

POSTER

FRAILITY IN CLINICAL PRACTICE AND PUBLIC HEALTH

P1- CLINICAL CLASSIFICATION OF FALL RISKS BY VISUALLY OBTAINED INFORMATION PREDICT FRAILITY AT A MEMORY CLINIC. Kenji Toba¹, Takashi Sakurai² ((1) Tokyo Metropolitan Institute for Geriatrics and Gerontology, Tokyo, Japan; (2) National Center for Geriatrics and Gerontology, Tokyo, Japan)

Background: Fall is an important event of frailty. However, there is few studies for simple classification of fall risks predicting frailty without established fall risk assessment tools. **Objectives:** To establish a simple clinical classification of fall risks by visually obtained information predicting frailty, we compared simple clinical classification of fall risks with established fall risk assessment. **Methods:** New cases visited to center of comprehensive care and research for memory disorders in National Center for Geriatrics and Gerontology were enrolled to the study. A couple of day-shift nurses separately recorded clinical classification of fall risks through visually obtained information during 10 minutes of outpatients' waiting time. Fall risk assessments such as Fall Risk Index and Timed Up & Go test etc. were obtained by non-nurse medical staffs. Frailty was judged using CHS criteria. Data analysis was done by independent researcher who was not involved in getting clinical information. **Results:** Nurse's clinical classification of fall risks by visually obtained information was well correlated with Fall Risk Index, Timed Up & Go test, One-leg Standing test and Dorsiflex meter. Furthermore, subjects classified to high fall risk were more frequently judged as frailty ($p < 0.01$). **Conclusion:** Nurse's clinical classification of fall risks by visually obtained information predict frailty on the basis of integrated impression such as muscle strength, gait speed and balance.

P2- COMPARISON OF MULTIDIMENSIONAL FRAILITY SCORE AND GRIP STRENGTH TO PREDICT POSTOPERATIVE COMPLICATIONS FOR OLDER HIP FRACTURE PATIENTS.

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Background: Frail older adults are at increased risk of postoperative morbidity compared with robust counterparts. Simple methods testing frailty such as grip strength have shown promising results for predicting post-operative outcome, but there is a debate regarding the most appropriate and precise frailty assessment method. **Objectives:** We compared the predictive value of multidimensional frailty score (MFS)

with grip strength or conventional risk stratification tool for predicting postoperative complications in older hip fracture patients. **Methods:** From January 2016 to December 2018, 277 older hip fracture patients (age ≥ 65 years) who underwent surgery and comprehensive geriatric assessment (CGA) were retrospectively included for analysis. Hip-MFS was calculated based on the CGA with component of Sex, Charlson Comorbidity Index, serum albumin, Koval grade, cognitive function, risk of falling, mini-nutritional assessment and mid-arm circumference. Grip strength was also measured before surgery. The primary outcome was a composite of postoperative complications (e.g. pneumonia, urinary tract infection, delirium, acute pulmonary thromboembolism, and unplanned intensive care unit admission). **Results:** Among 277 patients (mean age 81.7 ± 6.8 years, 73.3% female), 127 (45.8%) patients experienced postoperative complications and the mean total and postoperative length of hospital stays were 14.4 and 11.8 days, respectively. Grip strength, Hip-MFS, and American Society of Anesthesiologists (ASA) classification could predict postoperative complication. Grip strength (C-index = 0.673) had comparable prognostic utility compared to Hip-MFS (0.661, $p = 0.745$) and ASA classification (0.594, $p = 0.156$). However, both Hip-MFS (C-index of 0.592 [ASA] vs 0.675 [ASA + Hip-MFS], $p = 0.011$) and grip strength (C index of 0.594 [ASA] to 0.671 [ASA + grip strength], $p = 0.024$) improved the predictive value on ASA classification for postoperative complication. **Conclusion:** Grip strength showed comparable predictive utility on Hip-MFS which based on preoperative CGA or ASA classification for predicting postoperative complication. Both grip strength and Hip-MFS also showed incremental predictive ability for postoperative complications with the addition of ASA classification. Accordingly, grip strength could be used for screening tool to identify high-risk patients who need for further comprehensive geriatric assessment among older hip fracture patients.

P3- PREOPERATIVE SARCOPENIA AND POSTOPERATIVE INFECTION IN AGED DIGESTIVE SURGERY PATIENTS. Yuichi Kitagawa, Shinichiro Kobayashi, Ken Fujishiro, Yasuji Kawabata (Department of Digestive Surgery, National Center for Geriatrics and Gerontology, Obu, Japan)

Background: To evaluate for aged surgical candidate, preoperative assessment of sarcopenia and frailty are being introduced. Postoperative infectious complication is one of the most important problems when performing digestive surgery on aged patients. This study was performed as part of "Aged operative patients with sarcopenia and perioperative infection" in The Research Funding for Longevity Sciences from National Center for Geriatrics and Gerontology (NCGG), Japan (project 30-32). **Objectives:** The aim of this study is whether preoperative sarcopenia is associated with the development of postoperative infectious complications in aged surgical patients. **Methods:** After registration, electronic medical records were referred and extracted patient basic

information and data suspected of post-operative infections. The diagnostic criteria of infection dealt with Grade II or more of Clavien-Dindo classification. Diagnosis of infectious disease was made with reference to vital sign, blood test, imaging and bacterial test results. Surgical site infection (SSI) was evaluated based on the Infectious Control Team surveillance. **Results:** 47 elderly patients were registered with necessary data. The average age was 77.0 years, 25 males and 22 females were included. In the sarcopenia evaluation, there were 15 cases without sarcopenia and 32 cases with it. 12 cases developed some infectious complications postoperatively. The types of infectious complications (including duplication) were 11 cases of some surgical site infections including suture failures, 5 of pneumonia, 2 of urinary tract infection, 4 of pneumonia and 2 cases of sepsis in 12 patients. Infectious complications occurred in 4 cases in the non-sarcopenia group and 8 in the sarcopenia group ($P = 0.903$). The average postoperative hospitalization was 30.2 days overall, 20.8 in the group with postoperative infectious complications, and 61.9 in the group without sarcopenia. **Conclusion:** In this study, there was no relation in the incidence of postoperative infections and preoperative sarcopenia. However, the postoperative hospitalization in the group with postoperative infectious complications was almost tripled.

P4- THE IMPACT OF AN INTEGRATED CARE MODEL FOR PRE-FRAIL AND FRAIL OLDER PEOPLE LIVING IN COMMUNITY.

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Background: Frailty is a geriatric syndrome characterised by decreases in the functional reserve that places older people at risk for falls, disability, hospitalization and death. Therefore, effective care models should be identified to prevent or delay progression of frailty. **Objectives:** To evaluate the impact of an integrated care model for pre-frail and frail community-dwelling older people. **Methods:** A quasi-experimental design was used in the study. We enrolled people aged 60 years or older from a community primary care project. Inclusion criteria were being a member of community elderly centre with pre-frailty/frailty (measured by a simple frailty questionnaire (FRAIL) with a score of ≥ 1). We assigned participants to an intervention or a usual care control group. An in-depth assessment and personalised recommendations were drawn up for each participant in the intervention group by a geriatric nurse or a health worker. Coordinated follow-up programs to reduce frailty were provided. The primary outcome was the change in frailty, assessed by the FRAIL scale; while the secondary outcome was the change in use of health services. Assessments were conducted at baseline and at 12-month follow-up. **Results:** Between 2016 and 2018, we screened 792 people and assigned 347 pre-frail and 106 frail people to the intervention ($n=183$) or control group ($n=270$). Mean age

was 76.1 ± 7.5 years, and 80.1% were women. Mean change in FRAIL score at 12 months was -0.38 in the intervention group and -0.16 in the control group. Between-group difference was 0.22 ($p=0.046$). The adjusted odds ratio (OR) for improved with frailty status/remained robust was 1.6 (95% CI 1.02-2.38) higher in the intervention group when compared with the control group. However, we found no effects on reducing use of health services. **Conclusion:** The integrated care model reduced frailty and preserved memory functions in pre-frail and frail community-dwelling older people.

P5- RELATIONSHIP BETWEEN PHYSICAL CONDITION, FUNCTIONALITY, COGNITION, PSYCHO-AFFECTIVE STATE, QUALITY OF LIFE AND FRAILTY IN LONG-TERM NURSING HOME RESIDENTS. Iratxe Egaña¹, Itxaso Mugica^{1,2}, Nagore Arizaga², Maider Ugartemendia¹, Nagore Zinkunegi¹, Janire Virgala², Maider Kortajarena¹ ((1) *Nursing Department, University of the Basque Country (UPV-EHU), Spain*; (2) *Hospital Universitario Donostia, Osakidetza, Spain*)

Background: Dependence and cognitive disorder are very common among elders in nursing homes. Psychological disorders such as depression and anxiety have increased among this group of population. This has direct impact on risk of frailty, decreasing the quality of life and the happiness of seniors. **Objectives:** Analyze the physical, psychic, cognitive and health parameters of the seniors in nursing homes in Guipúzcoa, region in north of Spain. **Methods:** 81 people have participated in total, 45 men and 36 women. On average, they are 84.28 ± 6.58 years old and they are from 6 nursing homes in Guipuzcoa. The measured parameters are: general data and anthropometry. Physical state: TUG, Handgrip and SPPB test. Cognitive and psycho affective state: MOCA, EADG and SHS. Functionality: Barthel and Lawton and Brody. Frailty: Tillburg scale and quality of life: QoL-AD. Comparison of the average values, correlation among parameters and multiple linear regressions of the results have been analysed during the statistical analysis. **Results:** The parameters that have an impact to the quality of life are Tilburg scale of frailty ($p < 0.001$) and SPPB test ($p < 0.01$). Similar results have been found in other researches. The parameters that have higher influence in cognition are handgrip test ($p < 0.01$) and frailty ($p < 0.01$). In other investigations, they got the same results; better cognition is related to better physical capacity and less fragility. In regards with functionality, the values of TUG test ($p < 0.01$) and gait speed ($p < 0.01$) are the ones that show stronger relation. In other investigations, they observed that physical state and functionality were related. **Conclusion:** The quality of life, the functionality and MOCA test are interconnected and the parameters that have the strongest statistical relationship are fragility and physical state. The greater the physical capacity of the older person is, the greater the functional capacity is too and the fragility decreases. In conclusion, the quality of life is better.

P6- DISCORDANCE BETWEEN ECOG AND FRAILTY IN LUNG CANCER PATIENTS -THE ROLE OF CGA IN LUNG CANCER PATIENTS-

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Background: The proportion of older patients with lung cancer keeps growing. Elderly patients with cancer has large heterogeneity and it is well known that chronologic age is a poor predictor of outcomes. Research has shown that Comprehensive Geriatric Assessment (CGA) would be helpful to formulate individualized treatment plans for better outcomes. For older patients with cancer, careful review of functional status and medications is an important component of a CGA. Furthermore, regular and comprehensive review of all medications (both prescription and over the counter) is needed to remove any unnecessary or potentially inappropriate medications and to assess for potential drug interactions. Recent studies showed that routine frailty assessment is recommended to guide treatment decision. However, so far, In general, the overall condition of cancer patients is evaluated by ECOG criteria. **Objectives:** We investigated the difference between the ECOG PS results and the Frailty index results, which are used as tools for evaluating the performance status of patients when treating cancer patients. Furthermore, we analyzed how functional status of lung cancer patients measured by CGA correlated with ECOG and Frailty index. Based on these findings, we plan to develop a functional model for the establishment of a comprehensive multidisciplinary geriatric lung cancer care in the setting of a university based cancer center. **Methods:** Eligible patients aged ≥ 65 years with lung cancer referred to Medical Oncology Clinic were recruited. Each patient is evaluated by medical oncologist and geriatrician. The patient is classified as robust, pre-frail, or Frail based on the CGA result (Fried frailty index) and ECOG PS (Eastern Cooperative Oncology Group Performance Status) at the same time. **Results:** The average age of patients was 73.7. Only 31.8% percent of patients were determined to be robust (pre-frail – 42.3%, and Frail 25.9%). More than 92% of lung cancer patients received an ECOG score of 0 or 1 by the oncologists. However, 26 % of total patients were defined as frail by CGA. Furthermore, of the 185 patients evaluated ECOG 0 or 1, 79 patients (42%) were pre-frail and 42 patients (22%) were frail. Multiple regression result showed that Self-rated health condition, grip strength related with sarcopenia, nutritional status, ADL (Activities of daily living) and number of medication are more closely related with frailty compared with ECOG. **Conclusion:** We were able to observe definite discordance with ECOG score and Fried frailty index. In general, the overall condition of cancer patients is evaluated by ECOG criteria. However, considering functional indices

were more closely related with frailty measured by CGA rather than ECOG, frailty should be considered as a functional status examination tool in lung cancer patients. This means CGA may help to decide treatment plan for elderly lung cancer patients.

P7- RELATIONSHIP BETWEEN FRAILTY SYNDROME AND FRAMINGHAM RISK SCORE FOR CARDIOVASCULAR DISEASES IN OLDER ADULTS FROM THEINTERNATIONAL MOBILITY IN AGING STUDY.

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Background: Despite the growing evidence of the association between frailty and cardiovascular risk factors in older adults, studies largely fail to incorporate various economic, social and psychological life course adversities, which may confound the observed associations. **Objectives:** To investigate the association between frailty and a summary cardiovascular risk measure (Framingham Risk Score) in a sample of older adults from different epidemiologic contexts participating in the multicenter International Mobility in Aging Study (IMIAS). **Methods:** This is a cross-sectional study that used data from the IMIAS study, which is composed of older adults from four different countries (Canada, Albania, Colombia and Brazil). 1724 older adults aged 65-74 years were assessed. Frailty was defined as the presence of 3 or more of the following criteria: unintentional weight loss in the last year, exhaustion, muscle weakness, slowness in gait speed, and low levels of physical activity. Framingham Risk Score (FRS) estimated the 10-year risk for cardiovascular disease (CVD), based on: sex, age, systolic blood pressure (SBP), and treatment for hypertension, total and high-density lipoprotein (HDL) cholesterol, diabetes mellitus status and smoking habits. Multiple linear regression analyses were performed adjusting for adversities occurred during in early, adult or current life. **Results:** After adjustment for adversities occurred during in early, adult or current life, frail individuals presented higher values of FRS ($\beta=3.2$, 95%CI: 0.3 to 6.0) when compared to robust participants. In pre-frail participants we did not observed significant relationship with FRS ($\beta=1.3$, 95% CI: -0.07 to 2.7). Conclusion: Frailty was associated to FRS, independent of socio demographic, clinical and behavioral, life course adversities and prior CVD. Thus, in the older adults who presenting frailty syndrome, assessment of cardiovascular risk factors should be a target in order to provide interventions to manage the physical and metabolic health.

P8- IMPORTANCE OF ASSESSING FRAILITY IN OLDER PEOPLE WITH DECREASED GRIP STRENGTH. Carmen Eliana Peralta Vargas, Ian Falvy Bockos, Claudia Valdivia Alcalde (*Peruvian air force hospital, Lima, Perou*)

Background: Grip strength is a noninvasive method of risk stratification; however, the association with frailty, hospitalization and mortality is unknown in our Geriatric day hospital. **Objectives:** To know if the strength of decreased grip is associated with frailty and adverse outcomes in older people who come to Geriatric day Hospital of the Peruvian Air Force. **Methods:** Study: descriptive, observational and prospective. Patients older than 59 years of age attending to Geriatric day hospital were included. The grip strength of the dominant hand was measured during the outpatient clinic visit in older people who came to Geriatric day hospital. Frailty was assessed using the Edmonton scale. The association between decreased grip strength, frailty and adverse outcomes at 3 months follow-up was evaluated using the Chi-square test. **Results:** The grip strength was measured in 82 older people. According to the Edmonton frailty scale they had decreased grip strength: 83.3% of older people with severe frailty, 87.8% of older people with moderate frailty, 86.7% of older people with mild frailty and 46.7% of vulnerable older adults for frailty. Older adults: «not fragile» according to Edmonton had no reduced grip strength. The decrease in grip strength was associated with frailty ($p = 0.002$). Hospitalization and mortality at 3 months follow-up were frequent in: older people with reduced grip strength ($p = 0.49$), as well as in those with frailty ($p = 0.55$) according to Edmonton; although they were not statistically significant. **Conclusion:** The presence of a decreased tension force is associated with fragility. At 3 months of follow-up, older people with reduced grip strength, as well as the Fragile have adverse outcomes (hospitalization and mortality). **Key words:** Older people- Grip strength- Frailty- Hospitalization- Mortality.

P9- RELATIONSHIP BETWEEN SERUM FATTY ACIDS AND PHYSICAL FRAILITY IN COMMUNITY-DWELLING OLDER JAPANESE. Kaori Kinoshita¹, Rei Otsuka¹, Chikako Tange¹, Yukiko Nishita², Makiko Tomida¹, Takeshi Nakagawa¹, Fujiko Ando³, Hiroshi Shimokata⁴, Hidenori Arai⁵ ((1) *Section of NILS-LSA, Center for Gerontology and Social Science, National Center for Geriatrics and Gerontology, Obu, Japan;* (2) *Department of Epidemiology, Center for Gerontology and Social Science, National Center for Geriatrics and Gerontology, Obu, Japan;* (3) *Department of Health and Medical Science, Aichi Shukutoku University, Nisshin, Japan;* (4) *Graduate School of Nutritional Sciences, Nagoya University of Arts and Sciences, Nisshin, Japan;* (5) *National Center for Geriatrics and Gerontology, Obu, Japan*)

Background: Previous research suggested that physical frailty is related to chronic inflammation, and that serum omega-3 (n-3) fatty acids (FA) are known to be anti-inflammatory markers. However, little is known about the

serum FAs levels among subjects with frailty. **Objectives:** We aimed to clarify the cross-sectional relationship between serum FA and frailty status in community-dwelling older Japanese. **Methods:** The study participants were 513 men and 520 women aged 60-88 years (mean, 70.5; standard deviation, 7.0) in the fifth wave (2010–2012) of the National Institute for Longevity Sciences-Longitudinal Study of Aging (NILS-LSA). Physical frailty was assessed using the modified criteria of the Cardiovascular Health Study: weight loss, slowness, weakness, exhaustion and low physical activity, based on which we categorized patients into one of four groups: robust, having no phenotypes; pre-frail I, having one phenotype; pre-frail II, having two phenotypes; and frail, having three or more phenotypes. Fasting blood samples were collected early in the morning from all subjects, and their serum fatty acids of 24 fractions were measured. General linear model and trend tests were performed for comparisons of serum levels ($\mu\text{g/ml}$) of saturated FAs (SFA), monounsaturated FAs (MUFA), polyunsaturated FAs (PUFA), n-3 PUFA and n-6 PUFA among the four frailty groups, adjusted for age, sex, smoking status, education level, household income and medical history (cerebrovascular disease, ischemic heart disease, hypertension, dyslipidemia and diabetes mellitus). **Results:** The number (%) of participants in the robust, pre-frail I, pre-frail II and frail groups were 404 (39.1%), 380 (36.8%), 181 (17.5%) and 68 (6.6%), respectively. After multivariate adjustment, the serum level of PUFA, especially n-3 PUFA, was significantly lower with the advancing degree of frailty. There were no significant differences in n-6 PUFA, SFA or MUFA levels among the four groups. **Conclusion:** Our findings suggest that serum n-3 PUFA levels correlate negatively with advancing physical frailty. **COI:** This work was supported in part by grants from the Food Science Institute Foundation, and Research Funding for Longevity Sciences from the National Center for Geriatrics and Gerontology, Japan (grant number 19-10).

P10- WHO'S NEW TOOL FOR MEASURING THE INTRINSIC CAPACITY OF OLDER PEOPLE: FIRST EXPERIENCE OF USE. N. Tavassoli, C. Lafont, C. Berbon, J. De Kerimel, F. Da Costa, S. Augusto, L. Bouchon, S. Vaysset, M. Poly, N. Daniaud, C. Oliveira, M.C. Chassaingne, M. Soto, B. Vellas (*Gerontopole-Toulouse University Hospital, La Grave Hospital, Toulouse, France*)

Background: Limiting the number of dependent older people in the future is one of the economic and human challenges of population aging. In response to this challenge, WHO has developed the concept of integrated and personalized care for the older person. This modality of care consists in improving and / or maintaining as long as possible the intrinsic capacity of the individual defined as the totality of his physical and mental capacities. This implies an intervention on intrinsic capacity, lifestyle, environment and diseases. The requirement of such a model of care involves an easy-to-use measurement tool that can provide reproducible, warning-generating data. This tool should periodically assess the intrinsic capacity of the elderly and, if necessary, lead to a personalized assessment

and intervention. The WHO proposes to follow, in any older person, 5 domains of intrinsic capacity (locomotion, cognition, sensory functions, psychological status, nutrition / vitality). A first screening tool (Step1) that can be used by caregivers has been elaborated at Gerontopole - Toulouse University Hospital since 2018. **Objectives:** To test this tool (Step1) in the elderly to evaluate the feasibility of the proposed tests and its acceptability by the elderly and caregivers. **Methods:** The WHO tool (Step1) was first adapted to make it easier to use (creation of a form with modalities of examination, inclusion of scores to facilitate the orientation towards an evaluation and an intervention). Since September 2018, it has been used in elderly people as part of outreach activities of Gerontopole ("Hospital out of Walls" care unit). **Results:** Until October 22, 2019, 548 people have been evaluated. Handover time was 5 to 7 minutes. Average number of domains of intrinsic capacity affected was 2.12 ± 1.21 . 91.2% of people had at least one affected domain. **Conclusion:** This test is easy to use. An application and a conversational robot are being developed for wide use by health professionals.

P11- CREATION OF A «HOSPITAL OUT OF WALLS» CARE UNIT AT GERONTOPOLE - TOULOUSE UNIVERSITY HOSPITAL. N. Tavassoli, C. Berbon, C. Lafont, J. De Kerimel, C. Oliveira, L. Bouchon, F. Da Costa, S. Augusto, S. Vaysset, M. Poly, N. Daniaud, M.C. Chassaigne, M. Soto, B. Vellas (*Gerontopole-Toulouse University Hospital, La Grave Hospital, Toulouse, France*)

Background: The identification, assessment and management of frailty is certainly an essential way to delay the loss of autonomy for older people. However, care developed within the hospital is not the best solution to reach the population of frail elderly people. Because this population, still autonomous, does not come to the hospital structures. This is why the Toulouse Gerontopole has implemented outreach actions outside the hospital, creating a «Hospital out of Walls» care unit. **Objectives:** To take care of frail elderly people at their home or near their place of life. **Methods:** Since 2015, the Toulouse Gerontopole has been developing local actions in collaboration with various partners: the County Council, the pension fund (CARSAT), the University Department of General Medicine (DUMG), the regional unions of health professionals (URPS) of the physicians, the emergency medical aid services, the town halls, retirement communities and some insurances. The geriatric evaluation of the older people is carried out by of the Gerontopole nurses who have a long experience in geriatrics, outside the hospital, near the place of life of the people or even at their home. These experienced nurses, with the support of a hospital geriatrician, propose a personalized intervention plan to the older people evaluated. This plan is also sent to the person's General Practitioner (GP) who ensures its establishment and monitoring. In this way, an innovative unit of care «Hospital out of Walls» was created at Toulouse Gerontopole. **Results:** The «Hospital out of Walls» care unit is made up of 0.2 geriatrician's time per week and 3.5 nurse's time. Since 2015, 3,427 assessments have been conducted with

a very significant increase since 2018 (2,066 assessments). **Conclusion:** The growing number of patients seen by the «Hospital out of Walls» unit shows that it is a suitable solution for assessing older people and offering them a personalized intervention plan while staying in their living environment. It remains to evaluate the impact of this model of care on the quality of life and the functional status of older people.

P12- POTENTIALLY INAPPROPRIATE ANTI-HYPERTENSIVE PRESCRIBING AND ASSOCIATED FACTORS IN OLDER ADULTS. A. Heim¹, A. Pagès¹, L. Rouch¹, P. Cestac¹, B. Sallerin² ((1) *University Hospital, Geriatric unit, Toulouse, France*; (2) *University Hospital, Cardiology unit, Toulouse, France*)

Background: Hypertension is one of the major risk factors for cardiovascular disease. Lowering blood pressure is effective for preventing stroke, heart failure (HF), myocardial infarction and possibly dementia. In France, the prevalence of elderly people treated for hypertension rising leading to a possible increase of potentially inappropriate antihypertensive prescribing (PIAP) that may cause adverse drug events. **Objectives:** To identify associated factors with potentially inappropriate antihypertensive prescribing (PIAP) in elderly people. **Methods:** We conduct a retrospective observational study based on a cohort from geriatric day hospital for assessment of frailty and prevention of disability in Toulouse, between January 2016 and April 2018. PIAP was defined with several explicit criteria: the European list of potentially inappropriate medications, alert and control of iatrogenesis (ACI) criteria by the French Health Authority, the French Society of Hypertension guidelines, Screening Tool of Older People's potentially inappropriate Prescriptions (STOPP) version two and Summary of Product Characteristics. The PIAP has been considered as a binary variable (logistic regression) then as a counting variable by number of non-conformities on antihypertensive drugs (negative binomial regression). **Results:** Among the 1115 patients, 30% had PIAP. Frailty, polypharmacy, history of angina and HF are associated with a higher risk of PIAP. Similarly: frailty, polypharmacy and history of angina are associated with an increase in the number of non-conformities antihypertensive drugs. Analysis of subgroup of patient HF – PIAP indicated that 42% had ACI criteria whose 82% the ACI criteria "4 antihypertensive drugs or more" and 68% the ACI criteria "2 diuretics or more". Analysis of subgroup of patient history of angina – PIAP indicated that 65% had STOPP criteria, focused on loop diuretics. **Conclusion:** Our work suggests that some elderly people characteristics are associated with an increase likelihood of PIAP. Targeting these patients would be beneficial in preventing medicine-related illness.

P13- INCREASE IN SLEEP DURATION AND PROGRESSION OF PHYSICAL FRAILTY IN COMMUNITY-DWELLING OLDER ADULTS: DATA FROM A 4-YEAR LONGITUDINAL STUDY. Sho Nakakubo¹, Takehiko Doi¹, Kota Tsutsumimoto¹, Hideaki Ishii¹, Satoshi Kurita¹, Hiroyuki Shimada² ((1) Section for Health Promotion, Department of Preventive Gerontology, Center for Gerontology and Social Science, National Center for Geriatrics and Gerontology, Aichi, Japan; (2) Center for Gerontology and Social Science, National Center for Geriatrics and Gerontology, Aichi, Japan)

Background: Among the risk factors of physical frailty, long sleep duration in late life is one of the most important components. Although several studies have examined the relationship between change in sleep duration and health outcomes, less work examined associations between physical frailty and change in sleep duration, especially increase in sleep duration. **Objectives:** The purpose of the present study was to examine whether increase in sleep duration are associated with progression of physical frailty or each sub component in community-dwelling older adults. **Methods:** The study included 1,978 older adults without physical frailty and in medium sleep duration (6.1-8.9h) at baseline (wave 1), and who participated in assessments at 4 years later (wave 2). Sleep duration was assessed by self-reported questionnaire. Physical frailty was characterized based on the criteria from the Cardiovascular Health Study. Logistic regression analysis was used to estimate odds ratios (ORs) and 95% confidence intervals (CIs) of progression of physical frailty or each subcomponent of it according to two categories of sleep duration; those who changed to a long sleep duration at wave 2 (increase from medium) or not. **Results:** During the 4-year follow-up assessment, 106 participants (5.4%) developed physical frailty. Among those in medium sleep duration at wave 1, 210 participants (10.6%) were categorized as having an “increase from medium.” Increasing from medium significantly elevated the risk of progression of physical frailty (OR 2.46 [95% CI 1.46–4.14]) after adjustment for several covariates. Against the progression of each subcomponent, With the exception of weight loss (OR 1.36 [95% CI 0.91–2.04]), increase from medium had a significant effect on the progression of each subcomponent and increase of subcomponents (exhaustion, OR 1.66 [95% CI 1.07–2.55]; low activity, OR 1.46 [95% CI 1.02–2.08], weakness, OR 1.56 [95% CI 1.05–2.30], slowness, OR 1.61 [95% CI 1.14–2.28]). **Conclusion:** These results suggest that increase in sleep duration are associated with a higher risk of progression of physical frailty.

P14- HAND-GRIP STRENGTH AS A PREOPERATIVE SARCOPENIA SCREENING TOOL FOR SURGICAL PATIENTS. A. Akihiro Suzuki¹, Toshimi Kaido¹, Kanade Yoshida², Daisuke Okamura³, Yasuko Nagasaka², Hiroshi Matsufuji⁴ ((1) Gastroenterological Surgery; (2) Anesthesiology; (3) Rehabilitation; (4) Pediatric Surgery, St. Luke's International Hospital, Tokyo, Japan)

Background: Several studies have demonstrated that preoperative sarcopenia is associated with postoperative complications, especially in cancer patients. However, simple and effective preoperative sarcopenia screening for surgical patients has not yet been determined. **Objectives:** We hypothesize that measurement of hand-grip strength (HS) could be effective as a preoperative sarcopenia screening tool. **Methods:** We measured the HS of all preoperative patients (except emergency cases) at the anesthesiology clinic in our institution between July 1, 2019 and August 31, 2019. We used HS of 26 kg for males and 18 kg for females at the threshold values according to the sarcopenia guidelines of Asian Working Group for Sarcopenia (AWGS). We examined the incidence of low HS in all patients and difference of the incidence among departments. Moreover, we compared duration of postoperative hospital stay between patients with low HS and normal HS. **Results:** 674 cases had their HS measured during the 2 months. Average age was 57.5 (range; 18–91) years and the majority of the patients were female (417 cases, 61.9%). HS was measured in all cases. Average hand-grip strength was 35.5 kg (95%CI: 19.3–51.7) in males and 22.3 kg (95%CI: 12.1–32.5) in females. In Total, 117 patients (17.4%) had low HS. The rates of low HS under the threshold values were 15.2% for males and 24.0% for females (p=0.002). The rates of patients with low HS were relatively high in those who underwent plastic surgery (25.0%), cardiac surgery (24.0%), and orthopedic surgery (22.9%). The average durations of postoperative hospital stays were longer in patients with low HS (6.6 days, 95%CI: 4.9–8.3) than those with normal HS (4.3 days, 95%CI: 3.8–4.8); this difference being statistically significant (p=0.001). **Conclusion:** Hand-grip strength is a useful tool for preoperative sarcopenia screening. In the future, we will provide nutritional therapy and prehabilitation for patients with suspicious of sarcopenia to improve their preoperative status and surgical outcomes.

P15- FRAILTY INTERVENTION TRIAL IN END-STAGE PATIENTS ON HAEMODIALYSIS (FITNESS): BASELINE DATA AND NEXT STEPS.

