitant biomarker changes after varied forms of exercise for mild cognitive impairment (MCI). **Objectives:** This case study examined the effects of serially administered (every 72 hours) varied forms of exercise interventions, including moderate neuro-exergaming (with and without fasting), high-intensity interval training (HIIT), as well as fasting alone (as control), on cognitive function and biomarkers in an older adult with MCI. The mode of exercise was via a portable, in-home, interactive Physical and Cognitive Exercise System (iPACESTM), comprised of an under-table pedaler that controls progress in a tablet-based video game wherein one pedals and steers along a virtual bike path. **Methods:** All study procedures were administered remotely due to the COVID-19 pandemic. The participant self-collected saliva samples using materials shipped to her residence. Cognitive function was assessed via the Montreal Cognitive Assessment (MoCA) and the paper Stroop test (pStroop), administered via videoconference before and after the intervention. Additionally, an electronic Stroop (eStroop) was administered before and after each of the four serially-assigned interventions. **Results:** A time-series display illustrated slight improvements on the pStroop and MoCA from baseline to post-series of interventions, possibly influenced by practice effects. Within the series, there was a marked improvement on eStroop following the fasted moderate neuro-exergaming bout, as well as the fasting-only control condition. Biomarker analyses revealed a substantial increase in alpha-amylase following the non-fasted moderate neuro-exergaming, while cortisol decreased substantially from elevated baselines after the fasting-only and HIIT conditions. **Conclusion:** The results partially replicated previous findings of positive changes in executive function and biomarkers that suggest exercise is a useful tool in the fight against cognitive and physical frailty, but further research with additional participants is needed. Various combinations of exercise and nutrition status seem to yield different effects on biomarkers and cognition, with expected increases in alpha-amylase prominent after both moderate and HIIT exercise, with a decrease in cortisol after the latter. The greatest gain in cognitive function appeared to be after fasted moderate neuro-exergaming.

P94- FACILITATORS AND BARRIERS THAT ENHANCE PHYSICAL ACTIVITY IN OLDER PATIENTS DURING A HOSPITAL STAY: A SYSTEMATIC REVIEW.

Froukje Dijkstra[1,2,3], Geert van der Sluis[3,4], Harriët Jager-Wittenaar[2,3,5], Liesbeth Hempenius[6], Hans Hobbelen[2,3,7], Evelyn Finnema[1,2,3,8] *(1. NHL Stenden University of Applied Sciences, Research Group Living, Wellbeing and Care for Older People, Leeuwarden, the Netherlands; 2. Hanze University of Applied Sciences, Research Group Healthy Ageing, Allied Health Care and Nursing, Groningen, the Netherlands; 3. FAITH research consortium, the Netherlands 4. Nij Smellinghe Hospital Drachten, Department of Physiotherapy, Drachten, the Netherlands; 5. University of Groningen, University Medical Center Groningen, Department of Oral and Maxillofacial Surgery, Groningen, the Netherlands; 6. Medical Center Leeuwarden, Geriatric Center, Leeuwarden, the Netherlands; 7. University of Groningen, University Medical Center Groningen, Department of General Practice and Elderly Care Medicine, Groningen, the Netherlands; 8. University of Groningen, University Medical Center Groningen, Department of Health Science, Section of Nursing Research, Groningen, the Netherlands)*

Background: Low physical activity (PA) during hospital stay is related to poor physical outcomes, such as reduced pulmonary function, reduced strength and leading to functional decline. For 30% of older patients, the consequences of functional decline persist after discharge. Previous studies estimated that mobile older patients spend at least 80% of the day in bed during hospital stay. To change older patients PA behavior, it is important to understand which modifiable factors facilitate or hamper PA during hospitalization. **Objectives:** To systematically review the literature focusing on the identification of facilitators and barriers of PA in older patients (>= 65y) during hospitalization from the perspectives of patients, caregivers and healthcare professionals (HCP). **Methods:** The databases PubMed, CINAHL, PsychINFO, EMBASE and Web of Science were systematically reviewed. Inclusion criteria were: 1) quantitative or qualitative study design, 2) published in a peer-reviewed English, German or Dutch language journal, and 3) examining facilitators and barriers of PA of older patients during hospitalization. The social-ecological model of McLeroy et al. (1988), consisting of intrapersonal, interpersonal and institutional levels, was used as a framework to synthesize the identified facilitators and barriers. **Results:** Thirty-seven articles were included. Seven themes were identified within the social-ecological model. Intrapersonal included: 1) knowledge, awareness, and attitude of patient, caregivers and HCP; 2) patients health status; 3) treatment-related factors. Facilitators were awareness and perceived benefits. Barriers were patients physical health and safety concerns. Interpersonal included: 4) patient cooperation influences; 5) team and clinician influences. Facilitators were patient social support and HCP collaboration.

Barriers were HCP-patient relation and HCPs unclear roles. Institutional included: 6) physical environment; 7) structural and organizational factors. Facilitators were patient activities and PA protocols. Barrier was lack of resources. **Conclusion:** Older patients PA levels in hospital may increase if attention is paid to PA health benefits, safety concerns of patients and HCP, priority and interdisciplinary responsibility of PA promotion, availability of staffing, time and equipment, enhance physical environment, and hospital policies on mobilization. As many of these factors are modifiable, strategies can be developed to increase hospital PA behavior of older people.

P95- A MULTICOMPONENT AND FUNCTIONAL PHYSICAL EXERCISE PROGRAM REVERSES FRAILTY, IMPROVES PHYSICAL CONDITION AND MAINTAINS FUNCTIONALITY IN OLDER ADULTS LIVING IN NURSING HOMES. Itxaso Mugica-Errazquin[1,2], Maider Kortajarena[1], Ander Espin[3], Itziar Villar[4], Jon Irazusta[3], Ana Rodriguez-Larrad[3] *(1. Nursing Department II, University of the Basque Country (UPV/EHU), Spain; 2. Hospital Universitario Donostia, Basque Health Service (Osakidetza), Spain; 3. Physiology Department, University of the Basque Country (UPV/EHU), Spain; 4. Txara 2 Nursing Home, Gipuzkoa Provincial Council (Kabia), Spain)*

Background: Older people living in nursing homes (NH) are characterized by a high prevalence of frailty and dependency, and reversing or changing these conditions is often difficult as they worsen over time. Physical exercise programs (PEP) have been shown to improve these syndromes in community-dwelling older adults. In contrast, there is insufficient evidence in people living in NH and the results show contradictory effects. **Objectives:** The main objective of this study is to ascertain if a specifically designed PEP directed to people living in NH is effective to reduce frailty, maintain functionality and improve physical condition. **Methods:** 148 subjects (mean age 85.4±6.5, %49.7 women) participated in this single-group interventional study. The inclusion criteria were: ≥70 years, ≥50 points on the Barthel Index, ≥20 points on the MEC-35 test, and to be able to stand up from a chair and walk with or without any aid or help. The PEP consisted of an individualized and progressive multicomponent and functional intervention, of two sessions of one hour per week, for 6 months. Frailty was measured by Fried Frailty Index (FFI), Tilburg Frailty Indicator (TFI) and Rockwood Clinical Frailty Scale (RCFS). Barthel Index (BI) was used to asses functionality in activities of daily living. Short Physical Performance Battery (SPPB) was used to asses physical condition. Statistical comparisons were performed using paired t-test and McNemar test, and Cohen's d was calculated for effect size (ES) estimation. Accepted by the Research Ethics Committee of the University of the Basque Country, M10/2018/171. Clinical trial registry: NCT04221724. **Results:** The PEP improved frailty scores for the three parameters measured: FFI ($p<0.01$, ES:0.193), TFI ($p<0.01$, ES:0.189) and RCFS ($p<0.001$, ES:0.278). The prevalence of frailty also decreased: FFI 58.8% vs 51.35%, TFI 54.7% vs 46.6% and RCFS 19.6% vs 8.1% ($p<0.001$). SPPB score improved (6.16±2.65 vs 7.03±3.10, $p<0.001$, ES:0.301) and Barthel Index also improved non-significantly ($p=0.523$). **Conclusion:** The assessed PEP showed to be effective in reversing frailty and improving physical condition, as well as in maintaining autonomy in older adults living in NH. Long-term PEP should be implemented in NH for slowing functional decline of older adults.

INTEGRATED CARE (ICOPE)

P101- DEVELOPMENT OF A WELL-BEING INDEX (AN INTRINSIC CAPACITY SCORE) FOR PREDICTING FUNCTIONAL LIMITATIONS ACCORDING TO A SCREENING QUESTIONNAIRE IN THE CONTEXT OF INTEGRATED CARE FOR OLDER PEOPLE (ICOPE): THE JOCKEY CLUB COMMUNITY EHEALTH CARE PROJECT. Ruby Yu[1,2], Jason Leung[3], Grace Leung[2], Jean Woo[1,2] *(1. Department of Medicine & Therapeutics, Faculty of Medicine, The Chinese University of Hong Kong, Hong Kong, China; 2. Jockey Club Institute of Ageing, The Chinese University of Hong Kong, Hong Kong, China; 3. Jockey Club Centre for Osteoporosis Care and Control, The Chinese University of Hong Kong, Hong Kong, China)*

Background: A well-being index (An intrinsic capacity score) derived from a screening questionnaire in the context of integrated care for older people (ICOPE) may be used as a first step in community settings to identify older people with loss in intrinsic capacity who may be followed up with assessments and care planning. **Objectives:** To derive a well-being index based on the conditions associated with declines in intrinsic capacity. **Methods:** 10,007 people aged 60 years or older living in the community in Hong Kong were interviewed using an online screening questionnaire during 2016/2017 (baseline) and followed up for three years. The conditions associated with declines in intrinsic capacity including memory complaints, limited mobility, visual impairment, hearing loss, poor psychological well-being, and muscle weakness were collected. Bi-factor analysis was employed to derive the index standardizing to a mean of 5 and a standard deviation of 1, with higher scores indicating better well-being. Logistic regression and receiver operating characteristic (ROC) curve were performed to examine the ability of the index to predict incident functional limitations. **Results:** The mean age of the participants at baseline was 75.7±7.9 years. A bi-factor model, with a general factor labelled as 'well-being' was developed which fitted the data well, with overall good fit indices (Root Mean Square Error of Approximation=0.042, 90% CI=0.039-0.045). Older age groups, women, or those who reported more chronic diseases scored lower on the index (All $p<0.001$). Compared with the participants in the lowest quartile of the index, those in the highest quartile was associated with a 0.3 (95%CI=0.2-0.3) times lower risk of incident functional limitations at the 1-year follow-up(n=5,435), adjusted for age and sex. The corresponding values at the 2-year(n=2,315) and the 3-year follow-up(n=1,132) were both 0.3 (95%CI=0.2-

0.5). The area under the ROC curve for incident functional limitations at the 1-year, 2-year, and 3-year follow-up were 0.654, 0.624, and 0.638, respectively. A cut-off score of <=5.5 identified 60.9% of the participants as being at risk of functional decline at the 1-year follow-up with 81.3% sensitivity and 46.0% specificity. **Conclusion:** A well-being index with a cut-off score of <=5.5 may be used in community settings as the first step for screening out those with loss in intrinsic capacity for person-centred assessments and care planning.

P102- DEVELOPMENT OF CHECKLIST FOR ASSESSING INTRINSIC CAPACITY FROM THE KIHON CHECKLIST AND THE FALL RISK INDEX QUESTIONNAIRES. Shosuke Satake[1,2,3], Kaori Kinoshita[2], Yasumoto Matsui[3], Hidenori Arai[4] *(1. Department of Geriatric Medicine, National Center for Geriatrics and Gerontology, Obu Aichi, Japan; 2. Department of Frailty Research, Center for Gerontology and Social Science, National Center for Geriatrics and Gerontology, Obu Aichi, Japan; 3. Center for Frailty and Locomotive Syndrome, National Center for Geriatrics and Gerontology, Obu Aichi, Japan; 4. President, National Center for Geriatrics and Gerontology, Obu Aichi, Japan)*

Background: World Health Organization has proposed a new concept of "intrinsic capacity (IC)" to promote person-centered care for older adults in the primary care setting. They created a "Handbook for Integrated Care for Older People" to introduce how to screen and assess IC of older adults in the health checkup or primary care settings. Unfortunately, the coronavirus diseases-19 pandemic has negatively affected social activity, health checkups and visiting clinics, especially in older people. Therefore, it is reasonable to create a checklist for assessing IC (IC-checklist) for avoiding face to face interaction. **Objectives:** We tried to develop an IC-checklist from the preexisting questionnaires, such as the Kihon Checklist (KCL) and the Fall Risk Index (FRI), and to examine the validity of the checklist in patients who visited the frailty clinic. **Methods:** Participants were 464 patients aged 65 years and over who visited the frailty clinic of the National Center for Geriatrics and Gerontology Hospital. Physical functions, nutrition status, cognitive function, mental status, activities of daily living (ADL), and the KCL and the FRI questionnaires were assessed by trained medical staffs. The questions on cognitive, physical, vital, and mental capacity in the IC-checklist was constructed from the KCL and the sensory capacity was from the FRI questionnaire. Receiver operating characteristics (ROC) curve analysis was performed to examine the relationship between the standard assessments and each domain in the IC-checklist. **Results:** The area under the curve (AUC) between questions in each capacity and its standard examination were analyzed except visual and hearing capacity. The AUCs of IC-checklist in cognitive, physical, vital, and mental capacity for MMSE<24, SPPB≤9, MNA-SF≤11, and GDS-15≥=5 were 0.845, 0.796, 0.785, and 0.816, respectively. **Conclusion:** We developed a checklist to assess IC in older patients. The score in each capacity was well correlated with its standard evaluation. The validation of the checklist for IC should be warranted in an independent cohort.

P103- METHODS AND IMPACT OF ICOPE STEP 1 TRAINING BY WEBINAR. Justine de Kerimel, Céline Mathieu, Neda Tavassoli, Christine Lafont, Caroline Berbon, Fatemeh Nourhashemi, Maria Soto, Bruno Vellas *(Gérontopôle, Centre Hospitalo-Universitaire de Toulouse, Équipe Régionale Vieillissement et Prévention de la Dépendance (ERVPD), Hôpital La Grave, Place Lange, Toulouse, France)*

Background: ICOPE is a WHO program developped to reduce number of dependants older people. This program is based on evaluation ad monitoring of 6 fonctions (cognition, hearing, vision, mood, nutrition, mobility) by health professionals in primary care. Toulous Gerontopole organize training program by webinar to inform on ICOPE and help them to realize STEP 1. **Objectives:** - Evaluate the participation in training sessions and the profile of the participants; - Known the impact of training on the number of participants registered for the ICOPE MONITOR application or the ICOPEBOT chatbot and the number of step 1 performed. **Methods:** - Tools used for webinar training (STARLEAF/ LIVESTORM); - Information for health professionals : press release, posters, vidéo; - Statistical analysis : -Descriptive analysis from teleconferencing software data (May 2020 to April 2021); -Impact study: crossing data with software date and the Gerontopôle database. **Results:** 23 trainings sessions realized, mean training duration : 45 min. Average number of participants by session : 54 (min 21 max 153). 1736 professionals registered for 1380 professionals trained (engagement rate : 78.8%). Participants profils : nurses 63%, pharmacist 12%, doctors 6%. Nowadays, 622 (45.5%) professionals have downloaded one of the digital tools and performed 1392 step1. **Conclusion:** Webinar trainin is a useful method to inform health profesionals to ICOPE program and teaching them how to realize STEP 1.

P104- PLACE OF DIGITAL TOOLS IN THE IMPLEMENTATION OF THE ICOPE PROGRAM. Justine de Kerimel, Neda Tavassoli, Christine Lafont, Céline Mathieu, Caroline Berbon, Maria Soto, Bruno Vellas *(Gérontopôle, Centre Hospitalo-Universitaire de Toulouse, Équipe Régionale Vieillissement et Prévention de la Dépendance (ERVPD), Hôpital La Grave, Place Lange, Toulouse, France)*

Background: ICOPE is a program developed by WHO to prevent dependency. This program is based on the assessment and monitoring (every 4-6 months) of the 6 functions that make up intrinsic capacity (IC): mobility, nutrition, vision, hearing, mood and cognition. The target of this care project is the population of subjects aged 60 and over who are independent and living at home. One of the ICOPE's objectives is to help seniors, through support of caregivers, to become an actor in monitoring their capacities and manage their health conditions. To facilitate the assessment (step1) and allow the monitoring of the IC, the Gerontopole of the Toulouse University Hospital in

collaboration with the WHO has developed two digital tools: an application "ICOPE Monitor", a chatbot "ICOPEBOT". These tools are easy to use for seniors after a short training. The data collected are transmitted to a secure database approved GDPR: Frailty ICOPE database of Gerontopole. **Objectives:** - Evaluate the use, by seniors, of the 2 digital tools realize the initial step 1 and the follow-up step 1. - Identify the user profile for each digital tool. **Methods:** Quantitative descriptive analysis based on data extracted from the Frailty ICOPE database (until April 2021). **Results:** There are 8 145 participants in the database (74.9 ± 12.6 years, 60.5% female); 11 325 Step 1 registered: 8 145 (71.9%) initial and 3 180 (28.1%) follow-up; 1 100 (9.7%) Step1 were performed in self-assessment concerning 957 participants (68.5 ± 12.8 years, 56.1% female). 714; (64.9%) Step1 were realized by ICOPE MONITOR and 386 (35.1%) by ICOPEBOT. Among those who did their initial Step1 in self-assessment (n=957), 64.2% used ICOPE MONITOR and 34.8% ICOPEBOT and among those who did their follow-up (n=143), 69.9% used ICOPE MONITOR and 30.1% used ICOPEBOT. Thus, the choice of digital tool is unchanged during monitoring. **Conclusion:** These digital tools could be used by seniors, but their use is not widespread. The subjects who used digital tools are younger. There is no difference between male and female subjects. The choice of digital tool is unchanged during monitoring.