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Background: Frailty in End-Stage Renal Disease (ESRD) is associated with early initiation of dialysis, mortality, hospitalisation, falls and fractures. Frailty is prevalent in North American haemodialysis cohorts, but these data cannot be extrapolated to European populations as demographics and outcomes are different in the USA. Furthermore, it is not clear which frailty instrument is most appropriate in ESRD or whether frailty intervention can be successful for ESRD individuals. **Objectives:** The objectives of FITNESS are to; 1) determine the prevalence and sequelae of frailty in a contemporary single-centre English haemodialysis population, 2) determine the optimal frailty score with regard to predictive capacity for mortality/hospitalisation, and 3) conduct a feasibility study exploring a multi-disciplinary clinical intervention to improve frailty status among patients receiving haemodialysis. **Methods:** FITNESS is a Cohort Multiple Randomised Controlled Trial (cmRCT). Work package 1 is a cohort study of 500 prevalent HD patients who completed Frailty Phenotype (FP), Frailty Index (FI) and Edmonton Frailty Scale (EFS). A Clinical Frailty Scale (CFS) was completed by the patients' nephrologist. From the "Pre-Frail" cohort, 50 participants will be randomly invited to participate in a feasibility RCT, with further randomisation to intervention (delivered by renal dietitian/physiotherapist supervised by behaviour change expert) or standard of care (n=25) groups. Frailty assessments will take place at baseline, midway and end of study period (0-, 3- and 6-months respectively) for both groups. **Results:** Prevalence of frailty was 41.8% by FP, 63.2% by FI, 50.2% by EFS and 24.7% by CFS, with weak agreement between scores (ICC 0.439, 95% CI: 0.391-0.489) but improving to moderate when CFS was removed from the analysis (ICC 0.535, 95% CI: 0.485-0.584). Objectives 2 and 3 are currently in progress, with results planned for dissemination in 2020. **Conclusion:** There is a high frailty burden in this haemodialysis cohort. There is weak-to-moderate agreement between the frailty instruments studied here, suggesting that these frailty definitions may not be interchangeable in this population, particularly with CFS. Long-term outcomes stratified by frailty instrument will determine the optimal tool for our haemodialysis cohort and our feasibility trial will ascertain the benefit of multidisciplinary intervention to improve frailty.

P16- ASSOCIATION BETWEEN SOCIAL FRAILTY AND COMPREHENSIVE HEALTH LITERACY IN COMMUNITY-DWELLING OLDER ADULTS.

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Background: Health literacy (HL), the ability to access, understand, appraise and apply health information, has been reported to have effects on health behavior changes and health-related outcomes. Social frailty is the most important risk factor for new onset of frailty and sarcopenia, but the association between social frailty and HL remains unclear. **Objectives:** The aim of this study was to investigate the association between social frailty and comprehensive HL in community-dwelling older adults in Japan. **Methods:** In this cross-sectional study, we collected from self-reported questionnaires by the participants of the exercise program. Social frailty was defined by using responses to 5 questions then divided into two group (non-social frailty or any-social frailty). Comprehensive HL was measured using the Japanese version of the HLS-EU-Q47. This questionnaire consists of three domains, each with its own index: health care HL index (HC-HL), disease prevention HL index (DP-HL) and health promotion HL index (HP-HL). Additionally, general HL index (GEN-HL) comprised of all the items was also assessed. These scores were standardized on a metric between 0 and 50. Student's t-test was used to compare HL score between groups and logistic regression analysis was conducted to assess the association between social frailty and HL. **Results:** 63 subjects were analyzed, the mean age of 72.6 (SD=4.4) years, 29 were male (46.0%) and 34 were female (54.0%). Of the participants, 24 were non-social frailty (38.1%), 28 were pre-social frailty (44.4%) and 11 were social frailty (17.5%). In GEN-HL score, non-social frailty group scored higher than any-social frailty group (p=0.001). Similar results were obtained for sub-index scores, HC-HL (p=0.002), DP-HL (p=0.012) and HP-HL (p=0.001). The multivariate logistic regression analyses adjusted for age and gender showed GEN-HL (OR=0.89, 95%CI: 0.82-0.96), HC-HL (OR=0.90, 95%CI: 0.85-0.97), DP-HL (OR=0.91, 95%CI: 0.85-0.98) and HP-HL (OR=0.90, 95%CI: 0.84-0.97) were significantly associated with social frailty. **Conclusion:** The results shows that high HL is associated with non-social frailty, and older adults with high HL tend to have fewer social frailty. Therefore, it is suggested that support for the improvement of HL may be effective in preventing social frailty.

P17- ASSOCIATION BETWEEN FRAILTY AND QUALITY OF LIFE MEASURED WITH THE SARQOL®, SF-36 AND EQ-5D QUESTIONNAIRES IN OLDER PEOPLE FROM THE SARCOPHAGE COHORT.

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Background: Frailty is geriatric syndrome that leads to adverse health outcomes and impacts the daily life of older people. It makes sense to assume that frailty negatively affects health-related quality of life, and previous findings point in this direction. **Objectives:** The aim of this study was to investigate the association between frailty and health-related quality of life, in a cohort of older, community-dwelling people. **Methods:** This is a secondary analysis of data collected after the first year of the SarcoPhAge study. Participants in this study were 65 years or older and lived in Belgium. Frailty status was verified with the Fried frailty criteria (weight loss, exhaustion, low physical activity, slowness and weakness), and quality of life (QoL) was measured with the Sarcopenia Quality of Life (SarQoL®) questionnaire, the SF-36, the EQ-5D and the EQ-VAS. Statistical significance was determined with multinomial or binary regression analysis, wherein models were adjusted for gender, age, BMI, comorbidities and medication use. **Results:** A total of 395 participants were included. Among them, 175 (32.8%) were considered robust, 174 (32.6%) pre-frail and 46 (8.6%) were classed as frail. The median age of the participants was 73 (69-79) years and 58.5% were women. There was a significant difference ($p < 0.05$) in QoL between robust, pre-frail and frail subjects for the SarQoL® [median score: 77.27 vs 60.36 vs 48.10], the EQ-VAS (median score: 80.0 vs 70.0 vs 57.5) and the SF-36 PCS (median score: 51.58 vs 44.05 vs 34.90). For the EQ-5D (median score: 0.827 vs 0.800 vs 0.768) and the SF-36 MCS (median score: 50.14 vs 42.81 vs 42.23), QoL was only significantly different between robust and pre-frail, and between robust and frail participants. The same pattern was present for the 5 frailty indicators, where the SarQoL®, the EQ-VAS and the SF-36 were able to discriminate between the indicator being present or not, but the EQ-5D and SF-36 MCS returned mixed results. **Conclusion:** We found a significant relationship between QoL and frailty status across multiple instruments. Moreover, even the presence of a single frailty indicator was associated with lower QoL, highlighting the importance of early detection.

P18- FRAILTY ASSESSMENT IN OLDER UROLOGICAL PATIENTS PRIOR TO SURGERY: A SYSTEMATIC REVIEW AND NARRATIVE SYNTHESIS.

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Background: Bladder cancer is common cancer (1) and over half of cases occur in those over 75. Radical cystectomy (RC) with bilateral pelvic lymph node dissection is standard treatment for muscle invasive and high risk non-muscle-invasive disease (2). Reported RC 90-day mortality rates are between 1.7% - 9% (3-5) with perioperative morbidity of 70% (6). Frailty has been shown to be an independent risk factor for adverse outcomes in several surgical populations, but it is not yet routinely assessed in the RC population. **Objectives:** To describe frailty tools are used preoperatively in patients undergoing RC. To describe the prevalence of frailty in patients undergoing RC. To examine the association between frailty and adverse postoperative outcomes in patients following radical cystectomy. **Methods:** MEDLINE and EMBASE electronic databases search using a predetermined strategy. (PROSPERO - CRD42019145874). **Results:** 163 articles reviewed for eligibility and 9 studies included for analysis. 1 study described frailty using a validated frailty tool, 8 others measured frailty using non-validated tools based on large national databases (a count of the number of comorbidities, and a single question regarding functional dependency). The study using validated frailty tool showed 5.5% prevalence of frailty, and strong association between frailty and adverse postoperative outcome (7) (higher grade (Clavien-Dindo 3+) 30 and 90-day complications). The other studies did show a relationship between the result of non-validated tool and greater healthcare resource utilisation, but discriminative ability to predict adverse outcomes was poor and did not add predictive value to routinely used tools such as American Society of Anaesthesiologists (ASA). **Conclusion:**

The importance of accurately diagnosing frailty is essential to ensure effective preoperative optimisation of patients, modify their risk profile, for improved shared decision making, and better clinical and patient reported outcomes. This review also demonstrates the need for collaboration across specialties when conducting studies examining the older surgical population, thus avoiding pitfalls such as the development of tools claiming to measure frailty but primarily measuring multimorbidity. **References:** 1 - 7: available if required.

P19- FRAILTY AND RISK OF HOSPITALIZATIONS AND MORTALITY IN HOMEDWELLING OLDER PERSONS WITH HOME CARE NURSING SERVICE.

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Background: Old homedwelling persons with home care nursing service are assumed to be characterized by a high degree of frailty. However, the degree of frailty in this population is not previously studied. Whether degree of frailty is associated with risk of hospitalization and death, are unknown. **Objectives:** To assess degree of frailty using a Frailty Index, and explore whether frailty is associated with increased risk of hospitalization and death among homedwelling older persons with home care nursing service. **Methods:** We included 210 persons aged 65 and older with weekly home care nursing service. At inclusion the patients went through a comprehensive geriatric assessment performed in the patients own home. Cognitive function was assessed using Montreal Cognitive Assessment, activities in daily living was registered using Barthel Index together with screening questions on instrumental activities in daily living. Nutrition was assessed using Mini Nutritional Assessment, and chronic diseases and regular medications was registered from the patients medical record. Patients performed a 4 meter gait speed test, and grip strength was assessed. Based on these assessments, a Frailty Index consisting of 34 items was calculated. Patients were followed for 2 years, and all hospitalizations were registered from the hospital database, and time of death were registered from national registry. **Results:** 43 % of the patients suffered from severe frailty, 33% suffered from moderate frailty. and 24% of the patients had mild frailty, pre-frailty or no frailty. The patients had in total 436 hospitalizations, and patients with mild frailty had a significantly lower risk for admission to hospital (p=0.001). Patients with severe frailty had a significantly higher mortality risk. **Conclusion:** Frailty is common in old homedwelling persons with home care nursing service. Assessment of frailty is useful in predicting risk of hospitalizations and death in this population.

P20- PHYSICAL FRAILTY AND ADVERSE EVENTS IN OLDER ADULTS UNDERGOING ELECTIVE ABDOMINOPELVIC SURGERY IN A GENERAL HOSPITAL, LIMA-PERÚ. Tania Tello^{1,2,3}, Julio Guibovich³, Paola Casas^{1,2,3}, Elizabeth Aliaga^{1,2,3}, Fabiola Valero³, Pedro Ortiz^{1,2}, Guiliana Mas^{1,2}, Ximena Guevara^{1,2,3}, Luis Nizama², Zarina Gamarra², Henry Tapia^{2,3}, Enrique Valencia^{2,3}, Rossana Cruz³ ((1) *Instituto de Gerontología, Universidad Peruana Cayetano Heredia, Lima, Peru;* (2) *Facultad de Medicina, Universidad Peruana Cayetano Heredia, Lima, Peru;* (3) *Hospital Cayetano Heredia, Lima, Perú*)

Background: Elderly patients are at increased risk for postoperative complications. Preoperative risk assessment is important, even more in elderly patients because physiologic reserves are difficult to measure. It is essential to have pre surgical assessment scales for older adults who evaluate the physiological reserve and one of them is frailty. **Objectives:** Identify the association between frailty and postoperative complications in older adults undergoing elective abdominopelvic surgery in a general Hospital in Lima-Perú. **Methods:** This is a prospective cohort study. Frailty was measured in 183 older patients that arrived to a general hospital for elective abdominopelvic surgery between August 2017 and March 2019, in whom they were used validated questionnaires which were applied through face to face interview. In addition to usual surgical risk, frailty assessment was performed using Linda Fried criteria, and postsurgery complications were evaluated using the Clavien scale. The statistical analysis was realized by exploratory and multivariate analysis. **Results:** A total of 183 patients more than 60 years old were evaluated, in which 172 were undergoing elective surgery with a mean age of 68.7(±6.8) years old , 50,0% (86) were female, 29,7%(51) were hypertensive, 12,2%(21) were diabetic, mean comorbidities was 2.4 (±0.7), 13,3%(21) had functional impairment, 31%(53) had risk or malnutrition by MNA, 9,5%(16) had impairment cognitive. 29% (49) had frailty, 66%(113) prefrailty and 5,3% (9) were robust. 92,3% (159) had anesthesiological risk II, 97%(166) had cardiologic risk II. 57,9 %(99) were undergoing to open surgery vs 26,3%(45) laparoscopic. The most frequent surgeries were: prostatectomy in 27,3%(47), inguinal hernioplasty in 19,3%(33) , cholecystectomy in 19,9%(34) , genital dystopia in 23,4%(40). In 70% (120) general anesthesia were used. We observed post surgical complications in 22,5%(11) in frailty vs 13,9%(17) non frailty patients, RR 1.61 (IC95% 0.814-3.18), p=0,178. **Conclusion:** There is an increased risk of post-surgical complications in frail older adults undergoing abdominopelvic surgery at a General Hospital in Lima, Peru.

P21- ASSESSMENT OF FRAILTY AND OCCURRENCE OF ANXIETY AND DEPRESSION IN ELDERLY PATIENTS WITH ATRIAL FIBRILLATION (AF).

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Background: Atrial fibrillation (AF) is the most common cardiac arrhythmia, and its incidence increases with age. The elderly population is commonly affected by frailty syndrome (FS). FS and depressive symptoms are prevalent among elderly patients with AF. It is unclear whether depression contributes to AF, or vice versa. **Objectives:** To assess correlations between FS and the occurrence of anxiety and depression in a group of elderly patients with AF. **Methods:** The study included 100 elderly patients (69 female, 31 male, mean age: 70.27 years) with AF. Standardized research instruments were used: a questionnaire to assess FS (the Tilburg Frailty Indicator, TFI), and two questionnaires to assess depression (the Geriatric Depression Scale, GDS, and the Hospital Anxiety Depression Scale, HADS). **Results:** FS was found in 67% of patients. Based on GDS scores, depression was found in 51%. Based on HADS scores, 20% of patients were found to have anxiety, and 28% — depression. Single-factor analysis demonstrated a significant positive correlations between HADS anxiety ($r=0.492$), HADS depression ($r=0.696$), and GDS score ($r=0.673$) on the one hand, and overall TFI frailty score on the other. Multiple-factor analysis identified overall GDS score, education, and lack of bleeding as significant independent predictors of TFI scores ($p<0.05$). **Conclusion:** FS is common in the population of elderly patients with AF. Due to the risk of consequences which may in part be irreversible, screening for FS is recommended. Anxiety and depression may contribute to the incidence of FS in this group.

P22- RELATIONSHIP BETWEEN POLYPHARMACY AND FRAILTY IN COMMUNITY-DWELLING OLDER ADULTS: A CROSS-SECTIONAL ANALYSIS OF A PROSPECTIVE COHORT STUDY(NCGG-SGS).

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Background: Polypharmacy, use of multiple medications, may cause not only the problems of a number of drugs but also increases the risk of adverse drug-related events in older adults. Frailty is a common and important geriatric

syndrome, characterized by marked vulnerability to adverse health outcomes. It may be associated with greater exposure to polypharmacy. **Objectives:** The present study assessed the relationship between polypharmacy and frailty risk in Japanese community-dwelling older adults. **Methods:** The subjects were 15,048 people who participated in NCGG-SGS of the National Center of Geriatrics and Gerontology Center. Physical frailty was assessed according to the frailty phenotype (weight loss, exhaustion, low activity, weakness, and slowness) and classified into frail if they presented at least three criteria, pre-frail in case of one or two criteria according to Fried's criteria. Prevalence and related factors with polypharmacy (five or more drugs per day) were evaluated using multivariable logistic regression. Other variables were cognitive function by objective cognitive test, disease history (hypertension etc.) etc. **Results:** The average age was 72.8 years. In the status of medication, 21.8% were non-medication, 57.3% were 1-4 types, 18.3% were 5-9 types, and 2.6% were over 10 types. Compared with not polypharmacy, polypharmacy were older, had a disease history, and had a lower self-rated health, not drink or tobacco, cognitive decline, had a pre-frail (odds ratios[OR] 1.39, 95% confidence interval [CI] 1.25-1.55) and frail (OR 1.49, 95% CI 1.25-1.76). In case of phenotype of frailty, polypharmacy were female, older, had a disease history, and had a lower subjective health, cognitive decline, weight loss(OR 1.35, 95% CI 1.20-1.53), exhaustion(OR 1.23, 95% CI 1.09-1.38), low activity(OR 0.83, 95% CI 0.74-0.92), and slowness(OR 1.47, 95% CI 1.32-1.63). **Conclusion:** This study has identified that frailty, increasing age, chronic health conditions, and lower health status are significantly associated with polypharmacy. In the case of phenotype, weight loss, exhaustion, weakness, and slowness were related to medication status. This study has suggested that medication status could be a contributor to the frailty.

P23- A MULTI-FACTORIAL EXERCISE AND NUTRITIONAL INTERVENTION TO IMPROVE FUNCTIONAL PERFORMANCE AND PREVENT FRAILTY PROGRESSION IN COMMUNITY-DWELLING PRE-FRAIL OLDER ADULTS.

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Background: Progression of frailty, an age-associated decline of physiological reserve and function, leads to adverse health outcomes. Studies have suggested that frailty progression might be reversible with exercise and nutritional intervention. Therefore, efforts to identify and prevent frailty

amongst the elderly become critical for a sustainable nation, economically and socially. **Objectives:** The primary aim of this study was to evaluate the effectiveness of a multi-factorial intervention comprising physical exercise and nutrition education programmes to improve functional performance of pre-frail community-dwelling elderly aged ≥ 55 years, in Singapore. The effectiveness of preventing frailty progression was also evaluated. **Methods:** This study was conducted on 94 eligible pre-frail participants (mean age = 71.2 ± 7.3 years; 75.5% female) recruited from various senior activity centres in Singapore. Pre-frailty was operationally defined using FRAIL scale including participants scoring ≥ 3 but fulfilling the Asian Working Group for Sarcopenia defined cut-offs for weakness and slowness. As this was set out to be a pragmatic study, no control group was selected. Of the 94 participants, 68 completed the intervention and underwent pre- and post-intervention evaluations. Intervention comprised group- and home-based weekly physical exercise and 6 group-based nutritional education sessions, over a 4-month period. Primary outcome was functional performance, evaluated using several fitness tests for balance, gait, power, flexibility and cardio-respiratory endurance. A composite measure using the Short Physical Performance Battery (SPPB) score was also computed. The secondary outcome was frailty status progression. We compared performance measures pre- and post-intervention using paired-sample t-test. **Results:** The SPPB total score improved post-intervention by 0.32 (95% CI: 0.034, 0.610, $p = 0.029$) although a score increase of ≥ 0.5 was defined as clinically significant. The SPPB balance sub-total score improved post-intervention by 0.15 (95% CI: 0.001, 0.299, $p = 0.049$). The time taken for 5 chair-stand repetitions improved post-intervention by 0.73 seconds (95% CI: 0.03, 1.43, $p = 0.041$). Out of the 68 pre-frail participants, 21 (30.9%) transitioned to robust phenotype while 47 (69.1%) remained as pre-frail phenotype. **Conclusion:** This multi-factorial intervention comprising physical exercise therapy and nutrition education sessions showed functional performance improvement and demonstrated promise of reversing frailty progression in pre-frail community-dwelling older adults in Singapore.

P24- SHORT PHYSICAL PERFORMANCE BATTERY (SPPB) TEST CUT POINT TO DIFFERENTIATE BETWEEN FRAIL AND NON-FRAIL COMMUNITY-DWELLING OLDER ADULTS: RESULTS FROM PRO-EVA STUDY. Álvaro Campos Cavalcanti Maciel¹, Sabrina Gabrielle Gomes Fernandes¹, Rafaella Silva dos Santos¹, Luiz Eduardo de Lima Andrade¹, Mariana Carmem Apolinário Vieira¹, Edgar Ramos Vieira², Ricardo Oliveira Guerra¹, José Manoel Perez Marmol³, José Luis Garrido Bullejos³ ((1) *Department of Physical Therapy, Federal University of Rio Grande do Norte, Natal, RN, Brazil;* (2) *Department of Physical Therapy, Florida International University, Miami, FL, USA;* (3) *Department of Physiotherapy, University of Granada, Spain*)

Background: The term frailty is used to characterize older adults with reduced physiological reserves and resilience. Many assessment instruments are used to identifying frail individuals at risk for adverse outcomes. Previous research found that the short physical performance battery (SPPB) test can detect early stages of frailty in older adults with normal gait speed. However, there is a lack of information on SPPB cut points to differentiate between frail and non-frail older adults. **Objectives:** The objective of this study was to identify the ideal SPPB score cut point to differentiate between frail and non-frail community dwelling older adults. **Methods:** This was a cross-sectional study of 572 community dwelling older adults (70 ± 7 years old; 64% women). Frailty was classified based on weight loss, weakness, exhaustion, mobility limitation and low physical activity level, while the SPPB scores consisted on the performance on balance, gait and chair-stand tests. The area under the curve (AUC) and the cut-off SPPB scores for discriminating between frail and non-frail participants were calculated for different scores. **Results:** Sixteen percent of the participants were frail. The non-frail participants had significantly higher SPPB scores (10 ± 2 , $p < 0.001$) than the frail ones. The best SPPB score to differentiate between frail and non-frail participants was 9, with 74% sensitivity, 71% specificity and $AUC = 0.78$, which considered satisfactory. **Conclusion:** The SPPB test is useful for screening for frailty in community-dwelling older people; 9 was the ideal SPPB score cut point to differentiate between frail and non-frail community dwelling older adults. The use of the SPPB in the primary care can help in the early identification of the frail older adults and/or people at risk of becoming frail.

P25- ASSOCIATION BETWEEN THE COMPONENTS OF FRAILTY PHENOTYPE AND INFLAMMATORY MARKERS AMONG COMMUNITY-DWELLING OLDER ADULTS. Keitaro Makino, Sangyoon Lee, Takehiko Doi, Seongryu Bae, Kenji Harada, Sho Nakakubo, Ipppei Chiba, Osamu Katayama, Yohei Shinkai, Hiroyuki Shimada (*Department of Preventive Gerontology, Center for Gerontology and Social Science, National Center for Geriatrics and Gerontology, Obu Japan*)

Background: Frailty is a biological syndrome associated with multisystem decline in physiological reserve and increased vulnerability to stressors. Low-grade chronic inflammation, called “inflammaging,” is considered one of the pathophysiologies of frailty. While several early studies reported that frailty defined by Fried phenotype showed elevated inflammation, the association between each component of frailty phenotype (weight loss, exhaustion, low activity, weakness, and slowness) and inflammatory markers remains unclear. **Objectives:** This study aimed to examine the association between the components of frailty phenotype and inflammatory markers among community-dwelling older adults in a cross-sectional study. **Methods:** A total of 943 community-dwelling older adults (mean age 70.16 years, 49.0% female) met the inclusion criteria for the present study. We assessed the presence of frailty using frailty phenotypes (weight loss, exhaustion, low activity, weakness, and slowness), and circulating inflammatory markers (C-reactive protein [CRP] and interleukin-6 [IL-6]). Age, sex, body mass index, chronic diseases, prescribed medication, and current drinking and smoking habits were also assessed as covariates. **Results:** The prevalence of frailty and pre-frailty were 6.4% and 49.8%, respectively. One-way analysis of variance and Bonferroni post-hoc test showed that CRP level was significantly higher in frailty than in robust ($P=0.024$), and IL-6 level was significantly higher in frailty than in pre-frailty ($P=0.003$) and robust ($P<0.001$). In terms of frailty phenotype, CRP level was significantly higher in weakness ($P=0.020$), and slowness ($P=0.002$), and IL-6 level was significantly higher in low activity ($P=0.049$), weakness ($P=0.001$) and slowness ($P<0.001$). Weight loss and exhaustion were not associated with inflammatory markers. In multiple regression analysis, the association of IL-6 with weakness ($P=0.023$) and slowness ($P=0.041$) remained significant after adjusting for covariates. **Conclusion:** The results of the present study showed that weakness and slowness have an especially strong association with inflammatory markers. It is known that systemic inflammation progresses sarcopenia by enhancing muscle degradation and inhibiting muscle synthesis. Both weakness defined by grip strength and slowness defined by gait speed are key components of sarcopenia; therefore, the statistically significant association of these phenotypes with inflammation may be uncovered.

P26- SCREENING FOR FRAILTY IN OLDER CANDIDATES TO KIDNEY TRANSPLANTATION. F. Guerville¹, D. Heitz², J. Vernaudo³, H. Binot¹, R. Pszczolinski⁴, K. Moreau⁵, P. Merville⁵, I. Bourdel-Marchasson¹, M. Danet-Lamazou¹, O. Thauinat⁶, E. Morelon⁶, S. Caillard⁴, L. Couzi⁵ ((1) *Clinical Gerontology Department, CHU Bordeaux, France*; (2) *Oncogeriatrics Regional Coordination Unit, Hôpitaux Universitaires de Strasbourg, France*; (3) *Lyon Institute for Elderly, Hospices Civils de Lyon, France*; (4) *Nephrology and Transplantation Department, Hôpitaux Universitaires de Strasbourg, France*; (5) *Nephrology, Transplantation and Dialysis Département, CHU Bordeaux, France*; (6) *Transplantation, Nephrology and Clinical Immunology Department, Hospices Civils de Lyon, France*)

Background: Growing numbers of older patients with advanced chronic kidney disease are candidates to kidney transplantation (KT) and are exposed to high risks of post-KT complications, functional decline and loss of quality of life. Prognostic value of Fried frailty phenotype and SPPB score have been reported in this population, but implementation of comprehensive geriatric assessment (CGA) has not. Nephrologists also lack screening tools to select patients for CGA referral. **Objectives:** To determine the prevalence of CGA impairments in older candidates to KT and the relation between geriatricians’ conclusion and access to KT waiting list. To identify screening tools that nephrologists could use to select patients for CGA referral. **Methods:** Three KT centers in France recently implemented CGA in pre-KT evaluation. All patients ≥ 70 yo evaluated for KT between 2016 and 2019 were included in this retrospective study. Frailty perceived by nephrologists was recorded before CGA. CGA (including Fried criteria) were performed by geriatric teams in each center, blinded to nephrologists’ perceived frailty. **Results:** Among 290 patients (median (IQR) age 74 (71-76), 24% women, with 3 (2-4) moderate-to-severe comorbidities, taking 9 (6-11) drugs): 38% had an SPPB score < 10 , 15% an MMSE < 24 , 20% a GDS $> 5/15$, 39% a MNA-SF $< 12/14$, 28% were dependent for at least a 4- item IADL, 54% were pre-frail and 14% were frail. According to geriatricians, KT benefit-risk ratio was positive in 58%, positive with geriatric intervention in 27% and negative in 15%. Among them, 88, 80 and 39% were listed for KT, respectively. To predict geriatrician’s conclusion on KT benefit-risk ratio, sensitivity and negative predictive value were 34 and 51% for frailty perceived by the nephrologist, 33 and 75% for Fried criteria, and 69 and 77% for a tool combining 5-sit-to-stand test and 4-item IADL. **Conclusion:** Older candidates to KT is a heterogeneous population including robust patients and patients with multiple CGA impairments. In most cases, nephrologists’ final decision to list patients for KT are in accordance with geriatricians’ conclusion. Subjective frailty perceived by the nephrologist and Fried criteria have low sensitivity and should not be used to select patients for CGA referral. 5-sit-to-stand test and 4-item IADL could be used by nephrologists to select patient for CGA referral.

P27- ASSOCIATION BETWEEN HEARING PROBLEMS AND PHYSICAL, COGNITIVE, AND SOCIAL FRAILTY IN JAPANESE OLDER ADULTS.

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Background: Age-related hearing problems has been demonstrated by epidemiologic studies to be associated with poorer outcomes in terms of disability, depression, frailty, cognitive impairment, and incident dementia. However, the association between hearing problem and the progression of physical, cognitive and social frailty remains unclear. **Objectives:** The present study estimated the prevalence of hearing problems, and its associations with physical, cognitive, and social frailty in Japanese older adults. **Methods:** Participants were 5,043 older adults (mean age 73.1 ± 5.6 years, 47.2% male) who met the study inclusion criteria. Hearing problems were measured using the Hearing Handicap Inventory for the Elderly. Physical frailty was assessed according to the frailty phenotype (weight loss, exhaustion, low activity, weakness, and slowness). Cognitive frailty defined as the presence of both physical frailty and cognitive impairment. Social frailty was identified using responses to five questions: going out less frequently compared with last year (yes), visiting friends sometimes (no), feeling helpful to friends or family (no), living alone (yes), and talking with someone everyday (no). We performed logistic regression analysis to estimate the odds ratios (OR) and 95% confidence intervals (CI) of hearing status and each types of frailty. **Results:** Of the participants, 18.7% had hearing problems, which was more prevalent in the participants with physical, cognitive, and social frailty. After adjusting for confounders, participants with hearing problems exhibited the highest OR of the physical frailty (OR 2.85, 95% CI 2.19-3.71), followed by the physical pre-frailty (OR 1.60, 95% CI 1.36-1.88). Hearing problems was associated with cognitive frailty (OR 1.33, 95% CI 1.06-1.67). Additionally, participants with hearing problems exhibited the highest OR of the social frailty (OR 1.92, 95% CI 1.56-2.36), followed by the social pre-frailty (OR 1.29, 95% CI 1.09-1.53). **Conclusion:** Hearing problems in physical or social prefrail older adults was associated with greater risk of becoming frail, suggesting the hearing problems may hasten the progression of physical and social frailty. Also, hearing problems may have a greater risk for cognitive frailty. Further study should be directed at whether interventions to maintain optimal hearing health can prevent or slow the progression of frailty.

P28- ASSOCIATION BETWEEN DEPRESSION, APATHY AND SOCIAL FRAILTY.