P105- DOES STEP1 OF ICOPE ALLOW THE EARLY IDENTIFICATION OF FRAIL SUBJECTS? Christine Lafont, Caroline Berbon, Neda Tavassoli, Justine de Kerimel, Aurélie Morin, Celine Mathieu, Maria Soto, Bruno Vellas *(Gérontopôle, Centre Hospitalo-Universitaire de Toulouse, Équipe Régionale Vieillissement et Prévention de la Dépendance (ERVPD), Hôpital La Grave, Place Lange, Toulouse, France)*

Background: The ICOPE program (WHO) aims to promote healthy aging by optimizing the intrinsic capacity and functional abilities of the person, through monitoring of 6 key functions to maintain autonomy (mobility, nutrition, vision, hearing, mood and cognition). There are 5 steps: screening, in-depth assessment, personalized care plan, follow-up of the care plan and involvement of the community and caregiver. The first step (Step1) makes it possible to identify the decline of one or more functions, which requires their in-depth assessment (Step2) in order to implement corrective interventions. In ICOPE, the identification of frail subjects (Fried 2001) is recommended only at Step2 if there is impaired mobility (SPPB <10) and/or malnutrition (MNA <17). However, frail subjects are a priority target in the prevention of dependency. It would therefore be interesting to be able to identify them from early Step1 to prevent them from falling into dependency. **Objectives:** Check whether Step1 of ICOPE makes it possible to identify pre-frail and frail subjects at an early stage (Fried criteria) in order to carry out, from Step1, an assessment of the 6 domains of intrinsic capacity. **Methods:** The study concerns 396 subjects aged 60 years and over living at home who have benefited from a Step1 and a Step2 evaluating the 6 domains of intrinsic capacity between January 2020 and March 2021. The data are extracted from the Gerontopôle ICOPE database (Toulouse University Hospital - France). **Results:** The mean age is 80.6 years (95% CI [79.9; 81.2]), 69% are female. 16% of people are robust and 84% frail. Bivariate and multivariate analyzes were performed to characterize the existence of a link between: - Decline at Step1 and frailty, - Number of impaired capacities and frailty, - Domains affected by decline in Step1 and frailty, - An abnormality in Step1 and the decline of the same function in Step2. **Conclusion:** Identifying frail subjects from Step1 of ICOPE is a way of optimizing the care of seniors by setting up earlier interventions.

BODY COMPOSITION

P106- CUT-OFF POINTS TO IDENTIFY MUSCLE WEAKNESS WITH HANDGRIP AND KNEE EXTENSION STRENGTH ALLOMETRICALLY NORMALIZED BY BODY-SIZE VARIABLES IN OLDER ADULTS. Pedro Pugliesi Abdalla[1,2], Leonardo Santos Lopes da Silva[1], André Pereira dos Santos[1], Marcio Fernando Tasinafo Junior[1], Lucimere Bohn[2], Jorge Mota[2], Ana Claudia Rossini Venturini[1], Gustavo André Borges[3], Dalmo Roberto Lopes Machad[1,2] *(1. University of São Paulo, Brazil; 2. University of Porto, Portugal; 3. Western State University of Paraná, Brazil)*

Background: In older adults, weakness is identified as absolute strength or normalized according to body-size variables (mass, height and BMI-Body mass index). This implies an inaccurate weakness classification in extreme body size older adults (e.g., light or tall) due to the non-linear relationship between muscle strength and some body-size variables. Allometry might overcome this misclassification. In addition, cut-off points for muscle strength normalized by different body-size variables and allometrically adjusted for identifying muscle weakness have not been proposed. **Objectives:** To establish cut-off points for weakness from upper and lower limbs muscle strength using both the ratio standard and the allometric normalization by body size in older adults. **Methods:** A total of 94 (69.1% women) community-dwelling older adults were analyzed for 48 body-size variables (anthropometry, body composition and derived indexes), handgrip strength (HGS), dynamic (1RM) and isokinetic peak torque ($PT^{60°/s}$) of knee extension, and six-minute walk test (6MWT). Normalizations with ratio standard (strength/body size) and allometry (strength/body size^{b}) were proposed only for body-size variables significantly correlated with HGS, 1RM and $PT^{60°/s}$. Other allometric exponents from the literature were also considered. Cut-off points for weakness were proposed by adopting the ROC curve and Youden index based on mobility limitation (6MWT<400m). Cut-off points were adequate when area under the curve (AUC)>0.70 simultaneously for both sexes, and when there was no body-size effect on the muscle strength ($r \leq 0.30$). **Results:** Cut-off points for absolute HGS, 1RM and PT60°/s were not adequate ($r > 0.30$). However, when these values were normalized (23 possible variables) the cut-off points were adequate: HGS (n=1); 1RM (n=24) and $PT^{60°/s}$

(n=24). The best cut-off points for each strength test were considered those with highest AUC and applicability, being for men: HGS/forearm circumference (1.33 kg/cm, AUC=0.74), 1RM/triceps skinfold (4.22 kg/mm, AUC=0.81), and $PT^{60°/s}$/ body mass*height 0.43 (13.0 N/kg*m 0.43, AUC=0.94); and for women: HGS/forearm circumference (1.04 kg/cm, AUC=0.70), 1RM/body mass (0.54 kg/kg, AUC=0.76); and $PT^{60°/s}$/body mass 0.72 (3.14 Nm/kg 0.72; AUC=0.82). **Conclusion:** Normalizations (ratio standard and allometric) remove the effect of body size on muscle strength tests and improves the accuracy of weakness classification of those adjusted linearly/allometrically. Options to normalize absolute values of strength tests by body-size variables were expanded.

P107- IS THERE A CORRELATION BETWEEN FAT MASS AND RESPIRATORY MUSCLE STRENGHT IN COMMUNITY-DWELLING OLDER WOMEN?

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Background: Aging process may result in a decrease in skeletal and respiratory muscle strength (RMS), which, in turn, would directly affect the functional capacity and performance in the activities of daily living of the older persons. Obesity can worsen this situation, with an increase in intra and intermuscular fat. **Objectives:** To analyze the correlation between fat mass and RMS in olders. **Methods:** After approval by the Research Ethics Committee/UFVJM (number: 1.461.306), older women (aged >=65years), were included. Exclusion criteria were: cognitive impairment, using the medication digoxin, due to its positive effect on respiratory strength, impairments that made the tests unfeasible. Participants were evaluated for: body mass index (BMI), body composition (DXA), handgrip strength (HGS); Short Physical Performance Battery (SPPB) and gait speed (GS); RMS: Maximal inspiratory (MIP) and expiratory (MEP) pressures. **Results:** The 109 older women with a mean age of 73 years were included in the sample and divided according to the classification of Lipschitz (1994) as: underweight (UW - BMI <22;n=12), eutrophic (EU- BMI from 22 to 27;n=41) and overweight (OW - BMI> 27; n=56). There were significant differences between the three groups regarding: BMI, lean mass, total fat, trunk fat, visceral adipose tissue (VAT), MIP and MEP. In the total sample, there was a weak positive correlation between fat in the trunk with: MIP ($r = 0.242$; $p = 0.011$) and MEP ($r = 0.258$; $p = 0.007$) and between VAT with MEP ($r = 0.295$; $p = 0.002$), and also a moderate positive correlation between VAT and MIP ($r = 0.326$; $p = 0.001$). In the UW group, there was a moderate positive correlation between total fat and MEP ($r = 0.628$; $p = 0.029$) and trunk fat and MEP ($r = 0.613$; $p = 0.034$). **Conclusion:** The groups differed significantly in terms of fat parameters and RMS. The OW group had the highest values, suggesting that these larger adipose deposits increase the RMS and functionality of overweight older women. On the other hand, it is clear the need to evaluate and monitor these factors in low-weight older women, as they had worse respiratory muscle performance.

P108- CORRELATION BETWEEN MUSCLE QUALITY INDEXES AND GAIT SPEED IN COMMUNITY DWELLING BRAZILIAN OLDER WOMEN.

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Background: The muscle quality index (MQI) correspond to the ratio of muscle strength adjusted by volume or fat-free muscle mass. The MQI may be more sensitive than other measures of muscle quality, such as relative strength per unit of muscle mass, because it accounts for the velocity of muscle shortening, reflecting the quality of neural innervation of muscle tissue. **Objectives:** The aim of the study was to investigate the association between MQI indexes and mobility in community dwelling brazilian older women. **Methods:** This cross-sectional study with community dwelling older women (>=65 years), recruited for convenience. Approval by the Research Ethics Committee/ UFMG (CAAE:14129513.7.1001.5149). Were excluded: acute musculoskeletal diseases; lower limb fractures; neurological diseases; câncer, use of corticosteroids and cognitive impairment (MSME Bertolucci 1994). Hand grip strength (HS, Jamar®) and peak torque (PK) of the knee extensors at 60°/s by isokinetic (Biodex 3) were used to measure muscle strengths and gait speed (4m;m/s) for mobility. Dual-energy X-ray absorptiometry (DXA) was used to assess appendicular skeletal muscle mass (ALM/H2 and PK/ALM/BMI). MQI used were (HS/ALM/H2 and HS/ALM/BMI - PK/ALM/H2 and

PK/ALM/BMI). Statistical analysis by Pearson test (α= 5%). **Results:** 96 women (75.94 ± 6.71 years), HS (17.1 ± 4.23 kgf), HS /ALM/H2 (2.89 ± 0.78), HS /ALM/BMI (32.73 ± 8.5), PK /ALM/H2 (8.81 ± 3.03) and PK /ALM/BMI (100.99±37.26). There was a significant positive relationship between GS and PK/ALM/H2 (rho=0.4;p=0.001) and PK/ALM/BMI (rho=0.2;p=0.046). Other relationships were not significant (p>0.05). **Conclusion:** The results showed a significant and positive correlation between GS and QMI, only with the use of lower limb muscle strength in the index. Muscle quality measurements and tests with the isokinetic dynamometer are complex and expensive. The positive correlation between mobility with MIQ reinforce the use gait speed in clinical practice to detect sarcopenia. Longitudinal studies should be conducted to greater understanding between the variables.

P109- ESTIMATION OF APPENDICULAR SKELETAL MUSCLE MASS WITH BIOELECTRICAL IMPEDANCE ANALYSIS DERIVED EQUATIONS VERSUS DUAL ENERGY X-RAY ABSORPTIOMETRY IN AN URUGUAYAN ELDERLY POPULATION (IAEA RLA 6/073 PROJECT). Marina Moirano[1], Ramón Alvarez-Vaz[2], Mariana Simoncelli[1], Geraldine Sena[1], Florencia Sanchez[1], Gabriela Fajardo[1], Virginia Rivero[3], Alexandra Rojas[3], Widerley da Cunha[3], Aldo Sgaravatti[4] *(1. Escuela de Nutrición, Universidad de la República (UdelaR), Uruguay; 2. Instituto de Estadística, Facultad de Ciencias Económicas y de Administración, Universidad de la República (UdelaR), Uruguay; 3. Instituto Nacional de Reumatología. INRU/ASSE, Uruguay; 4. Cátedra de Geriatría y Gerontología, Universidad de la República (UdelaR), Uruguay)*

Background: Skeletal muscle mass and its assessment is critical for elderly people. Appendicular skeletal muscle mass (ASMM) can be estimated by bioelectrical impedance analysis (BIA) using predictive equations, developed for ethnic and age groups, validated with dual-energy X-ray absorptiometry (DXA). While no local equations are available, selection of the best needs to be considered. **Objectives:** To assess the agreement between ASMM by DXA (ASMMDxA) and two predictive equations derived from BIA to estimate ASMM. **Methods:** Cross-sectional study in 93 community-dwelling, non-disabled subjects (73 women), aged >65 years from IAEA RLA 6/073 Project, assisted in Cátedra de Geriatría y Gerontología, Hospital de Clínicas, Montevideo,Uruguay. Assessment included: anthropometric measurements (ISAK protocol); BIA (ImpediMed-DF50) at single operating frequency of 50kHz and whole body scan using a fan-beam X-ray densitometer (LUNAR Prodigy Advance, General Electrics). In DXA, emphasis was done to separate arms and legs from trunk, as recommended by Heymsfield et al. ASMMDxA was calculated as the sum of the lean mass of the limbs and considered the reference method. ASMM was estimated by two BIA derived equations, developed in Caucasian subjects including those >65 years: Sergi et al., (ASMMs) and Kyle et al., (ASMMk). Results of equations were compared with ASMMDxA. **Results:** Mean age was 73,9 years (65.0-89.0). Median ASMMDxA was 15,52kg (min11,35; max31,74), 16,47kg (min10,86; max30,9) for ASMMs and 17,01kg (min10,66; max33,39) for ASMMk. Bland-Altman plots showed good agreement between the two equations and the reference method, and no bias for sex or ASMM values. Mean difference in kg for ASMMDxA versus ASMMk was -1.78, critical difference 3.98, limits of agreement CI95% (-5.76; 2.19). For ASMMDxA versus ASMMs, mean difference was -0.98 kg, critical difference 3.52, limits of agreement CI95% (-4.51;2.54). Intra-class correlation coefficient for ASMMs was 0,898, CI95% (0,784-0,945, p<0,001) and for ASMMk 0,855, CI95% (0,47-0,941, p<0,001). **Conclusion:** In the population studied, a better degree of agreement was found for Sergi's equation, therefore it can be applied to estimate ASMM. However, larger studies and equations that consider local ethnicity are required.

P110- ASSOCIATION BETWEEN LUMBAR MUSCLE MASS AND POSTURAL STABILITY IN ELDERLY PATIENTS. Kiyoshi Inoue *(Orthopedic Surgery Department, Tokyo Saiseikai Mukojima Hospital, Tokyo, Japan)*

Background: We speculate improving the postural stability is the key to maintain good ADL in elderly people. We presented the group which had better balance ability had good spino-pelvic balance in last year's meeting. **Objectives:** The aim of this study is to evaluate the relation between the lumbar muscle mass and the postural stability. **Methods:** We studied 55 patients (19 males, 36 females) over 65 years old. We measured Index of Postural Stability(IPS) using Gravicoder GW-5000 made by ANIMA. IPS was advocated by Mochizuki et al, It was defined by the following equation; IPS=log[(area of stability limit+area of postural sway)/area of postural sway). The average in each age were already known. IPS was calculated automatically by Gravicoda. We divided these patients into two groups by the results of IPS. Group A had better IPS than the average in their age , Group B had worse IPS. Group A had 10 patients (1 males, 9 females, average age was 77.6 yo). Group B had 45pts (18 males, 27 females, average age was 76.0 yo.) We also measured the area of the psoas muscle, multifidus muscle, and sacrospinalis muscle (iliocostalis muscle+ longissimus muscle) by manually drawing the range of interest on MRI using the software made by FUJIFILM. It automatically calculated the area of the range of interest. We obtained Psoas muscle Index(PMI), Miltifidus muscle index(MMI) and Sacrospinalis muscle Index(SMI) by dividing the area of each muscles by the square of the patient's height. The percentage of fat infiltration area in the multifidus (FIM) was also measured. **Results:** In Group A , MMI, PMI and SMI were respectively 374.3, 480.8 1020.7, in Group B, 247.8, 496.8, 1005.6. MMI was significantly higher in Group A(P<0.001). The average FIM was 17.3% in Group A and 39.2% in Group B. It was significantly lower in Group A.(P<0.01). **Conclusion:** Our results showed the multifidus muscle mass was related to the postural stability. This suggests that keeping the multifidus muscle mass is one of the important factor in maintaining good postural stability.

P115- BODY COMPOSITION ASSESSMENT PROTOCOL IN SARCOPENIC PATIENTS. Juliana Bonfleur Carvalho, Grasiela Konkolisc Pina de Andrade, Ludiane Alves do Nascimento, Ana Lúcia Chalhoub Chediác Rodrigues, Natalia Golin, Ariane Nadólskis Severine *(Department of Nutrition, Sírio Libanês Hospital, Sao Paulo, Brazil)*

Background: Sarcopenia is a geriatric syndrome potentially treatable and preventable. Nutritional interventions and exercise programs could be recommended to hospitalized sarcopenic individuals. Largely used approaches are based on the association of low muscle mass and function, requiring specialized equipment to evaluate muscle mass, and muscle strength. **Objectives:** Create a protocol to detect changes in body composition and muscle quality in hospitalized patients to provide better management of sarcopenia. **Methods:** A body composition assessment team comprising three fixed specialist nutritionists who use handgrip strength and bioimpedance or anthropometry to detect sarcopenia early was created. Body composition must be assessed within 72 h after the classification of nutritional risk. Patients are reassessed within 15–20 days. The criteria are in according to EWGSOP2, 2018. After the body composition assessment, we conduct an individualized intervention. **Results:** Nutritional therapy based on objective body composition assessments assists in the treatment of sarcopenia, even in critically ill patients with inflammation and comorbidities. The main nutritional strategies and interventions used to improve body composition and muscle quality were readjustment of oral diet, oral supplementation, use of specific formulas as products for muscle mass gain like HMB and enteral or parenteral therapy. Patients are reassessed within 15–20 days to determine whether their body composition has improved, remained the same, or worsened. These data generate a nutritional quality indicator. The goal of the indicator of improvement and maintenance of body composition is 90%. **Conclusion:** Assessment of body composition through a well-defined protocol is essential to measure strength and muscle mass, which contributes to the diagnosis of sarcopenia and the development of early interventions to provide the best possible clinical outcome for hospitalized patients. Moreover, the systematization of care generates data for the continuous monitoring of the quality of nutritional assistance provided by the nutrition team.