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Background: Social frailty was reported to be associated with age, sex, income, education, marital status, and household status. However, mood status including depression and emotion was relatively less investigated. **Objectives:** The aim of this study is to clarify the association between depression and apathy status and social frailty in community-dwelling Japanese elderly. **Methods:** A health promotion project (TENG TV Project) is designed to distribute health promotion programs including enhancement of nutrition and physical activity via cable TV channel for community-dwelling elders. We ran a cross-sectional analysis using baseline characteristics of all participants (N=926). Demographic data, socio-economic status, comorbidities, and nutrition evaluated by mini-nutritional assessment- short form (MNA-SF) were recorded. Functional capacity was assessed by the Japan Science and Technology Agency Index of Competence (JST-IC). Mood status including depression, and emotion was measured by geriatric depression scale (GDS-15) and apathy evaluation scale (AES). Social frailty was defined by household status (living alone or not), financial difficulty, social activity, and fulfilment of social needs. We defined total deficit scores of 2 or more as social frailty, 1 as social pre-frailty, and 0 as robustness. We used a linear regression model to analyze the association between mood status and social frailty after adjusting for age, sex, education, marital status, comorbidities, BMI, MNA-SF, JST-IC. **Results:** At baseline, mean age of all participants (46.9% men) was 75 ± 5.9 years. A total of 34.3% and 22% of all participants were categorized as social pre-frailty and social frailty, respectively. The mean scores of GDS-15 and AES were 3.4 ± 3.3 , 14.3 ± 6.7 , respectively. In linear regression model after full adjustment, participants with social pre-frailty and social frailty were associated with increased GDS-15 scores (social pre-frailty vs. social robustness: $B=0.58$, 95%CI 0.01-1.15; social frailty vs. social robustness: $B=2.49$, 95%CI 1.68-3.29) and AES scores (social pre-frailty vs. social robustness: $B=0.04$, 95%CI -0.67-1.47; social frailty vs. social robustness: $B=1.63$, 95%CI 0.22-3.03). In addition, JST-IC was also associated with GDS-15 and AES scores. **Conclusion:** Social pre-frailty and social frailty were associated with greater level of depression and apathy. Future studies are warranted to determine the causal relationship among mood status and social participation.

P29- PREDICTING HOSPITAL OUTCOMES OF THE REPORTED EDMONTON FRAIL SCALE-THAI VERSION IN ORTHOPEDIC PATIENTS.

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Background: Frailty is a common geriatric condition with an impact on surgical outcomes. No research has been published on frailty assessment in hospitalized orthopedic patients in Thailand. Having a valid frailty measure has the potential to improve screening and could enhance quality of care. **Objectives:** To test the ability of the Reported Edmonton Frailty Scale-Thai version (REFS-Thai) in predicting hospital outcomes compared with preoperative assessment measures, the American Society of Anesthesiologists physical status classification (ASA) and the Elixhauser Comorbidity Measure (EMC) in older Thai orthopedic patients. **Methods:** A prospective study was conducted at a university hospital. The hospitalized patients aged 60 years or older scheduled for elective orthopedic surgery were recruited in this study. Multiple Firth logistic regression modeled the effect of frailty on postoperative complications, postoperative delirium (POD), and discharge disposition, while length of stay (LOS) was examined by Poisson regression. The area under the receiver operating characteristic curve (AUC) and mean squared errors (MSE) were used to compare predictive ability of the instruments. **Results:** Two hundred participants with mean age of 72 (range 60-94 years) were mostly female, 23% were frail, and 58% underwent knee surgery; of which 26.5% had postoperative complications, 12.5% developed POD, and 11% were unable to be discharged home. Average LOS was 6 days. Adjusting for other variables, frailty was significantly associated with postoperative complications (OR = 2.38, p = 0.049), POD (OR = 3.52, p = 0.034), and prolonged LOS (relative risk [RR] = 1.42, p = 0.043). Applying the REFS-Thai alone shows good performance in predicting postoperative complications (AUC = 0.81, 95% CI = 0.74-0.88) and POD (AUC = 0.81, 95% CI = 0.72-0.90). The combination of REFS-Thai with ASA and EMC demonstrates improvement in predicting postoperative complications (AUC = 0.81, 95% CI = 0.75-0.88 and 0.82 95% CI = 0.75-0.88, respectively) and POD (AUC = 0.80, 95% CI = 0.71-0.89 and 0.81 95% CI = 0.72-0.90, respectively). **Conclusion:** Frailty assessment using the REFS-Thai was useful in predicting adverse outcomes in older adults undergoing orthopedic surgery. Integrating the REFS-Thai for preoperative assessment may be useful for enhancing orthopedic care quality.

P30- FRAILTY'S IDENTIFICATION IN SMART HOME.

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Background: The attention of the scientific community to frailty has been drawn over the past several years. Frailty is defined as a state of increased vulnerability that may lead to functional disability. If this state is managed soon enough it may be reversible. In parallel, the possibilities of monitoring health status through connected objects such as smartphones are increasing. Similarly, it is possible to measure the activity of the inhabitants of a house collecting usage data (water and electricity consumption). Our project is in the field of smart home and aging monitoring. **Objectives:** Therefore, the objective of our work is to develop an integrative model of frailty based on the contributions of existing scientific tools (Fried et al., 2001; Mitnitski, Mogilner, & Rockwood, 2001) and current sensors to measure a person's activity. Eventually, we are aiming for the detection of the frailty trajectory early on. For example, real-time activity monitoring is used to detect a fall and alert rescue. In our case, these sensors will allow us to identify as soon as possible a dimension that would be abnormal in order to intervene and propose an appropriate intervention. **Methods:** Our tool will be able to measure the five Fried's frailty criteria which are currently used in clinical practice. We compare the data from the sensors with the results of the evaluation of Fried's frailty phenotype. **Results:** We expect to obtain a correlation between our data and phenotype results. **Conclusion:** The main contribution of our tool resides in the possibility to observe deviations from an individual's normal aging trajectory. Thus, the evaluation we propose would be more ecological as it will enable us to consider the individual's habits and to have a more detailed assessment of his activity evolution. In conclusion, the holistic aspect of our work will allow the practitioners to base their intervention on a wide range of health data.

P31- A FRAIL PHENOTYPE IN A PAEDIATRIC ONCOLOGICAL INTENSIVE CARE POPULATION.

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Background: A frail phenotype is recognized in the elderly population. Frailty is associated with a higher mortality for adult Intensive Care (ICU) patients. Research in oncology suggests biological age is not the key contributor to frailty, since frailty is also found in the younger population. In paediatrics frailty is an unknown concept and as a consequence, the prevalence and meaning of being frail at young age are unknown. **Objectives:** To assess whether a possible frail phenotype can be found in a critically ill paediatric oncological population. **Methods:** A retrospective cohort study in a paediatric oncological ICU population between January 2018 and September 2019. Demographic data and need for ICU resources (mechanical ventilation, inotropic support and

continuous renal replacement therapy (CRRT)) were collected. Since specific paediatric frailty scores are not available, we addressed patients as having a frail phenotype by textmining their electronic health records on the words “fatigue”, “cachexia” and “diminished physical activities” before, during, and after paediatric ICU admission. Risk factors for a possible frail phenotype (cachexia, use of corticosteroids and lowest serum albumin levels) were collected. Primary endpoint was mortality during ICU treatment or course of illness. **Results:** 479 admissions were included, of which 74 admissions had a possible frail phenotype. These admissions included 52 unique patients. 52% of patients was male and the median age was 5 years (IQR3-15). Patients were predominantly treated for a haemato-oncological malignancy (52%). Mortality during ICU-admission was 8%, and 23% died subsequently during the course of disease after PICU discharge. Patients were severely ill, with a mean ICU length of stay of 9.9 days (± 17), 53% on ventilator support, 34% receiving vasopressor or inotropic support, and 5% on CRRT. Loss of muscle function or fatigue was present in 54% before ICU admission and in 35% acquired atrophy or cachexia was documented during ICU treatment. 67% were treated with corticosteroids during PICU stay. In 28% a serum albumin ≤ 2 gram/dL was measured. **Conclusion:** A possible frail phenotype is present in the oncological patient population of a paediatric ICU. More research on the contributing factor of frailty on outcome of these patients is needed in the near future.

P32- NUTRITION AND PHYSICAL ACTIVITY FOR OLDER ADULTS WITH FRAILTY: PROTOCOL FOR THE DEVELOPMENT OF EVIDENCE-BASED CLINICAL PRACTICE GUIDELINES.

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Background: Despite research evidence related to nutritional and physical activity interventions, there is a gap in provision of evidence-based care focused on preventing and managing frailty among older adults. **Objectives:** To systematically generate evidence-based nutrition and physical activity (PA) clinical practice guidelines to improve health and functioning in older adults with or at risk of frailty. **Methods:** We are using the AGREE II guideline development protocol to generate guidelines to improve health and functioning in older adults. For each guideline, systematic review of meta-analyses was conducted by searching three

databases for English language citations published since 2001 that included adults aged 65y and older with frailty and/or pre-frailty. Nutrition or PA interventions with a comparison group were considered eligible. Acceptable study designs included RCTs, quasi-experimental trials, and observational cohorts with a comparison group. In a face-to-face meeting with multidisciplinary content experts, healthcare professionals, and end-users we will further appraise the quality and strength of the evidence using the GRADE approach. This group will use this evidence to form recommendations related to nutrition and PA in this population. **Results:** The nutrition and PA searches resulted in 3158 and 4709 citations, with 119 and 283 eligible for full-text review, respectively. The results will inform guideline recommendations. Knowledge translation strategies will be developed to support guideline dissemination and implementation. **Conclusion:** The guidelines will inform health professionals by providing evidence-based nutrition and PA interventions for adults with frailty.

P33- OPPORTUNITIES FOR FRAILTY SCREENING TOOLS/MEASURES IN US NATIONAL SURVEYS AND COMMUNITY PRACTICE. Jaime J Gahche¹, Mary Beth Arensberg², Mary Weiler², Johanna T. Dwyer^{1,3} ((1) *National Institutes of Health, Office of Dietary Supplements, USA*; (2) *Abbott Nutrition Division of Abbott*; (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*)

Background: Physical and psychosocial factors play important roles in the severity and progression of frailty. Frailty screening tools include measures of the more common risk factors, including advanced age, comorbidities, poor diet, weight loss, lower socioeconomic status, and physical inactivity. However, there has been limited standardization in the US on specific frailty screening measures to include in national health surveys or frailty tools/protocols for community health settings. This makes it difficult to monitor frailty incidence/prevalence in the older adult population and to best identify and treat individuals at risk. **Results:** We reviewed the most recent versions of 7 US national health surveys that include older adults, to identify whether frailty screening measures were included in. No national surveys had a battery of measures that would allow for frailty risk screening. Most commonly, questions on weight, disability, mental health, physical functioning were included. However, physical functioning measurements such as grip strength or gait speed, measured height and weight, unintentional weight loss, dietary intake or appetite changes were not. Further, we used the World Health Organization criteria for effective community screening programs to review published evidence of the validity, reliability, and feasibility of data-driven screening tools for frailty risk among community-dwelling older adults. Of the 10 frailty screening tools reviewed, the FRAIL scale was identified as the most promising, based on test characteristics and cost/ease of use. More community-level

research is recommended, particularly on predictive validity of favorable outcomes following physical activity/nutritional interventions. Finally, because nutrition plays a significant role in frailty risk, we surveyed registered dietitian nutritionists who work with older adult populations (n=576) to identify their awareness/use of frailty screening protocols/tools and dietitians' potential role in frailty screening. Dietitians practicing in the community recognized a potential role, but few dietitians were aware of (<6%) or using (< 4%) specific frailty screening tools. **Conclusion:** Future opportunities to better support healthy aging include: addition of frailty screening measures to national health surveys to help prioritize high-risk populations, conduct additional research to validate/recommend a common community-level screening tool, and promote engagement by dietitians and other health professionals who can establish protocols for community-based frailty screening.

P34- THE EFFECTIVENESS OF MULTI-DOMAIN INTERVENTION PROGRAM FOR FRAIL OLDER PEOPLE. Ming-Yueh Chou^{1,3}, Ying-Hsin Hsu¹, Yu-Chun Wang¹, Chih-Kuang Liang^{1,3}, Li-Ning Peng^{2,4}, Liang-Kung Chen^{2,4}, Yu-Te Lin¹ ((1) *Center for Geriatrics and Gerontology, Kaohsiung Veterans General Hospital, Kaohsiung, Taiwan;* (2) *Aging and Health Research Center, National Yang Ming University, Taipei, Taiwan;* (3) *Department of Geriatric Medicine, National Yang Ming University School of Medicine, Taipei, Taiwan;* (4) *Center for Geriatrics and Gerontology, Taipei Veterans General Hospital, Taipei, Taiwan*)

Background: Older people with frailty are at risk of adverse outcomes, such as falls, functional decline and mortality, and multi-domain intervention program may prevent those. **Objectives:** The purpose of this study is to evaluate the effectiveness of multi-domain intervention program among those community-dwelling frail older people in southern Taiwan. **Methods:** A 12 week multi-domain intervention program were provided for all participants, including physical activity, high protein diet education, medical knowledge education and cognitive simulation activity for 2 hours per week. Comprehensive geriatric assessments were performed before and after the intervention program, including basic demographic data, risk for malnutrition (by MNA-SF), mood condition (by GDS-5), cognitive condition (by MMSE) and frailty status according to the definition by the cardiovascular health study (CHS). **Results:** During Jan 2018 and May 2019, totally 386 participants were invited for study (75.9% female, mean age 76.0±7.1 years). Among them, 31 (9.4%) were clarified as frailty status and 190 (57.4%) as prefrailty status. After the multi-domain intervention program, their mood condition (0.35±0.83 to 0.23±0.71, p<0.001) and cognitive condition (24.40±5.75 to 25.14±5.70, p<0.001) improved significantly. In addition, the walking speed (0.89±0.28 to 0.98±0.49 m/s, p<0.001) and physical activity (13.42±14.51 to 16.31±15.99 mets/week, p<0.001) improved, but not handgrip strength (p=0.850). For the frailty status, those clarified as frailty status decreased from 9.4% to 5.2% and prefrailty status

from 57.4% to 41.4% (p<0.001). **Conclusion:** Our results showed that through the 12 week multi-domain intervention program, those frail older people could improve their mood condition, cognitive condition, usual gait speed and frailty status.

P35- FRAILTY AND SARCOPENIA IN WOMEN WITH SYSTEMIC LUPUS ERYTHEMATOSUS. Sarah B. Lieber¹, Stephen A. Paget^{1,2}, Jessica R. Berman^{1,2}, Medha Barbhaiya^{1,2}, Lisa Sammaritano^{1,2}, Kyriakos A. Kirou^{1,2}, John A. Carrino³, Dina Sheira¹, Mangala Rajan², Yingtong Lyu², Lisa A. Mandl^{1,2} ((1) *Division of Rheumatology, Hospital for Special Surgery, New York, NY, USA;* (2) *Department of Medicine, Weill Cornell Medicine, New York, NY, USA;* (3) *Department of Radiology and Imaging, Hospital for Special Surgery, New York, NY, USA*)

Background: Frailty is a clinical phenotype that increases with age, but can occur in younger patients with chronic disease. Based on few studies, frailty has been found in up to 27.5% of patients with systemic lupus erythematosus (SLE) and is associated with increased mortality. Whether frailty is prevalent in other SLE cohorts and associated with objective and subjective factors is unknown. **Objectives:** We aimed to determine the prevalence of frailty in a prospective cohort of women with SLE and whether inflammatory biomarkers, body composition, and patient-centered domains differed between frail and non-frail women. **Methods:** Adult women <70 years old who fulfilled American College of Rheumatology SLE criteria were recruited from one center. Exclusions included pregnancy, dialysis, active malignancy, overlap autoimmune syndromes, and severe SLE disease activity. Frailty was measured according to Fried criteria. Patient-reported outcomes (PROs) were measured using PRO Measurement Information System (PROMIS) computerized adaptive tests; LupusQOL; and disability based on Valued Life Activities. Physician-reported SLE disease activity and damage indices were collected. Inflammatory biomarkers and sarcopenia according to dual-energy x-ray absorptiometry were assessed. Differences between frail and non-frail women were evaluated using chi-square tests and Kruskal-Wallis tests; the association between frailty and disability was determined using logistic regression. **Results:** 71 women enrolled from 8/2018-9/2019. Despite age under 70 years old, 21% were frail. Frail women had greater disease damage (p=0.01) and were more often smokers (p=0.03). High-sensitivity C-reactive protein (p=0.05) and interleukin-6 (p=0.01) were higher and sarcopenia trended toward greater prevalence (p=0.07) in frail women. Significant differences in PROMIS mobility, physical function, pain interference and behavior, and fatigue and LupusQOL physical health and pain (all p<0.01) were observed between frail and non-frail women, with frail women reporting consistently worse scores. Frail women were 9.5x more likely to be disabled than non-frail women, including after adjustment for age, comorbid conditions, and disease activity/damage. **Conclusion:** The prevalence of frailty was high in this cohort of mid-aged women with SLE. Frail women had poorer health-related

quality of life than non-frail women, including substantially higher disability. If frailty is associated with worse health outcomes, it could be a potential therapeutic target.

P36- FRAILTY IN SYSTEMIC RHEUMATIC DISEASES: A SYSTEMATIC REVIEW. Sarah B. Lieber¹, Abigail M. Schmucker², Lisa A. Mandl^{1,3} ((1) *Division of Rheumatology, Hospital for Special Surgery, New York, NY, USA*; (2) *Sidney Kimmel Medical College at Thomas Jefferson University, Philadelphia, PA, USA*; (3) *Department of Medicine, Weill Cornell Medicine, New York, NY, USA*)

Background: Frailty, a state of decreased homeostatic reserve, is well studied in the elderly and independently associated with increased morbidity and mortality. Many systemic rheumatic diseases are increased in the elderly and associated with poor outcomes. To our knowledge, there are no systematic reviews evaluating frailty in inflammatory rheumatic conditions. **Objectives:** We conducted a systematic review to evaluate the prevalence of frailty and the association of frailty with health-related outcomes in patients with systemic rheumatic disease. **Methods:** A search of Ovid MEDLINE, Ovid Embase, the Cochrane Library, the Cumulative Index to Nursing and Allied Health Literature, AgeLine, and Scopus was conducted from database inception to January 2019 to identify original research articles and abstracts about frailty and inflammatory rheumatic conditions. Studies addressing frailty, using all definitions, and any inflammatory rheumatic disease were eligible. Data extracted included study design, patient characteristics, frailty instruments, and health-related outcomes. Risk of bias was assessed using the Newcastle-Ottawa scale for cohort and cross-sectional studies and the Cochrane Risk of Bias Tool for randomized controlled trials (RCTs). Two investigators reviewed each study. Disagreements were resolved by a third reviewer. The study was registered prospectively in PROSPERO and conducted according to Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. **Results:** Of 7602 abstracts identified, 64 full-text abstracts and articles were reviewed and 19 included: 1 RCT, 9 prospective cohort studies, 7 cross-sectional studies, 1 retrospective cohort study, and 1 case series. Eleven studies addressed rheumatoid arthritis, 4 systemic sclerosis, 2 systemic lupus erythematosus, 3 vasculitis, 1 psoriatic arthritis, and 2 non-specific “connective tissue disease.” Given study heterogeneity, meta-analysis was not conducted. Risk of bias varied across studies. Frailty was prevalent in multiple systemic rheumatic diseases and associated with poor clinical outcomes, including increased disability and mortality. **Conclusion:** To our knowledge, this is the first systematic review exploring the relationship between frailty and systemic rheumatic disease. Frailty is prevalent in multiple systemic rheumatic diseases and associated with poor clinical outcomes. Further study is needed to determine risk factors for frailty in systemic rheumatic disease. Using standardized frailty instruments will facilitate comparisons between diseases and patient populations.

P37- FACTORS PREDICTING CAREGIVER ROLE STRAIN FROM CAREGIVING ACTIVITIES FOR BED BOUND OLDER ADULTS AT HOME. Chariya Sumcharoen, Supreeda Monkong, Nuchanad Sutti (*Ramathibodi School of Nursing, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Bangkok, Thailand*)

Background: Bed bound older adults need caring of physical activities, mental, mood, and social from family caregivers. Family caregivers usually gets the role strain from caregiving. There are many factors associate with the caregiver role strain but have been rarely reported in bed bound older adults at home. **Objectives:** The study examined age, adequacy of incomes, mutuality, health status, preparedness, and social support influencing caregiver role strain from caregiving activities for bed bound older adults at home. **Methods:** Caregiver role strain concept by Archbold and colleagues with literature review were used to guide this study. The sample was recruited by purposive sampling consisted of 117 caregivers aged 18 years or older, who have cared for bed bound older adults at home in Thailand. Data were collected by structured interview using the questionnaires including demographic data, preparedness, health perception, mutuality, social support, and caregiver role strain from the care activities. Data was analyzed using descriptive statistics, Pearson’s product moment coefficients, and Multiple Regression Analysis. **Results:** The most of participants were women (78.33%), age ranging from 26 to 85 years (M= 56.23, SD=11.57). The result showed that age, adequacy of incomes, mutuality, health status, preparedness, and social support jointly significantly explained 31.9 % of the variation in caregiver role strain from caregiving activities. The regression effects were strongest for health status (Beta=-.285, p=.001), followed by preparedness (Beta=-.254, p=.002), age (Beta=.220, p=.008), and adequacy of incomes (Beta=-.214, p=.014) respectively. **Conclusion:** This finding suggests that healthcare providers should find strategies for promoting health status and preparedness of family caregivers for decrease caregiver role strain from caregiving activities.

P38- FRAILTY, PHYSICAL PERFORMANCE AND FALLS: RESULTS FROM SABE COLOMBIA STUDY. Ronald Camilo Gómez-Arteaga^{1,2,3,4} Luis Carlos Venegas-Sanabria^{1,2}, Estephania Chacón-Valenzuela^{1,2}, Elly Morros-González^{1,2}, María Paula Vargas-Beltrán^{1,2}, Diego Chavarro-Carvajal^{1,2}, Carlos Alberto Cano-Gutiérrez^{1,2} ((1) *Semillero de Neurociencias y Envejecimiento, Ageing Institute, Medical School, Pontificia Universidad Javeriana, Bogota, Colombia*; (2) *Geriatric Unit, Hospital Universitario San Ignacio, Bogota, Colombia*; (3) *Internal medicine and Geriatric Unit, Hospital Cardiovascular del Niño de Cundinamarca, Soacha, Colombia*; (4) *Internal medicine and Geriatric Unit, Clinica del Country, Bogota, Colombia*)

Background: Falls and fear of falling represent a geriatric syndrome with a high impact on disability and morbidity. Therefore, the early detection of modifiable risk factors could decrease the risk of functional disability, worsening quality

of life, and hospital admissions. **Objectives:** We estimated the prevalence and describe the characteristics of the population with recurrent falls and fear of falling and their association with frailty, physical performance and cognitive frailty. **Methods:** Data came from the “Salud, Bienestar y Envejecimiento” (SABE) Colombia Study, a cross-sectional study conducted in 2015 at the urban and rural research sites (244 municipalities) in Colombia. Sociodemographic, health, cognitive and anthropometric measures were collected from 23694 community-dwelling adults aged 60 years and older, representative from the total population. Frailty was defined using the frailty phenotype proposed by Fried. Cognitive frailty was defined using the INAA/IAGG consensus definition. Low performance was evaluated with SPPB (Short Physical Performance Battery). Logistic regression analyses were used to identify factors associated with recurrent falls and fear of falls. **Results:** Our study identified 603 elderly who had recurrent falls and 1193 fear of falling (15.6% and 39.5% respectively). Young elders (≤ 69 years) had more falls and greater probability for fear of falling compared to older ages. Sex had no significant differences. The factor associated with an increased risk of recurrent falls and fear of falling in the elderly were low physical performance, fragility and polypharmacy. Chronic illness such as osteoarticular disease, mental disease, diabetes and chronic pulmonary disease were significantly associated with recurrent falls and fear of falling. Finally, when adjusted for age, sex, sociodemographic factors and comorbidities in a logistic regression model, frailty was associated with fear of falling and recurrent falls, while cognitive frailty and low physical performance only were associated with fear of falling. **Conclusion:** Recurrent falls have a significantly association with frailty. There are cognitive, physical performance and clinical factors associated with fear of falling that could be preventable and treatable.

P39- CLINICAL FRAILTY SCALE AS A PREDICTOR OF SHORT TERM FUNCTIONAL RECOVERY IN PATIENTS WITH HIP FRACTURE. Rubbieri Gaia¹, Ceccofiglio Alice¹, Mazzeo Niela¹, Pupo Simone², Cartei Alessandro¹, Rostagno Carlo¹, Mossello Enrico² ((1) *Department of Perioperative Medicine, Careggi Hospital and University of Florence, Italy;* (2) *Department of Geriatric Medicine, Careggi Hospital and University of Florence, Italy*)

Background: The prevalence of frailty in patients with hip fracture is high, but little is known about the choice of the best frailty tool in terms of prediction of functional recovery. **Objectives:** The aim of this preliminary study was to determine the most predictive validated frailty tool in older people with hip fracture and to determine whether frailty can predict functional recovery during the hospital acute phase. **Methods:** This study was observational prospective cohort study. Participants aged 65+ admitted to Hip Fracture Units in Florence, were assessed pre surgery (T0), and post surgery. Each participants underwent a comprehensive geriatric assessment and frailty was defined using: Clinical Frailty Scale (CSF), Frail

Scale (FS), Reported Edmonton Frail Scale (REFS), Postal Frailty Screening (PFS). The outcome was functional recovery, evaluated by a score of postoperative performance on the Cumulated Ambulation Score (CAS). Data recorded included pre-recovery Barthel Index (BI), Charlson Comorbidity Index (CACI), Handgrip strength test (HG), ASA score, Mini Nutritional assessment short-form (MNA-sf), delirium. **Results:** Sample included 114 patients (mean age 85 ± 8 years, female 75.4 %). CFS was the most predictive frailty tool, with a 88% sensitivity and a 50% specificity (AUC = 0.80, cut off >3). Dividing the sample according to pre-morbid BI, while BI itself had the highest predictive value when pre-morbid level was $<80\%$, CFS was the best predictor of functional outcome in the 80%+ subsample (AUC= 0.67). **Conclusion:** Frailty defined by CFS can predict short-term functional recovery during acute phase following hip fracture. This appears particularly relevant for subjects with a higher pre-morbid functional independence.

P40- DISCORDANCE IN FRAILTY MEASURES IN OLD COMMUNITY DWELLING PEOPLE WITH MULTIMORBIDITY. Amelie Lindh Mazya^{1,2}, Anna Axmon³, Anne-Marie Boström^{4,5}, Anne Ekdahl^{1,6} ((1) *Department of Neurobiology, Care Sciences and Society, Division of Clinical Geriatrics, Karolinska Institutet, Sweden;* (2) *Geriatric Department of Danderyd Hospital, Sweden;* (3) *EPI@LUND (Epidemiology, Population studies, and Infrastructures at Lund University), Division of Occupational and Environmental Medicine, Lund University, Sweden;* (4) *Division of Nursing, Department of Neurobiology, Care Sciences and Society Karolinska Institutet, Sweden;* (5) *Theme Aging, Karolinska University Hospital, Huddinge, Sweden;* (6) *Department of Clinical Sciences Helsingborg, Lund University, Sweden*)

Background: Many individuals with multimorbidity are affected by frailty and assessment of frailty is considered a method to identify older persons with multimorbidity in need of holistic care. Agreement between different frailty measures varies greatly and the distinct groups classified as frail are not comparable. It is therefore interesting to explore differences between groups with discordant frailty classifications in order to understand the limitations of the measures. **Objectives:** This study aims to evaluate the agreement of five frailty measures with focus on the discrepancy in frailty identification between the Clinical Frailty Scale (CFS) and Fried’s Biological Phenotype (BP) in old persons with multimorbidity. **Methods:** A cross sectional study of baseline data from the Geriatric Mobile Team Trial (Ger-MoT), a randomized controlled trial to evaluate the effect of care based on Comprehensive Geriatric Assessment given by a mobile geriatric team. Inclusion criteria were ≥ 75 years old, ≥ 3 visits to the emergency care unit within the past 18 months, and ≥ 3 diagnoses according to the ICD-10. 450 participants were included. Frailty was measured with Fried’s Biological Phenotype, the Clinical Frailty Scale, the Short Performance Physical Battery – Swedish Version (SPPB-S), Grip Strength and Walking Speed. Cognition, Functional Status and Quality of Life were assessed with validated instruments. **Results:** Mean age was 82.5 years and

52% were women. 385 individuals had data for all five frailty measures. Nine percent of participants were non-frail by all instruments, 20 % were frail by all measures and thus 71 % had discordant frailty measurements. 91% were frail by at least one measure method. The prevalence of frailty ranged from 34 % to 75% for the different measures. Those classified as frail by CFS and non-frail by BP were more likely to be men, be co-living, have lower cognitive function and a higher dependency in IADL compared to those classified as frail by BP and non-frail by CFS. **Conclusion:** Frailty measures cannot be used interchangeably. Specifically the CFS might not identify physical frail women, with high cognitive ability who lives alone. Factors contributing to the heterogeneity of groups classified as frail by different measures need to be further explored.

P41- GAIT SPEED AND BODY MASS INDEX: RESULTS FROM THE AMI STUDY. Maturin Tabue-Teguo^{1,2}, Karine Perès², Nadine Simo¹, Mélanie Le Goff², Mario Ulises Perez Zepeda^{3,4}, Catherine Féart², Jean-François Dartigues², Hélène Amieva², Matteo Cesari^{5,6} ((1) *CHU de Guadeloupe, Université des Antilles, France*; (2) *INSERM 1219, Bordeaux Population Health Research Center, Université de Bordeaux, France*; (3) *Departamento de Investigación de Epidemiología y geriatría, Instituto Nacional de Geriatria, Mexico*; (4) *Instituto de Envejecimiento, Pontificia Universidad Javeriana, Bogotá, Colombia*; (5) *Geriatric Unit, Fondazione IRCCS Ca' Granda, Ospedale Maggiore Policlinico, Milano, Italy*; (6) *Department of Clinical Sciences and Community Health, University of Milan, Milano, Italy*)

Background: Gait speed and BMI are considered as general markers of wellbeing. **Objectives:** To examine the relationship between gait speed (GS) and body mass index (BMI) in men and women aged 75 years and older. **Design:** Cross-sectional analysis. **Setting, Participants:** Data from the Aging Multidisciplinary Investigation (AMI) study (159 women and 290 men aged ≥ 75 years), a French prospective cohort study with participants randomly selected from the farmer Health Insurance rolls. **Measurements:** Usual GS was measured over a 4 meter-track. BMI was categorized using clinical cut-points for European populations: <20.0 kg/m²; 20.0-24.9 kg/m²; 25.0-29.9 kg/m²; 30.0-34.9 kg/m²; ≥ 35.0 kg/m². **Results:** Mean age of participants was 81 years. Being malnourished, overweight and obese was significantly associated with slow GS. The unadjusted and age-adjusted models of covariance showed that underweight, overweight and obesity statuses were significantly associated with slow GS for both women (0.83m/s [0.61; 1.04], 0.87m/s [0.72; 1.02], 0.70 m/s [0.41; 0.98], respectively) and men (0.83m/s [0.61; 1.04], 1.11m/s [1.03; 1.20], 0.97m/s [0.75; 1.19], respectively). GS and BMI as continuous variable were not significantly correlated (P=0.16). **Conclusion:** Underweight and overweight/obesity are associated with slow GS in older persons. These two variables could be contributed at comprehensively and complementarily assessing the older person.