BIOLOGY OF FRAILTY, SARCOPENIA

P119- GRIP STRENGH IN ELDERS WITH TYPE 2 DIABETES MELLITUS. Natalia Sampaio, Ana Emília Fonseca de Castro, Patricia Parreira Batista, Ully Correa, Gabriela Nascimento Cândido, Tábatta Renata Pereira de Brito, Juscélio Pereira da Silva, Daniele Sirineu Pereira *(UFMG, Belo Horizonte, Brazil)*

Background: Older people with type 2 Diabetes Mellitus (DM2) present a reduction in muscle mass and strength with aging. Since DM2 shares pathophysiological mechanisms and risk factors with musculoskeletal disorders due to aging, there is a need for better comprehension of muscle loss in this population. **Objectives:** To investigate the factors associated with grip strength (GS) in community elderly with DM2. **Methods:** This is a transversal, observational study, with a sample of 193 people (69.43 ± 6,21 years old) with DM2. Participants answered a sociodemographic and clinical questionnaire for sample characterization and data collection of factors potentially related to GS. Plasmatic dosage of sTNFR1 was performed by Eliza method, from plasma samples. GS was assessed with a Jamar Manual Dynamometer?; the result was the average of three measurements with the dominant upper limb (Kgf). The factors associated to GS were investigated by multiple linear regression analysis, using the stepwise method. The Ethics Committee in Research approved this study (Report 2.543.714; CAAE: 82327817.4.0000.5142). **Results:** The average GS in the sample was 22,8 Kgf ± 5,6 for women and 35,6 Kgf ± 7,1 for men. The results revealed that appendicular muscle mass, plasmatic levels of sTNFR1 and the number of depressive symptoms were associated to GS in elders with DM2, even after adjusting for age, sex, education and time since DM2 diagnosis. The final model was able to explain 63% of the GS variability. **Conclusion:** Older adults with less appendicular muscle mass, higher plasmatic levels of sTNFR1 and higher number of depressive symptoms presented lower GS. These results highlight the importance of the assessment, appropriate approach and monitoring of muscle strength, with the objective of minimizing the impact in the functionality of diabetic elderly.

P120- ENERGY METABOLISM DYSREGULATION IN SARCOPENIA: ROLE OF CPT1A AND CPT1B. Chiara Greggi[1], Maria Giovanna Scioli[2], Giulia Fabbri[2], Virginia Veronica Visconti[1], Ida Cariati[1], Federica Onorato[3], Elena Gasbarra[3], Augusto Orlandi[2], Sabina Pucci[2], Umberto Tarantino[1,3] *(1. Department of Clinical Sciences and Translational Medicine, "Tor Vergata" University of Rome, Rome, Italy; 2. Department of Biomedicine and Prevention, Anatomic Pathology Institute, Tor Vergata University of Rome, Rome, Italy; 3. Department of Orthopaedics and Traumatology, "Policlinico Tor Vergata" Foundation, Rome, Italy)*

Background: Sarcopenia is a condition that characterises frail elderly population and involves loss of muscle mass and function, leading to a sedentary lifestyle and an overall deterioration in quality of life. Aged muscle tissue is characterised by metabolic dysregulations, which occur mainly at mitochondrial level, that lead to a deficit in the mechanisms responsible for cellular energy supply. **Objectives:** The aim of this study was to evaluate energy metabolism in the muscle tissue of healthy (CTRL), osteoarthritic (OA) and osteoporotic (OP) patients, investigating the expression and activity of Carnitine Palmitoyl Transferase 1 A (CPT1A) and Carnitine Palmitoyl Transferase 1 B (CPT1B): these proteins are both involved in the amount of long-chain fatty acids in the mitochondrion destined for β-oxidation and consequently, for

ATP synthesis. **Methods:** We enrolled 20 patients undergoing hip arthroplasty for osteoarthritis (OA), 20 osteoporotic patients (OP), and 10 patients undergoing surgery for high-energy fracture (CTRL). Muscle biopsies were processed for immunohistochemistry (IHC) and histomorphometric analysis, total protein extraction for enzymatic activity and expression analysis, and mRNA extraction for gene expression analysis. Finally, a qualitative analysis of the muscle tissue of the three groups of patients was carried out by Transmission Electron Microscopy (TEM). **Results:** Histomorphometric and IHC analysis of muscle tissue showed that OP patients had smaller muscle fibres and a lower percentage of type II muscle fibers than CTRL and OA patients. Noteworthy, OP patients were characterised by an increase of CPT1A and CPT1B expressions but a decreased enzyme activity. Moreover, in OP group, we also found a decrease in the levels of synthesised intracellular ATP. TEM analysis finally confirmed that the muscle tissue of OP patients was characterised by aberrant mitochondria, which could explain the altered function of CPT1A and CPT1B. **Conclusion:** These data suggest that the dysregulation of energy metabolism that characterises muscle tissue of OP patients could be caused by an alteration in the functionality of CPT1A and CPT1B enzymes. Thus, this study provides the basis for understanding the mechanisms underlying the onset of muscular atrophy, typical of patients forced to lead a largely sedentary life, such as those affected by osteoporotic disease.

P123- MUSCLE QUALITY INDEX IN PATIENTS WITH COGNITIVE IMPAIRMENT. RESULTS FROM A REFERRAL CENTER FOR ALZHEIMER'S DISEASE IN SOUTHERN ITALY. R. Barone[1], R. Capozzo[1], M.R. Barulli[1], C. Zecca[1], M.E. Frisullo[1], R. Tortelli[1], G. Logroscino[1,2] *(1. Center for Neurodegenerative Diseases and the Aging Brain, Department of Clinical Research in Neurology, University of Bari 'Aldo Moro, "Pia Fondazione Cardinale G. Panico", Tricase, Italy; 2. Department of Basic Medicine, Neuroscience, and Sense Organs, University of Bari 'Aldo Moro', Bari, Italy)*

Background: Muscle quality index (MQI) is a marker for sarcopenia and includes characteristics of muscle anatomic structure, chemical composition, and metabolic and mechanical performance. **Objectives:** Aim of this study is to evaluate the association of MQI with presence of Alzheimer's disease (AD) and to detect if there are differences between MQI among stages of the disease. **Methods:** This prospective observational study, involved consecutive patients who attended the Department for Neurodegenerative Diseases and the Aging Brain, a tertiary referral center of Southern Italy, from January to July 2019. As part of the diagnostic procedures, each patient undergo a- standard neurological examination, b- neuropsychological assessment using a validate battery of cognitive tests, c- high-field MRI scan, d-lumbar puncture with measurement of typical AD biomarkers. Furthermore, a nutritional examination and a hand grip strength test were performed in each patient. MQI was evaluated by bioimpedance, as part of the nutritional assessment. Diagnosis of AD was done according to the National Institute of Aging and Alzheimer's Association (NIA-AA) international criteria (McKhann,2011). Subjects who were referred to our centers and resulted negative in the clinical, neuropsychological, and markers examination have been included as controls/reference group. Data were analyzed using ANOVA and multiple logistic regression. **Results:** 73 subjects were enrolled. In multiple logistic regression models of AD (we considered as 0=normal (absence of disease) and 1 (presence of disease) =early, mild, moderate AD on MQI, controlling for age, sex, BMI, and Free Fat Mass, MQI was inversely associated with AD (OR:0,88 CI 95%-1,03 0,93). Differences of MQI values were found also in females and males: females had lower values (22.3,SD 6) compared to male (23,SD 6.5)($p<0,05$). **Conclusion:** Low values of MQI, a marker of sarcopenia, are associated with AD, supporting the hypothesis of a thigh association between AD and sarcopenia indexes.

P127- PHYSICAL ACTIVITY LEVEL AND ASSOCIATED FACTORS IN CANCER PATIENTS WITH ANOREXIA-CACHEXIA SYNDROME. Olga Laura Sena Almeida[1], Natalia Maira da Cruz Alves[1], Daniela Dalpubel Campanari[1], Roberta Cristina Cintra Taveira[1], Thiago Neves[1], Karina Pfrimer[1], Fernanda Maris Peria[2], Eduardo Ferriolli[1], Nereida Kilza da Costa Lima[1] *(1. Department of Internal Medicine, Ribeirao Preto Medical School, University of Sao Paulo, Sao Paulo, Brazil; 2. Department of Medical Images, Hemathology and Medical Oncology, Brazil)*

Background: Cancer-related anorexia-cachexia syndrome (ACS) can lead to progressive functional impairment in cancer patients. Loss of functionality in cancer patients can be measured by actigraphy that provides objective data regarding the level of daily physical activity, reducing the potential subjective biases in the evaluation of the physical capacity of cancer patients with ACS. In early stage cancer patients, the average physical activity parameters have been shown to be about 7.000 steps/day, 33,4 MET.h/day of energy expenditure, 10h of sedentary time, 3,7h of standing time and 1,6h of walking time. **Objectives:** To assess the level of physical activity and associated factors in cancer patients with ACS. **Methods:** Twenty cancer patients with ACS followed up at the Oncology Outpatient Clinic of a University Hospital were enrolled. A physical activity monitor (ActivPAL, UK) was installed on the right thigh of the patients and the patients were monitored for a period of seven consecutive days. The information recorded by the device was transferred through a USB interface to a specific software that performed the data analysis. Spearman's correlation index was used to analyze the association factors. The level of significance adopted was 5%. **Results:** The mean ($\pm$Standard Deviation) age of the patients was 66,3$\pm$9,1 years. The level of physical activity was 2.846$\pm$2.060 steps/day, estimated energy expenditure 21,5$\pm$1,0 MET.h, sedentary time 12,6$\pm$1,8h, standing time 2,7$\pm$1,5h and walking time 0,7$\pm$0,5h. There was a positive association between the number of steps and the patient's performance status measured by the KPS scale (Rs=0,693;p=0,001), as well

as a negative association between the patient's performance status measured by the KPS scale and sedentary time (Rs=-0,755;p=0,000). Weight loss was positively associated with sedentary time (Rs=0,605;p=0,005) and negatively with the number of steps (Rs=-0,705;p=0,001). When the data was compared between men and women, there was no difference between the groups. **Conclusion:** The level of physical activity found in the present study was much lower than that found in early stage cancer patients, which demonstrates the highly significant impact of ACS on the level of physical activity in cancer patients.

Late Breaking Communications

FRAILTY IN CLINICAL PRACTICE AND PUBLIC HEALTH

LB1- PHYSICAL FRAILTY IS CORRELATED WITH WORSE QUALITY OF LIFE IN OLDER ADULTS WITH HYPERTENSION.

Pan Liu, Yaxin Zhang, Shijie Li, Ying Li, Yumeng Chen, Ou Zhao, Yu Song, Bixi Li, Tong Ji, Yiming Pan, Yun Li, Lina Ma *(Department of Geriatrics, Xuanwu Hospital, Capital Medical University, National Research Center for Geriatric Medicine, Beijing, China)*

Background: Hypertension is one of the common chronic cardiovascular diseases in older adults. Frailty is a common geriatric syndrome that is characterized by a reduced multisystem function and diminished reserve function, which makes an individual vulnerable to adverse health events. Frailty and hypertension often coexist in older people, but few studies have explored frailty in older hypertensive adults. **Objectives:** We aimed to explore the correlation of frailty with quality of life in older hypertensive adults. **Methods:** We enrolled 291 patients with hypertension aged >=60 years. Ambulatory blood pressure monitor was performed. Physical frailty was assessed by Fried phenotype. Quality of life was assessed by SF-36. **Results:** Forty-eight (16.5%) patients were frail. Compared with non-frail older hypertensive patients, frail patients were older, had lower education levels, a higher rate of living alone, and a longer duration of hypertension. Moreover, they had lower diastolic blood pressure (DBP) and mean arterial pressure (MAP), and higher pulse pressure, more chronic diseases, a higher proportion of calcium channel blockers (CCBs) usage, and worse quality of life. Frailty scores were positively correlated with pulse pressure, and negatively correlated with DBP and MAP. The SF-36 score was negatively correlated with frailty scores and positively correlated with grip strength and walking speed. After adjusting for age, the SF-36 score was negatively correlated with frailty and positively correlated with walking speed. Frailty, when adjusted for age, duration of hypertension, DBP and comorbidity, had a significant effect on the SF-36 score. **Conclusion:** Frailty was associated with worse quality of life of older adults with hypertension. Frailty prevention and intervention may help improve the quality of life of older hypertensive adults.

LB3- NUTRITION INTERVENTION FOR ADULT OUTPATIENTS WITH MALNUTRITION RISK REDUCES THE RISK OF INCIDENT FRAILTY.

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Background: Malnutrition, a well-recognized risk factor for functional impairment and incident frailty, and a dynamic stage preceding disability, places older adults at high risk for multiple adverse outcomes and poor health. Little is known about the effectiveness of nutrition interventions on delaying onset or preventing progression of incident frailty. **Objectives:** We assessed whether a comprehensive, nutrition-focused quality improvement program (QIP) could result in preventing progression of incident frailty among Colombian older adults presenting for outpatient care post a recent hospitalization and/or for chronic disease management. We also assessed differences by gender and nutrition group. **Methods:** QIP patients classified as at-risk or malnourished based on the Mini Nutritional Assessment-Short Form (MNA-SF) received care from the outpatient clinical service of Hospital Universitario San Ignacio in Colombia between 09/2019-03/2020. Incident frailty was assessed using the Fried Phenotype Assessment. Patients were followed for up to 12 weeks after baseline visit; received a 60-day supply of oral nutritional supplements (ONS; Ensure or Glucerna, Abbott, USA); and recevied nutrition and exercise counseling. **Results:** Of 618 patients, 69.4% were female, with mean age of 74.1 (± 8.7), and 2.6 (± 1.5) comorbid conditions. A 16.8% improvement over 90-days in incident frailty was observed post QIP intervention (Fried scores: 2.14 vs. 1.78 points, 95% CI, -0.45 to -0.27; p<0.001). Overall, 42.5% of QIP patients experienced improved physical frailty status. 54.1% of malnourished patients improved physical frailty status by 31.8% (2.67 vs 1.82 points, 95% CI, -1.11 to -0.58; p<0.001), and 40.4% of at-risk patients saw an improvement by 13.6% (2.05 vs 1.77 points, 95% CI, -0.37 to -0.18 p<0.001). 46% of female patients (2.25 vs. 1.85 points, 95% CI, -0.51 to -0.28; p<0.001) and 34.6% of male patients (1.91 vs. 1.63 points, 95% CI, -0.43 to -0.13; p<0.001) experienced improved physical frailty status by 17.8% and 16.7%, respectively. **Conclusion:** Comprehensive, nutrition-focused QIP for at-risk/malnourished outpatient older adults resulted in improved frailty status among the QIP population, regardless of gender and nutrition status. Results highlight the importance of nutrition care to alleviate the clinical burden of malnutrition by reducing incidence or preventing progression of frailty and promoting healthy aging.

LB4- PREDICTION ACCURACY OF DIFFERENT SCREENING TOOLS FOR EARLY FALLS DETECTION IN ELDERLY MEN AND WOMEN LIVING IN LONG-TERM CARE HOMES. Nagore Arizaga[1], Janire Virgala[1], Itsaso Mujika[1,2], Jon Irazusta[1], Borja Astiz[3], Maider Kortajarena[2], Amaia Irazusta[2] *(1. Department of Physiology, Faculty of Medicine and Nursing, University of the Basque Country (UPV/EHU), Leioa, Bizkaia, Spain; 2. 2Department of Nursing II, Faculty of Medicine and Nursing, University of the Basque Country (UPV/EHU), Donostia-San Sebastian,Gipuzkoa, Spain; 3. Centro Residencial Alai-Etxe, 20015 Donostia, Guipuzcoa, Spain)*

Background: Falls are one of the most important problems of public health in the world. Therefore, it is of vital importance to study the instruments that could make an adequate prediction of falls in order to prevent as many falls as possible. It has been observed that falls in nursing home residents are closely related to functionality, dependency, frailty and physical condition. In addition to facilitating the work in nursing homes (NH) by providing a simple and effective way of detecting resident falls, the quality of life of residents could be improved. **Objectives:** Analysis of the prediction accuracy of different screening tools for early falls detection in elderly men and women living in long-term care homes. **Methods:** Participants were 199 residents (85,41±6,51 years), 100 men (84,24±6,83 years) and 99 women (86,60±5,97 years) from 16 NH in Gipuzkoa. Mean Barthel score of 85,95 and 74,75 and MEC score of 28,66 and 27,04 respectively. SPPB and TUG tests were used to analyse physical condition and the Rockwood Clinical Frailty scale to measure frailty. We calculated the area under curve (AUC) using receiver operating characteristics (ROC) analysis for each variable. AUC values of >0,7 were considered acceptable. **Results:** In men, the Barthel questionnaire achieved an AUC=0,801, the SPPB test AUC=0,736, the TUG test AUC=0,295 and the Rockwood Clinical Frailty scale AUC=0,214. In women, no results higher than AUC>0,7 were obtained. **Conclusion:** While the most sensitive tools for preventing falls in male living in NH were Barthel, TUG, SPPB and Rockwood Clinical frailty scale, in women this sensitivity was lower. Therefore, it would be necessary more studies to look for accurate tools to prevent falls in women living in NH.

LB5- PREDICTORS OF FUNCTIONAL DECLINE IN HOSPITALIZED FRAIL OLDER ADULTS AND THE PREVENTIVE ROLE OF AN ASSESS-AND-RESTORE PROGRAM (HEART). Beatrise Edelstein, Jillian Scandiffio *(Humber River Hospital, Toronto, Canada)*

Background: Hospitalized frail seniors are often prone to functional decline that could become permanent. To prevent this decline in function, assess-and-restore programs such as Humber's Elderly Assess and Restore Team (HEART) provide short-term restorative care to increase strength, mobility and functional ability in frail older adults. However, evidence on the effectiveness of assess-and-restore programs in preventing functional decline is limited. **Objectives:** This study aimed to determine whether HEART improved functional score in frail older adults and to determine what characteristics best predicted functional improvement. **Methods:** This was a retrospective observational study of 530 patients who completed the HEART program between September 4, 2018 and March 31, 2020. Functional level was measured using the Barthel Index and was assessed upon hospital admission and discharge. Functional change was defined as the percent difference in Barthel score from admission to discharge. Barthel scores and predictor variables (marital status, falls risk, dwelling, age, sex, comorbidities, condition, ambulation device and ambulatory status) were obtained from electronic health records. For categorical predictors, group differences in functional change were compared using ANOVA with Tukey post-hoc tests ($p<.05$). For continuous predictors, a Pearson correlation analysis was conducted. **Results:** HEART participants had an average functional improvement of 36.75% (SD=18.22), with 99.2% of participants having the same or greater Barthel score from admission. Ambulatory status had a significant effect on functional change ($p=.005$), with those who required a 1 person assist having the highest functional change (M=39.56, SD=18.79). There was also a significant effect of ambulation device on functional change ($p<.001$) with the greatest functional improvement in those using a rollator walker(M=37.18, SD=17.48), 2 wheeled walker (M=37.76, SD=18.51), or another kind of walker (M=46.07, SD=17.46). The primary condition of the patient affected functional change ($p=.03$) but post-hoc testing could not determine significant differences between groups. No other variables were significantly related to functional change. **Conclusion:** The HEART program largely maintained or improved participants' functional ability. Those who required a 1-person assist and who used a walker had the greatest functional improvement, suggesting that these candidates should be considered when enrolling patients to the program.

LB6- THE EFFECT OF FRAILTY ON MORTALITY AND OTHER ADVERSE OUTCOMES IN GERIATRIC PATIENTS WITH A HIP FRACTURE: A COHORT STUDY. Irene Carrillo-Arnal, Cristina Borrellas Rodriguez, Cristina Nicolas Luis, Montserrat Méndez Brich, Ana Isabel Llopis Calvo, Jose Antonio Martos Gutiérrez, Ramon Cristofol Allué *(Geriatric Department, Hospital de Matar , Consorci Sanitari del Maresme, Barcelona, Spain)*

Background: Frailty has been widely described as a mortality and adverse outcomes risk factor. The need for its regular assessment has been highlighted for the last decades. Although a multidimensional approach might be more accurate in estimating a prognosis in elder patients, studies based on this method are still limited. **Objectives:** To measure the effect of frailty on mortality and other poor outcomes in geriatric patients with a hip fracture admitted in our orthogeriatric unit, assessed with a multidimensional tool that could be used on our daily clinical practice. **Methods:** This is a prospective cohort study. We recruited all patients admitted at our orthogeriatric unit with a hip fracture from September 2019 to December

2019 who were older than 74 years. Frailty was measured with the FRAIL-VIG index, a multidimensional tool based on the comprehensive geriatric assessment. We analysed a 30-day follow up. A logistic regression was conducted to measure the effect of frailty on in-hospital mortality. **Results:** A total of 101 patients were included in the study. The mean age was 87.2 years old. 74.3% participants where women and 73.3% were frail; 48.5% mild-frail, 24.8% moderate-frail and none were severe-frail. In-hospital mortality was 7.9% (3.7% for non-frail, 9.5% for frail); 4.1% for mild-frail and 20% for moderate-frail with an OR of 3.39 (p 0.04). At hospital dismissal, 69.2% non-frail and 59% mild-frail patients were admitted at a rehabilitation unit while 65% moderate-frail patients were admitted at nursing homes. Within 30 days, 70.6% severe-frail patients were living at nursing homes and none had returned home, 70.6% were dependent for walking and 15% were readmitted at hospital. 30-day mortality was 15.2%; 18.5% for non-frail, 8.2% for mild-frail and 26.1% for moderate-frail. **Conclusion:** Our results showed the effect of frailty on in-hospital mortality and 30-day mortality as well as other adverse outcomes such a drop in functionality and higher rates of hospital readmission and nursing home admission. The FRAIL-VIG index resulted a good prognosis estimator in our patients, showing the benefits of a regular frailty assessment with this tool in our orthogeriatric unit. These findings could be extrapolated to other orthogeriatric units.

LB8- DO INDICES OF SARCOPENIA PREDICT TREATMENT MODIFICATION IN OLDER ADULTS WITH CANCER? PRELIMINARY RESULTS OF A RETROSPECTIVE COHORT STUDY. Efthymios Papadopoulos[1], Ali Abu Helal[2], Andy Kin On Wong[3,4], Narhari Timilshina[1], Shabbir M.H Alibhai[1,2] *(1. Department of Medicine, University Health Network, Toronto, ON Canada; 2. Department of Medicine, University of Toronto, Toronto, ON Canada; 3. Joint Department of Medical Imaging, University Health Network, Toronto, ON, Canada; 4. Dalla Lana School of Public Health, University of Toronto, Toronto, ON, Canada)*

Background: Measures of physical performance, such as grip strength (GS) and the short physical performance battery (SPPB), can be used in addition to body composition measurements to identify sarcopenia. In geriatric oncology, GS and SPPB have been shown to predict clinically relevant outcomes including treatment toxicity, disease progression, and mortality. However, no information exists on the role of these tests in predicting cancer treatment modification (to reduce over/undertreatment) in the geriatric setting. **Objectives:** Our aim was to examine whether pre-treatment GS and/or SPPB predict treatment modification in older adults with cancer. **Methods:** We conducted a retrospective cohort study of older adults with cancer who were seen prior to treatment in a geriatric oncology clinic within a tertiary cancer centre. Disease and other patient-related characteristics were retrieved from an institutional database and electronic patient records. Abnormal GS was defined as < 26kg for men and < 16kg for women. Abnormal SPPB was defined as ≤ 9/12 points. Treatment modification was dichotomized to include patients with i) unchanged treatment or intensified treatment and ii) reduced treatment intensity or transition to supportive care. Unadjusted and adjusted logistic regression was used to evaluate potential associations between abnormal GS and/or SPPB with treatment modification. The adjusted analysis included variables with a p value of <0.10 in the unadjusted analysis. **Results:** Data were abstracted for 91 (mean age: 80.5 y) of ~550 patients in the database. Patients most frequently had genitourinary malignancies (36.3%) and had localized disease (34.1%). Of the 91 patients, 64 (70.3%) had abnormal GS and/or SPPB. In the unadjusted analysis, abnormal GS and/or SPPB (combined) were associated with reduced treatment intensity or transition to supportive care (OR= 2.89, 95%CI= 1.09, 7.61, P= .032). Abnormal SPPB was a stronger predictor of treatment modification (OR= 4.32, 95%CI= 1.54, 11.59, P= .005) relative to abnormal GS (OR= 2.50, 95%CI= 1.00, 6.22, P= .049) in the unadjusted analyses. Nonetheless, the significance of these associations did not persist in the adjusted analysis. **Conclusion:** Indices of sarcopenia and particularly SPPB may be useful in predicting cancer treatment modification in older adults, but larger samples sizes are needed to establish this.

LB9- OLDER WOMEN LIVING ALONE ARE AT GREATER RISK FOR FUNCTIONAL DECLINES: RESULTS FROM LONGITUDINAL AGING STUDY OF TAIPEI. Po-Chin Yang[1,2], Li-Ning Peng[1,3], Ming-Hsien Lin[1,3], Liang-Kung Chen[1,3,4] *(1. Center for Geriatrics and Gerontology, Taipei Veterans General Hospital, Taipei, Taiwan; 2. Institute of Public Health, National Yang Ming Chiao Tung University Yangming Campus, Taipei, Taiwan; 3. Aging and Health Research Center, National Yang Ming Chiao Tung University Yangming Campus, Taipei, Taiwan; 4. Taipei Municipal Gan-Dau Hospital, Taipei, Taiwan)*

Background: Living alone is an objective measure of one's living arrangements, and has been recognized as an indicator of social isolation, and the major risk factor for loneliness and depression. However, little was known regarding the impacts of living alone on functional declines. **Objectives:** To explore the roles of living alone on incident functional declines, accidental falls, fractures, and hospitalizations among community-dwelling older people. **Methods:** Data of participants aged 65 years and older excerpted from the Longitudinal Aging Study of Taipei (LAST) were used for study. Living arrangement was categorized into living alone and living with others (spouse, adult children, and friends). After enrollment, participants received telephone follow-ups every 3 months for at least two years. Incident functional declines, falls, fracture events, and hospitalizations during follow-up were used as the outcome indicators. A series of covariates including sociodemographic, health behaviors, medical history, depressive symptoms, and cognitive impairment were entered in the regression models. **Results:** Data of 867 participants (mean age: 71.1±5.0, 33.8% males) were available for analysis. Among them, 100 participants (11.5%) lived alone, and women were significantly

more likely to live alone (89.0%). After adjustment for age, sex, and other covariables, living alone significantly increased the risk of incident functional declines (OR=1.810, 95% CI 1.009-3.246), but not falls (OR=1.328, 95% CI 0.791-2.230), fracture events (OR=0.689, 95% CI 0.230-2.066), and hospitalizations (OR=1.467, 95% CI 0.821-2.621). Moreover, the association between living alone and incident functional declines was limited to women only (HR=1.92, 95% CI=1.02-3.61), but not men. **Conclusion:** Older women living alone were at greater risk for incident functional declines in 2-year follow-up that deserve further study to evaluate the risk of disability and dementia. Intervention programs to prevent functional declines for people living alone are needed in addition to the focus on mental well-being.

LB10- COMPARISON OF PHYSICAL ACTIVITY USING A WEARABLE DEVICE AMONG COMMUNITY-DWELLING OLDER ADULTS WITH AND WITHOUT FRAILTY. Si-hyun Kim[1], Kyue-nam Park[2] *(1. Department of Physical Therapy, Sangji University, Wonju-si, South Korea; 2. Department of Physical Therapy, Jeonju University, Jeonju-si, Jeonrabuk-do, South Korea)*

Background: There is increasing use of wearable devices that track physical activity. These devices measure and monitor the daily step and physical activity of individuals. **Objectives:** This study compared the number of steps and time of physical activity according to the intensity of activity among community-dwelling older adults with and without frailty. **Methods:** Eighty-eight participants were classified into non-frail, pre-frail, and frail groups. Wearable activity trackers were used to measure step counts and time of physical activity. Step counts were recorded as the number of days. The time of physical activity was recorded according to the intensity of activity (sedentary, light, fairly, and very active). One-way analysis of variance with post-hoc analysis was used to identify significant differences among the frailty groups. **Results:** Frail older adults showed significantly decreased daily step counts and time of all intensities of physical activity (except for sedentary activity) compared to the non-frail group ($p < 0.05$). Additionally, pre-frail older adults showed significantly lower step counts and light-to-very active physical activity compared to the non-frail group ($p < 0.05$). The pre-frail group showed a significantly higher time of sedentary behavior compared to the non-frail group ($p < 0.05$). **Conclusion:** Decreased step counts and time of light-to-very active physical activity as well as increased time of sedentary behavior should be corrected to manage frailty in older adults. Future studies are required to evaluate the effects of increasing the amount physical activity on frailty in older adults.

LB12- DETERMINANTS OF GLOMERULAR FILTRATION RATE DECLINES IN OLDER PEOPLE FROM A 5-YEAR LONGITUDINAL COHORT STUDY: AGE DOESN'T REALLY MATTER. Wen-Yi Sah[1,2], Chia-Chia Hsu[1,2], Li-Kuo Liu[1,4], An-Chun Hwang[1], Ko-Han Yen[1,2], Li-Ning Peng[1,3], Ming-Hsien Lin[1,3], Liang-Kung Chen[1,3,5] *(1. Center for Geriatrics and Gerontology, Taipei Veterans General Hospital, Taipei, Taiwan; 2. Institute of Hospital and Health Care Administration, National Yang Ming Chiao Tung University, Hsin-Chu, Taiwan; 3. Aging and Health Research Center, National Yang Ming Chiao Tung University, Hsin-Chu, Taiwan; 4. Shin Kong Wu Ho-Su Memorial Hospital, Taipei, Taiwan; 5. Taipei Municipal Gan-Dau Hospital, Taipei, Taiwan)*

Background: Theoretically, the estimated glomerular filtration rate (eGFR) gradually decreases with age. However, there was inconsistent evidence whether renal function deteriorated along with aging and it might be unsatisfactory to predict renal function solely by eGFR classification. The aim of this study was to analyze the trend of eGFR change among relatively healthy older adults with diagnosis of chronic kidney disease (CKD) and determine the associated risk factors. **Methods:** We conducted a retrospective cohort study of annual elderly health checkup in New Taipei City, Taiwan. Consecutive 5-year data since 2010 were excerpted. Demographic information, health related lifestyle factors and laboratory data were collected. Renal function was assessed by eGFR using MDRD equation and factors associated with the serial changes in eGFR were identified using generalized estimating equation. **Results:** Baseline data from 3,869 participants in the first year health checkup (mean age: 74.89 ± 5.97 years, 52% males) were analyzed and the average eGFR was 80.42 ± 21.32. After 5-year follow-up, significant renal function deterioration was noted among participants with eGFR >45 ($p<0.05$) while those ≤45 revealed no significant decline. Besides, in generalized estimating equation model, the patients with diabetes (OR =1.414, 95% CI: 1.193 – 1.676) and hypertension (OR =1.123, 95% CI: 1.020 – 1.236) were the independent risk factors of deteriorated renal function within 5 years, but older age was not the main factor associated with renal function decline. **Conclusion:** Renal function deterioration was noted only in older adults with CKD before stage 3A and Diabetes mellitus as well as hypertension were the independent risk factors for renal function decline in consecutive 5 years. Further research is needed to realize the mechanism of renal function change in the elderly.

COGNITIVE FRAILTY

LB13- SOCIAL, HEALTH, AND BEHAVIORAL FACTORS OF SOUTH KOREAN ADULTS WITH COGNITIVE IMPAIRMENT.

Sanghun Nam[1], Suyeong Bae[1], Brian Downer[2], Ickpyo Hong[1] *(1. Department of Occupational Therapy, College of Software and Digital Healthcare Convergence, Yonsei University, Wonju-si, Gangwon-do, Republic of Korea; 2. Division of Rehabilitation Sciences, University of Texas Medical Branch, Galveston, Texas, USA)*

Background: In 2018, an estimated 1.67 million South Korean adults aged 65 and older were living with mild cognitive impairment (22.6% of older adult population) and 750 thousand (10.2%) older adults were living with severe cognitive impairment. South Korea is experiencing rapid population aging, which will contribute to an increase in the number of older adults living with dementia. This makes it important to identify risk and protective factors for cognitive functioning among Korean adults. **Objectives:** To describe the social, health, and behavioral characteristics of Korean adults classified as cognitively unimpaired, moderately impaired, and severely impaired. **Methods:** This analysis used data from 6,153 participants of the Korean Longitudinal Study on Aging. Participants were classified as cognitively unimpaired, moderate cognitive impairment, and severe cognitive impairment using an algorithm combining the Korean version of the Mini-Mental State Examination (K-MMSE) and instrumental activities of daily living (IADL). Selected social, behavioral, and health characteristics included living in a rural or urban location, social participation, engaging in exercise, grip strength, and depressive symptoms. **Results:** The majority of participants were classified as cognitively unimpaired (n = 4,471, 72.7%) followed by moderate (n = 1,239, 20.1%) and severe (n = 443, 7.2%) cognitive impairment. In general, participants with moderate or severe cognitive impairment had lower grip strength than participants who were cognitively unimpaired regardless of gender. The difference in grip strength for men with moderate and severe cognitive impairment was not statistically significant. Individuals with depression had significantly higher odds to be classified as moderate or severe cognitive impairment. People with moderate and severe cognitive impairment were more likely to live in rural areas and less likely to perform social participation activities than people classified as cognitively unimpaired. **Conclusion:** This analysis identified several social, behavioral, and health characteristics associated with the cognitive status of Korean older adults. These characteristics should be taken into consideration when planning health policy programs designed to address the needs of older adults with cognitive impairment.

COVID 19 & FRAILTY & SARCOPENIA

LB14- THE ASSOCIATION BETWEEN COVID-19 AND ACTIVITIES OF DAILY LIVING IN OLDER ADULTS LIVING IN COMMUNITY.

Suyeong Bae, Sanghun Nam, Ickpyo Hong *(Department of Occupational Therapy, College of Software and Digital Healthcare Convergence, Yonsei University, Wonju-si, Gangwon-do, Republic of Korea)*

Background: Coronavirus disease (COVID-19) is a negative effect on the world's population. Especially these epidemics have a negative impact on the mental functions of older adults. In 2002, severe acute respiratory syndrome (SARS) has increased the depression and the associated suicide rate of older adults in Hong Kong. In previous studies, a decrease in mental function leads to a reduction in the activity of daily living function. On the other hand, the association between COVID-19 and the activity of daily living is still not clear. **Objectives:** The objective of our study was to examine the association between COVID-19 and frequency of help in the activity of daily living. **Methods:** We retrieved data from 3,118 adults in the 2020 National Health and Aging Trends Study - COVID19 (NHATS) survey. Our final sample included 2,115 adults after excluding 1,003 cases with missing values in variables. The independent variable was a positive test for COVID-19 (Yes or No). The dependent variables were frequency of help in the activity of daily living. Also, we adjusted co-variables: Affecting of COVID-19 in life, lonely, sleep quality, depression, anxiety, relation variable with post-traumatic stress disorder. We used Poisson regression the examined the association between COVID-19 and frequency of help in the activity of daily living. **Results:** The participants who have a positive test for COVID-19 were 24 (1.13%), where females 11 (45.83%) and males 13 (54.17%). Subsequently, the participants who did not positive test for COVID-19 was 2091 (98.87%), were females 923 (44.14%) and males 1168 (55.86%). All participants were living in a community setting (n=24). There was positive association was between COVID-19 and frequency of help in the activity of daily living (relative risk = 2.45, 95% confidence interval = 1.68-3.57, p-value = <0.01). **Conclusion:** In this study, we present an association between COVID-19 and frequency of help in the activity of daily living. The participants who have a positive test for COVID-19 were higher to receive help in the activity of daily living than those who have not. The result of the study was suggesting the need for a rehabilitation program in a community setting after treatment for COVID-19.