P42- DRUG USE AS A PREDICTOR OF FRAILTY IN HOME-DWELLING OLDER PERSONS. Thomas Røland¹, Miriam Kristine Sandvik², Hege Kersten³, Maria Krogseth⁴ ((1) *Department of Psychiatry, Telemark Hospital Trust, Skien, Norway*; (2) *Telemark Hospital Trust, Skien, Norway*; (3) *Department of Research, Telemark Hospital Trust, Skien, Norway*; (4) *Department of Internal Medicine, Telemark Hospital Trust, Skien, Norway*)

Background: Polypharmacy is increasingly common amongst older, multimorbid adults. In these individuals, studies have shown a high prevalence of frailty. Identification of frailty can be performed using comprehensive assessments registering accumulation of deficits like in the Frailty Index, or using single-trait markers of frailty like gait speed and handgrip strength. Polypharmacy is recognized as an independent risk factor for the development of frailty, and the subgroup of psychotropic drugs may be particularly important in the development of this syndrome. **Objectives:** Our objectives were to study the relationship between the total burden of polypharmacy on frailty status using three different measurements of frailty, and specifically the influence of psychotropic drug use on frailty status. Our overall aim was to explore whether either of these could be used as independent predictors of frailty. **Methods:** We used data from a 2-year follow-up study of older people living in the community and receiving home care nursing, i.e. the CASCADE-study. Data collection was completed in June 2018. All 210 participants were aged >65 years (mean 84 years). A 34 item Frailty Index was calculated based on results from a comprehensive geriatric assessment performed in the patients' own home. A four-meter gait speed test was performed, as well as measurement of handgrip strength. Information on regular medications was collected from the patients if they administered own medications, or from the home care nursing service if they were responsible for administering the patients' medications. Psychotropic drugs were selected based on Beers 2019 criteria. **Results:** We found a significant association between the use of psychotropic drugs and Frailty Index, and Frailty index increased by 0.03 for each psychotropic drug added (p<0.001). One additional psychotropic drug decreased gait speed by 0,03 m/s (p<0,05). There was no statistically significant association between psychotropic drug use and handgrip strength. **Conclusion:** Our study showed that psychotropic drug use was a significant predictor of increased Frailty Index and reduced gait speed. This was not the case for handgrip strength in our material.

P43- FRAILTY PROFILE AND PREOPERATIVE ANEMIA OF ELDERLY PATIENTS ADMITTED FOR HIP FRACTURE. Laetitia Beernaert¹, Frédéric Schuind², Sandra De Breucker¹ ((1) *Department of Geriatrics, Hôpital Erasme – Université Libre de Bruxelles, Belgium;* (2) *Department of Orthopedics, Hôpital Erasme – Université Libre de Bruxelles, Belgium*)

Background: Anemia is a condition whose prevalence might reach 50% in the geriatric population. Anemia and frailty are two prognostic factors for patients admitted for a hip fracture. **Objectives:** We analyzed retrospectively if preoperative frailty and anemia were independently predictive of postoperative complications and mortality in old patients admitted for hip fracture. **Methods:** Ninety-seven patients above 65 years old have been admitted for urgent surgery for a hip fracture during 2016 and 2017. We excluded patients with a pathological fracture or fractures due to high energy trauma. Preoperative anemia was defined as an hemoglobin level under 12g/dL for women and 13g/dL for men. Frailty was assessed with the ISAR (Identification of Seniors at Risk) score. **Results:** Seventy-five percents of patients were considered as frail (ISAR score > 2). The prevalence of preoperative anemia was 37%. We found no statistically significant correlation between anemia and frailty ($r = -0.18$ - $p = 0.071$). In multiple regression logistic analysis, the only independent parameter associated with anemia was the presence of comorbidities (OR 1.12 (1.04-1.20)- $p = 0.02$), and the only parameter associated with frailty was the presence of malnutrition (OR 28.2 (2.8-28.9)- $p = 0.005$). Neither anemia nor frailty was associated with postoperative complications and mortality. **Conclusion:** Preoperative anemia and frailty are not interrelated in patients admitted for hip fracture. Anemia is associated with comorbidities, but not postoperative mortality. Frailty is associated with preoperative malnutrition. The ISAR score may not be ideal to screen for frailty in old patients admitted for hip fracture, an item being attributed to the current loss of autonomy.

P44- FRAIL-VIG .A PROMISING AND TIME-FEASIBLE INDEX FRAILTY FOR CLINICAL SETTINGS. M Martinez², Maria Montoya^{1,2}, Davide Angioni¹, Lizeth Canchucaja², Natalia Ronquillo³, Maria Luz Gallego², Claudia Bejar⁴, Emmanuel Gonzalez², Olga Vazquez², Anna Renom² ((1) *Institute de Viellissement Toulouse, France;* (2) *Hospital del Mar, Barcelona, Spain;* (3) *Hospital de Terrasa, Barcelona, Spain;* (4) *Parc Tauli, Barcelona, Spain*)

Background: Frailty is a common critical geriatric syndrome which has been associated with poor health outcomes. A wide variety of frailty indices (FIs) have been developed. Frail-VIG («VIG» is the Spanish/Catalan abbreviation for Comprehensive Geriatric Assessment). It contains 22 simple questions that assess 25 different deficits. It has been inspired by the Rapid Geriatric Assessment. **Objectives:** The aim is to compare the prediction capacity of Clinical Rockwood Index Frailty (RIF) and Frail- VIG

index (VIF) for Poor Health Outcomes (PHO) defined as: emergency department visits and/or hospital admission and/or mortality among elderly patients. **Methods:** a retrospective observational study was conducted with a follow-up up to 15 months or PHO occurred. Patients were admitted in Acute Geriatric Unit Care and Geriatric Day Hospital at Hospital del Mar; Barcelona; Spain during August 2018 and March 2019. The inclusion criteria were the admission ones. Frailty was measured at admission. Survival analysis was conducted; Cox proportional hazards regression was used to build a PHO predictive model based on both indexes. Best model according to contrast of hypothesis log-rank, AIC, BIC and C Harrel was selected. Diagnoses of the chosen model was done. **Results:** a total of 49 patients were included, mean age was 78 and 46.9% female. The mean of follow-up was 9.78, 51% patients presented a PHO. 24.4% died, 32% were admitted at emergency department, 26.5% were hospitalized and 22% presented more than one event. Survival curves for frail and non-frail according to PHO showed statistically significance for VIF ($X^2=6.77$ $p=0.0093$) but not for RIF ($X^2=0.62$ $p=0.4315$). Cox proportional hazards regression showed VIF hazard ratio 3.44 ($p=0.0406$) and RIF hazard Ratio 1.27 ($p=0.607$). Predictive capability resulted in a model for VIF containing cognition and sex, with Harrel C of 0.735. As for RIF the most parsimonious model RIF would be absent and Harrel C 0.503. The diagnoses of the model showed Time Covariate Variable test with $p=0.429$, $p=0.297$, $p=0.640$ for each predictive variable; squared linear predictor with $p=0.39$ of and 2 outliers. **Conclusion:** The VIG Frailty Index performed better; compared to Rockwood clinical Index; in predicting a composite outcome composed by mortality, hospitalization and visits to Emergency Departments in patients admitted in acute and outpatient settings.

P45- EFFECT OF 24-WEEK MULTICOMPONENT EXERCISE PROGRAM ON FRAILTY AND SARCOPENIA IN POST-HOSPITALIZATION OLDER ADULTS. Iñaki Echeverria¹, Miriam Urquiza¹, Maria Amasene², Idoia Labayen³, Ariadna Besga⁴, Ana Rodriguez-Larrad¹, Jon Irazusta¹ ((1) *Department of Physiology, University of the Basque Country, Spain;* (2) *Department of Pharmacy and Food Science, University of the Basque Country, Spain;* (3) *Faculty of Health Science, Public University of Navarra, Spain;* (4) *Department of Internal Medicine, Hospital Universitario de Alava, Osakidetza Spain*)

Background: Frailty and sarcopenia are associated with the loss of functional capacity and disability. Also related to reductions in quality of life, higher morbidity and mortality, and increased use of health resources. Hospitalization in older patients is associated with decreased muscle strength and muscle mass loss and usually accelerates deconditioning. Physical exercise has shown to be cornerstone in attenuating this loss of functional capacity. However, few studies evaluate how to reduce frailty and sarcopenia at hospital discharge. **Objectives:** To evaluate the effects of 24-week multicomponent exercise program on frailty and sarcopenia among older adults

after hospital discharge. **Methods:** This study was conducted in the Departments of Internal Medicine and Neurology of the University Hospital of Araba (Basque Country, Spain). Participants were ≥ 70 years, scoring ≥ 20 on the MMSE test and able to stand and walk independently for at least 4-meter. Participants performed twice-weekly moderate intensity group sessions of multicomponent exercise at the hospital during 12-week, followed by a home-based intervention (12-week). Both were focused on balance, aerobic capacity and strength. Taking together both interventions, participants completed 24-week of physical exercise. At the beginning and the end of the program, frailty was measured through Fried's index¹ and Sarcopenia with different criteria²: muscle strength (5-chair stand), muscle quality (DXA) and physical performance (SPPB). We compared the results before and after the intervention by McNemar test. **Results:** 55 patients (27 females, 49%) were enrolled, 26 were lost to follow-up at the 24-week time point and 29 people finished the intervention. The intervention decreased significantly the percentage of frail individuals ($p < 0.001$) according to Fried's Index, and the percentage of people who met sarcopenia criteria for sit-to-stand ($p = 0.031$) and SPPB ($p = 0.031$). However, there were no differences in the percentage of people with low appendicular muscle mass. **Conclusion:** Our study showed that a multicomponent exercise program is effective for post-hospitalization patients because after 24-week intervention there were significant reductions in frailty and improving results in muscle strength and physical performance. We did not find changes related to muscle mass. **References:** 1.Fried, et al. *J Gerontol A Biol Sci Med Sci*. 2001;56(3):146-156; 2.Cruz-Jentoft, et al. *Age and Ageing*. 2019;48(1):16-31.

P46- INCREASED RISK OF UNACKNOWLEDGED FRACTURE IN THE PATIENTS ADMITTED IN ALCOHOL REHABILITATION. A. Medioli, L. Scaglia (*Fondazione Richiedei alcoholic rehabi, Brescia, Italy*)

Background: Alcohol addiction can impact every part of the body, including bones. Research shows that chronic heavy alcohol use, especially during adolescence and young adult years, can dramatically affect bone health and increase the risk of osteoporosis and bone fracture later in life. **Objectives:** The purpose of this study is to compare data from international scientific literature with data from the study of patients admitted for alcohol dependence, to assess whether there are significant connections between alcohol dependence and unrecognized fractures. **Methods:** We analyzed 34 meta-analysis's studies from the PUBMED search engine to evaluate the association between bone fractures with alcohol use disorders. Only humans studies from the last 5 years have been analyzed. Subsequently, data related to patients admitted for an alcohol rehabilitation cycle were analyzed. **Results:** Scientific literature show that there is a close correlation between alcohol abuse and greater frequency of bone fractures. This is partly due to Association Between Alcohol Consumption and Both Osteoporotic Fracture and Bone Density, and partly to the fact that there is an increased risk of falls in alcohol intoxicated

patients compared to the general population. 1145 patients were considered: 71% male and 28.2% female. The average age was 48 years. Of these 1145, 5.38%, 61 patients, had unrecognized fractures. **Conclusion:** Intoxicated patients admitted in alcoholic rehabilitation with recurrent falls anamnesis often did not perform any diagnostic assessment. This is due to the lack of pain perception in the patients or due to family members or emergency physicians who placed the state of drunkenness before any consequences caused by repeated falls. There is an increased risk of unacknowledged fracture in the patients admitted in alcohol rehabilitation This is partly due to the fact that alcohol intoxicated patients often do not perceive the pain and therefore do not investigate any falls that occurred in a state of drunkenness, in part it is due to the damages that alcohol causes on the bone. Our data show that alcohol dependence and unrecognized fractures can often be associated. Studies in the literature confirms that there is an increased risk of non-cone fractures in patients with alcohol dependence.

P47- A HIERARCHICAL APPROACH BETWEEN FRAILTY AND DISABILITY TO PREDICT MORTALITY AMONG COMMUNITY-DWELLING OLDER ADULTS: THE THREE CITIES STUDY. Alfonso Zamudio-Rodríguez, Hélène Amieva, Luc Letenneur, Karine Pérès (*Centre de recherche INSERM U1219 Université de Bordeaux – ISPED, Bordeaux, France*)

Background: Although conceptually distinct, frailty and disability are very common among older adults. Both are multifactorial conditions and share some risk factors and pathophysiological mechanisms, such as inflammation or sympathetic-parasympathetic balance alteration. Furthermore, each individual component of the frailty phenotype defined by the Cardiovascular Health Study (CHS) has been associated with disability in basic and instrumental activities of daily living. **Objectives:** The present study aimed to determine whether Pre-frail and Frailty are part of the natural history of the disability process. **Methods:** A sample of 894 people aged 75 of the Three Cities (3C) study in Bordeaux were followed for four years. Pre-frailty and frailty were defined according to the original phenotype proposed in the CHS. Disability was defined using the basic (ADL) and instrumental (IADL) activity of daily living scales. Seven mutually exclusive hierarchical groups were distinguished at inclusion: 1) Robustness (no frailty or disability); 2) Pre-frail (without disability); 3) Frailty (without disability); 4) IADL (without Pre or frailty or ADL) 5) Pre-frail with IADL (no ADL); 6) Frailty with IADL (no ADL); 7) frailty with IADL and ADL. **Results:** 177 deaths (19.8%) occurred during the four years follow-up. Compared to the Robust group, all other hierarchical subgroups had an increased risk of death, with an increasing gradient: Pre-frailty (HR= 1.84; IC 95 % = 1.00 – 3.39); Frailty (HR= 3.46; IC 95 % = 1.59 – 7.53), IADL disability (HR = 3.21; IC 95 % = 1.28 – 8.05); Pre-frailty with IADL disability (no ADL) (HR= 4.08; IC 95% = 2.16 – 7.70); Frailty with IADL disability (no ADL) (HR= 5.42; IC 95% = 2.84 – 10.34); Frailty with IADL and ADL disability (HR= 10.58; IC 95% = 5.39 – 20.77) were significant after

adjustment by age and sex. **Conclusion:** There is a gradual risk of mortality across the different groups (i.e., 1) Robust; 2) Pre-frail; 3) Frail; 4) IADL disability without Pre or frailty; 5) Pre-frail with IADL disability; 6) Frail with IADL disability; 7) Frail with IADL and ADL disability) thus suggesting a hierarchical relationship. This study could have important clinical implications since pre-frailty and frailty are assumed more effectively reversible conditions in order to interrupt the continuum at the early phase of the disability processes.

P48- GETTING FIT FOR HIP AND KNEE REPLACEMENT: THE FIT-JOINTS PILOT RANDOMIZED CONTROLLED TRIAL OF A MULTI-MODAL INTERVENTION IN FRAIL PATIENTS WITH OSTEOARTHRITIS. Ahmed M. Negm^{1,2}, George Ioannidis¹, Courtney C. Kennedy¹, Lehana Thabane³, Mitchell Winemaker⁵, Danielle Petrucci⁵, Julie Richardson⁶, Stephanie Atkinson⁴, Jonathan D. Adachi⁷, Alexandra Papaioannou^{1,3,7} for the Fit Joint Investigators ((1) *GERAS Centre for Aging Research, St Peter's Hospital, Canada;* (2) *Faculty of Rehabilitation Medicine, University of Alberta, Canada;* (3) *Department of Clinical Epidemiology and Biostatistics, McMaster University, Canada;* (4) *Department of Pediatrics, McMaster University, Canada;* (5) *Department of Surgery, Division of Orthopedic Surgery, McMaster University, Canada;* (6) *School of Rehabilitation Science, McMaster University, Canada;* (7) *Department of Medicine, McMaster University, Canada*)

Background: Joint replacement provides significant improvement in pain, physical function, and quality of life in patients with osteoarthritis. With a growing body of evidence indicating that frailty can be treated, it is important to determine whether targeting frailty in joint replacement patients is feasible and improves post-operative outcomes. **Objectives:** To examine the feasibility of a preoperative multi-modal frailty intervention (MMFI) compared to usual care in pre-frail/frail older adults undergoing elective unilateral hip or knee replacements. **Methods:** In this pilot randomized controlled trial (RCT), participants who are 1) ≥ 65 years old; 2) Pre-frail (score of 1-2; (Fried Frailty Phenotype (FFP)) or frail (score of 3-5; FFP); 3) having elective unilateral hip or knee replacement with surgery wait times between 3-10 months were recruited from the Regional Orthopaedic clinic McMaster University, Ontario Canada. The MMFI included tailored exercise, protein (20-40 gm/day), vitamin D (1000 IU/day) supplementation, and medication review with recommendations sent to family physicians. Frailty and mobility were assessed at baseline and 6-weeks post-operative using FFP, Short Performance Physical Battery (SPPB) and Oxford Hip/Knee Score (OHS/OKS) respectively. **Results:** We recruited and randomized 69 participants between September 2016 and May 2018. Of those, 78.3% were referred for total hip replacement and 21.7% for knee replacement. The included participants' mean age (standard deviation (SD)) was 73.9 (7.5) years; 68.1% were women; 30.0% lived alone, body mass index was 31.9 kg/m² (7.2) and 44.9% were former smokers. At the baseline

assessment, on the FFP, 64% were prefrail, 36% were frail and the SPPB was 7.0 (2.2). For participants with hip osteoarthritis, OHS mean (SD) was 19.5 (7.3) and for participants with knee osteoarthritis, OKS mean (SD) was 24.5 (7.2). The study recruitment rate was 54.8%, and the retention rate was 87%. Eighty three percent of participants of the intervention group completed the intervention. Self-reported adherence to the intervention components was as follow: 1) Exercise sessions: 68.4%, 2) Protein supplement: 87.5%, 3) Vitamin D supplement: 85.7% and 4) Medication review completion: 100%. **Conclusion:** This is the first study to examine the feasibility of a multi-modal frailty intervention in pre-frail/frail older adults undergoing joint replacement. This study showed that frailty screening, assessment and management is feasible for older adults undergoing joint replacement in orthopaedic surgery clinics. Results have informed the current multi-centre RCT to determine effectiveness.

P49- INFLUENCE OF FRAILTY STATUS ON DISCHARGE SETTING FOLLOWING INPATIENT REHABILITATION FOR HIP FRACTURE PATIENTS. Christine Tocchi¹, Sathya Amarasekara², Michael Cary³ ((1) *School of Nursing, Duke University Durham, NC USA;* (2) *School of Nursing, Duke University Durham, NC USA;* (3) *School of Nursing, Duke University Durham, NC USA*)

Background: Inpatient rehabilitation Facilities (IRFs) provide intensive rehabilitation therapy to patients to reduce functional impairment, enhance independence and return patients to the community. Determination of eligibility for IRF is currently based on preadmission screening. Subpopulations of older adults may require special consideration in determination of IRF admission due to greater risk for poor functional recovery such as those with pre-existing functional limitations and those who are frail. Frailty, a pervasive characteristic in older adults with hip fractures has not been examined as a clinical factor influencing discharge destination outcomes in IRFs. **Objectives:** 1) Determine the prevalence of frailty among older adult with hip fracture receiving inpatient rehabilitation; and 2) Determine the association between frailty and discharge destination among hip fracture patients receiving inpatient rehabilitation. **Methods:** A retrospective cohort study design using CMS 2014 Inpatient Rehabilitation Facility-Patient Assessment Instrument file. Multivariate regression models were performed to examine the association between frailty and discharge destination. Frailty status was measured using a Frailty Index of 30 items with the following cut-off points: 0 - 0.20 robust/non-frail; 0.20 - 0.35 pre-frail; and 0.35 or greater as frail. The final sample included 26,134 hip fracture patients. **Results:** Frailty, pre-frailty, and non-frail were present in 0.33% (n=86), 7.6% (n=1976), and 92% (n=24071) of hip fracture patients, respectively. The majority (65%) of the frail hip fracture patients were discharged home. There were significantly greater proportion of females than males discharged home and those of white race, 65 to 74 years of age, and with higher functional status. Regression analysis showed significantly lower functional status at discharge (p <

.0001) for patients with these characteristics: males, non-white race, and older age. Additional factors that influenced discharge destination included: marital status, living in the community prior hospitalization, and length of stay. **Conclusion:** Frailty was the most common frailty status on admission to IRF. Home is the most common discharge destination for all frailty status groups. Frailty status could be used to identify hip fracture patients at high risk for adverse outcomes. Future studies should be used to explore the potential of frailty to provide value-added utility to clinical settings such as IRFs.

P50- FEASIBILITY OF IMPLEMENTING A FRAILTY ORDER SET TO ENHANCE THE HOSPITAL CARE OF OLDER ADULTS LIVING WITH FRAILTY.

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Background: Front-line care providers are seeking direction on how frailty measures may be integrated into existing or future care pathways to enhance the experience of individuals who live with it. Multidimensional frailty measures such as the Edmonton Frail Scale offer the potential for case-finding, estimation of severity, and definition of frailty components. **Objectives:** Test the feasibility of the implementation of a multidimensional frailty order set into acute care. **Methods:** In 2016, we conducted a literature search to identify existing frailty guidelines and systematic reviews related to frailty in acute care. An expert panel graded the quality the evidence, then generated recommendations, graded by strength to inform the generation of a clinical knowledge and content management (CKCM) topic for dissemination throughout Alberta Health Services (AHS). AHS is the largest province-wide, fully-integrated health system in Canada. This CKCM would include graded statements and recommendations, clinical decision support, electronic alerts, and a frailty order set. **Results:** Four guidelines, 60 systematic reviews, and one scoping review informed the development of the frailty CKCM. From this, we developed eight recommendations, covering topics such as prevention, case-finding, estimation of severity, definition of components, triggers for expert assessment, and linkage to care processes. The recommendations also addressed safeguards to avoid labelling and other unintended consequences. An order set employs the Clinical Frailty Scale, Electronic Frailty Index, and Edmonton Frail Scale to support a clinician to develop a personalized care plan. The order set empowers front-line clinicians to administer these frailty measures, based on cut points that prompt personalized recommendations on diet, activity, fall prevention, bladder management, and infusions. Depending on the frailty component of concern, clinicians are also prompted with specific options to address cognitive impairment, functional dependence, falls and immobility, social isolation, nutritional risk, polypharmacy, urinary incontinence, chronic pain, and constipation. In preparation for the conversion

to a province-wide electronic medical record (EMR) in November 2019, the CKCM was released in May 2018 and the frailty order set was built into the EMR by September 2019. **Conclusion:** Development and implementation of a multidimensional frailty order set in the setting of acute care is feasible.

P51- PREVALENCE OF FRAILTY AND ITS ASSOCIATED FACTORS IN PATIENTS WITH RHEUMATOID ARTHRITIS IN JAPAN. Masayo Kojima¹, Toshihisa Kojima², Yuko Nagaya³, Yasumoto Matsui¹ ((1) *National Center for Geriatrics and Gerontology, Obu, Aichi, Japan;* (2) *Nagoya University, Nagoya, Aichi, Japan;* (3) *Nagoya City University, Nagoya, Aichi, Japan*)

Background: Prevention programs for frailty at community usually target healthy older people. To further prolong healthy life expectancy, we need to approach those who already have got chronic diseases such as rheumatoid arthritis (RA). **Objectives:** The aim of this study is to assess the prevalence and factors associated with frailty in Japanese RA patients. **Methods:** RA patients aged 40-79-year-old who visited two university hospitals between March and July 2019 were consecutively invited to join the study. Those who agreed to participate the study provided written consent forms. Frailty was assessed by the total score of the Kihon Checklist ≥ 8 . Self-report questionnaires were used to evaluate patients' demographic characteristics, perceived degree of pain, depression (the Beck Depression Inventory-II) and physical function (the Health Assessment Questionnaire, HAQ). Rheumatologists' global assessment of disease severity, swelling and/or tender joint counts, years of RA duration, frequency of arthritis surgery and CRP level were also measured. **Results:** Total of 389 RA patients were included in the study (312 women, average age: 64.5 ± 9.7 years, average disease duration: 15.8 ± 11.8 years), and the prevalence of frailty was 25.6%. The higher the age and the longer the duration of the disease, the higher percentage of RA patients with frailty was observed. 18.4% among RA patients of working age (40-64 years), were frail, whereas 28.0% and 39.3% were frail among those aged 65-74 years and ≥ 75 years, respectively. Stepwise logistic regression analysis revealed that age, HAQ, depression severity and trust in neighbors were independently associated with frailty in RA. No significant gender difference was observed. **Conclusion:** Frailty is common even among working age in RA patients. Physical function, depression and social capital were suggested to be independently associated with frailty. On-going follow-up study will disclose the influence of frailty on fracture, dependency, and mortality among RA patients.

P52- FRAILITY AS MODULATOR OF BRAIN DAMAGE IN PARKINSON'S DISEASE. A. Pilotto¹, A. Lupini¹, F. Savoldi¹, A. Scalvini¹, S. masciocchi¹, A. imarisio¹, S. nocivelli¹, R. turrone¹, M. Rizzetti², A. Padovani¹ ((1) *University of Brescia, Department of Clinical and Experimental Sciences, Brescia, Italy;* (2) *FERB Onlus, Parkinson disease rehabilitation Unit Trescore Balneario, Trescore Balneario (bg), Italy*)

Background: Frailty is an important modulator of ageing and might impact on clinical presentation and progression of Parkinson's disease. **Objectives:** To evaluate the prevalence of frailty and correlation with motor and non motor symptoms as well as MRI atrophy and white matter hyperintensities in Parkinson's disease. **Methods:** Consecutive Parkinson's disease patients underwent a comprehensive motor and non motor evaluation and geriatric assessment using multidimensional prognostic index (MPI). A subset of 60 patients underwent MRI with assessment of atrophy and white matter hyperintensities by visual rating. **Results:** 125 PD outpatients (mean age 69.5 y, mean disease duration 4.6 years) entered the study. Pre-Frailty assessed by MPI was presented by 20% of patients and correlated with age and disease duration. When adjusting for these variables, MPI correlated with UPDRS-III, non motor symptoms assessed by UMSAR, prevalence of prevalence of orthostatic hypotension, RBD and depression. The MRI assessment showed a correlation between global atrophy and frailty independently from MMSE and educational levels. No association between frailty and WM hyperintensities was found. **Conclusion:** Frailty is a possible important modulator of pathology and brain vulnerability in Parkinson's disease and could explain different severity in motor and non motor symptoms. Longitudinal studies are warranted to evaluate the impact of frailty in disease progression.

P53- INFLUENCE OF COGNITIVE IMPAIRMENT AND ASSISTANCE FROM INFORMAL CAREGIVERS ON THE BODY WEIGHTCHANGES OF NURSING HOME RESIDENTS AFTER ACCIDENTAL FALLS. Caterina Trevisan^{1,2}, Mattia Mazzochin¹, Alessandra Imoscopi³, Enzo Manzato¹, Anna-Karin Welmer^{2,4,6}, Giuseppe Sergi¹ ((1) *Department of Medicine (DIMED), Geriatrics Division, University of Padova, Italy;* (2) *Aging Research Center, Department of Neurobiology, Care Sciences and Society, Karolinska Institutet and Stockholm University, Stockholm, Sweden;* (3) *Istituto AltaVita IRA, Padova, Italy;* (4) *Stockholm Gerontology Research Center, Stockholm, Sweden;* (5) *Division of Physiotherapy, Department of Neurobiology, Care Sciences and Society, Karolinska Institutet, Stockholm, Sweden;* (6) *Allied Health Professionals, Function Area Occupational Therapy & Physiotherapy, Karolinska University Hospital, Stockholm, Sweden*)

Background: Accidental falls in older adults have been associated with worse health-related outcomes especially in the frailest individuals, such as nursing home (NH) residents. In this special population of older adults, falls have been related to

greater morbidity and mortality, but their impact on nutritional status is still unclear. Moreover, so far there are no data on the potential role of unmodifiable (e.g. cognitive impairment [CI]) and modifiable factors (e.g. assistance from informal caregivers) in influencing the impact of falls on nutritional status in older residents. **Objectives:** We aimed to evaluate the changes in body weight during the six months after the occurrence of a fall in NH residents, and the possible influence of severe cognitive impairment, depressive symptoms and of the assistance from informal caregivers on such variations over time. **Methods:** The sample included 148 older residents who experienced at least one fall since NH admission. For each participant, we collected data on sociodemographic information, mean frequency of visits from informal caregivers, medical history, and cognitive and functional status at NH admission. Severe CI was defined as the presence of a physician-based diagnosis of CI or a Mini-Mental State Examination <18 points. The frequency of the visits from informal caregivers was categorized as none or 1 (low) vs >1 (high) per week. Falls' date and characteristics were obtained from structured forms completed by physicians. Monthly body weight in the six months before and after the fall were derived from the NH medical records based on nurses' assessments. Linear mixed models were used to evaluate the body weight changes after a fall, as a function of the presence of severe CI and low visits' frequency from informal caregivers, alone or in combination. **Results:** The mean age of our sample was 81.8±8.4 years and 72% were women. More than half (54.7%) of residents involved had severe CI and 51.7% had low visits' frequency from informal caregivers. After adjusting for potential confounders, the presence of severe CI (B=-0.4, SE=0.1, p<0.001) and the report of low visits' frequency from informal caregivers (B=-0.2, SE=0.1, p=0.03) were associated with steeper decline in body weight during the six months after the fall. When combining these variables, we found an additive effect of severe CI and low visits' frequency from informal caregivers in influencing weight loss (B=-0.44, SE=0.13 for residents with severe CI and high visits' frequency, and B=-0.65, SE=0.13 for those with severe CI and low visits' frequency; p<0.001 for all). **Conclusion:** Our results suggest that cognitive impairment may worsen the impact of falls on nutritional status in NH residents, and that this effect may be exacerbated by scarce assistance from informal caregivers.