LB15- OPPORTUNISTIC BIOMARKERS OF FRAILTY FROM CT IMAGING IN PATIENTS WITH SUSPECTED COVID-19.

Neetika Bharaj, Pablo Solla Suarez, Jeremy Obrand, Jessica Chetrit, Fayeza Ahmad, Sarah Lantagne, David Morrison, Xiaoqing Xue, Marc Afilalo, Brent Richards, Jonathan Afilalo *(McGill University, Montreal, QC, Canada)*

Background: Frailty is more meaningful than chronological age for risk prediction and patient-centered decision making

in COVID-19. While frailty scales may be challenging to use in this setting, computed tomography (CT) scans are often performed and provide access to opportunistic biomarkers of frailty such as skeletal muscle area (SMA). **Objectives:** We would like to examine the association between CT-based measures of SMA with adverse outcomes in patients with suspected COVID-19. Additionally, we would like to investigate the feasibility of using computed tomography scans for measures of muscle and fat areas. **Methods:** We conducted a cohort study nested in the prospective Quebec COVID-19 Biobank. Symptomatic patients presenting to our acute care hospital were eligible if they underwent a COVID-19 test and a clinically-indicated CT scan of the chest or abdomen. Using the CoreSlicer web-based software, we loaded CT images and measured SMA and subcutaneous fat area at 3 pre-defined axial levels (T6, T12, L4). The current analysis focuses on scans acquired in the first 24 hours and on images at the T6 level; if not included in the scan field, multiple imputation was used based on the closest available level. The primary outcome was log-transformed hospital length of stay. **Results:** Out of 770 patients included in the Biobank at our hospital, 232 met the inclusion criteria. At the T6 level in men and women, respectively, the mean SMA was 140±37 cm2 and 99±26 cm2 and the mean subcutaneous fat area was 135±67 cm2 and 217±133 cm2. SMA was inversely correlated with Rockwood's Clinical Frailty Scale (Spearman R -0.43, P<0.001). In the linear regression model adjusted for age, sex, Charlson comorbidity index, and COVID-19 status, lower SMA was independently associated with prolonged length of stay (Beta -0.018, 95%CI -0.001 to -0.035). **Conclusion:** CT-based measures of muscle and fat area were reliably feasible in 97% of scans. Patients with suspected COVID-19 and low muscle mass on clinical CT scans had higher risks of adverse in-hospital outcomes.

LB16- RELATIONSHIPS BETWEEN MALNUTRITION, SARCOPENIA, AND FRAILTY AND THE INCIDENCE OF COVID-19 IN OLDER ADULTS: DATA FROM THE SARCOPHAGE COHORT. Laetitia Lengelé[1], Médéa Locquet[1], Michel Moutschen[2], Charlotte Beaudart[1,3], Jean-François Kaux[3,4], Sophie Gillain[5], Jean-Yves Reginster[1,6], Olivier Bruyère[1,3,4] *(1. WHO Collaborating Centre for Public Health Aspects of Musculoskeletal Health and Aging, Division of Public Health, Epidemiology and Health Economics, University of Liège, CHU—Sart Tilman, Quartier Hôpital, Liège, Belgium; 2. Department of Infectious Diseases and General Internal Medicine, CHU Sart-Tilman, University of Liège, Liège, Belgium; 3. Physical, Rehabilitation Medicine and Sports Traumatology, SportS2, University Hospital of Liège, Liège, Belgium; 4. Department of Sport Rehabilitation Sciences, University of Liège, Liège, Belgium; 5. Geriatrics Department, University Hospital of Liège, Liège, Belgium; 6. Biochemistry Department, College of Science, King Saud University, Riyadh, Saudi Arabia)*

Background: The identification of risk factors for COVID-19 is requested to implement targeted prevention strategies. **Objectives:** This study aimed to evaluate the associations between the incidence of COVID-19 and malnutrition, sarcopenia, and frailty, identified as potential risk factors in previous cross-sectional studies. **Methods:** Community-dwelling older adults aged over 65 years from the Sarcopenia and Physical Impairments with Advancing Age (SarcoPhAge) cohort were included in the present study. Malnutrition, sarcopenia and frailty were assessed at the last available follow-up from the SarcoPhAge cohort (i.e., the fifth year that ended in June 2019) according to the Mini-Nutritional Assessment short-form, the European Working Group on Sarcopenia in Older People (EWGSOP2), and the Fried criteria, respectively. Information regarding the COVID-19 was gathered by phone calls interviews to measure its self-declared incidence between March 2020 and April 2021. Cox-regressions adjusted for age, sex, body mass index, number of drugs and number of comorbidities per participants, MMSE score, and physical activity level in analyses on malnutrition and sarcopenia, and Kaplan-Meier curves were performed. **Results:** The present study included 241 participants (median age 75.6 (73.0 – 80.6) years, 63.1% women) who were assessed for the three diseases and for which we have obtained information regarding the COVID-19. Among them, 27 participants (11.2%) developed the non-fatal Covid-19. No significant increased risks of Covid-19 were observed in patients with malnutrition (adjusted HR: 1.14 [0.26 – 5.07]) and sarcopenia (adjusted HR: 1.25 [0.35 – 4.42]). Nevertheless, the incidence of COVID-19 was significantly higher in frail (32.0 %) than in robust participants (8.8 %) (adjusted HR: 3.97 [1.56 – 10.10]), which was confirmed by the Kaplan-Meier curves (p <0.001). Among the frailty syndrome components, a low physical activity level was the only one significantly associated with an increased risk of COVID-19 (adjusted HR: 5.18 [1.37 – 19.54]). **Conclusion:** A 4-fold increased risk to develop COVID-19 was observed in the presence of the frailty syndrome. As we are the first to evaluate prospectively these associations, further investigations are needed to elaborate on our findings.

OSTEOPOROSIS & FRAILTY

LB17- ASSOCIATIONS BETWEEN SOCIOECONOMIC STATUS, BONE HEALTH, AND OBESITY, SARCOPENIA, AND SARCOPENIC OBESITY IN INDIAN OLDERADULTS. Anoohya Gandham[1], David Scott[1,2,3], Maxine P Bonham[4], Bharati Kulkarni[5], Sanjay Kinra[6], Peter R Ebeling[1], Ayse Zengin[1] *(1. Department of Medicine, School of Clinical Sciences at Monash Health, Monash University, Clayton, Victoria, Australia; 2. Institute for Physical Activity and Nutrition (IPAN), School of Exercise and Nutrition Sciences, Deakin University, Geelong, Australia; 3. Department of Medicine and Australian Institute of Musculoskeletal Science, Melbourne Medical School – Western Campus, The University of Melbourne, St Albans, Victoria, Australia; 4. Department of Nutrition, Dietetics and Food, Monash University, Notting Hill, Victoria, Australia; 5. Clinical Division, National Institute of Nutrition, Jamai Osmania PO, Hyderabad, India; 6. Department of Non-Communicable Disease Epidemiology, London School of Hygiene & Tropical Medicine, London, UK)*

Background: Socioeconomic status (SES) may contribute to increased prevalence of sarcopenia and obesity and are important predictors of musculoskeletal health outcomes particularly in lower income countries. **Objectives:** To investigate if SES determinants including education and occupation types were associated with obesity and sarcopenia and if these associations further contributed to poor bone health in Indian older adults. **Methods:** 1057 older adults aged >50years were included. Dual energy X-ray absorptiometry measured fat and lean mass and BMD at the hip and spine. Obesity was defined by body fat percentage (Men: >25%, Women: >30%); sarcopenia was defined using the revised Asian Working Group for Sarcopenia definition with low hand grip strength (Men: <28kg, Women: <18kg) and appendicular lean mass index (Men: <7.0kg/m2, Women: <5.4kg/m2). Participants were classified into four groups: non-sarcopenic non-obesity (NSNO), obesity alone (O), sarcopenia alone (S) or sarcopenic obesity (SO). SES determinants included educational attainment (graduate education, secondary and primary schooling) and occupation types (professional, skilled-manual, unskilled manual and unemployed). Multinomial logistic regression (Odds ratios; 95% CI's) and linear regression (β-coefficients; 95% CI's) analyses were performed and adjusted for confounders including age, sex, and smoking status. Mediation analysis was performed. **Results:** Older adults with education were significantly less likely to have S and SO compared to those with no education (all p<0.05). Older adults with professional occupations were less likely to have S (0.40; 0.16, 0.76) and O (0.37; 0.20, 0.69) vs NSNO compared to those unemployed. Older adults with S had lower hip BMD vs NSNO (-0.058; -0.077, -0.051), while those with SO also had lower spine BMD vs both NSNO (-0.062; -0.113, -0.010) and O groups (-0.089; -0.143, -0.035). Percentage mediation of 50% indicated that SO contributed to the association between lower SES factors and poor BMD. **Conclusion:** Lower education and occupation were associated with increased likelihood for sarcopenia, but only education was associated with sarcopenic obesity. Sarcopenic obesity was associated with low BMD and appeared to mediate the association of SES determinants with BMD in Indian older adults. Further research is necessary to design effective interventions for preventing sarcopenic obesity among older adults with diverse SES.

NUTRITION AND AGING

LB18- RELATIONSHIP BETWEEN NUTRITION, ORAL HEALTH AND SARCOPENIA IN THE ELDERLY: A CROSS-SECTIONAL STUDY. Wei-Hsuan Chiu[1], Yi-Ya Chang[2] *(1. Chang Gung Health and Culture Village, Chang Gung Medical Foundation Chang Gung memorial hospital, Taoyuan, Taiwan; 2. Department of Nursing and Clinical Competency Center, Chang Gung University of Science and Technology, Taoyuan, Taiwan)*

Background: Sarcopenia can increase the occurrence of falls, fractures and disability, thereby increasing the cost of medical treatment or care. Studies have shown that sarcopenia is common among long-term institutional elderly, and malnutrition may be a related factor that affects sarcopenia. More studies focus on nutrition and exercise in the elderly with sarcopenia. However, few studies pay attention on nutrition, oral health and sarcopenia in the elderly. **Objectives:** To explore the correlation between nutrition, oral health and sarcopenia in the elderly. **Methods:** A cross-sectional study with purposive sampling in an aging institution was designed in northern Taiwan. The structured questionnaires were used for data collections from April to July 2020. SPSS 22.0 were used for data analysis. **Results:** In total, 172 participants (86 participants with sarcopenia and 86 participants without sarcopenia) were recruited, with 100% response rate. The age of participants ranged from 65 to 98, with an average age of 81.66 (SD±8.26). The majority of participants were female (63.4%). The results of the study showed that (1) The quality of life in oral health and oral health showed positive correlation in the elderly with sarcopenia (r = 0.441). (2) The quality of life in oral health and nutritional status showed negative correlation in the elderly with sarcopenia (r = -0.322). (3) Oral health and nutritional status showed negative correlation in the elderly with sarcopenia (r = -0.272). (4) Gender, BMI, oral health and nutrition were important factors of sarcopenia in the elderly. (5) Gender, BMI, and oral health are predictors of sarcopenia. The accuracy of using ROC curve to predict sarcopenia is 86.6%. **Conclusion:** The factors of nutrition and oral health were important influencing factors to sarcopenia in the elderly. Therefore, it is recommended that medical schools should increase oral hygiene education-related training courses to enhance the ability of medical staff to care for the elderly. In addition, oral health education should be provided to the elderly to enhance their oral health knowledge and care ability.

LB20- DOES THE COMBINATION OF RESISTANCE TRAINING AND A NUTRITIONAL INTERVENTION HAVE A SYNERGIC EFFECT ON MUSCLE MASS, STRENGTH, AND PHYSICAL FUNCTION IN OLDER ADULTS? A SYSTEMATIC REVIEW AND META-ANALYSIS. MoonKi Choi[1], Hayeon Kim[2], Juyeon Bae[3] *(1. College of Nursing, Kangwon National Universit y, Chuncheon-si, Gangwon-do, Republic of Korea; 2. Seoul Women's College of Nursing, Seoul, Republic of Korea; 3. Department of Nursing, Yeoju Institute of Technology, Yeoju-si, Gyeonggi-do, Republic of Koreae)*

Background: Health-promoting interventions such as exercise and diet are important to prevent frailty and sarcopenia in older adults. However, there is limited evidence that nutritional interventions yield additional effects when combined with resistance training. **Objectives:** This systematic review and meta-analysis aimed to compare the effectiveness of nutritional interventions with resistance training and that of resistance training only on muscle mass, muscle strength, and physical functional performance among community-dwelling older adults. **Methods:** Randomized controlled trials published in peer-reviewed journals prior to July 2020 were retrieved from databases and other sources. The articles were screened according to the inclusion and exclusion criteria. For each included article, key data about characteristics of the study population and the experimental intervention, treatment for the comparison group, and outcome evaluation. The methodological quality of the included studies was assessed using Cochrane's risk of bias tool 2. A meta-analysis was performed using the RevMan 5.4 program. **Results:** A total of 26 studies were included in the meta-analysis. The exercise programs included resistance training in 21 studies and multimodal exercise in 5 studies. The studies provided protein (ten studies), creatine (three studies), long-chain n-3 polyunsaturated fatty acids (two studies), calcium (a study), maslinic acid (a study), vitamin D (two studies), vitamins C and E (two studies), linoleic acid and creatine (a study), and multinutrients containing more than three nutrients (four studies). The results of the meta-analysis showed no significant differences between groups in lean body mass, appendicular skeletal muscle mass, handgrip strength, knee extension, chair stand test results, or the timed up-and-go test results. In the subgroup analysis regarding the types of nutritional interventions, creatine showed significant effects on lean body mass (n=3, MD 2.96, CI 0.76 to 5.16). Regarding the other subgroup analyses, there were no significant differences in the mean age or sex of the participants, type of nutritional intervention, or duration of intervention. **Conclusion:** This meta-analysis showed that nutritional interventions to resistance training have no additional effect on body composition, muscle strength, or physical function. Only creatine showed synergistic effects with resistance training on muscle mass.

LB21- PREALBUMIN IS A PREDICTOR OF MORTALITY AT D30 IN INTENSIVE CARE PATIENTS 75 YEARS OF AGE AND OLDER: A FOUR-YEAR RETROSPECTIVE STUDY. Elodie Edwige[1] , Gilles Albrand[1], Régis Aubry[2], Thomas Gilbert[1], Claire Falandry[1], Marc Bonnefoy[1], Vincent Piriou[1] *(1. Hospices Civils de Lyon, France; 2. Chu de Besançon, France)*

Background: Prealbumin is an early marker of undernutrition. Elderly people's D-30 mortality is higher than younger. **Objectives:** The main objective of this study was to determine if prealbumin is a predictor of 30-day mortality of patients aged 75 years and older admitted in intensive care for at least 24 hours, regardless of the reason for admission. **Methods:** In this monocentric retrospective study, we reviewed the medical charts of patients aged 75 years and over, hospitalized in intensive care (Hospices Civils de Lyon, Groupement Sud, France) for at least 24 hours, between November 1, 2015 and December 31, 2019. The data collected were: age, sex, prealbumin, prothrombin, diagnosis of infection, initial IGSII severity score, length of stay, and 30-day mortality. Exclusion criteria were unmeasured prealbumin, missing initial severity score or re-hospitalization. Mortality at D30 was defined as death occurring within 30 days of admission to ICU. **Results:** 253 patients were included in the analyses. The rate of 30-day mortality was of 23.3%, 59 patients. Mortality at D30 within the intensive care unit was significantly associated with prealbumin (p=0.009). In the multivariate model, the different risk factors for death were: infection (OR=2.81 [1.19;7.53] p=0.025) and IGS2 (OR=1.35 [1.02;1.05] p<0.001). A prealbumin level between 0.1 and 0.2 g/L was a protective factor (OR=0.39 [0.19;0.80]) p=0.010]. We observed a difference in survival according to the rate of prealbumin: prealbumin,levels >0.20 g/L increased probability of survival at D30 : 3 days (logrank p value=0.0032). **Conclusion:** Our study showed that hypoprealbuminemia is a risk factor for death. Hypoprealbuminemia is possibly a marker of frailty in patients aged 75 years and older.

LB22- NUTRITIONAL ASSESSMENT AND FRAILTY SYNDROME IN A GROUP OF MEXICAN NURSING HOME RESIDENTS. MC Velazquez-Alva, ME Irigoyen-Camacho, MF Cabrer Rosales, M Zepeda-Zepeda *(Health Care Department. Metropolitan Autonomous University. Unit Xochimilco. Mexico City, Mexico)*

Background: Malnutrition is a clinical condition particularly common in older adults living in nursing homes and has been reported to be associated with multiple adverse outcomes such as decreased quality of life, higher health care costs, as well as increased risk of morbidity and mortality. **Objectives:** The aim of the present study was to identify the association between nutritional status and frailty, in a group of Mexico City nursing home residents. **Design:** a cross-sectional study, conducted in four nursing homes of Mexico City. The frailty phenotype components described by Fried et al., were used to evaluate frailty status: (1) Unintentional weight loss, (2) Exhaustion, (3)

Low handgrip strength (Mechanical hand dynamometer [TKK 5001; Takei Scientific Instruments, Tokyo, Japan, (4) Low walking speed and (5) Low physical activity. According to the number of affected components, the participants were classified as robust (0), pre-frail (1 - 2) and frail (>= 3). The Full Mini Nutritional Assessment (Full – MNA) was used to evaluate the nutritional status, this tool has 18 items and its general score ranges from 0 – 30 points. Based on the total score obtained, participants were classified as well-nourished (Full – MNA > 24 points), at risk of malnutrition (Full – MNA = 17 – 23.5 points) and malnourished (Full – MNA < 17 points). **Results:** A total of 286 nursing home residents were included in the study. The mean age was 82.4 (± 9.2). The most common feature was low hand grip strength that was present in 93.4% of the residents, followed by walking or climbing stairs difficulty (60.5%). Only 10 (3.5%) did not have meet any of the frailty criteria and 21 (7.3%) met all five criteria. More than half of the nursing home residents were frail (58.0%), and more than one-third pre-frail (38.5%). The mean MNA score was 19.81 (±4.26). Less than one-fifth (17.8%) of the residents were well nourished, 59.5% were at risk of malnutrition and 22.7% malnourished. **Conclusion:** Within this group of Mexican older adult, a high prevalence of risk of malnutrition/malnourishment, and frailty phenotype were observed in nursing home residents. It is urgent that the health personnel who take care of patients in nursing homes become aware of these clinical entities, identify them and implement nutritional support programs with the use of oral nutritional supplements rich in protein, as well as muscle strength exercise programs.