P54- “ACTION RESEARCH” TO ACHIEVE COMMUNITY-BASED COMPREHENSIVE APPROACH FOR FRAILTY PREVENTION. K Iijima¹, Tomoki Tanaka¹, Kyo Takahashi¹, Misa Nishimoto¹, Mahiro Fujisaki¹, Unyaporn Suthutvoravut¹, Hiroyo Yoshizawa², Koichi Kozaki³, Masahiro Akishita¹, Kenji Toba⁴ ((1) *The University of Tokyo, Tokyo, Japan*; (2) *Tokyo Women Medical University, Tokyo, Japan, Japan*; (3) *Department of Geriatric medicine, Kyorin University medical hospital, Tokyo, Japan*; (4) *Tokyo Metropolitan Institute of Gerontology, Tokyo, Japan*)

Background: In consideration of the future rapid aging of the society, to achieve healthy and active aging is indispensable. Because especially the major issue is to prevent “multi-faceted frailty”, it is necessary to reconsider regarding nutrition, physical activity and sociality/sociability in the elderly. Sarcopenia is associated with adverse health outcomes, such as frailty, limited physical function, falls, disability and loss of independence. **Objectives:** Our aim to notice evidence-based new information, leading to frailty prevention, and let the community-based activity by elderly citizen only promote as a voluntary motion in each community. **Methods:** We have already established many new evidences from our on-going Japanese large-scale longitudinal study ‘KASHIWA study’. These evidences include the impact of overlapping of slight oral dysfunction, namely “ORAL FRAILTY”, as well as unbalanced diet and inadequate physical activity in early-stage sarcopenia. Furthermore, we found the negative impact of several social disengagements including eating alone, so-called “SOCIAL FRAILTY”, leading to subsequent sarcopenia. We developed a simple screening tool, “Frailty Check-up activity”, which elderly citizen supporters only can operate in each small gathering place (e.g. community salon) via support by its local government. **Results:** Based on the concept of all-including three pillars, 1) nutrition (i.e. dietary food intake including diversity and adequate protein intake, and treatment/maintenance against oral frailty), 2) physical activity (not only exercises but also social daily activity) and 3) social participation, the newly citizen activity “Frailty Check-up” has developed. After elderly citizen supporters received training fully, they could implement this activity completely and repeatedly in each local municipality. Elderly participants could learn how to improve/conquer by themselves with raising their self-awareness for the importance of early frailty/sarcopenia prevention and could change their behavior modification. In addition, using big data combined with pre-existing database of new-onset regarding care needs and/or all-cause mortality, we found the new cut-off point in our frailty check-up activity. **Conclusion:** We could confirm that our interdisciplinary “ACTION-RESEARCH” can raise the citizen’s early awareness and affect their behavior modification via elderly citizen supporter system for frailty prevention, consequently leading to extend healthy life expectancy.

P55- QUALITY- ADJUSTED LIFE YEARS AND FRAILTY IN OLDER CHILEANS. Cecilia Albala, Rodrigo Saguez, Carlos Márquez, Bárbara Angel, Mario Moya, Lydia Lera (*INTA, Universidad de Chile, Santiago, Chile*)

Background: Physical phenotype of frailty has been associated with quality of life deterioration and some studies have calculated cost-effectiveness of interventions on frailty in Quality-Adjusted Life years (QALYs), however studies on the direct burden of frailty expressed in QALYs lost in community dwelling older adults are scarce. **Objectives:** To forecast QALYs lost caused by frailty in older Chileans and describe health profiles as determined by EuroQoL (EQ-5D) in community-dwelling older Chileans with and without frailty. **Methods:** Cross sectional study in 630 (72,4% women, mean age 72y±6.7) community dwelling people ≥60years participants in ALEXANDROS cohorts. The frailty phenotype was defined as having ≥3 from the 5 following criteria: weak handgrip dynamometry, unintentional weight loss, fatigue/exhaustion, five chair-stands/slow walking speed and low physical activity. QoL was evaluated through EuroQoL (EQ-5D) five dimensions: mobility, self-care, usual activities, pain/discomfort and anxiety/depression and Self-rated health through EQ5-Visual analogue scale (EQ-5D-VAS). QALYs were calculated by the EQ5-D Time Trade-Off (TTO) method. To estimate life expectancies (LE), multistate methods based on the follow-up of ALEXANDROS cohorts, were employed. **Results:** Frailty was identified in 31,7% of the sample. Self-rated Health according to EQ-5D-VAS was lower in frail than non-frail people (63.9±21.2 vs 73.6±18.0, p<0,01). After adjusted Multinomial logistic regression, the EQ-5D dimensions of anxiety/depression (very depressed RRR= 6.24;95%CI:2.55-15.30, moderate RRR=4.19; 95%CI:2.42-7.23) and pain (Much pain RRR=7.89;95%CI:3.15-19.76, moderate pain RRR=2.44;95%CI:1.27-4.69) had the highest association with frailty. The valorisation of years in QALYs was lower in frail than in non-frail people (0.77±0.29 vs. 0.87±0.23 QALYs per year, p<0,05) and among those frail, much lower in people ≥80y than in the group 60-69y (0.48±0.30 vs. 0.83±0.26, p<0,05). The QALYs remaining years were lower in frail people than in non-frail: Total LE at 60-69y was 22,5y corresponding to 18,8 QALYs in frail and 20,5 QALYs in the non-frail; In the group ≥80y TLE was 8,3y corresponding to 3,98 QALYs in frail people and 6,72 in the non-frail. **Conclusion:** The high burden of frailty on QALYs, mostly related to pain and anxiety/depression makes compulsory its early detection and treatment. Its knowledge allows calculating cost-effectiveness of interventions.

P56- +ÁGILBCN: INTEGRATED CARE FOR FRAIL OLDER ADULTS WITH COGNITIVE IMPAIRMENT IN THE COMMUNITY. L. Mónica Pérez^{1,2}, Luis Soto^{1,2}, Neus Gual^{1,2}, Pamela Burbano^{1,2}, Cristina Udina^{1,2,3}, Francisco Diez⁴, M. Belén Enfedaque⁵, Marco Inzitari^{1,2,3} ((1) *Parc Sanitari Pere Virgili, Area of Intermediate Care, Barcelona, Spain;* (2) *RE-FiT Barcelona research group, Vall d'Hebrón Institute of Research, Barcelona, Spain;* (3) *Department of Medicine, Universitat Autònoma de Barcelona, Barcelona, Spain;* (4) *Primary Healthcare Center Bordeta-Magòria, Institut Català de la Salut, Barcelona, Spain;* (5) *Institut Català de la Salut, Gerencia Territorial de Barcelona de Atención Primaria, Barcelona, Spain*)

Background: + AGIL Barcelona is a real-life a multi-component intervention against frailty implemented in a primary care center, which promotes a comprehensive and coordinated approach between primary care, geriatrics teams and community resources, to detect and reverse frailty in the older adults. **Objectives:** We aimed to assess the 3-months impact on physical function of +AGIL Barcelona in community-dwelling frail older adults with cognitive impairment. **Methods:** The study population was driven from the +AGIL Barcelona program population. We included participants with cognitive impairment or dementia past history and those who performed a Minicog test < 3 points. After frailty screening by the primary care team, a geriatric team performed the comprehensive geriatric assessment. According to CGA results, a tailored and specific multidisciplinary intervention for each person was designed. The intervention could include a) multi-modal physical activity (PA) sessions, b) promotion of adherence to a Mediterranean diet c) health education and d) medication review. The physical performance was assessed at baseline and at 3-months follow-up by the Short Physical Performance Battery (SPPB) and gait speed. The pre/post intervention analysis was done by a paired sample t-test for repeated samples for continuous variables and Chi-square for categorical variables. **Results:** We included 54 participants (mean age= 82.2±5.2, 70.2% woman and 29.8% lived alone). Despite being independent in daily life, 36.8% had fallen the past year, 77.2% were vulnerable or frail according to the CSF. Physical performance was impaired: SPPB=7.29±2.5 and gait speed=0.67±0.20m/sec and 46.9% had balance impairments. After 3 months, 73.2% of participants completed >=7.5 physical activity sessions. The mean improvements were +1.15±1.27 points (p<0.001) for SPPB, +0.06±0.12 m/sec (p<0.001) for gait speed, -4.4±8.53 sec (p<0.001) for chair stand test, and 47.6% (p 0.001) improved their balance. Additionally, psychoactive treatment was withdrawn in 25.9%. **Conclusion:** According to our results, a multidisciplinary and comprehensive geriatric intervention for frail elderly people with cognitive impairment of the community improves physical function and could reverse fragility at 3 months.

P57- AWARENESS REGARDING FRAILTY AND SARCOPENIA AMONG HEALTHCARE PROFESSIONALS AT A DISTRICT GENERAL HOSPITAL IN SOUTH EAST UNITED KINGDOM. Clarence Mwelwa Patrick Chikusu, Amritha Narayanan, Joel James (*Ashford and St Peter's NHS Foundation Trust, Chertsey, UK*)

Background: Frailty and muscle strength are a critical component of walking ability and presence of these can result in high prevalence of falls. It also results in increased morbidity and mortality among the elderly. Despite sarcopenia being very common and a reversible condition in its early stage it is a frequently overlooked and undertreated geriatric syndrome A greater understanding of sarcopenia and frailty among healthcare professionals could have a dramatic impact on outcome and quality of life of the elderly. **Objectives:** This study aimed to assess the current knowledge about the concept of sarcopenia and frailty among the healthcare professionals working in an NHS District General Hospital in Surrey. **Methods:** This longitudinal study included NHS healthcare professionals (n = 50) who were asked to complete a questionnaire regarding awareness of concept, risk, diagnostic strategy and management of frailty and sarcopenia. **Results:** 63.27% of healthcare professionals stated to know the concept of sarcopenia, 20% indicated to know how to diagnose sarcopenia and 20% had seen patients with suspected sarcopenia in the last one month. Only 20 % knew the risk associated with sarcopenia. 83.33% used SARC F questionnaire as diagnostic method for sarcopenia. 100 percent of the cohort experienced bottle necks during the implementation of diagnostic strategy. Lack of awareness and time (41.76%) was the main reason for this .97.96 percent heard the term frailty and 76.16% knew that sarcopenia and frailty is not the same .77.55 percent was aware of the scoring methods for the frailty and 76.32 % used clinical frailty score as the method. 65.31% was aware of the frailty pathway but only 53.06% knew whom to contact regarding managing frailty. 57.14% heard the term comprehensive geriatric assessment. Only 24.49% was aware of key recommendations of managing frailty in the acute settings. **Conclusion:** Although concept of sarcopenia and frailty is familiar to most NHS healthcare professionals, the practical and clinical application is limited due to a lack of awareness regarding the diagnostic methodology, risks as well as time constrains. As such the benefits and potential treatment options may be overlooked and we aim to improve awareness so that these measures can improve outcomes for patients.

P58- A GERIATRIC OUTPATIENT'S CROSS-SECTIONAL STUDY: AGE AND GENDER RELATED RISK FACTORS AND COMORBIDITY WITH FRAILTY INDEX. Mahtab Alizadeh-Khoei¹, Fatemeh Sadat Mirzadeh¹, Reyhaneh Amini-roaya¹, Fati Nourhashemi² ((1) *Gerontology & Geriatric Department, Medical School, Tehran University of Medical Sciences, Ziaeeian Hospital, Tehran, Iran;* (2) *Department of Internal Medicine and Clinical Gerontology, Toulouse, France*)

Background: Frailty is a potentially reversible geriatric syndrome associated with geriatric risk factors. Detecting risk factors is a useful purpose to predict frailty levels incidence to plan for institutional or home care services. **Objectives:** The aims were finding frail and prefrailty frequency in Iranian geriatric outpatients' and determining demographics related factors and geriatric syndrome predictors on frailty levels, based on frailty Fried index. **Methods:** In this cross-sectional study 364 elderly ≥ 60 years old, selected by convenience sampling from geriatric day clinics in the area of Tehran university of medical sciences. The effect of risk factors (ADL and IADL dependency, obesity, and polypharmacy) and geriatric syndromes (falling, chronic pain, sleep problems, vertigo, vision and hearing impairments, incontinence, dementia, and depression) were evaluated on frailty Fried Index. Predictor factors by logistic regression model were analyzed, according to demographic risk factors and geriatric syndromes. **Results:** The mean age was $67/3 \pm 6/2$ years old, majority were male (62%). Prefrailty was 37.6% in men and 47.1% in women based on FI. The significant risk factors in elderly prefrail women were depression (82.1%), polypharmacy (48.3%), visual impairment (47.2%), and chronic pain (56.6%); although, in prefrail men were vertigo (57.6%), falling (52%), sleep disorder (49.5%), and incontinence (52.1%). In prefrail older adults ≥ 70 years, only sleep disorder was significant. In logistic regression model, six significant predicted factors were included depression, IADL dependency, falling, chronic pain, vertigo, and age. Depression increased the risk of prefrailty by 2.8 times, dependency in IADL increased 3.5 times; moreover, chronic pain and vertigo increased prefrailty risk about 2 times. Dependency on IADL increased the risk of frailty 5.8 times, and chronic pain and falling increased the risk of frailty about 1.65 times. By logistic regression model, 58% of prefrail outpatients elderly could be diagnosed. **Conclusion:** Geriatric syndromes in outpatients' elderly could predict prefrail more than frail elderly. In the Iranian community dwellers prevalence of prefrailty was high, so the on-time screening and outpatients' interventions can help to prevent frailty.

P59- THE FRAILTY INDEX IN OLDER WOMEN WITH GYNECOLOGICAL CANCER. Laura Orlandini¹, Tiziano Nestola¹, Giuseppe Ferdinando Colloca², Alessandro Ferrini³, Matteo Cesari^{4,5} ((1) *Azienda Servizi alla Persona Pio Albergo Trivulzio, Milano, Italy;* (2) *Dipartimento di Diagnostica per Immagini, Radioterapia Oncologica ed Ematologia, Fondazione Policlinico A. Gemelli IRCCS - Università Cattolica Sacro Cuore, Rome, Italy;* (3) *Area di Geriatria, Policlinico Universitario Campus Biomedico, Roma;* (4) *Geriatric Unit, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy;* (5) *Department of Clinical Sciences and Community Health, University of Milan, Milan, Italy*)

Background: Frailty is a key condition to be screened among elderly oncological patients. Nevertheless, the use of the Frailty Index (FI) in onco-geriatrics is still limited. **Objectives:** Aim of our work is to measure the functional and prognostic value for 1-year mortality of the Frailty Index (FI) in a cohort of older women with gynecological cancer. **Methods:** The prognostic value of FI was tested in 200 older women with gynecological cancer (mean age = 73.5 years). FI was retrospectively calculated following the Rockwood model[1]. Spearman's rho test was used for correlations with other oncological scales: Eastern Cooperative Oncology Group Performance Status (ECOG); Karnofsky Performance Status (KPS); Vulnerable Elders Scale-13 (VES-13). Cox proportional hazard models and ROC curve were performed to estimate prognostic role of 1-year mortality. Sensitivity and specificity were also calculated. **Results:** FI is normally distributed and descriptive statistics define our population as frail (mean = 0.25 ± 0.11 , range 0.08-0.51). 0.7 is confirmed as an upper limit compatible with life. FI doesn't significantly correlates with age, ECOG and KPS while it positively correlates with VES-13 ($r=0.7$, $p < .01$). FI is the strongest predictor for 1-year mortality confirmed after all adjustments for confounders (OR 3.40; 95% CI 1.55-7.45, $p < .01$) and by ROC curve analyses (0.66, 95% CI 0.51-0.81, $p=.01$). **Conclusion:** Frailty Index is a useful tool to detect vulnerability in onco-geriatrics and it predicts 1-year mortality. It predicts negative health-related outcomes (mortality) better than other traditional scales. Its adoption may support a more efficient identification of patients in the need of adapted and personalized care. Further studies are needed to confirm and extend these findings.

P60- PREDICTORS OF FRIED FRAILTY PHENOTYPE IN A SAMPLE OF A PORTUGUESE COMMUNITY-DWELLING OLDEST OLD INDIVIDUALS. Sara Alves^{1,2}, Oscar Ribeiro^{2,3}, Constança Paúl^{1,2} ((1) *Instituto de Ciências Biomédicas Abel Salazar (ICBAS.UP), University of Porto, Porto, Portugal;* (2) *CINTESIS - Centro de Investigação em Tecnologias e Serviços de Saúde;* (3) *Departamento de Educação e Psicologia da Universidade de Aveiro (DEP.UA), University of Aveiro, Aveiro, Portugal*)

Background: Frailty has been studied in the old population due to its association with negative outcomes but more

information is needed about frailty in very old samples. The Fried Frailty Phenotype (FFP) has been widely used and includes a set of objective indicators: weakness, slowness, unintentional weight loss, exhaustion and low physical activity. **Objectives:** To determine which sociodemographic, functional and health-related variables predict FFP in a sample of community-dwelling individuals aged 80+yrs. **Methods:** Data from 142 individuals living in the Metropolitan Area of Porto were considered: sociodemographic information (age, sex, education level, living status), FFP (0-5), functionality (basic and instrumental activities of daily living), health information (nr. medicines, nr diseases, nr. falls, cognitive impairment, and self-perception of health). Descriptive and correlational analysis were conducted and followed by a linear regression analysis (stepwise method) of variables significantly associated with FFP. **Results:** Participants' mean age was 88.1 years (SD=5.3), they were mainly women (73.9%), with 1-4 years of education (52.8%) and living with a relative (63.4%). High disability levels were found both for basic and instrumental activities of daily living. The mean of medicines intake was 6.8 (SD=3.5) and of diseases 6.4 (SD=2.1); 41.1% of the participants rated their health as poor. The median number of falls in the last year was 1 (IQR=2). Participants scored on average 19.4 points (SD=6.4) in MMSE. Gender or age were not associated with FFP. Basic and instrumental activities of daily living, self-perception of health and cognitive performance significantly predicted FFP. In the adjusted model (R²=0.311), the stronger predictor was the higher dependency for basic activities of daily living, followed by worst self-perception of health and lower scores of cognitive performance. The dependency for instrumental activities of daily living lost its significance in the adjusted model. **Conclusion:** Our results identify three main predictors of FFP (basic activities of daily living, self-perception of health, and cognitive performance) in participants with advanced age. These results provide relevant information for further understanding of frailty and the FFP among the oldest old.

P61- RISK FACTORS AND SCREENING TOOLS TO PREDICT 90-DAY MORTALITY, REHOSPITALIZATION AND FUNCTIONAL DECLINE IN A HOSPITAL GERIATRIC UNIT. Renato Gorga Bandeira de Mello, Vitor Pelegrim de Oliveira Roman Orzechowski, Ana Clara Guerreiro, Felipe Luiz Rengel Siedschlag, Thadeu Jairo Guerra Silva, Jane Elizabeth Malheiros de Souza, Andry Fiterman Costa, Roberta Rigo Dalacorte, Emilio Hideyuki Moriuguchi, Ana Claudia Tonelli (Hospital de Clinicas de Porto Alegre, Internal Medicine Division, Geriatric Unit. Federal University of Rio Grande do Sul (UFRGS), Porto Alegre, Brazil)

Background: Unplanned hospital readmissions are associated with poorer prognosis and increased risk of functional decline and dependence in older people. Identifying major risk factors and assessing clinical risk scores can help to distinguish patients at risk of worse outcomes and rehospitalization, allowing the proposal of preventive measures.

Objectives: The aim of this study was to compare the accuracy of different instruments and risk factors in predicting readmission, functional decline and death in hospitalized older patients in a Brazilian Geriatric Unit. **Methods:** In a cohort study performed at a Geriatric Unit, 198 patients, 65 years old or over were included. Demographic data, Functional Status, Prisma 7 Scale, Geriatric Depression Scale, Mini Mental State Examination, Timed Get Up and Go Test, Gait Speed, Mini Nutritional Assessment, Palmar Prehension Strength, Charlson Comorbidities Index, Frailty Score of The Cardiovascular Health Study and the Senior Index Risk for Rehospitalization were assessed at study admission. All patients received a follow-up telephone call at 90 days after discharge to assess potential readmissions, deaths and functional status. **Results:** Mean age was 79.1 years (SD +- 8.63) and the mean Barthel ADL Score was 71.43 (SD +- 33.0). Altered Barthel (5.39; CI95% 2.6-11.4; p<0.001), CHS score (11.57; CI95% 1.5-87.4; p<0.001), ISAR-HP (3.27; CI95% 1.1-9.9; p=0.02), TGUG (7.85; CI95% 1.8-34.1; p<0.001), Palmar Prehension (3.84; CI95% 1.3-11.3; p=0.01) and Gait Speed (2.94; CI95% 1.6-6.9; p=0.01) were associated with higher mortality 90 days after discharge. The risk of Functional Decline at 3-month follow up evaluation was higher in patients with altered Barthel (4.62; CI95% 1.54-13.9; p<0.001), Lawton (5.66; IC95% 1.3-25.2; p=0.01), CHS score (4.6; CI95% 1.9-11.0; p<0.001), ISAR-HP (3.88; CI95% 1.8-8.4; p<0.01), Prisma 7 (2.23; CI95% 1.2-4.3; p=0.02), TGUG (5.22; CI95% 2.36-11.55; p<0.001), Palmar Prehension (3.49; CI95% 1.7-7.0; p<0.01) and Gait Speed (1.98; CI95% 1.13.7; p=0.03). **Conclusion:** Altered IADL, Frailty CHS score, ISAR, TGUG, Palmar Prehension Strength and Gait Speed are predictive of functional decline and mortality 90 days after hospital discharge. These tools can be useful to pinpoint frailty in older patients, allowing the implementation of preventive interventions to avoid functional decline. More research is needed to evaluate the role of these tools in predicting rehospitalization.

P62- ANAESTHESIA GERIATRIC EVALUATION (AGE) TO GUIDE PATIENT SELECTION FOR PREOPERATIVE MULTI-DISCIPLINARY TEAM CARE IN CARDIAC SURGERY. Lisa Verwijmeren¹, Linda M Peelen^{2,3}, Wilton A van Klei³, Edgar J Daeter⁴, Eric PA van Dongen¹, Peter G Noordzij¹ ((1) Department of Anaesthesiology, Intensive Care, and Pain Medicine, St. Antonius Hospital, Nieuwegein, The Netherlands; (2) Department of Epidemiology, Julius Centre for Health Sciences and Primary Care, University Medical Centre Utrecht, Utrecht University, Utrecht, The Netherlands; (3) Department of Anesthesiology, Intensive Care and Emergency Medicine, University Medical Centre Utrecht, Utrecht University, Utrecht, The Netherlands; (4) Department of cardiothoracic surgery, St. Antonius Hospital, Nieuwegein, The Netherlands)

Background: A multi-disciplinary approach to improve postoperative outcomes in frail elderly patients is gaining interest. Multi-disciplinary team care should be targeted at complex patients at high risk for adverse postoperative outcome

to limit the strain on available resources and prevent an unnecessary increase in patient burden. **Objectives:** This study aimed to improve patient selection for multi-disciplinary care by identifying risk factors for disability after cardiac surgery in elderly patients. **Methods:** Two-centre prospective cohort study in 537 patients aged ≥ 70 years undergoing elective cardiac surgery. Before surgery 11 frailty characteristics were investigated. Outcome was disability at three months defined as World Health Organisation Disability Assessment Schedule 2.0 $\geq 25\%$. Multivariable modelling using logistic regression, concordance statistic (c-statistic), and net reclassification index were used to identify factors contributing patient selection. **Results:** Disability occurred in 91 (17%) patients. Ten out of 11 frailty characteristics were associated with disability. A multivariable model including EuroSCORE II and preoperative haemoglobin yielded a c-statistic of 0.71 (95% CI 0.66 – 0.77). After adding prespecified frailty characteristics (polypharmacy, gait speed, physical disability, preoperative health related quality of life, and living alone) to this model the c-statistic improved to 0.78 (95% CI 0.73 – 0.83). Net reclassification index was 0.32 ($p < 0.001$) showing improved discrimination for patients at risk for disability at three months. **Conclusion:** Using preoperative frailty characteristics improves discrimination between elderly patients with and without disability at three months after cardiac surgery and can be used to guide patient selection for preoperative multi-disciplinary team care.

P63- PHYSICAL FRAILTY AND FUNCTIONAL DEPENDENCE AS PREDICTORS OF ADVERSE EVENTS IN HOSPITALIZED OLDER ADULTS WITH HIP FRACTURES IN THE ORTHOGERIATRIC UNIT OF A GENERAL HOSPITAL IN LIMA, PERU.

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Background: Frailty is increasingly recognized as a risk assessment to detect vulnerability and complexity. Currently, there are limited tools to predict adverse perioperative outcomes for the geriatric population with hip fracture. **Objectives:** To determine Frailty and functional dependence as predictors of intrahospital adverse events in hospitalized older adults with hip fractures in the Orthogeriatric Unit of a General Hospital in Lima, Peru. **Methods:** We conducted a prospective cohort involving 218 patients aged 60 years or older who were admitted to the Orthogeriatric Unit with hip fracture from June 2017 to June 2019. Data were obtained at the time of admission to our unit: Frailty was assessed with the FRAIL scale, function ability with the Barthel scale, cognition with the Short Portable Mental State Questionnaire (SPMSQ) scale of Pfeiffer, comorbidities, socio-family assessment and geriatric syndromes. Patients were followed up to discharge, and adverse events were evaluated during this period. Univariate models were performed, and logistic regression was done subsequently.

Results: 218 patients with hip fractures were evaluated, the mean age was 80.4 (8.9) years, 73.8% (161) were women and 2.7% (6) came from nursing homes. Hypertension was the most frequent comorbidity in 41.2% (90). 56% (122) had a history of functional dependence on basic activities of daily living (ABVD), 54% (104) had some degree of cognitive impairment, 13.7% (30) had social problems, polypharmacy in 21.5% (47) and 43.8% (139) history of falls in the last year. According to FRAIL scale, 18.3% ($n = 40$) were robust, 29.3% ($n = 64$) were pre-frail and 52.3% were frail ($n = 114$). 31.8% (69) had an adverse event while hospitalized (pneumonia, UTI, delirium, acute renal injury, PET), of whom 15% (6) were robust, 31.2% (20) pre-frail and 38% (43) frail ($p = 0.02$). 73.9% of patients with functional dependence on ABVD presented adverse events. In the multivariate analysis, the factors associated with in-hospital adverse events were functional dependence in ABVD, OR: 2.72, (CI: 1.3-5.7); frailty with an OR: 1.51 IC (0.5-4.5) and social problem, OR: 2.72 IC (1.1-6.2). **Conclusion:** Older adult patients hospitalized for hip fracture who had frailty, functional dependence, and social problems had significant adverse events at a general hospital in Lima, Peru.

P64- THE RISK FACTORS OF SOCIAL FRAILTY IN COMMUNITY-DWELLING JAPANESE OLDER ADULTS.

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Background: Social frailty was associated with age, sex, income, education, marital status, and household status. However, the risk factors of social frailty relatively less investigated. **Objectives:** The aim of this study is to clarify the risk factors of social frailty in community-dwelling Japanese elderly. **Methods:** A health promotion project (Nagoya-TENG Project) is designed to distribute health promotion programs including enhancement of nutrition and physical activity via cable TV channel for community-dwelling elders. Of all participants ($N=926$), 500 participants with complete baseline information (mean age 75.0 ± 5.9 years, 242 men (46.9%)) were included in our cross-sectional analysis. At baseline, demographic data, socio-economic status, Geriatric depression scale (GDS-15), Japanese version of European Health Literacy Survey Questionnaire (J-HLS-EU-Q47) were obtained. Social frailty was defined by household status (living alone or not), financial difficulty, social activity, and fulfilment of social needs. Total deficit scores of 2 or more were defined as social frailty, 1 as social pre-frailty, and 0 as robustness. **Results:** A total of 234 (46.8%), 172 (34.4%), and 94 (18.8%) of all participants were categorized as social non-frailty, pre-frailty and social frailty, respectively. In multivariable logistic regression model after adjusting for age, sex, BMI,

and education level, living without a spouse is a significant risk factor ($p < 0.001$) for social pre-frailty (OR 2.95, 95% CI 1.78-4.88) and social frailty (OR 4.31, 95% CI 2.25-8.22). Low GDS-15 scores were associated with high risk of social pre-frailty (OR 1.16, 95% CI 1.07-1.26) and social frailty (OR 1.43, 95% CI 1.30-1.57). In addition, health literacy was inversely associated with social frailty (OR 0.92, 95% CI 0.88-0.96). Age, sex, and education level were not associated with social frailty. **Conclusion:** Regardless of age and sex, living with a spouse and depression which is associated with activity of daily living and quality of life are associated with social frailty. Low health literacy is also a risk factor of social frailty. In literature, loneliness and social frailty were associated with functional decline and mortality in the elderly. Future approaches incorporating health literacy interventions are warranted to prevent social frailty in the aged society with increasing number of physical frail older adults.

P65- PREOPERATIVE FRAILITY AND ONE YEAR FUNCTIONAL RECOVERY OF ELDERLY CARDIAC SURGERY PATIENTS: AN OBSERVATIONAL PROSPECTIVE COHORT STUDY. Lisa Verwijmeren¹, Peter G. Noordzij¹, Edgar J. Daeter², Marielle H. Emmelot-Vonk³, Wilton A. van Klei⁴, Eric P.A. van Dongen¹ ((1) Department of Anaesthesiology, Intensive Care, and Pain Medicine, St. Antonius Hospital, Nieuwegein, The Netherlands; (2) Department of cardiothoracic surgery, St. Antonius Hospital, Nieuwegein, The Netherlands; (3) Department of Geriatric Medicine, University Medical Center Utrecht, Utrecht University, Utrecht, The Netherlands; (4) Department of Anaesthesiology, Intensive Care and Emergency Medicine, University Medical Centre Utrecht, Utrecht University, Utrecht, The Netherlands)

Background: Frailty increases the risk for morbidity and mortality after cardiac surgery. The influence of frailty on postsurgical functional outcomes is largely unknown. **Objectives:** The aim of this research was to study the association of preoperative frailty characteristics on adverse functional outcomes and to investigate the trajectory of functional recovery among frail and non-frail elderly patients up to one year after elective cardiac surgery. **Methods:** A prospective two-centre observational cohort study in 555 elective cardiac surgery patients aged ≥ 70 years. Pre-anaesthesia assessment was supplemented with 11 frailty tests covering the physical, mental, and social domain. Functional outcomes were assessed at one year and included change in health related quality of life (HRQL) measured by the Short Form 36 and disability measured by the World Health Organisation Disability Assessment Schedule 2.0. Adverse functional outcome was considered when worse physical or mental HRQL or disability was present after surgery. **Results:** Frailty characteristics were present in 468 (86%) patients of whom 406 (73%), 214 (39%) and 231 (42%) showed frailty in the physical, mental or social domain respectively. Adverse functional outcome at one year after surgery occurred in 257 (46%) patients. Patients with an adverse functional outcome

were more often frail (92 (36%)) than patients without an adverse functional outcome (47 (16%) $p < 0.001$). Worse physical or mental HRQL occurred in 134 (24%) and 141 (25%) patients respectively. The most important frailty characteristic associated with worse physical HRQL was high preoperative physical HRQL (β -0.56 per point (95% CI -0.7 to -0.5)). Preoperative mental HRQL showed the strongest associations for worse mental HRQL (β -0.55 per point (95% CI -0.7 to -0.4)). Disability was reported by 120 (22%) patients and associated with preoperative polypharmacy, gait speed, health related quality of life, living alone or dependent living. Gait speed had the strongest association (β 2.2 per second (95% CI 1.6 to 2.8)). **Conclusion:** Preoperative frailty characteristics were common and predictive for adverse functional outcome one year after cardiac surgery. Frailty screening can be used to improve risk stratification and decision making in older cardiac surgery patients.