GEROSCIENCE: SENESCENT CELLS

LB23- METABOLOMICS-BASED FRAILTY BIOMARKERS IN CHINESE OLDER ADULTS. Yiming Pan, Pan Liu, Yaxin Zhang, Yun Li, M Lina *(Department of Geriatrics, Xuanwu Hospital, Capital Medical University, National Research Center for Geriatric Medicine, Beijing, China)*

Background: The health problems of older adults brought about by the accelerating aging of the population are urgently needed to be solved. Frailty can fully reflect the health status and disease risks of the elderly, but its early diagnosis still lacks of proper biomarkers. The metabolomics platform is a powerful tool to find biomarkers for diseases. Accordingly, we sought to apply it to the research of frailty biomarkers. **Objectives:** To identify metabolomics biomarkers and possible pathogenic mechanisms for frailty with untargeted metabolomics profiling. **Methods:** UPLC-QTOF-based untargeted metabolomics analysis was performed on serum samples of 25 frail older inpatients (male=17) and 49 non-frail older controls (male=31). The metabolomics profiling was compared between the above two groups. **Results:** We identified 349 metabolites belonging to 46 classes, in which 3-Methylphenylacetic acid, Leucyl-Serine, Pyruvic acid, 2-Hydroxyglutarate and 3-Pyridylacetic acid were increased and Fusicoccin H, Glycoursodeoxycholic acid, Taurodeoxycholic acid, 1-Stearoylglycerophosphoglycerol, DL-2-Aminooctanoic acid, Glyceric acid and Ser Phe Val Phe were decreased in frail older adults. After adjusting for age and sex, 2 metabolites were positively and 10 were negatively correlated with grip strength, and 1 was positively and 14 were negatively correlated with gait speed. In the pathway analysis, 11 metabolite sets (fatty acid metabolism, mitochondrial beta-oxidation of long chain saturated fatty acids, glycolysis, et al.) and 16 pathways (ascorbate and aldarate metabolism, pentose and glucuronate interconversions, lysine degradation, et al.) were significantly associated with one or more criteria of frailty phenotype. **Conclusion:** Our results revealed characteristics of metabolites in the serum of Chinese frail older adults. Some metabolites related to fatty acid metabolism, amino acid metabolism and carbohydrate metabolism might be candidate biomarkers for early identification of frailty. Disorders of energy metabolism, lipotoxicity of saturated fatty acids and degradation of essential amino-acid were potential mechanisms and therapeutic targets of frailty.

EPIDEMIOLOGY

LB24- FACTORS ASSOCIATED WITH FUNCTIONAL IMPAIRMENTS AMONG COMMUNITY-DWELLING ELDERLY IN CAMEROON: 1ST NATIONAL CROSS-SECTIONAL STUDY. Gustave Mabiama[1,2], Dieudonné Adiogo[2], Pierre Marie Preux[1], Jean-Claude Desport[1,3], Philippe Fayemendy[1,3], Pierre Jésus[1,3] *(1. Inserm U1094, Univ. Limoges, CHU Limoges, IRD, U1094, Tropical Neuroepidemiology, Institute of Epidemiology and Tropical, Neurology, GEIST, Limoges, Limoges, France; 2. Microbiology, Immunology-Hematology and Morphologic Sciences Laboratory (LMIHSM), Doctoral Training Unit in Health Sciences (UFD-SCS), Doctoral School, Douala University, Douala, Cameroun; 3. Health Network of the Nouvelle Aquitaine Regional Health Agency Limousin Nutrition (LINUT), Isle, Isle, France)*

Background: Functional abilities decline with aging as demonstrated by previous studies around the world, but few is known about Cameroonian elderly. **Objectives:** The aim of this study was to assess factors associated with functional impairments among elderly in Cameroon. **Methods:** Through a cross-sectional study, a representative sample of 599 elderly from urban and rural areas was selected. Participants were aged >=60 years. Socio-demographic and health conditions data were collected. Functional abilities were assessed through Rosow's mobility score (dependent for all items if dependent for one), Activities of Daily Living (ADL, 6 items, maximum score 12, dependent when=<6) and Instrumental ADL (5 common functions, maximum score 5, dependent when<2.5). Center for Epidemiologic Studies-Depression (CES-D, depressive syndrome when score>=17) and Mini Mental State Examination (MMSE, cognitive impairment (CI) when score <24) were also assessed. Chi-2, ANOVA, and multiple regressions were performed to assess factors associated with functional impairments. The protocol was approved by the Ethics Committee of the University of Douala (Cameroon).

The threshold of statistical significance was 5%. **Results:** The average age was 68.9±7.2 years, sex ratio M/F=0.93, weight 68.5±14.7 kg. Functional impairments were 24.9% for mobility, 22.2% for ADL and 48.2% for IADL. Scores were 7.2±2.8 for ADL, 2.0±1.5 for IADL, 17.9±4.7 for CES-D and 24.2±5.0 for MMSE. In multivariate analysis, mobility impairment was positively associated with advanced age (70-79 years: OR=5.8;>=80 years: OR=22.8) and obesity (OR=1.2) and negatively associated with retirement pension as income (OR=0.5). Advanced age (70-79 years: OR=1.8; >=80 years: OR=3.6) and inactivity (OR=4.2) were positively associated with ADL impairment, when urbanity (OR=0.5), normal waist circumference (OR=0.5) and absence of CI (OR=0.4) were negatively associated. Advanced age (>=80 years: OR=3.1), inactivity (OR=10.7), one pathology (OR=2.5) and obesity (OR=2.1) were positively associated with IADL impairment, while urbanity (OR=0.6), male gender (OR=0.5), no education (OR=0.6), income>=92€/month (OR=0.5) and no CI (OR=0.3) were negatively associated. **Conclusion:** Advanced age, inactivity and obesity appeared to be major factors associated with functional impairments among elderly. Appropriate policies and strategies to increase activity and reduce obesity in older people might improve functional abilities.

LB26- PREVALENCE OF FRAILTY AND ITS RELATED FACTORS IN COMMUNITY-DWELLING MIDDLE-AGED AND OLDER ADULTS IN JAPAN -REPRODUCIBILITY IN TWO CITIES. Tsukasa Yoshida[1], Daiki Watanabe[1], Takashi Nakagata[1], Yosuke Yamada[1,2], Kayo Kurotani[3], Naomi Sawada[4], Megumi Okabayashi[5], Hidekazu Shimada[5], Hidemi Takimoto[1], Nobuo Nishi[1], Motohiko Miyachi[1,6], Keiichi Abe[1] *(1. National Institutes of Biomedical Innovation, Health and Nutrition, Tokyo, Japan; 2. Kyoto University of Advanced Science, Kyoto, Japan; 3. Showa Women's University, Tokyo, Japan; 4. Settsu city local Government, Osaka, Japan; 5. Osaka Prefectural Government, Osaka, Japan; 6. Waseda University, Saitama, Japan)*

Background: In Japan, there is a lack of data about prevalence of frailty in the middle-aged, and about the factors associated with frailty. **Objectives:** We aimed to examine the prevalence of frailty and its associated factors in community-dwelling middle-aged and elderly adults in two cities in Osaka to ensure reproducibility. **Methods:** We conducted a mailed, self-administered, questionnaire survey of individuals aged 40 years and older in Settsu and Hannan cities. The participants were 5,134 individuals from Settsu and 3,939 individuals from Hannan. We defined frailty using the Kihon Checklist (KCL), and Simple Frailty Index (SFI). Multivariate logistic regression analysis was performed for each city to examine the association of frailty. **Results:** The average age (standard deviation) of participants was 62.7 (12.5) years in Settsu and 63.4 (12.2) years in Hannan. The prevalence of frailty was similar between those in their 40s and 60s; using KCL, 18.7% and 17.9% for participants in their 40s, 18.2% and 14.6% for those in their 50s, 17.0% and 15.7% for those in their 60s, 25.4% and 20.8% for those in their 70s, 39.7% and 36.1% for those 80 years and older from Settsu and Hannan; using SFI, 16.2% and 13.5% for those in their 40s, 15.0% and 11.9% for those in their 50s, 12.5% and 10.0% for those in their 60s, 14.6% and 12.3% for those in their 70s, and 24.7% and 22.3% for those aged 80 years and older in Settsu and Hannan, respectively. Age, subjective health, economic status, subjective physical fitness, sleeping status, and awareness of the word "frailty" were significantly associated with frailty as defined using KCL and SFI in both cities. **Conclusion:** This study found that 11.9 % to 18.7 % of participants to be frailty as early as their 40s or 50s. Thus, efforts must be made to prevent frailty in working-age populations, including those aged 40 years and older. Six factors were associated with frailty. Longitudinal or interventional studies are required to examine their causal relationships and public health significance.

BIOMARKERS AND IMAGING

LB27- ASSOCIATIONS OF LEG EXTENSION STRENGTH WITH FEATURES CHARACTERIZING THE DISTRIBUTION OF MUSCLE ADIPOSE TISSUE IN ELDERLY MEN WITH OSTEOSARCOPENIA. Oliver Chaudry[1,2], Mansour Ghasemikaram[1], Stefan Bartenschlager[1,2], Wolfgang Kemmler[1], Klaus Engelke[1,2] *(1. Institute of Medical Physics, Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany; 2. Department of Internal Medicine 3, Friedrich-Alexander-Universität Erlangen-Nürnberg and University Hospital Erlangen, Erlangen, Germany)*

Background: Sarcopenia is characterized by a progressive loss of muscle strength and muscle mass. Muscle is infiltrated by adipose tissue (AT). It is still unknown whether muscle strength is related to muscle morphology, such as the amount or distribution of AT. **Objectives:** (1) To determine intramuscular adipose tissue (IMAT), fat fraction and other morphological features of the thigh by advanced MR imaging. (2) To apply a texture analysis to determine spatial distributions of these features and (3) to find associations with leg extension strength in men with osteosarcopenia. **Methods:** T1-weighted and Dixon MRI scans at mid-thigh were obtained from 31 community dwelling men (age >72 years) with osteosarcopenia (3T, MAGNETOM Skyrafit, Siemens, scan length 10 cm, 34 slices 0.8x0.8x3.0 mm2). From the scans the standard parameters: volumes of fascia, IMAT and muscle tissue as well as fat fraction (FF) within the fascia and of muscle tissue were measured. In addition, 51 texture features describing the distribution of IMAT and of muscle tissue FF were determined. In order to reduce the number of features, correlation clusters were built and one representative feature per cluster was selected. Standard parameters, remaining features and a combination of both were used for regression models in a best subset analysis in order to predict leg extension strength. **Results:** In the multivariate model using standard parameters only muscle tissue FF remained $R^2 = 0.08$ ($p = 0.07$). In the multivariate model of the 20 texture features resulting

from the correlation cluster analysis the so called variogram slope of IMAT, energy and correlation features in muscle tissue remained in the best model $R^2 = 0.32$ ($p < 0.01$). By combining these and the standard parameter muscle tissue FF, the model further improved to $R^2 = 0.4$ ($p < 0.01$). **Conclusion:** Interestingly standard parameters did only very weekly correlate with muscle strength. Our results indicate that the distribution of adipose tissue is much more relevant. The three texture features indicate that a higher degree of homogeneity of muscle tissue is associated with higher muscle strength. Texture analysis to obtain additional information about muscle health can provide useful results.

LB28- SERUM METABOLOMIC ADAPTATIONS FOLLOWING A HIGH-INTENSITY INTERVAL TRAINING OR A CONTINUOUS TRAINING IN OBESE OLDER ADULTS. Layale Youssef[1], Sylvère Durand[2], Fanny Aprahamian[2], Deborah Lefevre[2], Eva Peyrusqué[3], Guy Hajj-Boutros[4], Vincent Marcangeli[3], Livia Carvalho[5], Chiara Maiuri2, José A Morais[4], Pierrette Gaudreau[5], Guido Kroemer[1], Gilles Gouspillou[3], Mylène Aubertin-Leheudre[3], Philippe Noirez[6] *(1. Université de Paris, France; 2. INSERM UMRS1138, Paris, France; 3. Département des Sciences de l'Activité Physique, UQAM, Canada; 4. Research Institute of the McGill University Health Center, McGill University, Canada; 5. Centre de Recherche du Centre Hospitalier de l'Université de Montréal, Université de Montréal, Canada; 6. Université de Reims Champagne-Ardenne, France)*

Background: Ageing and obesity became major public health issues. Older adults are becoming increasingly aware of the importance of exercising for a healthy lifestyle. It has been shown that the metabolome can be affected by exercising. It would be interesting to evaluate the metabolome adaptations following different types of exercising. **Objectives:** The aim of this study is to evaluate the serum metabolomic adaptations following a High-Intensity Interval Training (HIIT) and a Continuous Training (CONT) in obese older adults which would reveal new possible biomarkers specific to each type of training. **Methods:** 71 obese sedentary elderly men and women participated in this randomized double-blind interventional study: a 12-week HIIT training program or a 12-week CONT training program. Serum samples were collected before and after the intervention to obtain the metabolomic profile through 4 spectrometers: 1) UHPLC/q-Exactive (Thermo Scientific); 2) LC/QTRAP 6500+ (AB Sciex); 3) LC/QQQQ 6410 (Agilent); 4) GC/7000C (Agilent)) coupled with different liquid or gas chromatography methods. **Results:** 364 metabolites and metabolite ratios from different metabolisms were identified. Among this number, HIIT effect was observed for 26 metabolites (9 increased and 17 decreased; $p<0.05$), and CONT effect was observed for 22 metabolites (19 increased and 3 decreased; $p<0.05$). **Conclusion:** Metabolomic analyses following HIIT and CONT revealed interesting adaptations in the serum metabolomic profile in obese elderly. It would be interesting to correlate these metabolites with clinical measurements in order to identify biomarkers specific for each type of exercise, which would be useful in the field of geriatrics and in the follow-up of obese elderly.

LB29- INVESTIGATING THE IMPACT OF FLUID STATUS ON THE ULTRASOUND ASSESSMENT OF MUSCLE QUANTITY AND QUALITY IN THE DIAGNOSIS OF SARCOPENIA. Benjamin Stanley[1], Carolyn Greig[2,3,4], Thomas Jackson[1,2,5], Danielle Lewis[1], Tahir Masud[2,6,7], Thomas Pinkney[8,9], Carly Welch[1,2,5] *(1. Institute of Inflammation and Ageing, College of Medical and Dental Sciences, University of Birmingham, Birmingham, UK; 2. Medical Research Council – Versus Arthritis Centre for Musculoskeletal Ageing Research, University of Birmingham and University of Nottingham, UK; 3. School of Sport, Exercise, and Rehabilitation Sciences, University of Birmingham, UK; 4. National Institute for Health Research Birmingham Biomedical Research Centre, University of Birmingham and University Hospitals Birmingham NHS Trust, Birmingham, UK; 5. Department of Healthcare for Older People, University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK; 6 Queen's Medical Centre, Nottingham University Hospitals NHS Trust, Nottingham, UK; 7. School of Medicine, University of Nottingham, Nottingham, UK; 8. Academic Department of Surgery, University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK; 9. Institute of Applied Health Research, College of Medical and Dental Sciences, University of Birmingham, Birmingham, UK)*

Background: Sarcopenia is a clinical manifestation of ageing, characterised by progressive loss of muscle mass and function. Diagnosis requires assessment of muscle quantity and quality, however current assessment methods such as Computed Tomography and Magnetic Resonance Imaging have significant barriers including cost, safety and accessibility. Ultrasound represents an emerging non-invasive tool for muscle assessment. However, emerging evidence suggests this assessment may be impacted by fluid balance. This is particularly important when assessing for acute sarcopenia in hospitalised patients, where fluid disturbance often occurs. **Objectives:** The primary aim of this study was to characterise the impact of fluid status on ultrasound assessment of muscle quantity and quality, such that any fluid disturbance may be accounted for in sarcopenia diagnostics. **Methods:** A total of 74 patients across three patient groups (emergency surgery, elective surgery and medical) were assessed serially over a 13-week period, with 221 assessments performed in total. At each assessment, fluid status was evaluated clinically, and also quantified using Bioelectrical Impedance Analysis (BIA). Muscle quantity was measured using Bilateral Anterior Thigh Thickness (BATT) with Rectus Femoris (RF) echogenicity used to assess muscle adiposity and hence provide an inverse measure of muscle quality. **Results:** A significant positive correlation was found between Total Body Water measured using BIA, and BATT as a measure of muscle quantity, in males ($rs = 0.662$, $p<0.001$) and females ($rs = 0.638$, $p<0.001$). A significant negative correlation was found between Total Body Water and RF echogenicity (rs =

-0.448, p<0.001). **Conclusion:** These findings demonstrate significant associations between fluid balance and ultrasound assessment of muscle quantity and quality. Given the emerging use of ultrasound muscle assessment in sarcopenia diagnosis, there is a need to account for this in clinical practice. Future research should focus on confirmation of the causal relationship underlying the correlations, and the development of a corrective equation allowing accurate assessment of muscle quantity and quality which account for fluid status, and hence aid the accurate diagnosis of sarcopenia

PHYSICAL EXERCISE

LB30- WHAT FACTORS INFLUENCE OR AFFECT THE IMPLEMENTATION OF EARLY MOBILIZATION OF OLDER PATIENTS IN HOSPITAL: A SYSTEMATIC REVIEW APPLYING THE CONSOLIDATED FRAMEWORK FOR IMPLEMENTATION RESEARCH (CFIR). Chelson Kumar Solomon[1], Patricia Grocott[2] *(1. Clinical Service Lead for Occupational Therapy and Physiotherapy in Medicine, Therapies Department, Imperial College Healthcare NHS Trust (National Health Service), Praed Street, London, UK; 2. King's College London, Florence Nightingale Faculty of Nursing, Midwifery & Palliative Care, Applied Technologies for Clinical Care Research Division, James Clerk Maxwell Building, London, UK)*

Background: Older patients access acute hospital care. Though there is ample evidence recommending early mobilization of older people in hospital, they are not mobilized early leading to immobility, immobilization syndrome, decline in mobility and activities of daily living function, and increased length of stay. **Objectives:** This systematic review aimed to apply the Consolidate Framework of Implementation (CFIR) to identify factors that affect the implementation of early mobilisation of patients in hospital and potential implementation strategies to address barriers. **Methods:** A systematic review was carried out starting with database searches on AMED, MEDLINE, EMCARE, EMBASE, CINAHL, BNI and PsyINFO databases. Twelve studies were included in the review. Data were extracted inductively using a thematic analysis approach and then aligned against the constructs in CFIR. More constructs i.e., patient factors were added when the constructs within CFIR did not fully encompass all the data. Barriers identified preventing early mobilisation were matched to Expert Recommendations for Implementing Change Project (ERIC) for designing potential implementation strategies. **Results:** Intra organizational factors, staff attributes, mobility delivered within programs, and patient related factors were found to be major influencers affecting the implementation of early mobilization. Where protocols or programs for early mobilization were used, the implementation was consistently better. Though emergency admissions and unplanned medical care pathways were different from enhanced recovery or elective pathways, the review found that an innovative approach was needed to absorb learning from different pathways ultimately benefitting older patients. A care program that just did not target early mobility alone but one that could provide better integrated care to accommodate the multiple care needs of older patients, including cognitive impairment and frailty was important. Tailoring to local context, staff education, engagement and empowerment, and protocols/programs were found to be useful strategies for early mobilization. Older patients should also be involved in the designing of interventions. Early rapid evaluation of the adopted early mobilization program was crucial to avoid failed implementation. **Conclusion:** The review helps understand the issues with early mobilization. However, it points to the need for more research into implementation outcomes, not just clinical outcomes.

LB30bis- BASELINE RESULTS OF A PEER-LED PAIN MANAGEMENT PROGRAM FOR OLDER ADULTS LIVING IN NURSING HOMES: A CLUSTERED RANDOMIZED CONTROLLED TRIAL. M Tse *(School of Nursing, The Hong Kong Polytechnic University, Kowloon, Hong Kong)*

Background: Chronic pain is common in nursing home residents, who may have difficulty seeking out pain management strategies. Older adults often accept chronic pain as part of the process of aging and have strong reservations about using oral medications as they are afraid of possible adverse effects after taking pain relief drugs. This has boosted the popularity of non-drug strategies for dealing with pain, such as pain education, exercise, and visual stimulation. **Objectives:** The peer support model shows promise as a strategy for managing chronic conditions. this paper explores the effect of a peer-lead pain management program in helping older adults with chronic pain. **Methods:** This was a clustered randomized controlled trial. A peer-led pain management program was provided for the experimental group. The pain management program led by peer volunteers was provided for the participants in the experimental group. The pain management program started with physical exercises (20 minutes) under the supervision of the PVs, then, pain management education (30 minutes) about pain and the impacts of pain, the use of drugs and non-drug strategies, as well as demonstrations and return demonstrations of non-drug pain management skills and techniques. Pain situation, depression, quality of life, non-drug strategies used, and pain knowledge were measured. **Results:** A total of 262 participants joined the study. Their overall pain score was 6.41. Depression was also reported by the participants. Their score for quality of life was 32.61 for the physical component and 51.65 for the mental component. The mean score for pain knowledge was 46.74 out of 100. No significant difference was shown between the two groups at baseline. **Conclusion:** Severe pain intensity and low self-efficacy among the participants indicated the necessity of providing pain management programs, particularly for this population. The frequency with which pain management strategies were applied correlated significantly with pain intensity, pain interference, depression, and quality of life.

LB30ter- ACTION IS PREVENTION – A PILOT COMMUNITY-BASED EXERCISE PROGRAM FOR OLDER INDIVIDUALS. Mário Inácio[1,2], Carla Sá[1,2,3], Inês Matos[1], Rodrigo Pontedeira[1], Bryan Rivero[1], Flávio Melo[4,5], Rita Guerra[4,6] *(1. University of Maia, Maia, Portugal; 2. Research Center for Sport Sciences, Health Sciences and Human Development, Vila Real, Portugal; 3. Polytechnic Institute of Bragança, Bragança, Portugal; 4. Santa Maria Health School, Porto, Portugal; 5. Hospital of St. John, Porto, Portugal; 6. Prelada Hospital, Porto, Portugal)*

Background: Aging brings about changes in multiple physiological systems that lead to losses in performance, especially in rapid force production. Additionally, the disproportionate decline in the hip abductors significantly contribute to impairments in functional mobility and balance control. Furthermore, inadequate lifestyle is also associated with the development of chronic diseases and increased mortality. As the worldwide proportion of older individuals is expected to increase over the next decades, it is of paramount importance to reduce these age-related deficits and comorbidities to allow for greater independence and wellbeing in the later stages in life. Physical activity has proven to be effective at improving these markers in older adults, but the establishment of community-based exercise programs can sometimes be challenging and often with limited results. **Objectives:** Investigate whether a pilot community-based exercise program for older individuals, promoted by a local health care center, could improve muscular performance, functional mobility and fall risk. **Methods:** Thirteen generally healthy older adults (65.8±1.4yrs) underwent a multimodal moderate-vigorous (6-7 in modified Borg scale) exercise intervention, bi-weekly for 8 weeks, that focused on aerobic and traditional resistance training. Baseline and post-training sessions consisted of 10m walk test, timed Up-and-Go (TUG), four square step test (FSST) and hip abductor isometric maximal performance testing. Pre-post training comparisons were performed with a linear mixed effects model. Significance was set at $p<0.05$. **Results:** The conducted intervention improved the time to complete the TUG (7.37±0.85 s vs 5.06±0.28 s, pre and post-training respectively, $p<0.05$) and the time to complete the FSST (9.06±0.70 s vs 7.42±0.28 s, pre and post-training respectively, $p<0.05$). There was also a non-significant trend for improved time to complete the 10m walk, preferred walking speed, hip abductor peak force and rate of force development ($p>0.05$). **Conclusion:** Even though this pilot study had a rather small sample size and short intervention, it was enough to lead to significant improvements in the participants' functional mobility and fall risk, and trending improvements in the remaining performance markers. This positive outcome paves the way to continuously develop community-based exercise programs for older individuals, promoted by Portuguese local health care centers.

INTEGRATED CARE (ICOPE)

LB31- PREVALENCE AND ASSOCIATED FACTORS OF DECLINES IN INTRINSIC CAPACITY IN CHINESE OLDER ADULTS. Lina Ma, Yaru Zhou, Jagadish K. Chhetri, Li Zhang, Zhe Tang *(Xuanwu Hospital, Capital Medical University, China National Clinical Research Center for Geriatric Disorders, Beijing, China)*

Background: The WHO proposed intrinsic capacity (IC) as a new model to capture an individual's functions and capacities across lifetime. **Objectives:** We investigated the prevalence of and factors associated with decline in IC (DIC) and examined associations between IC and adverse outcomes in China. **Methods:** Data were derived from the China Comprehensive Geriatric Assessment Study. IC comprised five domains: locomotion, cognition, vitality, sensory, and psychological domains. Participants were deemed DIC if they had any domain decline(s). Sociodemographic characteristics, chronic diseases, geriatric syndromes, and adverse outcomes were examined. **Results:** Of 5,823 community-dwelling older participants, 2,506 were DIC (weighted 39.9%): 57.7% in Western, 38.3% in Northern, 33.7% in Northwest, 36.1% in Middle, 16.9% in Eastern, and 19.8% in Northeast China. Participants with decline in locomotion, cognition, vitality, sensory, and psychological domains numbered 1,039 (17.8%), 646 (11.1%), 735 (12.6%), 824 (14.2%), and 713 (12.2%), respectively. Age, northern residence, low education, poor marital status, low income, less exercise, less meat intake, insomnia, memory loss, urinary incontinence, constipation, slowness, chronic obstructive pulmonary disease, and osteoarthritis independently influenced DIC. After adjusting for age, sex, area, district, marriage, education, waist-hip ratio, smoking, alcohol consumption, exercise, income, and chronic diseases, DIC was independently associated with risk of frailty, disability, fall, fracture, and immobility. **Conclusion:** The current study provided preliminary understanding of the DIC situation in China, which suggests ways to successfully put IC into clinical practice to contribute to complex integrated care strategies for older persons with DIC. Consistent with the WHO recommendations, this study indicates screening and interventions should be provided, especially for vulnerable participants. As such, China has already put the theory-based ICOPE approach into clinical practice and launched a pilot multi-center study called "China Aging, Resilience and Intrinsic Capacity Study (CARICS)" to identify and manage DIC to improve well-being among community-living older adults.

LB32- DETERMINANTS OF IMPROVED QUALITY OF LIFE AMONG OLDER ADULTS WITH MULTIMORBIDITY RECEIVING INTEGRATED OUTPATIENT SERVICES: A HOSPITAL-BASED RETROSPECTIVE COHORT STUDY. Ko-Han Yen[1,2], Chia-Chia Hsu[2,3], Pei-Chin Yu[2,4], Hsin-Yu Liu[2,5], Zhi-Jun Chen[6], Yu-Wen Chen[7], Li-Ning Peng[1,2], Ming-Hsien Lin[1,2], Liang-Kung Chen[1,2,8] *(1. Aging and Health Research Center, National Yang Ming Chiao Tung University, Hsin-Chu, Taiwan; 2. Center for Geriatrics and Gerontology, Taipei Veterans General Hospital, Taipei, Taiwan; 3. Institute of Hospital and Health Care Administration, National Yang Ming Chiao Tung University, Hsin-Chu, Taiwan; 4. Institute of Neuroscience, National Yang Ming Chiao Tung University, Hsin-Chu, Taiwan; 5. Institute of Public Health, National Yang Ming Chiao Tung University, Hsin-Chu, Taiwan; 6. Office of Global Research and Industry Alliance, National Yang Ming Chiao Tung University, Hsin-Chu, Taiwan; 7. Medical Library, Department of Medical Education, Taipei Veterans General Hospital, Taipei, Taiwan; 8. Taipei Municipal Gan-Dau Hospital, Taipei, Taiwan)*

Backgrounds: Older adults with multiple complex care needs tend to receive fragmented care that may jeopardize their quality of life (QoL) and health outcomes. This study evaluated the determinants of improved QoL among integrated outpatient service recipients with multimorbidity.**Methods:** We conducted a retrospective cohort study of integrated geriatric outpatient services (IGOS) at a tertiary medical center in Taiwan. Data from 2018 to 2019 were retrieved. All patients underwent comprehensive geriatric assessment, which included demographic information, serial functional assessments, and assessment for QoL. QoL was reassessed through a telephone survey 6 months after the patients' first visit to IGOS. Factors associated with the interval changes in QoL were identified using multivariate logistic regression. **Results:** Data from 995 patients receiving IGOS (mean age: 82.21 ± 7.96 years, 54.5% males) were analyzed. An overall mean improvement in QoL was noted (EQ-5D index: +0.055±0.26, p <0.001) while 747 recipients reported maintained or improved QoL. The results of the multivariate logistic regression showed that poorer nutritional status (OR = 1.56, 95% CI: 1.07 - 2.28), depressive symptoms (OR = 1.99, 95% CI: 1.38 - 2.86), and frailty (OR = 1.66, 95% CI: 1.10 - 2.52) were independent risk factors for poorer QoL after adjustment for baseline QoL. **Conclusion:** Integrated outpatient services improved the quality of life of elderly with multimorbidity. Those with poorer nutritional status, depressive symptoms and frailty were less likely to show improvement in their QoL.

BODY COMPOSITION

LB33- OBSERVATIONAL COHORT STUDY OF HEALTHY COMMUNITY DWELLING SENIORS FOLLOWED FOR 12 MONTHS TO ASSESS THE IMPACT OF LIFESTYLE ON SARCOPENIC STATUS. A.G. Juby[1], C.M.J. Davis[2], S. Minimaana[1], D.R. Mager[3] *(1. Department of Medicine, Division of Geriatrics; 2. Faculty of Kinesiology; 3. Faculty of Agriculture, Food and Nutrition Sciences, University of Alberta, Edmonton, Alberta, Canada)*

Background: The prevalence of sarcopenia varies depending on the cohort evaluated. Most studies have been done in "vulnerable" populations. Very few studies have been done on successfully aging community dwelling Seniors. **Objectives:** -to evaluate the sarcopenic status of healthy community dwelling Seniors; -to evaluate whether this changed over 12 months and what factors may have influenced this. **Methods:** Community dwelling Seniors were invited to participate in a 12 month observational study. All were independent of all basic activities of daily living at baseline, and most instrumental activities (some needed assistance with driving, finances). They were assessed for physical function (TUG, SPPB, gait speed, Tinetti, grip strength), muscle mass (DXA, arm and calf circumference), body fat (skinfold, DXA), reported daily exercise (aerobic, resistance), and laboratory parameters. **Results:** Of 50 participants, 11 were male and 39 female. Average age was 75.8 (67-90) years, and BMI was 28 (18.8-39.2). Average MMSE and MoCA cognitive scores were 28.1(20-30) and 24.8(4-30) respectively. 8 dropped out prior to their DXA test. 15 participants (3 men) fulfilled the EWGSOP revised criteria for sarcopenia, probable or pre-sarcopenia, giving a prevalence of 36% in this community dwelling sample. The sarcopenic group had a lower BMI (25.6±5.1 versus 29±5, p=0.01), less body fat by skinfold measurement (36.4±6.5 versus 39.3±8.1, p=0.01), lower calf (35.6±3.2 versus 37.6±3.4, p=0.04) and arm (29.1±2.5 versus 31.9±3.5, p=0.02) circumferences when compared to their non-sarcopenic peers. After 12 months, 41 participants remained in the study. Of these, the sarcopenic status of 7 improved, 10 declined, with the remainder not changing. There were no statistically significant differences in baseline laboratory parameters between the groups, including 25(OH)D status. But, of the status decliners, 40% had suboptimal 25(OH)D at baseline. Some participants attended a Seniors focus exercise class. Those with sarcopenia attending the exercise class had improvements in balance and total Tinetti scores, compared to those not attending or without sarcopenia. **Conclusion:** In the majority (75%) of these community dwelling Seniors there was no change or improvement in sarcopenic status over 12 months. Those who declined and improved provide valuable preventive information.

LB34- USE OF THE SERGI EQUATION TO ESTIMATE THE APPENDICULAR MUSCLE MASS IN THE MEXICAN POPULATION: AN EXPLORATORY STUDY.

Jorge Morales Vargas[1], Paola Vanessa Miranda Alatriste[2], Jorge Luis Alberto Morales Torres[1], Araceli Guadalupe Guadian Moreno[1], Luis Javier Pesqueira Ornelas[1] *(1. Hospital Aranda de la Parra. Centro de Investigacion Morales-Vargas SC, Leon Guanajuato México; 2. Instituto Nacional de Ciencias Médicas y Nutricion Salvador Zubiran, Departamento de Nefrologia y Metabolismo Mineral, Area Nutricion Renal, Ciudad de México, México)*

Background: Sarcopenia is the age-related loss of skeletal muscle that can result in decreased muscle strength and physical performance. To make the diagnosis, evaluation of muscle mass is recommended through measurement of appendicular muscle mass (AMM) and appendicular muscle mass index (AMMI). In Mexico, access to DXA devices is limited, so it is necessary to develop new ways to identify subjects with low AMM. **Objectives:** To evaluate the concordance between the Sergi equation and the DXA measurement to estimate the appendicular muscle mass in the Mexican population. **Methods:** Height, weight and handgrip strength were evaluated. A body composition analysis was done by Bioelectric Impedance Analysis (BIA) and by dual X-ray absorptiometry (DXA). **Results:** A good correlation was found between AMM DXA and AMM Sergi (r=0.971, p<0.000), AMMI DXA and AMMI Sergi (r=0.90, p<0.000) and AMMI DXA/Height and AMMI Sergi (r=0.888 p<0.001). Through the Bland Altman analysis, good agreement was found between the variables. The ICC was obtained to evaluate the concordance between AMM DXA and AMM Sergi (ICC=0.9672, 95% CI 0.8680 to 0.9919), AMMI DXA and AMMI Sergi (ICC=0.9407, IC 0.7614 to 0.9853), AMMI DXA / Height and AMMI Sergi (ICC=0.9335, IC 0.7324 to 0.9835). **Conclusion:** The findings of this study confirm, in a preliminary way, that the Sergi equation presents a good agreement with the DXA analysis to estimate AMM in older Mexican adults. In Mexico, its use can make the diagnosis and follow-up of patients with sarcopenia more accessible.

LB35- MUSCLE MASS CUTOFFS OF FOUR INTERNATIONAL SARCOPENIA-WORKING GROUPS IN JAPANESE PEOPLE USING A DXA AND TWO BIA.