P66- THE IMPORTANCE OF SENSORY FRAILITY IN A POPULATION BASED SAMPLE IN ENGLAND. SE Lamb, SA Arnadottir, J Bruce, R Lall, EJ Withers, M Underwood, A Hossain, Pre-FIT Study Group (*Institute of Health Research, College of Medicine and Health, University of Exeter, Exeter, United Kingdom; Department of Physical Therapy, Faculty of Medicine, University of Iceland, Reykjavik, Iceland; Warwick Clinical Trials Unit, Warwick Medical School, University of Warwick, Coventry, UK; Institute of Statistical Research and Training (ISRT), University of Dhaka, Dhaka, Bangladesh*)

Background: Frailty Frailty has many elements and these can be characterised as physical, nutritive (including body composition), cognitive and sensory (including hearing and seeing). The relative prevalence and importance of these elements are not known. **Objectives:** To estimate the prevalence of frailty and relative contribution of physical/balance, nutritive, cognitive and sensory frailty to important adverse health states (falls, physical activity levels, outdoor mobility, problems in self-care or usual activities, and lack of energy or accomplishment) in an English cohort. **Methods:** Analysis of 9803 community-dwelling older people. The sample was drawn from a random selection of all people aged 70 or more registered with 63 general practices across England. Data were collected by postal questionnaire. Frailty was measured with the Strawbridge questionnaire. We used cross sectional, multivariate logistic regression to estimate the association between frailty domains and adverse health outcomes. Some models were stratified by sex and age. **Results:** Mean age of participants was 78 years (sd 5.7), range 70 to 101 and 47.5% (4653/9803) were men. The prevalence of overall frailty was 20.7% (2005/9671) and there was no difference in prevalence by sex (Odds Ratio 0.98; 95% Confidence Interval 0.89 to 1.08). Sensory frailty was the most common and this was reported by more men (1823/4586) than women (1469/5056; Odds Ratio for sensory frailty 0.62, 95% Confidence Interval 0.57 to 0.68). Men were less likely than women to have physical or nutritive frailty. Physical

frailty had the strongest independent associations with adverse health states. However, sensory frailty was independently associated with falls, less frequent walking, problems in self-care and usual activities, lack of energy and accomplishment. **Conclusion:** Physical frailty was more strongly associated with adverse health states, but sensory frailty was much more common. The health gain from intervention for sensory frailty in England is likely to be substantial, particularly for older men. Sensory frailty should be explored further as an important target of intervention to improve health outcomes for older people both at clinical and population level.

P67- ECARE: IN SEARCH OF THE REAL UNMET NEEDS TO REACH FRAILTY MANAGEMENT IN OLD ADULTS. Laura Sánchez, Patricia Martínez (*Jagger, Madrid, Spain*)

Background: It live independently. Our goal is to encourage independent living, wellbeing and to relieve health and care services budget pressure. Longevity is one of the biggest achievements of modern societies. By 2020, a quarter of Europeans will be over 60 years of age. Combined with low birth rates, this will bring about significant changes to the structure of European society, which will impact on our economy, social security and health care systems. The most problematic expression of population ageing is the clinical condition of frailty. Frailty develops because of age-related decline in multiple physiological systems. It is estimated that a quarter to a half of people over 85 years are frail, and this is set to reach epidemic proportions over the next few decades. While frailty increases, the average amount of health spending increases as well with the frailty level in a range from 1,500 to 5,000 €/person year, depending upon the frailty status and the setting of care. Frailty usually comes along associated with another risk factor; loneliness. Then, ageing, frailty and loneliness constitute overlapping conditions submitted to multiple health and care interventions. eCARE project aims to deliver disruptive digital solutions for the prevention and comprehensive management of frailty to encourage independent living, wellbeing and to relieve health and care services budget pressure, throughout the implementation of a Pre-Commercial Procurement scheme. Pre-commercial procurement is an ideal framework for the delivery of innovative solutions. The eCARE network of procurers and the service providers are often on the frontline as new needs emerge. This PCP will allow the procurers to voice out their unmet needs, create a new demand to access sustainable products of higher quality, and develop new applications with lower life cycle costs. The demand and the supply side will work together to co-create and co-design the solutions and validate their functionalities against the specific challenges outlined in the PCP call for tender. This will clearly maximize the engagement of innovation in health and care services. Solutions should improve outcomes for frailty in old adults entailing the physical and the psychosocial factors. The target group are the pre-frail/frail old adults with emphasis on those that feel lonely and/or isolated. The project will procure the development, testing and implementation of digital

tools/services and communication concepts to facilitate the transition to integrated care models across health and social services and country-specific cross-institutional set-ups, including decentralised procurement environments and collaboration across institutions. **Objectives:** The Project objectives are: • Newly development easy-to-use and reliable solutions that facilitate early detection of frailty based on the most efficient standards and methods. • Improve the understanding of the factors affecting frailty and the feelings of loneliness and isolation, and how they do correlate (e.g.: gender dimension, social context, etc.). • Deliver personalised intervention plans taking into account the end-user societal context. • Innovative and meaningful means to tackle the feelings of loneliness and isolation. • New approaches to engage patients as active self-managers of their own health. • New technology developments designed and oriented to the target end-user. • And among all, investigate to deliver cost-efficient solutions, affordable to the payers involved. **Methods:** eCARE procurers will proactively organize the requirements of the demand for care solutions in a coherent way. The procurers (buyers' group) will assess the solution adequacy to the targets. The preferred partners will contribute with solid knowledge of innovative procurement paths to the innovation procurement tender. The project partners will do this by: • Providing a solid and informed base for dialogue between stakeholders by determining a coherent picture of the market state of the art of the sector based on practical experience of customers and suppliers. • Enabling a genuine and credible dialogue between the supply-chain and customers to determine the practical policy and procurement actions required to deliver the eCARE solutions. • Defining the common unmet needs, communicating these to stakeholders and initiating a mobilization plan for a PCP addressing eCARE needs. The PCP may be summarized in a series of actions: • Convey the relevance of innovation procurement to public procurers: Encouraging suppliers to offer novel solutions to address eCARE challenges rather than the lowest price solutions. • Analyze the state of the art of the market with all potential suppliers, as well as the main problematic and barriers faced in the sector and that need to be overcome A set of actions involving both the supply and demand sides will be carried out: a coordinated first analysis of the state of the art conducted by all project members followed by a coordinated market sounding through all dissemination channels managed by the consortium will be undertaken to spread project results aiming to receive feedback from all key market players. For this, the role of procurers is vital to replicate and stretch the impact of the project. • Providing public procurers with procurement know-how to improve public sector procurement efficiency and increase public sector market power by giving support to apply the methodologies of innovation procurement. Market sounding will provide an opportunity for engagement and two-way dialogue with innovative companies that can offer solutions and guidance on how to overcome the procurement barriers. • Launching an agreed, realistic and validated joint PCP tender. **Results:** the eCare Consortium is immerse in a deep process of unmet needs detection. Our goal is to be extraordinarily concrete when

defining what the end users and the healthcare professionals are willing for. Those unmet needs will be critical for the definition of the requirements and uses cases that the IT suppliers will have to follow to design the ICT solutions. Then... what a better way to know their needs than asking them personally? The vision of providing tailored fit solutions and tools to the end users led to the consensus in creating and facilitating focus group sessions across the 4 procurers regions – Campania (Italy), Barcelona (Spain), Santander (Spain) and Wrocław (Poland)-. These sessions will be involving end users, health and social care professionals, and IT internal Departments of the procurers' organisations. - The Focus Group script for the end users sessions integrates as main topics the specific condition and related symptoms; experiences of services and care provided; experiences of managing condition when progressing rapidly ; needs for symptom management and how these can be met ; integration of IT supportive tools in the management of Frailty and Loneliness. - The professionals are invited to reflect and discuss the topics of common symptoms and actual care model; experiences of monitoring elderly when condition is progressing rapidly; views about the supportive care needs of elderly and caregivers; early integration of the new care in the management of Frailty and Loneliness; integration of IT supportive tools in the management of Frailty and Loneliness. - The identified and proposed topics for the IT staff would be the state of the art of the relation in between IT and social/healthcare; state of the art of interventions on Frailty and Loneliness. All the four procurers were challenged to organize, at least, 3 focus sessions, one with each specific target group. So far, all the procurers already organized and scheduled the sessions that will occur until the end of January. In terms of impact, 119 participants are expected to be involved (56 end users, 42 healthcare professionals and 21 IT people). All the representative of the procurers reported so far that the participants have been considering the sessions so interesting and useful. In fact, new topics have been put in the table for discussion in all the different sessions, adding more important information for the definition of the unmet needs. The journey of the project so far has been providing very powerful insights and evidences that people and professionals appreciate to be involved and e(motionally) CAREd. **Conclusion:** eCARE will progress beyond the state of the art by approaching older people not just in terms of their diseases but also in terms of physical, cognitive and psychosocial care and support to prevent functional decline, frailty and disability. The project key components to address frailty are those that define also integrated care, with the addition of targeting high risk frail individuals, an enablement attitude and a focus on outcomes most relevant to frail individuals and their caregivers. For these, a multimodal comprehensive system able to provide the most effective care will need to be provided.

P68- FRAILTY IN OLDER PERSONS WITH IDIOPATHIC NORMAL PRESSURE HYDROCEPHALUS UNDERGOING CEREBROSPINAL FLUID REMOVAL PROCEDURE. M. Clerici¹, D. Consonni², B. Cerasoli¹, P. Iannuzzi¹, M. Cesari^{3,4}, P. Rossi³ ((1) *Specialization School in Geriatrics and Gerontology, University of Milan, Italy;* (2) *Department of Clinical Sciences and Community Health, University of Milan, Milan, Italy;* (3) *Geriatric Unit, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy;* (4) *Unit of Epidemiology, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy*)

Background: Idiopathic normal pressure hydrocephalus (iNPH) is a neurological disease, particularly prevalent in older people, characterized by urinary symptoms, gait disturbance, and cognitive impairment [1, 2]. The only effective treatment for iNPH is the surgical shunt intervention, but scarce data about the efficacy are available for older persons [3, 4]. It has been reported that repetitive cerebrospinal fluid (CSF) tap test might improve clinical and functional impairment in older persons with iNPH [1, 5, 6]. Frailty is defined as a state of increased vulnerability, resulting in the diminished ability to resist and recover from stressors [7]. The so-called Frailty Index (FI) represents a model of frailty based on the theory that health deficits tend to accumulate with aging, gradually destabilizing the individual's homeostasis [8]. **Objectives:** The purpose of this study was to investigate the relationship between FI and the duration of benefits from tap test in older persons with iNPH. **Methods:** A total of 48 iNPH patients were enrolled. The FI was computed according to the standardization criteria provided by Searle and colleagues [9], taking into consideration 46 items. Tap test benefits and their duration were evaluated on the basis of the Mini-Mental Status Examination (MMSE), Time Up and Go (TUG), Tinetti Scale, and Barthel Index evolution over time. A linear regression model was used to analyze the relationship between FI and the duration of clinical benefit after tap test. **Results:** Fourteen patients (29.2%) showed no benefit from the procedure and were excluded from the study as non-responders, while 34 (70.8%) showed clinical improvements. The FI mean was 0.40 (SD= 0.10) in the non-responder group, and 0.38 (SD= 0.99) in the responder group (p-value: 0.56). Linear regression analysis showed that the FI was significantly associated with the duration of clinical benefit after tap test (b: -0.262, 95% CI -0.499, -0.024; R²: 0.19, P = 0.032). **Conclusion:** This study demonstrates that the FI may have clinical relevance for judging the benefit after CSF tap test. Among responders to the tap test, those with higher FI at the baseline tend to have a shorter duration of clinical benefits, as demonstrated by rapid worsening of MMSE, TUG, Tinetti Scale and Barthel Index. iNPH patients with frailty may need a narrower time-window between tap tests.

P69- DESIGN AND DEVELOPMENT OF A NEW MODEL FOR THE ASSESSMENT AND SUPPORT OF FUNCTIONALITY IN COMMUNITY-DWELLING OLDER PEOPLE.

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Background: Maintaining autonomy as life progresses has become a challenge for the health systems. This objective can only be achieved by moving the axis of health policies and health care practice from the disease to the preservation of functional capacity. **Objectives:** The aim of this study is to design and pilot a model for the assessment and support of functionality for community dwelling older people. **Methods:** A space in which nurse and social worker jointly assess the functional capacity of older people and identify and provide responses to the detected deficits was proposed. This study was performed in OSI Donostialdea (Gipuzkoa, Spain). Three main tasks were carried out: 1. Definition of the joint assessment procedure of functionality. 2. Identification of the existing resources and community assets to give answer to the identified needs. 3. Piloting the model in a sample of older people. The identified needs and the availability of resources to respond to them were obtained from the pilot phase. **Results:** In the initial version of this integral assessment were included, functional capacity, physical activity, cognitive capacity, sense organs, nutritional status, social assessment and housing and environmental conditions. A total of 49 individuals (69% women; mean age 82 years, SD=5.8; Barthel index, mean 97.0, SD=4.2; 47% living alone; 76% without cognitive impairment) were recruited during the pilot. The following needs were identified: personalized workout routines, fine motor skill exercises, visual and efficient diets adjusted to each patient, make sure resources reach the community, promote the use and design of gadgets to assist the needs of basic and instrumental activities of daily living, improve strategies to prevent cognitive function impairment, ease loneliness and avoid or minimize physical and environmental barriers to access home, to walk the streets and, particularly, to use public transport. There were no resources available for all the identified needs. **Conclusion:** This study will allow the development of a model for the integral assessment of functionality for the aged population,

based in a multidisciplinary team, a space and a new way of working in primary care.

P70- IDENTIFICATION OF CLUSTERS OF CHRONIC DISEASES IN FUNCTIONALLY INDEPENDENT ROBUST AND FRAIL INDIVIDUALS.

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Background: Multimorbidity and frailty are often present in older people and are found to be associated to increased risk of adverse health events. It is necessary to improve the knowledge of the characteristics of such populations to design adequate clinical guidelines seeking to avoid or delay the onset of dependence. **Objectives:** The aim of this study was to identify clusters of chronic diseases in robust and frail individuals and compare sociodemographic and health characteristics between these clusters. **Methods:** This was a cross-sectional study based on data from two longitudinal studies. The sample was composed of functionally independent community-dwelling older people with multimorbidity living in Gipuzkoa (Basque Country, Spain). Information from electronic health records (diagnose diseases and medication) and a baseline assessment (sociodemographic characteristics, functional status, self-perceived health, cognitive status, sight and hearing impairments, history of falls and nutritional status) was used in the analysis. The Timed Up and Go test of physical performance was included as a measure of frailty. Multiple correspondence and cluster analyses were performed to identify groups. **Results:** The study population consisted of 813 individuals (55.1% women; mean age 77.4 years, SD=5.0). Frail individuals (n=244) were older, had a lower educational level and a poorer health status than robust individuals (n=569). Three clusters were obtained in robust (RC1, n=348; RC2, n=139 and RC3, n=82) and four among the frail individuals (FC1, n=164; FC2, n=23; FC3, n=44 and FC4, n=13). In RC1 and FC1, none of the chronic diseases had a higher prevalence than in RC2-RC3 and FC2-FC3-FC4, respectively. Individuals pertaining to RC2 and FC2 presented more frequently diseases related to mobility limitation or limb pain compare to the other clusters. Higher rates of cardiovascular diseases and risk factors were seen in RC3 and FC3. In frail individuals a new cluster emerged, FC4, containing individuals with higher rates of cognitive and eye problems and a clearly poorer health status. **Conclusion:** The findings obtained in this exploratory study may provide insight for the designing of more specific health

interventions for older patients with multimorbidity, even though the chronic diseases cluster identified were similar in robust and frail individuals.

P71- FEASIBILITY OF A HABIT FORMATION INTERVENTION TO DELAY FRAILTY PROGRESSION AMONG OLDER AFRICAN AMERICANS. Heather Fritz, Malcolm Cutchin, Yi-Ling Hu (*Wayne State University, Detroit USA*)

Background: Older African Americans (OAA) are at high risk for becoming frail in later life. Interventions can reverse or delay frailty, yet OAA have largely been excluded from frailty intervention research. Many interventions are also time and resource intensive, making them inaccessible to socially disadvantaged OAA. **Objectives:** We present results of a feasibility trial of a low dose frailty prevention intervention among 60 community- dwelling, pre-frail OAA aged 55+ recruited from a primary care clinic between June 1st and October 31st 2018. **Methods:** Using a 2-arm RCT, participants were assigned to the intervention, which was delivered by an occupational therapist (OT) and comprised of four sessions over four months (an OT evaluation, and sessions on healthy dietary practices, increasing physical activity, and maintaining a healthy lifestyle), or enhanced usual care (publicly available information about healthy lifestyle, home safety, and local elder services). Feasibility criteria were set a priori at 75% for participant retention (including attrition due to death/hospitalization), 80% for session engagement, 2 participants/week for mean participant accrual, and 90% for program satisfaction. **Results:** Participants were 65% female with an average age of 76.58 years, 51.67% of which lived alone and 51.67% lived off of less than 15K per year. Feasibility metrics were met. The study recruited 2.5 participants per week and retained 75% of participants who attended 95% of scheduled sessions. Mean satisfaction scores were 93%. The treatment also resulted in positive trends in the expected direction in the treatment group for the following outcomes (d = effect size): Global health (d = .45), mental health (d = .26), QOL (d = .18), social functioning (d = .68), depression (d = .24), and pain reduction (d = .43). Descriptively, treatment group participants were also less likely to experience a progression (deterioration) in three frailty status indicators at 4-months compared to controls: Weight lost, walking speed slowness, and grip strength weakness. **Conclusion:** The intervention was feasible to deliver. Qualitative findings from exit interviews suggested changes to the program dose, structure, and content that could improve it for future use.

P72- AUGMENTED EXERCISE IN HOSPITAL IMPROVES PHYSICAL PERFORMANCE AND REDUCES NEGATIVE POST HOSPITALIZATION EVENTS: A RANDOMIZED CONTROLLED TRIAL.

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Background: It is well known that frail patients are potentially most at risk of functional decline following a hospital admission. **Objectives:** To measure the effects of an augmented prescribed exercise programme versus usual care, on physical performance, quality of life and healthcare utilisation for frail older medical patients in the acute setting. **Methods:** This was a parallel single-blinded randomised controlled trial. Within two days of admission, older medical inpatients with an anticipated length of stay ≥ 3 days, needing assistance/aid to walk, were blindly randomly allocated to the intervention or control group. Until discharge, both groups received twice daily, Monday-to-Friday half-hour assisted exercises, assisted by a staff physiotherapist. The intervention group completed tailored strengthening and balance exercises; the control group performed stretching and relaxation exercises. Length of stay was the primary outcome measure. Blindly assessed secondary measures included readmissions within three months, and physical performance (Short Physical Performance Battery) and quality of life (EuroQOL-5D-5L) at discharge and at three months. Time-to-event analysis was used to measure differences in length of stay, and regression models were used to measure differences in physical performance, quality of life, adverse events (falls, deaths) and negative events (prolonged hospitalisation, institutionalisation). **Results:** Of the 199 patients allocated, 190 patients' (aged 80 ± 7.5 years) data were analysed. Groups were comparable at baseline. In intention-to-treat analysis, length of stay did not differ between groups (HR 1.09 (95% CI, 0.77-1.56) $p=0.6$). Physical performance was better in the intervention group at discharge (difference 0.88 (95% CI, 0.20-1.57) $p=0.01$), but lost at follow-up (difference 0.45 (95% CI, -0.43 – 1.33) $p=0.3$). An improvement in quality of life was detected at follow-up in the intervention group (difference 0.28 (95% CI, 0.9 – 0.47) $p=0.004$). Overall, fewer negative events occurred in the intervention group (OR 0.46 (95% CI 0.23 – 0.92) $p=0.03$). **Conclusion:** Improvements in physical performance, quality of life and fewer negative events suggest that this intervention is of value to frail medical inpatients. Its effect on length of stay remains unclear.

P73- THE LORRAINE FRAILITY-PROFILING SCREENING SCALE AS A FIRST-STEP TOOL TO DETECT SPECIFIC FRAILITY PROFILES.

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Background: To propose a simple frailty screening tool able to highlight frailty profiles, already since the initial screening phase. **Methods:** A 9-item questionnaire (Lorraine Frailty Profiling Screening Scale, LoFProSS), constructed by an experts' working group, was administered by health professionals to participants >70 years old (N=817) and living at home, in 3 different clinical settings: a primary care outpatient clinic (RURAL population, N=591), a geriatric day clinic (DAY-CLINIC population, N=76) and healthy volunteers (URBAN population, N=147). A Multiple Correspondence Analysis (MCA) followed by a hierarchical clustering of the results of the MCA performed in each population was conducted to identify participant profiles based on their answers to LoFProSS. A response pattern algorithm was resultantly identified in the RURAL (main) population and subsequently applied to the URBAN and DAY-CLINIC populations and, in these populations, the two classification methods were compared. Finally, clinically-relevant profiles were generated and compared for their ability to similarly classify subjects. **Results:** The response pattern differed between the 3 sub-populations for all 9 items, revealing significant intergroup differences (1.2±1.4 positive responses for URBAN vs. 2.1±1.3 for RURAL vs. 3.1±2.1 for DAY-CLINIC, all p<0.05). Five clusters were highlighted in the main RURAL population: "non-frail", "hospitalizations", "physical problems", "social isolation" and "behavioral", with similar clusters highlighted in the remaining two populations. Identification of the response pattern algorithm in the RURAL population yielded a second classification approach, with 83% of tested participants classified in the same cluster using the 2 different approaches. Three clinically-relevant profiles ("non-frail" profile, "physical frailty and diseases" profile and "cognitive-psychological frailty" profile) were subsequently generated from the 5 clusters. A similar double classification approach as above was applied to these 3 profiles revealing a very high percentage (95.6%) of similar profile classifications using both methods. **Conclusion:** The present results demonstrate the ability of LoFProSS to highlight 3 frailty-related profiles, in a consistent manner, among different older populations living at home. Such scale could represent an added value as a simple frailty screening tool for accelerated and better-targeted investigations and interventions.

P74- FRAILITY PREDICTS SHORT AND LONG-TERM OUTCOMES OF REPERFUSION TREATMENT IN ACUTE STROKE.

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Background: Frailty is the most important short and long term predictor of disability in the elderly. No study to date evaluate the impact of frailty on short and long term independently from neurological outcome measures. **Objectives:** The aim of the study was to evaluate whether diagnosis frailty predicts short and long-term mortality and neurological recovery in old patients who underwent reperfusion acute treatment in stroke unit. **Methods:** Consecutive patients were older than 65 years who underwent thrombectomy or thrombolysis in a single Stroke Unit from 2015 to 2018. Predictors of stroke outcomes were assessed including demographics, baseline NIHSS, time to needle, treatment and medical complications. Premorbid frailty was assessed with a comprehensive geriatric assessment (CGA) including functional, nutritional, cognitive, social and comorbidities status. At 3 and 12months, all-cause of death and clinical recovery (using mRS) were evaluated. **Results:** 102 patients, of whom 31 underwent mechanical thrombectomy and 71 venous thrombolysis (mean age 77.5, 65- 94 years) entered the study. Frailty was diagnosed in 32 out of 70 patients and associated with older age (p=0.001) but no differences in baseline NIHSS score or treatment strategies. At follow-up, frail patients showed higher incidence of death at 3 (25% vs 3%, p=0.008) and 12 (38% vs 7%, p=0.001) months. Frailty was associated with worse neurological recovery at 3 month (mRS 3.4 + 1.8 vs 1.9 + 1.9, p=0.005) and one year follow-up (mRS 3.2 + 1.9 vs 1.9 + 1.9) for free survival patients. **Conclusion:** Frailty is an important predictor of efficacy of acute treatment of stroke beyond classical predictors of stroke outcomes. Larger prospective studies are warranted in order to confirm our findings.

P75- ASSOCIATIONS OF FRAILITY INDICATORS AND SOCIAL ISOLATION RISK AMONG COMMUNITY-DWELLING OLDER ADULTS IN THE UNITED STATES.

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Background: Frailty becomes increasingly common as adults age and has known associations with activity limitations

and injurious falls among older adults. While it is believed that frailer older adults are less socially connected than their more functional counterparts, less is known about the relationship between frailty and social isolation among community-dwelling older adults. **Objectives:** The purpose of this study was to examine associations of frailty indicators on self-reported social isolation risk among community-dwelling adults age 60 years and older. **Methods:** The Upstream Social Isolation Risk Screener (U-SIRS) was developed to assess social isolation risk among older adults within clinical and community settings. Comprised of 13 items (Cronbach's alpha=0.80), the U-SIRS assesses physical, emotional, and social support aspects of social isolation. Using an internet-delivered survey, data were collected from a national sample of 4,082 adults age 60 years and older. Participants completed the U-SIRS and additional items on sociodemographics and other health risks. Theta scores for the U-SIRS serve as the dependent variable, which were generated using Item Response Theory. An ordinary least squares regression model was fitted to identify frailty indicators associated with social isolation risk. **Results:** Participants' average age was 69.6 (\pm 5.2) years. The majority of participants was female (58.5%) and lived with a partner/spouse (56.9%). Twenty eight percent of participants reported difficulty walking or climbing stairs, 4.3% reported difficulty dressing or bathing, and 16.2% reported a fall in the past year. Higher U-SIRS theta scores were reported among males ($B=3.82$, $P<0.001$) and those with more chronic conditions ($B=9.34$, $P<0.001$). Participants who reported difficulty walking or climbing stairs ($B=3.96$, $P<0.001$), difficulty dressing or bathing ($B=3.43$, $P=0.001$), or a fall in the past year ($B=4.27$, $P<0.001$) also reported higher U-SIRS theta scores. Further, higher U-SIRS theta scores were reported among participants who had not left their home in the past three days ($B=10.62$, $P<0.001$). **Conclusion:** Findings suggest frailer older adults and those with functional limitations may have greater risk for social isolation. This highlights the critical demand for easy-to-administer and practical assessments for frail older adults that identify their social isolation risk and link them to needed resources and services.

P76- CROSS-SECTIONAL AND LONGITUDINAL ASSOCIATIONS BETWEEN PEAK EXPIRATORY FLOW AND FRAILTY IN OLDER ADULTS. Caterina Trevisan^{1,2}, Debora Rizzuto^{1,4}, Stefania Maggi³, Giuseppe Sergi², Anna-Karin Welmer^{1,4,6}, Davide Liborio Vetrano^{1,7} ((1) Aging Research Center, Department of Neurobiology, Care Sciences and Society, Karolinska Institutet and Stockholm University, Stockholm, Sweden; (2) Department of Medicine (DIMED), Geriatrics Division, University of Padova, Italy; (3) National Research Council, Neuroscience Institute, Padova, Italy; (4) Stockholm Gerontology Research Center, Stockholm, Sweden; (5) Division of Physiotherapy, Department of Neurobiology, Care Sciences and Society, Karolinska Institutet, Stockholm, Sweden; (6) Allied Health Professionals, Function Area Occupational Therapy & Physiotherapy, Karolinska University Hospital, Stockholm, Sweden; (7) Centro Medicina dell'Invecchiamento, IRCCS Fondazione Policlinico "A. Gemelli" and Catholic University of Rome, Italy)

Background: Peak expiratory flow (PEF) has been linked to several negative health-related outcomes in older people, but its association with frailty is still unclear. **Objectives:** This study investigates the association between PEF and prevalent and incident frailty in older adults. **Methods:** Data come from 2559 community-dwelling participants of the Swedish National study on Aging and Care in Kundgsholmen (SNAC-K), aged ≥ 60 years. Baseline PEF was expressed as standardized residual (SR) percentiles. Frailty was assessed at baseline and over six years, according to the Fried criteria. Associations between PEF and frailty were estimated cross-sectionally through logistic regressions, and longitudinally by multinomial logistic regression, considering death as alternative outcome. Obstructive respiratory diseases and smoking habits were treated as potential effect modifiers. **Results:** Our cross-sectional results showed that the 10th-49th and <10th PEF SR-percentile categories were associated with three- and five-fold higher likelihood of being frail, than the 80th-100th one. Similar estimates were confirmed longitudinally, i.e. adjusted OR=3.11 (95%CI: 1.61-6.01) for PEF SR-percentiles<10th, compared with 80th-100th. Associations were enounced in participants without physical deficits, and tended to be stronger among those with baseline obstructive respiratory diseases, and, longitudinally, also among former/current smokers. **Conclusion:** These findings suggest that PEF is a marker of general robustness in older adults and its reduction, exceeding that expected by age, is associated with frailty development.

PHYSICAL FRAILTY AND AGE-RELATED BODY COMPOSITION MODIFICATIONS

P77- IMPORTANCE OF PHYSICAL HABITS TO COUNTERACT MUSCLE AGING PROCESS.

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Background: As consistently reported in the literature, muscle strength (MS) decreases at a higher rate than muscle mass (MM) during aging resulting in a decreased muscle quality (MQ). Loss of MQ has been associated with loss of mobility, falls, frailty and an increased risk of mortality. However, the degree of muscle declines is varying throughout the population leading to 3 states: successful, normal or pathological. It has been proposed that healthy life habits such as be physically active, having a healthy diet etc. could reduce the muscle aging decline. Thus, identifying if life habits could counteract or maintain muscle quality during successful aging is important to better characterize aging and to intervene more specifically. **Objectives:** The aim of the present study was to identify whether a physically active lifestyle could attenuate the effects of aging on MQ. **Methods:** Active young were compared to active older men. To be considered active, young and older men need to practice voluntary physical activity at least 150min/week since 5yrs. Body composition (DXA; MRI) and maximum knee extension strength were measured. MQ was calculated as the ratio of MS to MM. Aerobic capacity (VO₂max; Moxus©) and muscle contractility (EMG) were also measured. Muscle biopsies were performed to determine fiber typing, size, intermuscular adipose tissue (IMAT) and intramyocellular lipid content (IMCL). **Results:** Absolute MM (p<0.001) and MS (p=0.005) was greater in young participants compared to their older counterparts while MQ was similar between them. Even if total (p=0.04) and type IIa (p=0.024) fiber size were greater in YA than in OA, muscle fiber proportion, muscle contractility and lower limb fat mass (IMAT, IMCL) were similar between both groups (p>0.05). **Conclusion:** MQ was similar between younger and older physically active men suggesting that being physical activity may have mitigated the loss of MQ with aging and delayed some physiological age-related changes (muscle composition, contractility).