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Background: The Asian Working Group for Sarcopenia (AWGS) 2019, European Working Group on Sarcopenia in Older People 2 (EWGSOP2), Foundation for the National Institutes of Health Sarcopenia Project (FNIH), and International Working Group on Sarcopenia (IWGS) reported different cutoff values for sarcopenia. **Objectives:** We aimed to validate these cutoff values in a Japanese population using DXA and two different devices of multi-frequency BIA (MF-BIA). **Methods:** We examined the data of Japanese individuals aged 18-86 years using the DXA (n = 756) and two 8-electrode MF-BIA devices (InBody and TANITA MC) (n = 1884). To validate these cutoff values, we used a population aged 18-40 years, and calculated the 95% confidence intervals (CIs) of [mean-2SD]. **Results:** In DXA, the 95%CIs of [mean-2SD] for ALM/Ht2 were 5.2-5.8 and 6.6-7.3 kg/m2 in women and men, respectively. The AWGS (<5.4 in women and <7.0 in men), and IWGS (≤5.67 in women and ≤7.23 in men) cutoffs were acceptable. Regarding TANITA MC, the 95%CIs of [mean-2SD] for ALM/Ht2 were 5.6-6.0 and 6.9-7.4 kg/m2 in women and men, respectively. The AWGS (<5.7 in women and <7.0 in men), EWGSOP2 (<6.0 in women and <7.0 in men), and IWGS cutoffs were acceptable. Regarding InBody, the 95%CIs of [mean-2SD] for ALM/Ht2 were 4.8-5.2 and 6.4-6.8 kg/m2 in young women and men, respectively. All cutoff values were too high compared to those measured by InBody. InBody and TANITA MC were highly correlated (P < 0.001), but the values by InBody were significantly lower than those by TANITA MC or DXA. Using Yamada's equation for InBody raw data, the AWGS, EWGSOP2, or IWGS cutoffs were acceptable. We also obtained the 20th percentile in older adult population. **Conclusions:** The AWGS and IWGS cutoffs were valid for DXA, and the AWGS, IWGS, and EWGSOP2 cutoffs were valid for TANITA MC in Japanese population. Because the prevalence of sarcopenia is too low particularly in women when using those criteria, the 20th percentile might be a good alternative criteria (ALM/Ht2 , <6.2 in women and <7.5 in men for TANITA MC; <5.4 in women and <7.0 in men for InBody).

LB36- FAT AND SPINAL MUSCLE MASS IN PATIENTS WITH LOW BACK PAIN AND DEGENERATIVE DISC DISEASE IN DIFFERENT AGE GROUPS.

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Background: Back pain is one of the leading age-related conditions arising from degenerative lesions of the musculoskeletal system. Of the widely studied factors influencing the development of spinal degeneration, changes in the muscles of the back and adipose tissue remain less studied. **Objectives:** To evaluate fat and spinal muscle mass using MRI, assess how these parameters correlate with degenerative disc disease in young, middle-aged and elderly patients with back pain. **Methods:** Our study included 90 patients with back pain, which was associated with degenerative disc disease. First group included elderly patients (n=30, 8 males and 22 females, of mean age 66,03±4,76). Second group - middle-aged patients (n=30, 17 males and 13 females, mean age 52,77±4,45). Third group - young patients (n=30, 16 males and 14 females, mean age 35,7±6,17). We assessed the severity of pain according to visual analog scale (VAS, mm), the nature of the course of low back pain (LBP) (IAPS, 2018), body mass index (BMI, kg/m2). Moreover, we studied MRI-data at the L3-vertebral

level: subcutaneous fat thickness on the anterior abdominal wall (Fat Thickness, FT, cm), waist thickness at the L3-level (WT, cm), IVD degeneration (C.W. Pfirrmann); cross-sectional area of spinal muscles (CSAm, cm2) - m. psoas major, m. erector spinae, m. quadratum lumborum, muscular-vertebral index (CSAm/CSA of vertebra = MVI). The study was carried out on ToshibaExcelerat 1.5 Tesla MRI. **Results:** The severity of pain in the first group was 73,6±17,2 mm on average, in the second - 59±20,7 mm, in the third - 64,5±21,4 mm. Chronic back pain was found in 82% of patients in all groups. 30,2%, 18,8% and 18,2% of patients were obese in the first, second and third group accordingly (BMI>30). The abdomen volume (by the waist thickness) is greater in the elderly ($p < 0.01$). The mean values of the MVI were 3,4 in the first group, 3,73 in the second and 4,18 in the third ($p=0,05$). Correlation analysis showed a significant relationship between FT and BMI ($r=0,49$, $p<0,01$), MVI and BMI ($r=0,32$, $p=0,05$), FT and IDD L5-S1 ($r=0,34$, $p<0,05$), positive correlation between the values of MVI and the chronic course of LBP ($r=0,31$, $p<0,05$). **Conclusion:** 1. The percentage of obese patients was significantly higher in the elderly group of patients (30,2%) such as abdomen volum, $p<0,01$. 2. We found a correlation between IDD, BMI and the fat thickness, which means general and abdominal obesity plays a role in the progression of degenerative disc disease in the patients of all age groups. 3. The mass of spinal muscles decreases with age according to the MRI data, $p<0,001$. This might indicate that spinal sarcopenia contributes to the persistance of low back pain in the elderly patients but further research is needed in this direction.

LB37- CHARACTERISTICS OF BODY COMPOSITION IN PEOPLE OVER 50 YEARS OF AGE. Iulia Samoilova, Olga Fedorova, Daria Podchinenova, Maria Matveeva, Natalya Nekrasova, Oxana Oleinik, Christina Maximova, Ekaterina Khoroshunova, Tatiana Milovanova *(Siberian State Medical University, Tomsk, Russia)*

Background: Bioimpedance analysis is a non-radiological, relatively inexpensive method that allows the routine clinical practice to identify changes in body composition associated with the development of sarcopenia, metabolic and cardiovascular disorders. **Objectives:** Study the characteristics of body composition in people over 50 years of age. **Methods:** 204 people aged between 50 and 82 years participated in the study. All subjects had a complex examination including anthropometry (height, weight, body mass index (BMI)) and body composition analysis by Inbody 770 (Inbody Co.Ltd, Korea). Statistical processing of the results was performed using SPSS Statistics 25.0. **Results:** The age of the women was 61.0 [56.0;65.8] years, weight 75.8 [67.5;86.0] kg, height 160.0 [156.0;164.9] cm, BMI 29.6 [25.8;34.7] kg/m^2. Body fat mass was 31.6 [24.5;40.8] kg, body fat percentage 42.3[37.2;47.9] %, visceral fat area 165.6 [127.5;205.3] cm^2, skeletal muscle mass 23.9 [21.7;26.8] kg, appendicular muscle mass 6.6 [5.9;7.4] kg according to bioimpedanceometry. Appendicular muscle mass deficiency was found in 13.5% of the women's group. In the group of women with normal BMI 100% of cases had an increased percentage of fat mass, 33.3% of women had visceral obesity and muscle mass deficiency was found in 18.9% of cases. Male age was 64 [58.8;68.5] years, weight 78.5 [71.8;94.0] kg, height 172 [167.8;177.3] cm, BMI 27.8 [24.9;30.6] kg/m^2. Body fat mass was 21.4 [16.6;29.8] kg, body fat percentage 28.9 [23.5;33.8] %, visceral fat area 98.4 [78.3;152.2] cm^2, skeletal muscle mass 32 [28.7;35.0] kg, appendicular muscle mass 8.0 [7.1;8.9] kg according to bioimpedance measurement. The prevalence of reduced appendicular muscle mass in men was 15%. In the group of men with a normal BMI, 80% were overweight, 40% had skeletal muscle deficits and no cases of visceral obesity were detected. **Conclusion:** The observed changes in body composition among those studied with a normal BMI indicate the need for more active diagnostic tactics and the use of additional tools for early detection and correction of these abnormalities, due to their association with reduced life expectancy and quality of life, as well as the risk of developing a number of metabolic disorders.

LB38- AGE-RELATED CHANGES OF BODY COMPOSITION IN HEALTHY UKRAINIAN MEN DURING THE PHYSIOLOGICAL AGING. Anna Musiienko, Vladyslav Povoroznyuk, Nataliia Grygorieva *(Dmitry F. Chebotarev Institute of Gerontology of the National Academy of Medical Sciences of Ukraine, Kyiv, Ukraine)*

Background: Physiological changes occur with aging in all organ systems including changes in body composition, in particular bone loss, loss of skeletal muscle mass and strength, and increase in fat mass. **Objectives:** The aim of the study was to determine age-related changes in body composition in healthy men. **Methods:** We have examined 342 men, aged 20-89 years (mean age - 53.54±16.65 years, height - 175.97±7.19 cm, body weight - 85.48±13.64 kg, body mass index - 27.59±4.01 kg/m2) without any diseases with significant negative influence on bone tissue or skeletal muscles, which were divided into groups according to age. Body composition, appendicular lean mass (ALM, lean mass of the limbs, kg), and appendicular lean mass index (ALMI, lean mass of the limbs/(height)2, kg/m2) were measured by dual-energy X-ray absorptiometry (Prodigy, GE Lunar). **Results:** Age-related changes in body composition consisted in a decrease in lean mass ($F=8,56$; $p<0.001$) with a significant increase in fat mass ($p<0.001$). Significant decrease of the lower lean mass index was found in the age group of 70-79 years by 11.4% (55.08±6.10 and 62.14±5.10 kg, respectively, $p=0.01$) and in the group of 80-89 years by 16.0% (52.18±8.33 and 62.14±5.10 kg, respectively, $p=0.004$) compared with men aged 30-39 years who had the highest lean mass index. The highest ALM was detected in the subjects aged 20-29 years, and it significantly decreased with age ($F=18.43$; $p<0.001$). However, the statistically significant decrease was found only in the age groups 70-79 years ([CI: 6.03-30.9], $\chi2=7.6$, $p=0.006$) and 80-89 years ([CI: 5.7-45.8], $\chi2=8.6$, $p=0.003$). It was detected the significantly lower ALMI in the age group 70-79 years - 7.9±0.8 kg/m2 and 80-89 years - 7.7±1.1 kg/

m2 compared to the age group 20-29 years - 8.8±0.9 kg/m2 and 30-39 years - 8.8±0.6 kg/m2. The frequency of sarcopenia significantly increased relating to age (ALMI <7.0 kg/m2): in the groups 50-59 years it was equal to 5.3%, 60-69 years – 5.1%, 70-79 years – 15.1%, 80-89 years – 41.0%. A significant negative connection was detected between the age and lean mass (r=-0.31; p<0.001), ALM (r=-0.48; p<0.001) and ALMI (r=-0.28; p<0.001). **Conclusion:** Age-related changes in body composition in healthy Ukrainian men are associated with a decrease in lean mass and was manifested in an increase in the incidence of sarcopenia from 5.3% in the age group 50-59 years to 41.0% in 80-89 years.

BIOLOGY OF FRAILTY, SARCOPENIA

LB39- MOTS-C PREVENTS DISUSE-INDUCED SKELETAL MUSCLE WASTING.

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Background: MOTS-c is a 16-amino acid peptide and that has been shown to protect against aging- and high fat diet-induced insulin resistance. We also recently demonstrated that MOTS-c administration suppressed plasma and skeletal muscle myostatin expression and prevented skeletal muscle wasting in high-fat-diet-fed mice. These observations suggest that MOTS-c may have additional muscle preserving and sarcopenia-preventing effects. **Objectives:** The aim of the present study was to examine the effect of MOTS-c on disuse-induced skeletal muscle wasting in mice. **Methods:** Young (10-weeks old) male C57BL/6 mice were randomly assigned to one of three experimental groups: A) non-cast immobilization control, B) cast immobilization with sterile water injection (CA), and C) cast immobilization with MOTS-c injection (MOTS-c) groups. Both right and left hindlimbs of the mice were immobilized by using casting tape under light anesthesia and mice were injected with sterilized water or MOTS-c (7.5 mg/kg, 2 times per day, intraperitoneal injection) for 8 days. Plasma and skeletal muscle (soleus, gastrocnemius, and plantaris) samples were collected at the end of the experiment. **Results:** Cast immobilization led to a 13% reduction in muscle mass compared to control. The MOTS-c-treated mice showed significant improvement (5% reduction) in the total weight of soleus, gastrocnemius, and plantaris muscles compared to the CA group (p<0.01). Furthermore, plasma levels of IL-1β and IL-6, which were 10-fold and 34-fold elevated in the CA group than control, respectively, were significantly (30% and 38%, respectively) lower in the MOTS-c group than CA group (both p<0.05). Additionally, MOTS-c administration inhibited FOXO1 activity and suppressed myostatin expression in skeletal muscle by approximately 40 percent. **Conclusion:** This study demonstrates that MOTS-c administration leads to protection against disuse-induced skeletal muscle wasting and suggest that MOTS-c analogues may be useful in clinical scenarios associated with muscle wasting, sarcopenia and frailty.

LB40- ASSOCIATIONS BETWEEN HEMOGLOBIN LEVELS AND SARCOPENIA AND ITS COMPONENTS: RESULTS FROM THE I-LAN LONGITUDINAL STUDY.

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Background: As a biomarker for anemia and nutritional status, hemoglobin may play various roles in the development of sarcopenia, but studies evaluating these roles are scarce. **Objectives:** This study aimed to explore the associations between hemoglobin levels and sarcopenia and its components and to determine optimal cutoffs of hemoglobin for identifying sarcopenia. **Methods:** Data from 730 participants identified from the I-Lan Longitudinal Aging Study were retrieved. Anemia was defined by the World Health Organization criteria as a hemoglobin level <13 g/dL in men and <12 g/dL in women, and anemia status was divided into 5 groups (1 g/dL below cutoff, 0–1 g/dL below cutoff, 0–1 g/dL above cutoff, 1–2 g/dL above cutoff, and 2 g/dL above cutoff) for trend analysis. Sarcopenia was defined by the Asian Working Group for Sarcopenia 2019 criteria. **Results:** In total, 118 (16.2%) participants were anemic, and 62 (8.5%) participants were sarcopenic. A higher hemoglobin level was significantly associated with faster gait speed (p-trend, 0.037) and stronger handgrip strength (p-trend, 0.003). Anemia was significantly associated with sarcopenia (OR: 2.4, 95% CI: 1.2–4.9), weakness (OR: 1.6, 95% CI: 1.0–2.5) and slowness (OR: 2.0, 95% CI: 1.1–3.4). Stronger correlations between anemia and sarcopenia were found in men and those with severe disease burden. **Conclusion:** Hemoglobin levels were independently associated with sarcopenia, and the associations were stronger for mu scle function than for mu scle mass and in men than in women. Older adults with anemia had a higher risk of sarcopenia and mu scle weakness, and further intervention studies are needed to clarify the causal relationship between anemia and sarcopenia.

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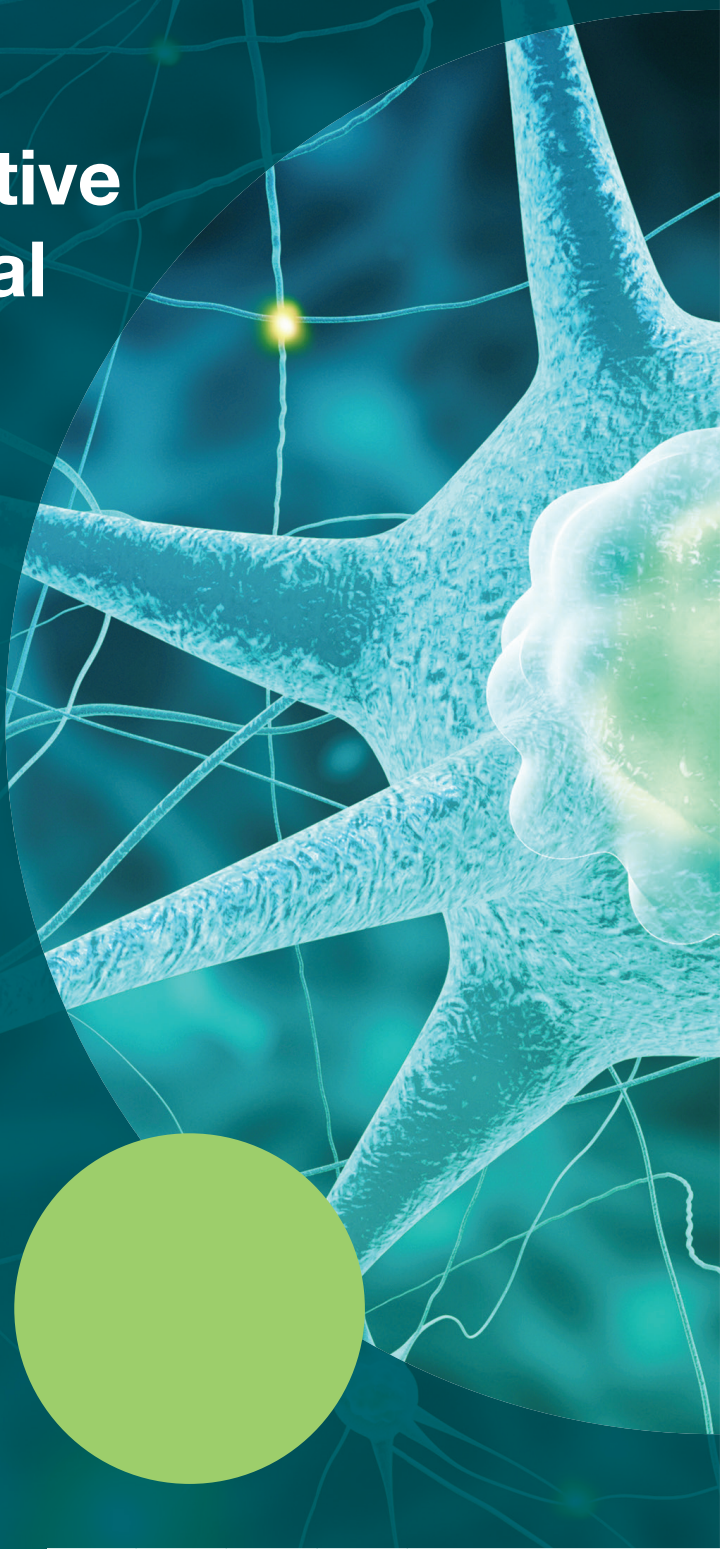

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