P78- RELATIONSHIP BETWEEN PHYSICAL CONDITION, FUNCTIONALITY, COGNITION, PSYCHO-AFFECTIVE STATE, QUALITY OF LIFE AND FRAILTY IN LONG-TERM NURSING HOME RESIDENTS.

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Background: Dependence and cognitive disorder are very common among elders in nursing homes. Psychological disorders such as depression and anxiety have increased among this group of population. This has direct impact on risk of frailty, decreasing the quality of life and the happiness of seniors. **Objectives:** Analyze the physical, psychic, cognitive and health parameters of the seniors in nursing homes in Guipúzcoa, region in north of Spain. **Methods:** 81 people have participated in total, 45 men and 36 women. On average, they are 84,28±6,58 years old and they are from 6 nursing homes in Guipuzcoa. The measured parameters are: general data and anthropometry. Physical state: TUG, Handgrip and SPPB test. Cognitive and psycho affective state: MOCA, EADG and SHS. Functionality: Barthel and Lawton and Brody. Frailty: Tillburg scale and quality of life: QoL-AD. Comparison of the average values, correlation among parameters and multiple linear regressions of the results have been analysed during the statistical analysis. **Results:** The parameters that have an impact to the quality of life are Tilburg scale of frailty (p<0,001) and SPPB test (p<0,01). Similar results have been found in other researches. The parameters that have higher influence in cognition are handgrip test (p<0,01) and frailty (p<0,01). In other investigations, they got the same results; better cognition is related to better physical capacity and less fragility. In regards with functionality, the values of TUG test (p<0,01) and gait speed (p<0,01) are the ones that show stronger relation. In other investigations, they observed that physical state and functionality were related. **Conclusion:** The quality of life, the functionality and MOCA test are interconnected and the parameters that have the strongest statistical relationship are fragility and physical state. The greater the physical capacity of the older person is, the greater the functional capacity is too and the fragility decreases. In conclusion, the quality of life is better.

P79- EFFECTS OF HEIGHT LOSS ON SKELETAL MUSCLE MASS INDEX AND PHYSICAL FUNCTION IN JAPANESE ELDERLY WOMEN: THE JAPANESE POPULATION-BASED OSTEOPOROSIS (JPOS) STUDY. Kazuki Kaji¹, Jun Kitagawa², Takahiro Tachiki³, Naonobu Takahira², Masayuki Iki⁴, Junko Tamaki⁵, Etsuko Kajita³, Yuho Sato⁶, JPOS Study Group⁴ ((1) National Center for Geriatrics and Gerontology, Obu, Aichi, Japan; (2) Nagoya University, Nagoya, Aichi, Japan; (3) Nagoya City University, Nagoya, Aichi, Japan)

Background: The skeletal muscle mass index (SMI), which is the appendicular skeletal muscle mass (ASM) adjusted for height squared (kg/m²), is used to assess skeletal muscle mass. We reported at this conference last year that SMI was overestimated by height loss due to aging in elderly women. Furthermore, age-related changes in SMI were inconsistent with changes in physical function such as grip strength and walking speed. **Objectives:** The purpose of this cross-sectional study was to investigate the effects of height loss on age-related changes in SMI and physical function in Japanese women aged 50 or older. **Methods:** This study was part of the 15/16-year follow up survey of the Japanese Population-based Osteoporosis (JPOS) cohort study conducted in 2011/2012. The JPOS study was started in 1996. The subjects of the 15/16-year follow-up were 710 women (mean 65.3±10.0 years). We divided the subjects into quartiles based on 15 years of height loss (Q1: the lowest, Q2, Q3 and Q4: the highest). ASM was measured by dual X-ray absorptiometry (QDR4500A, Hologic, USA). Grip strength, maximum walking speed, and timed up and go (TUG) were also measured. **Results:** The mean change in height during the 15/16-year follow-up was -1.6±1.6 cm. Mean changes in height in Q1 (n=191), Q2 (n=171), Q3 (n=172) and Q4 (n=176) were -0.2±0.41 cm, -1.0±0.20 cm, -1.8 ±0.26 cm and -3.7±1.84 cm, respectively. The trend test demonstrated significant increases in the mean age and SMI from Q1 to Q4. On the other hand, there was a significant decrease in ASM from Q1 to Q4. The mean grip strength and maximum walking speed significantly decreased from Q1 to Q4. TUG results were similar, suggesting that greater height loss led to longer times. **Conclusion:** In Japanese elderly women with height loss, ASM and physical function decreased with age, but the SMI adjusted for height increased. It may be necessary to establish a muscle mass parameter other than SMI to investigate the relationship between muscle mass and physical function.

P80- ASSOCIATION BETWEEN ANOREXIA OF AGING AND SARCOPENIA AMONG JAPANESE OLDER ADULTS. Kota Tsutsumimoto¹, Takehiko Doi¹, Sho Nakakubo¹, Satoshi Kurita¹, Hideaki Ishii¹, Hiroyuki Shimada² ((1) Section for Health Promotion, Department of Preventive Gerontology, Center for Gerontology and Social Science, National Center for Geriatrics and Gerontology, Aichi, Japan; (2) Center for Gerontology and Social Science, National Center for Geriatrics and Gerontology, Aichi, Japan)

Background: Sarcopenia was defined as decline in skeletal muscle mass and muscle function, leading to serious health problems including disability. The modifiable risk factors of sarcopenia should be elucidated to contribute to develop intervention from sarcopenia. **Objectives:** To examine the association between anorexia of aging and sarcopenia among community-dwelling elderly Japanese individuals. **Methods:** Population-based, cross-sectional cohort study in Japanese older adults was conducted and participants were identified from the database of the National Center for Geriatrics and Gerontology-Study of Geriatric Syndromes. Anorexia of aging was assessed via a simplified nutritional appetite questionnaire. Handgrip strength and walking speed were tested, and skeletal muscle mass was assessed using a bio-impedance analysis device. Subjects with sarcopenia were defined as those who met the criteria of the Asian Working Group for Sarcopenia. The association between anorexia of aging and sarcopenia was then analyzed via multiple regression analysis. **Results:** In total, 9,496 elderly Japanese individuals were evaluated. The prevalence of sarcopenia and anorexia of aging was 4.0% and 9.8%, respectively. In multivariable logistic regression model adjusted for the covariates except for nutritional status such as albumin, anorexia of aging was independently associated with sarcopenia (OR: 1.45, 95% CI: 1.07 to 1.95; P = 0.015). This significant association remained even after adjusting for all covariates including nutritional status (OR: 1.42, 95% CI: 1.06 to 1.92, P = 0.020). **Conclusion:** Anorexia of aging is associated with sarcopenia among Japanese older adults. Further studies are needed to determine whether a causal association exists between anorexia and sarcopenia.

P81- COMPARISON OF GRIP STRENGTH IN RUSSIAN POPULATIONS (THE CITIES ARKHANGELSK AND NOVOSIBIRSK) VERSUS A NORWEGIAN POPULATION (TROMSØ). Bjørn Heine Strand¹, Rachel Cooper², Vladimir M. Shkolnikov^{3,4}, Alexander Kudryavtsev^{5,8}, Sofia Malyutina⁶, Andrey Ryabikov⁷, Laila Hopstock⁸, Jonas Johansson⁸, Sarah Cook⁸, David A Leon^{8,9} ((1) Norwegian Institute of Public Health, Oslo, Norway; (2) Manchester Metropolitan University, Manchester, UK; (3) National Research University Higher School of Economics, Moscow, Russian Federation; (4) Max Planck Institute for Demographic Research, Rostock, Germany; (5) Northern State Medical University, Arkhangelsk, Russian Federation; (6) Research Institute of Internal and Preventive Medicine – Branch of the Institute of Cytology and Genetics, Siberian Branch of Russian Academy of Sciences, Novosibirsk, Russian Federation; (7) Novosibirsk State Medical University, Russian Ministry of Health, Novosibirsk, Russian Federation; (8) UiT, The Arctic University of Norway, Tromsø, Norway; (9) London School of Hygiene & Tropical Medicine, London, UK)

Background: Low grip strength is consistently associated with higher rates of mortality, disability and other age-related health outcomes, and is a key characteristic of sarcopenia. Grip strength has thus been proposed as a general biomarker of ageing. Life expectancy in Russia is substantially lower than in Norway but whether this is reflected in differences in grip strength across adulthood, as observed in previous comparisons of older adults from Russia, Denmark and England, needs to be established and explained. **Objectives:** We aimed to compare grip strength in Norwegian and Russian populations by age and gender, and investigate whether any observed differences were explained by contrasts in height, weight, smoking or education. **Methods:** We used harmonised cross-sectional data on grip strength for 10,112 men and women aged 40-69 years. This comprised participants from the Russian Know Your Heart study (n=4,147) conducted in the cities Arkhangelsk and Novosibirsk in 2015-18, and from wave 7 of the Norwegian Tromsø Study (n=5,965) conducted in 2015-16. Grip strength was assessed using the Jamar+ Digital dynamometer in both studies, and the maximum of six measurements (three in each hand) was used. The association between grip strength and covariates was assessed using linear regression. **Results:** Norwegian males had stronger grip than Russian males at all ages, for example they were an average of 3.2kg (95% confidence interval (CI) 2.3, 4.1) stronger at age 40 years and 3.3kg (95% CI 2.6, 4.0) stronger at age 69 years. Among women, corresponding numbers were 2.0kg (95% CI 1.2, 2.8) at age 40 and 1.5kg (95% CI 0.9, 2.1) at age 69. Adjustment for weight, education and smoking did not affect the results, but height attenuated the between country differences, especially at older ages. Among women aged 60+, differences in height between countries fully explained the differences observed in grip strength. **Conclusion:** Norwegian 67-year-olds had the grip strength of 60-year-old Russians suggesting that Russians are ageing more rapidly in terms of muscular strength than

their Norwegian counterparts. The important role of height in explaining these differences, especially at older ages, suggest contrasts in early life circumstances may be of key importance.

P82- MUSCLE THICKNESS BY ULTRASOUND IS A POTENTIAL BIOMARKER FOR FRAILTY IN THOSE AT RISK OF FALLS AND FRAGILITY FRACTURE. Eleanor Lunt^{1,2}, Paul Greenhaff^{2,3}, Adam L Gordon^{2,4,5}, John RF Gladman^{1,2} ((1) Division of Rehabilitation, Ageing and Wellbeing, University of Nottingham, UK; (2) NIHR Nottingham Biomedical Research Centre, UK; (3) Division of Physiology, Pharmacology and Neuroscience, University of Nottingham, UK; (4) Division of Medical Sciences and Graduate Entry Medicine, University of Nottingham, UK; (5) NIHR CLAHRC East Midlands, UK)

Background: Frailty is a state of vulnerability to stressors resulting in adverse clinical outcomes including falls and fragility fractures. Identifying biomarkers associated with these outcomes may help target interventions. **Objectives:** To compare parameters of body composition, muscle thickness and muscle strength between patients and healthy older and young volunteers. **Methods:** Six young (18-35 years) and 11 older (≥ 70 years) healthy female volunteers were recruited by advert from community groups. 15 female patients (≥ 70 years) with an acute fragility fracture were recruited from hospital wards and measured during first week of admission (median 4th day (IQR 2-6)). Frailty was determined by the 5-item FRAIL scale. Height, weight, handgrip (Jamar dynamometer) and knee extension (Lafayette manual muscle tester) were assessed. Body composition was estimated using whole body bioelectrical impedance (BodyStat Quadscan 4000®). Midpoint vastus lateralis (VL) muscle thickness and mid-thigh subcutaneous fat thickness were assessed using ultrasound (Mylab Gold, Esaote Biomedica, Italy) with a 14Hz linear-array probe. One-way ANOVA and post hoc Tukey's test were used to compare end-point measures between groups. **Results:** Frailty was significantly more prevalent in the patient group (53% frail, 40% pre-frail, 7% robust) than the healthy older group (100% robust, $p < 0.001$). The patient group was older (83 ± 7 years vs 78 ± 6 years, $p < 0.05$) and had more co-morbidities ($p < 0.001$). There were no significant differences between the patient and healthy older group in weight, height, BMI, percentage body fat or subcutaneous fat thickness of lateral thigh. VL muscle thickness was lower in the patient group compared to healthy older and young volunteers (1.27 ± 0.43 cm, 1.75 ± 0.30 cm and 2.09 ± 0.41 cm respectively, $p < 0.01$). The patient group also had lower handgrip strength (9.2 ± 5.5 kg, 19.9 ± 5.8 kg, 41.3 ± 15.6 kg respectively, $p < 0.001$) and lower knee extension strength (4.3 ± 1.4 kg, 7.8 ± 1.3 kg, 9.5 ± 1.3 kg respectively, $p < 0.001$). VL muscle thickness associated with muscle strength (knee extension $r = 0.70$, $p < 0.001$ and handgrip $r = 0.71$, $p < 0.001$) and was significantly lower in the frail compared to pre-frail or robust participants (0.98 ± 0.30 cm, 1.53 ± 0.27 cm, 1.76 ± 0.29 cm respectively $p < 0.001$). **Conclusion:** Female patients presenting to hospital with a fall and fragility fracture have lower muscle thickness in the thigh compared to non-frail older women,

despite no difference in other body composition variables.

P83- ASSOCIATION BETWEEN TESTOSTERONE AND FRAILTY: A SYSTEMATIC REVIEW AND META-ANALYSIS. Peng Xuchao, Deng Chuanyao, Lin Taiping, Zhao Yanli, Corresponding Author: Yue Jirong (*Department of Geriatrics and National Clinical Research Center for Geriatrics, West China Hospital, China*)

Background: Testosterone and frailty are common with aging, previous studies examining testosterone status and frailty have produced complicated results. **Objectives:** We conducted a systematic review to evaluate the relationship between testosterone level and frailty. **Methods:** Several databases (MEDLINE, Embase, ACP Journal Club, the Cochrane Central Register of Controlled Trials, Cochrane Database of Systematic Reviews, Cochrane Clinical Answers, Cochrane Methodology Register, Health Technology Assessment, NHS Economic Evaluation Database) were searched from inception to April 12, 2019. Cross-sectional and cohort studies that reported adjusted risk ratios with 95% confidence intervals (CI) for frailty with serum level of total testosterone, free testosterone, sex hormone-binding globulin (SHBG) were selected. A meta-analysis was carried out by using fixed effects and random effects models to calculate the OR of relationship between low level of testosterone and risk of frailty. **Results:** The cross-sectional study concluded 9 articles, There was statistically significant association between lower level of total testosterone and risk of frailty (OR=1.59; 95%CI, 1.28-1.98, I²=80%), as well as free testosterone (OR=1.59; 95%CI, 1.21-2.08, I²=78%), the highest level of SHBG was no significant associated with the risk of frailty (OR=1.05; 95%CI, 0.84, 1.30; I²=62%). The prospective cohort studies obtain 4 articles, no significant were found between frailty and low total testosterone and frailty (pool OR=1.12; 95%CI, 0.99-1.32, I²=14%). **Conclusion:** The meta-analysis indicates that low level of serum testosterone is significantly associated with the risk of frailty in the cross-section studies. However, we found no significant relationship between low total testosterone and frailty in the cohort studies. More research is needed to address the underlying mechanisms to explain this relationship and to determine whether testosterone supplementation is effective for preventing frailty syndrome.

P84- INTERACTION BETWEEN FRAILTY AND ABDOMINAL OBESITY ON DISABILITY IN OLDER PERSONS – THE SINGAPORE CHINESE HEALTH STUDY. Woon-Puay Koh^{1,2}, Kevin Yiqiang Chua^{2,3} ((1) *Health Services and Systems Research, Duke-NUS Medical School Singapore, Singapore*; (2) *Saw Swee Hock School of Public Health, National University of Singapore, Singapore*; (3) *NUS Graduate School for Integrative Sciences and Engineering, National University of Singapore, Singapore*)

Background: Although frailty and abdominal obesity are known risk factors for disability in older persons, few studies have investigated the interaction between both factors on the

association with disability. **Objectives:** To investigate the association of frailty and abdominal obesity with disability in older persons. **Methods:** We used data from 13,787 participants (41% men) in the prospective, population-based Singapore Chinese Health Study cohort, who were interviewed and examined for frailty, abdominal obesity and disability at mean age of 74 (range 63 to 97) years from 2014-2017. We defined frailty as having three or more features of weak handgrip strength, slow timed-up-and-go test, low energy level, multiple comorbidities, and difficulty carrying out usual activities. We defined abdominal obesity by waist circumference using sex-specific cut-offs, and assessed disability using the Lawton Instrumental Activities of Daily Living (IADL) scale. We used multivariable logistic regression models to compute the odds ratio (OR) and 95% confidence interval (CI) for the association between frailty/abdominal obesity and disability. **Results:** About 7.6% of participants were frail and 58.4% had abdominal obesity. Frailty was associated with increased OR (95% CI) of 7.78 (6.64-9.12) for disability. Conversely, the OR (95% CI) for the association between abdominal obesity and frailty was only 1.13 (1.01-1.27). Compared to participants who were neither frail nor abdominally obese, the OR (95% CI) for disability was 6.19 (4.71-8.14) in those who only had frailty, and 1.10 (0.98-1.24) in those who only had abdominal obesity. However, participants who were both frail and abdominally obese had markedly increased OR (95% CI) of 9.57 (7.75-11.81) for disability; p-value for interaction between frailty and abdominal obesity was 0.047. Furthermore, while men who were both frail and abdominally obese had increased OR (95% CI) of 4.67 (3.27-6.67) for disability compared to their counterparts who were neither frail nor obese, the corresponding OR (95% CI) was much higher at 14.92 (11.34-19.65) in women; p value for heterogeneity by sex <0.001. **Conclusion:** Frailty and abdominal obesity interacted synergistically to increase the risk of disability in older persons, and the combined effect of both factors on disability was much stronger in women than in men.

P85- ASSOCIATION BETWEEN PHYSICAL ACTIVITY AND COGNITION IN MEXICAN AND KOREAN OLDER ADULTS. Ronald Camilo Gómez-Arteaga^{1,2,3}, Vera Aarsland⁴, Miguel Germán Borda^{1,2,4}, Dag Aarsland^{4,5}, Mario Ulises Perez-Zepeda^{1,7} ((1) *Semillero de Neurociencias y Envejecimiento, Ageing Institute, Medical School, Pontificia Universidad Javeriana, Bogota, Colombia*; (2) *Unidad Geriatria Hospital Universitario San Ignacio, Bogota, Colombia*; (3) *Departamento Medicina Interna y Geriatria Hospital cardiovascular del Niño de Cundinamarca, Soacha, Colombia*; (4) *Centre for Age-Related Medicine (SESAM), Stavanger University Hospital, Stavanger, Norway*; (5) *Faculty of Health Sciences, University of Stavanger, Stavanger, Norway*; (6) *Department of Old Age Psychiatry, Institute of Psychiatry, Psychology and Neuroscience, King's College London, London, UK*; (7) *Geriatric Medicine Research, Dalhousie University and nova Scotia Health Authority, Halifax, NS, Canada*)

Background: As the world's population ages, the prevalence of cognitive impairment associated with age increases

exponentially. **Objectives:** Objective of this study was to investigate the longitudinal association of physical activity and cognitive function in two deferentl populations; older adults from Mexico representing Latin America and South Korea representing Asia. Based on two large population-based longitudinal studies. **Methods:** This is a secondary analysis of two surveys, MHAS and KLoSA, designed to study the aging process of adults living in Mexico and South Korea. Participants >50 were selected from rural and urban areas. Here we investigate the longitudinal association of exercise and cognition using the two waves of each study. Cross Cultural Cognitive Examination and Mini-Mental State Examinarion were used to analyze the association between physical activity and cognition in Mexican and Korean older adults. Multivariate logistic regression models were used to evaluate the said association. **Results:** In Mexico, the prevalence of physical activity was 40.68%, Physical active older adults obtained a higher score in CCCE (0.099 ± 1.01) p-value < 0.001. They also had more years of education (5.63 ± 4.61 vs. 5.10 ± 4.27) p-value < 0.001, had depression (31.55% vs. 35.25%) 0.0090 and consumed less alcohol (89.91 vs. 93.03) p-value < 0.001. In Korea, the prevalence of physical activity was 35.57%. The physical active group performed better in MMSE (-0.123 ± 1.05 vs. 0.046 ± 0.90) p-value < 0.001. The no physical active group had a higher proportion of women, less alcohol consumption (50.01 vs. 55.22%) p-value < 0.001, fewer years of education p-value < 0.001 and a higher prevalence of depression (5.12% vs 3.64%) p-value 0.0090. In the multivariate analysis an independent association was found in the Korean population between physical activity and MMSE score even after adjusting for confounders (0.0866 (0.0266 ; 0.1467) p value 0.0047). **Conclusion:** Physical activity could have a protective effect on the cognitive decline associated with ageing.

P86- DOES WORK PER REPETITION AND PHASE ANGLE PLAY A ROLE IN SARCOPENIA? Sandra Pais^{1,2}, Pedro Guerreiro^{2,3}, Carla Guerreiro^{1,2}, Marta Botelho^{1,2} ((1) *Centre of Biomedical Research (CBMR), Universidade do Algarve, Faro, Portugal*; (2) *CENIE- International Center on Aging, Interreg -POCTEP*; (3) *Universidade de Évora, Évora, Portugal*)

Background: Aging is related to the increase of several chronic diseases, such as, osteoarthritis, osteoporosis, diabetes, hypertension and sarcopenia. Sarcopenia (progressive loss of muscle mass and physical performance) is related to difficulties in treating other comorbidities, whether pharmacologically or non-pharmacologically. It's important to understand the relations between muscular strength (W), muscular mass and the phase angle (PA) of bioimpedance, in sarcopenic subjects to prescribe more accurate treatments. **Objectives:** To study the relations of Skeletal Muscle Index (SMI) with W, PA and the presents of comorbidities (NC) in elderly subjects. **Methods:** A prospective, observational secondary analysis of data from the "The Sarcopenia Screening and health related issues in the Region of Algarve", was performed. Community independent

living elderly subjects were recruited. Body composition was measured by bioimpedance (Seca analytics 115), knee flexion and extension isokinetic strength (60°/sec) (HUMAC NORM). A screening questionnaire was used to determine the presence of comorbidities. SMI levels were assessed using European Working Group on Sarcopenia in Older People cut-off points. **Results:** A total of 46 female and 12 males, were included, mean age 73,7 ($\pm 7,64$ sd). Subject were divided into 3 groups according to SMI: normal (n=21), moderated impairment (n=18) and severe impairment (n=19). Pearson Correlation were calculated within each group for W; PA and comorbidities. Normal SMI level, were correlated to knee extensors W in both legs (right: $r=0,510$, $p<0,05$ and left $r=0,506$, $p<0,05$). No significant correlations were found with PA. Moderate SMI level: were correlated to knee extensors W in both legs (right: $r=0,742$, $p<0,001$ and left $r=0,708$, $p\leq 0,001$), and also with knee flexors W (Right: $r= 0,677$, $p< 0,005$; Left: $r= 0,659$, $p<0,005$). A Moderate correlation was also found in this group with PA ($r= 0,472$, $p< 0,05$). Severe SMI level: no correlations were found, in this group, with W. A moderate correlation was found with PA ($r= 0,565$, $p< 0,05$). Comorbidities did not have any correlations with SMI levels. **Conclusion:** Our results seem to indicate that isokinetic strength (work) may have in the future a role in understanding Sarcopenia, once it is related to SMI. Also, PA may indicate moderate and severe SMI impairment.

P87- FAT MASS INDEX AND THE PERFORMANCE OF OLDER PEOPLE IN THE 6-MINUTE WALKING TEST. Tatiane Lopes de Pontes¹, Fernanda Pinheiro Amador dos Santos Pessanha¹, Renato Campos Freire Júnior², Natália Maira da Cruz Alves¹, Priscila Giacomo Fassini¹, Olga Laura Sena Almeida¹, Karina Pfrimer¹, Eduardo Ferriolli¹ ((1) *Department of Internal Medicine, Ribeirão Preto Medical School, University of São Paulo, Brazil*; (2) *Faculty of Physical Education and Physiotherapy, Federal University of Amazonas, Brazil*)

Background: Body characteristics as low muscle mass and high fat mass (FM) affect the physical function of older people. Physical function is a fundamental component for the performance of daily activities and for the maintenance of the independence of older adults. However, the relationship between body composition and physical performance varies in different studies and still demands further research. **Objectives:** This study aimed to investigate the association of fat mass index (FMI) determined by Dual-energy X-ray Absorptiometry (DXA) with physical performance in Brazilian community-dwelling older adults. **Methods:** A cross-sectional study with a sample of 55 participants aged 60 years and older, living in Ribeirão Preto, Brazil, including both men and women, was conducted. FM was measured by DXA and FMI was calculated as fat mass/height² (kg/m²). The physical performance was assessed by the 6-minute walk test, and walking distance was recorded as the main parameter, considering the distance predicted by sex. The Kolmogorov-Smirnov test was used to verify the normality of data distribution. The association of physical performance and FMI was analyzed using the

Pearson's correlation test and statistical significance was set at $p \leq 0.05$ (two-sided). **Results:** The participants were aged 70.13 ± 6.3 years, FMI was 9.88 ± 3.1 kg/m² and distance walked was 454.6 ± 83.2 m. There was a significant negative association ($r = -0.277$, $p = 0.040$) between FMI and distance walked, showing that higher fat mass index is associated with worse performance in the 6-minute walk test. **Conclusion:** High fat mass index is associated with worse physical performance in Brazilian older adults.

P88- ECHOCARDIOGRAPHIC QUADRICEPS MUSCLE THICKNESS: A PRACTICAL BIOMARKER FOR FRAILTY. Victoria Hayman¹, Christos Galatas¹, Neetika Bharaj¹, Marie-Josée Blais², Nancy Murray², Lawrence Rudski², Igal A. Sebag², Jonathan Afilalo^{1,2} ((1) Centre for Clinical Epidemiology, Jewish General Hospital, Montreal, QC, Canada; (2) Division of Cardiology, Jewish General Hospital, McGill University, Montreal, QC, Canada)

Background: Sarcopenia and physical frailty have been shown to be risk factors for mortality and major morbidity in older adults suffering from various forms of cardiovascular disease. Ultrasound measurement of quadriceps muscle thickness (QMT) is an emerging biomarker for sarcopenia, which we hypothesized could be conveniently acquired during the routine echocardiographic exam. **Objectives:** To demonstrate the feasibility of measuring QMT at the time of echocardiography, and determine the association between QMT and clinical indicators of frailty. **Methods:** Adult inpatients and outpatients undergoing a clinically-indicated echocardiogram for known or suspected cardiovascular disease were recruited for this cross-sectional study at the Jewish General Hospital. Prior to the echocardiogram, trained research assistants measured height, weight, and three clinical indicators of frailty: Rockwood's Clinical Frailty Scale, handgrip strength (Jamar dynamometer), and bioimpedance phase angle (InBody 770). At the conclusion of the echocardiogram, cardiac sonographers blinded to the preceding assessments acquired a biplane image of the anterior thigh midway between the anterior superior iliac spine and knee, and measured QMT as the combined thickness of the rectus femoris and vastus intermedius muscles. A cardiac ultrasound machine and probe were used (GE Vivid E9/E95, 1.5-4.5 MHz probe). **Results:** The cohort consisted of 301 patients, of which 290 had an available measure of QMT. The acquisition and measurement of QMT added 1-2 minutes to the echocardiographic exam. The mean age was 65 ± 15 years with 56% females. The mean QMT was 30 ± 9 mm, similar in men and women, with the lowest quintile being <22.2 mm. Higher age and lower body mass index were associated with lower QMT. After adjustment for age, sex, and body mass index, QMT was found to be associated with the multivariate composite of frailty indicators ($P < 0.001$), particularly with the Clinical Frailty Scale (Beta -0.03 per mm; CI $-0.04, -0.01$) and bioimpedance phase angle (Beta 0.02 per mm; CI $0.01, 0.03$). Additional adjustment for heart failure and inpatient status did not alter results. **Conclusion:** QMT can be efficiently

measured during a routine echocardiographic exam and can add incremental insights about frailty in a diverse group of patients with cardiovascular disease.

P89- FRAILTY IN COMMUNITY-DWELLING OLDER ADULTS ENROLLED ON A PHYSICAL EXERCISE PROGRAM. Luís Midão^{1,2}, Marta Almada¹, João Viana³, Carla Sá³, Elisa Marques³, Mafalda Duarte^{4,5}, Constança Paúl^{2,5}, Elísio Costa¹ ((1) UCIBIO/REQUIMTE, PORTO4AGEING - Competence Center on Active and Healthy Ageing of the University of Porto, Faculty of Pharmacy of the University of Porto, Porto, Portugal; (2) ICBAS - Abel Salazar Institute of Biomedical Sciences, University of Porto, Porto, Portugal; (3) CIDESD - Research Center in Sports Sciences, Health Sciences and Human Development, University Institute of Maia, Porto, Portugal; (4) ISAVE - Superior Institute of Health, Amares, Braga, Portugal; (5) CINTESIS - Center for Research in Health Technologies and Services, Porto, Portugal)

Background: Frailty is a clinical syndrome whose signs and symptoms are predictors of health complications, making this a major public health problem. **Objectives:** This study aims to evaluate the prevalence of frailty, in community-dwelling older adults enrolled in a physical exercise program in the north region of Portugal, based on Fried's Phenotype, its association with other variables. **Methods:** In this cross-sectional analysis, we used data from 419 individuals who were enrolled in physical exercise programs. Gender and age standardized prevalence and the association between frailty and sociodemographic (age, gender, marital status, education, shortage of money) physical (self-perceived health, polypharmacy, physical fitness, vision, hearing), cognitive (memory), social (emptiness, loneliness and abandonment) and psychological (depression and anxiety) variables were evaluated. **Results:** Of the 419 participants, the mean age was 72.4 ± 5.5 years old, and 69.2% were female. Prevalence of pre-frailty and frailty were of 46.8% and 5.0%, respectively. From the 5 Fried's Phenotype criteria, exhaustion is the most common reported by 58.2% of the pre-frail and 76.1% of the frail participants. Age, marital status, self-perception of health, physical fitness, memory and depression were found to be independently associated with pre-frailty, while age, education, self-perception of health, physical fitness and anxiety were independently associated with frailty. **Conclusion:** We reported lower prevalence of pre-frailty and frailty compared with other studies, showing that physical exercise may delay the progression of frailty. Interventions aimed to prevent frailty must address the diversity of the associated variables.

P90- RELATIONSHIP BETWEEN PHYSICAL HEALTH INDICATORS ASSOCIATED WITH FRAILTY IN OLDER HISPANICS WITH TYPE 2 DIABETES.

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Background: Frailty is related with ethnicity and impaired physical capacity which is also affected by diabetes. However, little is known about how physical health indicators of frailty are associated with each other in older Hispanics with diabetes. **Objectives:** The goal of this study was to investigate the relationship between physical health indicators of frailty in older Hispanics with diabetes. **Methods:** Thirty-eight older Hispanics with diabetes (29 women, 9 men, age = 79±7 years) participated in the study. The variables included age, weight, body mass index, body composition (% of muscle mass and body fat - bio-impedance), fear of falls (Falls Efficacy Scale International - FES-I), chair stands in 30 sec, grip strength (Jamar® dynamometer), balance with eyes open and closed (force plate), preferred walking speed, gait velocity during regular and reduce time street crossing simulations (GAITRite®). **Results:** Characteristics: body mass = 75±16 kg, % of muscle mass = 25±5%, % of body fat = 40±11%, FES-I score = 29±11 points, chair stands = 8±4 repetitions, grip strength = 21±6 kg, center of pressure area with eyes open = 5±3 cm² and with eyes closed = 8±6 cm², preferred walking speed = 81±22 cm/s, gait velocity during regular = 100±29 cm/s and during reduced time street crossing = 124±34 cm/s. There were significant correlations (*p<0.05, **p<0.01) between age and gait velocity during regular street crossing (r = -0.34*); grip strength and % of body fat (r = -0.51**) and % of muscle mass (r = 0.56**); chair stands and preferred walking speed (r = 0.63**), gait speed during regular (r = 0.68**) and during reduced time street crossing (r = 0.60**) and center of pressure area with eyes closed (r = -0.36*), and between fear of falls and center of pressure area with eyes closed (r = 0.56**). **Conclusion:** Gait speed during street crossing simulations decreased with age. Greater grip strength was associated with lower % of body fat and higher % of muscle mass. People who completed less chair stands in 30s also walked slower and had worse balance, and those with poor balance had increased fear of falls.

P91- FRAILTY AFFECTS CHRONIC PAIN IN ELDERLY ONE YEAR AFTER CARDIAC SURGERY.

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Background: Chronic pain after cardiac surgery is common and has a negative impact on quality of life. Frailty is an important risk factor for adverse surgical outcomes. The influence of frailty on chronic pain after cardiac surgery is unknown. **Objectives:** This study aimed to address whether frailty characteristics were associated with chronic pain after cardiac surgery in an older population. **Methods:** This study was based on the Anesthesia Geriatric Evaluation (AGE) and quality of life after cardiac surgery study, which included 560 patients ≥ 70 years undergoing elective cardiac surgery. Preoperatively, frailty was tested in physical, mental and social domains. Pain was evaluated with the Short Form 36 questionnaire (SF-36) preoperatively and one year after surgery. Multivariate logistic regression was used to investigate the association between frailty and chronic pain. Change in health related quality of life (HRQL) was analyzed to evaluate the impact of chronic pain. **Results:** 426 (78%) patients were included in the analysis. 84/426 patients (20%) reported new or increased pain one year after surgery. In 356 patients (84%) at least one frailty characteristic was present and 118 patients (28%) were frail in two or more domains. After adjustment for possible confounders in multivariate analysis, patients with single status and polypharmacy were at increased risk for new or increased chronic pain (AORs 1.86 (95% CI 1.01 – 3.41) and 2.13 (95% CI 1.11 – 4.11). New or increased chronic pain was associated with a worse HRQL (AOR 2.81; 95% CI of 1.61 – 4.90). **Conclusion:** Frail patients are at risk for chronic pain and worse HRQL after cardiac surgery. Future research should focus on perioperative interventions to reduce chronic pain in elderly patients.

P92- PHYSICAL FRAILTY AND UNDERNUTRITION IN OLDER ADULTS UNDERGOING ELECTIVE ABDOMINOPELVIC SURGERY IN A GENERAL HOSPITAL, LIMA-PERÚ.

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Background: Frailty is a vulnerability state that is associated with negative outcomes such as falls, in-hospital admissions and mortality. Many factors can contribute to the pathogenesis of frailty and nutritional status is playing an important role. That's why undernutrition and frailty must be overviewed in older adults before surgical procedures in order to treat them earlier. **Objectives:** Identify the relationship between physical frailty and undernutrition in older adults undergoing elective abdominopelvic surgery in a general Hospital in Lima-Perú.

Methods: This is a secondary database study from the original “Physical frailty and adverse events in older adults undergoing elective pelvic abdominal surgery in a general hospital, Lima-Perú”, it was realized between August 2017 and March 2019, using validated face to face questionnaires. Physical frailty was determined with Fried criteria, Undernutrition by Mini Nutritional Assessment (MNA). In addition, they also evaluated functional status and cognition. Univariate models were performed, and logistic regression was done subsequently. **Results:** 171 older adult met inclusion’s criteria, the mean age was 68.7(±6.8) years old, 50,0% (86) were female, 29,7% (51) had hypertension, 12,2% (21) were diabetic, the mean number of comorbidities were 2.4 (±0.7), 11,1% (19) had functional impairment, 9,5%(16) had cognitive impairment. The mean BMI was 27.41 ± 4.80. 16,57% (28) were underweight, 49.70%(84) normal ,17.75%(30) overweight and 15.98% (27) obese. By MNA 31 % (53) had risk or undernutrition, 22.64% (12) of them had functional impairment in contrast with 5,9%(7) who weren’t at risk or undernutrition; p=0.002. Also, 16.98 % (9) who had risk or undernutrition had cognitive impairment in contrast with 5.93%(7) who weren’t at risk or undernutrition; p=0.014. By Fried criteria, 29% (49) were frailty, 66 % (113) prefrailty and 5,3% (9) robust. The frailty patients 53% (26) had risk or undernutrition vs 23,08%(26) in prefrailty and 1.11%(1) in robusts; p=0.000. **Conclusion:** There is an increased risk of undernutrition in frail older adults undergoing abdominopelvic surgery at a General Hospital in Lima, Peru.

COGNITIVE FRAILTY

P93- THE EFFECTS AND FEASIBILITY OF AN M-HEALTH BRISK-WALKING INTERVENTION FOR OLDER PEOPLE WITH COGNITIVE FRAILTY. Rick Yiu Cho Kwan, Deborah Lee¹ (*Centre for Gerontological Nursing, School of Nursing, The Hong Kong Polytechnic University, Hong Kong*)

Background: Cognitive frailty increases the risk of dementia, dependency and mortality in older people. Moderate-vigorous physical activity (MVPA) improves frailty syndrome and cognitive functions in older people, but being physically inactive is still prevalent. Walking is the most common and inexpensive form of physical activity in older people and brisk walking is a form of MVPA. M-health has been successful in changing health behaviours in many populations. However, its effect in treating cognitive frailty through promoting MVPA in older people is not known. **Objectives:** The aims of this study were to examine the effects and feasibility of an m-health intervention. **Methods:** A pilot randomized controlled trial was employed. Eligibility criteria include 1) age > 60 years, 2) living in community, 3) having cognitive frailty, and 4) mobility at “outdoor walker” level. The study was conducted in community settings. Subjects were recruited in the elderly community centres. Subjects were randomized into either intervention or control at a 1:1 ratio. In the intervention groups, the subject received a smartphone pre-installed with physical

activity tracking and social media applications. They received a course of brisk-walking in daily living training, health education, and a 12-week behavioural change intervention on the smartphone platform. In the control group, participants received a course of brisk-walking in daily living training, health education, and telephone follow-up. The outcomes were frailty (FFI), cognitive function (MoCA) and MVPA (actigraph). We targeted at recruiting totally 30 subjects. Non-parametric tests were used to compare the effects within and between groups. Missing values were replaced by last observed values. **Results:** This study recruited 33 subjects (intervention: n=16, control: n=17). Significant improvements in frailty (p<0.01), cognitive function (p<0.01), and MVPA (p<0.05) were observed in the intervention group after the completion of the intervention. Only cognitive function was also observed to be improved in the control group (p<0.01). The compliance of wearing devices (i.e., smartphones and actigraphs) and the usage of the smartphone applications were highly satisfactory. Three subjects withdrew from the study (intervention: n=1, control: n=2). **Conclusion:** M-health intervention is feasible to treat cognitive frailty in older people. It is more effective to ameliorate frailty and increase MVPA in older people with cognitive frailty when compared to conventional training.

P94- FACTORS ASSOCIATED WITH MOTORIC COGNITIVE RISK (MCR) SYNDROME AND IMPACT OF MCR ON FUNCTIONAL CAPABILITY AMONG OLDER ADULTS. Reshma Aziz Merchant^{1,2}, Jia Yi Lim², Matthew Zhixuan Chen¹, Surein Sandrasageran¹, Hidehiko Shirooka¹, Yiong Huak Chan² ((1) *Division of Geriatric Medicine, Department of Medicine, National University Hospital, National University Health System, Singapore*, Singapore; (2) *Department of Medicine, Yong Loo Lin School of Medicine, National University of Singapore, Singapore*)

Background: The prevalence of dementia and associated healthcare cost increases with aging population. Population health management and proactive screening with increased emphasis on primary risk reduction may reduce the overall prevalence of dementia. Motoric cognitive risk syndrome (MCR) has been increasingly studied as a pre-dementia stage to identify older adults at risk of transiting to dementia while few studies explored the association between MCR and functional capabilities. **Objectives:** The aims are to investigate the prevalence of MCR and its associated factors among community-dwelling older adult and also to examine possible impact of MCR on functional capabilities. **Methods:** Data for 546 older adults aged above 60 years old staying in Northwest region of Singapore was used. MCR was defined as slow gait speed over 4m (1 SD below population mean) with subjective memory complaints in the absence of dementia. Functional capability was determined by administering the Lawton Instrumental Activities of Daily Living (IADLs). Differences in demographics, socioeconomic and lifestyle factors between MCR positive and MCR negative groups were found using independent t-test and chi-square test. Risk factors of MCR and impact of MCR on functional capability were examined using

logistic regression. **Results:** The prevalence of MCR in the studied population was 7.1%. After adjusting for demographics and socio-economic factors, Indians (Adjusted OR = 5.79, 95% CI = 1.36-24.57, $p = 0.017$), increasing age (Adjusted OR = 1.09, 95% CI = 1.04-1.14, $p < 0.01$), higher BMI (Adjusted OR = 1.12, 95% CI = 1.05-1.20, $p < 0.01$) increased likelihood of MCR while increased years of education decreased likelihood (Adjusted OR = 0.91, 95% CI = 0.84-0.99, $p = 0.028$). The odds of having at least one impairment in IADL after adjusting for demographics, socio-economic and health factors amongst those with MCR were 3.65 (Adjusted OR = 3.65, 95% CI = 1.37-9.72, $p = 0.01$). **Conclusion:** Our study found 1 in 14 to have MCR, the pre-dementia stage. Indian ethnicity, those with increased age and higher BMI are at greater risk of having MCR. As MCR is also associated with functional impairment, it can serve as a useful screening tool to identify those at risk of progressing to dementia.

P95- SLEEP PATTERNS AND SLEEP PROBLEMS IN OLDER PERSONS WITH DEMENTIA. Narumon Numpha, Pornthip Malathum, Nuchanad Sutti, Taweevat Assavapokeea¹ (*Mahidol University, Bangkok, Thailand*)

Background: Sleep disturbance has been found in older persons with dementia, which impact on the quality of life of older persons and on the caregiving burden of the family. Little is known about the sleep patterns and sleep problems of older persons with dementia. Exploring these data would provide basic information to develop interventions for this population. **Objectives:** To explore sleep patterns and sleep problems in community-dwelling older persons with dementia. **Methods:** The sample recruited by purposive sampling consisted of 88 community-dwelling older persons with any stage of dementia who used healthcare services at outpatient departments of a university hospital, Thailand. Data were collected using a demographic data questionnaire, a sleep diary recorded by caregivers, and an electronic wrist activity tracker to assess sleep data for 3 consecutive nights. The data had been collected for three months and were analyzed using descriptive statistics. **Results:** The sample had an age range from 65 to 101 years ($M = 82.33$, $SD = 7.15$). The total sleep data of the 88 older persons with dementia consisted of 264 episodes. Almost all of the sleep data showed the polyphasic sleep pattern (sleeps for several periods of time a day), but a few had monophasic and biphasic sleep patterns. The total sleep time per night ranged from 3 to 13 hours with a mean of 9 hours. The mean sleep latency was 35 minutes, by which two-thirds of them had sleep latency less than 30 minutes. Three-quarters of the data woke up at night. The mean duration of waking up at night was 26 minutes. Two-thirds of the data had sleep problems, including insomnia, waking after sleep onset, and excessive daytime sleeping. Also, most of them had snoring (74%), followed by sleep talking (53%). **Conclusion:** The polyphasic sleep pattern was found mostly in older persons with dementia. Also, they had sleep problems of insomnia at night and excessive sleeping during the daytime. Healthcare providers may use the results from this study to understand the sleep patterns and then find

strategies to promote the sleep quality of older persons with dementia.

P96- COGNITIVE FUNCTION AND VITALITY HAVE A STRONGER CORRELATION WITH “PERCEIVED AGE” THAN “CHRONOLOGICAL AGE”. Yumi Umeda-Kameyama¹, Masashi Kameyama², Taro Kojima¹, Masaki Ishii¹, Shinya Ishii¹, Mitsutaka Yakabe¹, Kiwami Kidana¹, Tomohiko Urano^{1,3}, Sumito Ogawa¹, Masahiro Akishita¹ ((1) *Department of Geriatric Medicine, the University of Tokyo School of Medicine, Tokyo, Japan*; (2) *Department of Diagnostic Radiology, Tokyo Metropolitan Geriatric Hospital and Institute of Gerontology, Tokyo, Japan*; (3) *Department of Geriatric Medicine, International University of Health and Welfare, Narita, Chiba, Japan*)

Background: «Perceived age» of facial appearance in elderlies was shown to be a robust biomarker of aging that predicts survival, telomere length, and DNA methylation. It is also reported to correlate with carotid atherosclerosis and bone status. **Objectives:** This study aims to determine whether perceived age is a better biomarker than chronological age for a variety of aspects in dementia assessment, which includes general cognition, vitality, depressive state, and self-supportability. **Methods:** One hundred twenty-six patients admitted to the department of geriatric medicine, The University of Tokyo hospital with suspect of cognitive decline were enrolled. MMSE, Vitality Index, GDS15, IADL, and Barthel Index were performed. Ten geriatricians and clinical psychologists determined the perceived age of subjects based on their photographs. **Results:** The average values of 10 rates showed excellent reliability ($ICC(3,10) = 0.941$). Perceived age showed significantly better correlation with MMSE (female), Vitality Index (total, female), and IADL (total) than chronological age by Steiger's test, but not with GDS15 and Barthel Index. **Conclusion:** Perceived age was demonstrated to be a better biomarker for cognitive assessment than chronological age.

P97- RISK FACTORS FOR COGNITIVE FRAILTY AND ITS IMPACT ON HEALTH OUTCOMES IN COMMUNITY DWELLING OLDER ADULTS. Laura Tay¹, Huda Mukhlis¹, Jolene Ho¹, Aisyah Latib², EeLing Tay³, ShiMin Mah³, Candy Chan⁴, YeeSien Ng¹ ((1) *Department of General Medicine, Sengkang General Hospital, Singapore*; (2) *Office of Regional Health System, SingHealth, Singapore*; (3) *Department of Physiotherapy, Sengkang General Hospital, Singapore*; (4) *Dietetics, Sengkang General Hospital, Singapore*)

Background: Cognitive frailty is characterized by co-existence of physical frailty and cognitive impairment. Earlier studies reported aggravated health outcomes attributable to cognitive frailty over physical frailty alone. **Objectives:** We examine risk factors for cognitive frailty, and its impact on physical performance and health outcomes, compared

with isolated occurrence of cognitive impairment or physical frailty. **Methods:** Cross-sectional analysis of 757 community-dwelling older adults who completed multi-domain geriatric screen assessing for social vulnerability, mood, cognition, functional performance, nutrition, physical frailty (FRAIL) and sarcopenia (SARC-F). Cognitive impairment was defined using locally validated education-adjusted cut-offs on modified-Chinese Mini-Mental State Examination. Participants underwent physical fitness tests comprising grip strength, gait speed, lower limb strength and power, flexibility, balance, and endurance. Health outcomes included hospitalization, emergency department visits, falls and self-rating of health. Each participant was categorized as robust-cognitive intact (PF-/CI-), pre-frail/ frail only (PF+/CI-), cognitive impaired only (PF-/CI+), and cognitive frailty (PF+/CI+). **Results:** Mean age of study cohort was 67.6(6.7)years. 523 (69.0%) were PF-/CI-, 122 (16.1%) PF+/CI-, 73 (9.6%) PF-/CI+, and 39 (5.2%) PF+/CI+. In multi-nomial logistic regression referenced to PF-/CI-, older age significantly increased risk for PF-/CI+ and PF+/CI+. Ethnic minority was a risk factor only for PF+/CI+ [RR=5.67 (1.28-25.26), p=0.023]. Lower socio-economic status [RR=2.40 (1.40-4.12), p=0.002] and depression [RR=2.13 (1.15-3.94), p=0.016] increased risk only for PF+/CI-. Malnutrition and sarcopenia significantly increased risk for PF+/CI-, PF-/CI+ and PF+/CI+ (all p<0.05). PF+/CI+ had worst performance across all fitness tests (p<0.001), being significantly more impaired than PF+/CI- and PF-/CI+ in gait speed, balance, flexibility, leg power, and endurance (p<0.05). Only PF+/CI+ conferred higher risk for hospitalization [OR=4.33 (2.07-9.06), p<0.001] and emergency department attendance [OR=2.99 (1.37-6.49), p=0.006], independent of age and gender. PF+/CI- and PF+/CI+ significantly increased falls risk, with higher odds by cognitive frailty [OR=1.90 (1.17-3.09), p=0.010; OR=2.65 (1.26-5.56), p=0.010]. PF+/CI- and PF+/CI+ reported worse self-ratings of health (p<0.05). **Conclusion:** Cognitive frailty contributes to worse physical performance and poorer health outcomes compared to physical frailty and cognitive impairment in isolation. While social vulnerability and depression were differentially associated with isolated frailty status, malnutrition and sarcopenia should be targets for preventing frailty and cognitive impairment.

P98- DETECTION OF COGNITIVE FRAILTY SUBTYPES AND RELATIONS WITH CLINICAL CHARACTERISTICS: A LATENT CLASS ANALYSIS. Osamu Katayama, Sangyoon Lee, Seongryu Bae, Keitaro Makino, Ipei Chiba, Kenji Harada, Yohei Shinkai, Hiroyuki Shimada (*Department of Preventive Gerontology, Center for Gerontology and Social Science, National Center for Geriatrics and Gerontology, Japan*)

Background: Cognitive frailty is a condition recently defined by operationalized criteria describing coexisting physical frailty and mild cognitive impairment (MCI). However, there is no consensus on the definition of cognitive frailty for use in clinical and community settings. **Objectives:** This study aimed to use latent class analysis (LCA) to discover

potential subtypes of cognitive frail older people. In addition, we explored the relationship between the identified cognitive frailty subtypes, and their demographical, neuropsychological, body composition, and lifestyle activity characteristics. **Methods:** A total of 7309 community-dwelling older adults aged ≥ 60 years participated in the study. We characterized physical frailty as ≥ 3 of the following criteria: slow walking speed, muscle weakness, exhaustion, low physical activity, and weight loss. We used tests of word list memory, attention, and executive function, and processing speed to screen for cognitive impairment. The presence of ≥ 1 cognitive impairments were defined as MCI. We defined the condition where physical frailty and MCI coexist as cognitive frailty. LCA was applied to characterize classes or subgroups with different cognitive frailty phenotypes. Subsequently, we performed multinomial logistic regression analysis with cluster membership as dependent variable and dichotomized demographics and lifestyle activity characteristics as independent variables. **Results:** LCA identified eight distinct subgroups included three different cognitive frailty phenotypes: cognitive frailty composed of physical frailty and amnesic MCI (aCF), cognitive frailty composed of physical frailty and non-amnesic MCI (naCF) and, cognitive frailty in which physical frailty and global cognitive impairment (GCF). Cognitive frailty subtypes were associated with distinct demographical, neuropsychological, and lifestyle activity characteristics. In particular, the aCF cluster was associated with younger age and also related to the inactivity of productive and cognitive activities (p<0.05). The naCF cluster was related to the inactivity of social and cognitive activities (p<0.05). Finally, the GCF cluster was associated with older age (p<0.05). **Conclusion:** Using LCA, we identified eight distinct subgroups included three different cognitive frailty phenotypes in a large sample of community-dwelling older adults. Cognitive frailty subtypes were associated with distinct demographical, neuropsychological, and lifestyle activity characteristics.

P99- ASSOCIATION BETWEEN THE APOE $\epsilon 4$ GENOTYPE AND CARDIOVASCULAR RISK FACTORS IN OLDER MEXICAN ADULTS WITH MILD AMNESTIC AND NON-AMNESTIC COGNITIVE IMPAIRMENT. Sara G Aguilar Navarro, Alberto J Mimenza Alvarado, Itzel Aparicio González, Clarita Cabrera Juárez, Alejandra Samudio Cruz, Monsal Alexa, JA Avila Funes, Teresa Juarez-Cedillo (*Instituto Nacional de Ciencias Médicas y Nutrición Salvador Zubiran, Ciudad de México, Mexico*)

Background: The prevalence of mild cognitive impairment (MCI) ranges between 14-18% and is 4 times more frequent than dementia. The DCL has been associated with cardiovascular risk factors, mainly changes at the executive level. The APOE4 genotype, on the other hand, is a gene that confers susceptibility to Alzheimer's disease in addition to participating in lipid metabolism, giving greater risk of atherosclerosis and cardiovascular risk. However, given the genetic heterogeneity of the Mexican population, this

association is not clear. **Objectives:** To establish the strength of association between the different types of DCL (amnesic and non-amnesic) in Mexican mestizo older adults according to their carrier status of the ApoE4 allele and cardiovascular risk factors. **Methods:** 83 patients in a memory clinic were evaluated from 2017 to 2019, older than 75 years, without sensory deficit, psychiatric diseases or uncontrolled metabolic pathology, separating them into 3 mutually exclusive groups: healthy controls, group with amnesic MCI, group with non-amnesic MCI, performing geriatric and neuropsychological evaluation. Parametric and nonparametric statistics (χ^2 , ANOVA, multivariate linear regression analyzes) were used to find statistical differences between groups. **Results:** Multivariate linear regression analyzes were performed to examine the relationship between vascular risk factors, the presence of the APOE ϵ 4 allele, and cognitive change. APOE genotype significantly modified the associations between both hypertension and cardiovascular disease and a decline in language abilities as well as diabetes and decline in verbal memory, attention, and visuospatial abilities in non-amnesic MCI. Associations between increased vascular risk burden and greater cognitive decline were observed among APOE ϵ 4 carriers but not non-carriers with MCI. **Conclusion:** The present study revealed an increase in the association between non-amnesic MCI (APOE ϵ 4 carriers with vascular risk factors) and suggests that the treatment of vascular risk factors could contribute to reducing the risk of progression of cognitive impairment, particularly among patients with APOE ϵ 4 Mexicans.

P100- A COMPREHENSIVE LONGITUDINAL STUDY INCLUDING BIOLOGY AND IMAGING OF COGNITIVE FUNCTIONS IN FRAIL OLDER ADULTS (COGFRAIL): A STUDY PROTOCOL. S. Sourdet^{1,2}, G. Soriano^{1,2}, B. Vellas^{1,2} ((1) *Gérontopôle, Centre Hospitalier Universitaire de Toulouse, Toulouse, France*; (2) *Inserm UMR1027, Université de Toulouse III Paul Sabatier, Toulouse, France*)

Background: A number of cross-sectional and longitudinal studies have demonstrated an association between physical frailty and cognitive impairment (1). Many mechanisms have been suggested to explain the presence of cognitive impairment in frail subjects, such as cardiovascular risk, hormonal disturbances, chronic inflammation or nutrition (2, 3). Another hypothesis is that cognitive impairment in frail patient may be due to Alzheimer's disease (AD) (1, 2, 3). However, the link between frailty and amyloid deposition has to date never been studied in vivo. **Objectives:** (1) To examine the prevalence of cerebral amyloid pathology as measured with amyloid Positron Emission Tomography (PET) or amyloid- β -1-42 level in cerebrospinal fluid, among frail and pre-frail individuals presenting an objective cognitive impairment (2) To characterize the cognitive and clinical progression of frail cognitively impaired patients according to the amyloid status. **Methods:** COGFRAIL is a monocentric observational prospective study of 345 cognitive frail and

pre-frail older participants (according to Fried criteria), aged ≥ 70 years, with an objective cognitive decline (defined by a Clinical Dementia Rating (CDR) Scale Score ≤ 0.5 or 1). The participants will be followed up every 6 months, during 2 years. In addition to Cerebral amyloid pathology (measured by amyloid Positron Emission Tomography (PET) or amyloid- β -1-42 level in cerebrospinal fluid), measurements include cognitive performance, physical function, nutritional status, depressive symptoms biology, nutrition, Magnetic resonance imaging (MRI), and body composition to better understand the mechanisms and progression of cognitive frailty. **Results:** The study is currently being recruited. To date, 272 patients were included. 156 MRI 170 PET scan and 10 lumbar puncture have been performed. 43 subjects completed the study. **Conclusion:** This study will allow us to determine, for the first time, the prevalence of amyloid pathology, a marker of AD, among frail and pre-frail patients presenting objective memory impairment. The results will help characterize the cognitive decline in frail and pre-frail patients, with important implications for the detection, management and ultimately prevention of neurocognitive disorders among frail old individuals **References:** 1) Kojima G, Taniguchi Y, Iliffe S, et al. Frailty as a predictor of Alzheimer disease, vascular dementia, and all dementia among community-dwelling older people: a systematic review and meta-analysis. *J Am Med Dir Assoc.* 2016;17:881 – 888. 2) Panza F, Solfrizzi V, Barulli MR, et al. Cognitive frailty: a systematic review of epidemiological and neurobiological evidence of an age-related clinical condition. *Rejuvenation Res.* 2015;18:389 – 412. 3) Ruan Q, Yu Z, Chen M, et al. Cognitive frailty, a novel target for the prevention of elderly dependency. *Ageing Res Rev.* 2015;20:1 – 10.

P101- STEADY FALL RISK SCORE PREDICTS INCIDENT COGNITIVE IMPAIRMENT: DATA FROM THE NATIONAL HEALTH AND AGING TRENDS SURVEY. Rebecca S. Crow^{1,2}, Christian Haudenschild^{1,3}, Robert M. Roth^{1,5}, Meredith Roderka², Travis Masterson¹, John Brand¹, Tyler Gooding², Matthew C. Lohman⁴, Todd A. Mackenzie^{1,2,3}, Cheryl Elinsky^{1,2}, John A. Batsis^{1,2,3} ((1) *Geisel School of Medicine at Dartmouth, Hanover, New Hampshire, USA*; (2) *Department of Medicine, Dartmouth Hitchcock Medical Center, Lebanon, New Hampshire, USA*; (3) *The Dartmouth Institute for Health Policy, Lebanon, New Hampshire, USA*; (4) *University of South Carolina, Department of Epidemiology and Biostatistics, USA*; (5) *Department of Psychiatry, Dartmouth Hitchcock Medical Center, Lebanon, New Hampshire, USA*)

Background: Cognitive impairment is a well-known risk factor for falls in older adults. The risk of falls is increased in those with diminished executive function and reduced processing speed. While participants with cognitive deficits are more prone to falling, it is unknown whether risk of falling on cognitively intact individuals placing them at higher risk for future cognitive decline. **Objectives:** To ascertain the incident development of cognitive decline in those at higher

risk for falls using the Center for Disease Control's fall risk assessment tool, STEADI (Stop Elderly Accidents, Deaths, and Injuries) in community dwelling individuals >65 years of age. **Methods:** We identified individuals ≥ 65 years old using the longitudinal National Health and Aging Trends Study (NHATS) that consists of eight years of follow-up. These individuals did not have cognitive impairment at baseline. Fall risk was defined using the algorithm from the Center for Disease Control's STEADI initiative. Participants were classified at baseline in three categories of fall risk (low, moderate, severe). Impaired global cognition was defined as NHATS-defined impairment in either the Alzheimer's Disease-8 score, immediate/delayed recall, orientation, clock-drawing test, or date/person recall. The primary outcome was the risk of incident cognitive impairment over time. Cox-proportional hazard models and linear mixed-effects modeling ascertained the incidence of cognitive impairment, adjusting for age, sex, smoking status, education, co-morbidities and an ability to walk. Our referent variable was individuals at low STEADI fall risk. **Results:** Of the 5,822 participants (55.7% female), median age category was 75-80 years. Prevalence of baseline fall risk using the STEADI measure in participants was low (55.2%), medium (36.2%) and high (8.5%). The rate of cognitive impairment in our sample was 45.7%. In our fully adjusted model, the risk of developing cognitive impairment was HR 1.12 [95%CI:1.00 – 1.26] in the intermediate risk group, and HR 1.78 [95%CI: 1.51 – 2.11] in the high risk group. Using linear mixed-effects modeling yielded similar results. **Conclusion:** STEADI fall risk at baseline was predictive of higher rates of cognitive decline in those with normal cognition. Elevated fall risk by STEADI may suggest need for more thorough cognitive assessment.

P102- IMPACT OF COGNITIVE RESERVE ON FUNCTIONAL AND COGNITIVE DECLINE AMONG ELDERLY OUTPATIENTS. A. Sardella¹, A. Catalano², A. Alibrandi³, G. Ciancio², D. Brischetto², C. Principato², M. Muscianisi², F. Corica², M.C. Quattropiani¹, G. Basile² ((1) *Department of Clinical and Experimental Medicine, University of Messina, Italy;* (2) *Unit and School of Geriatrics, Department of Clinical and Experimental Medicine, University of Messina, Italy;* (3) *Department of Economics, University of Messina, Italy*)

Background: The concept of cognitive reserve (CR) has been developed as a potential factor able to describe individual differences in vulnerability to cognitive, functional, or clinical decline along aging. The progressive reduction of cognitive and functional performances represents an outcome commonly associated with aging. **Objectives:** The aim of this cross-sectional study is to investigate the association of CR with cognitive and functional outcomes in a sample of elderly outpatients. **Methods:** Subjects aged ≥ 65 were consecutively recruited. Patients who were unable to undergo the execution of required tasks due to severe cognitive, functional or sensory impairment were excluded. Mini Mental Examination (MMSE), Brief Intelligence Test (TIB) and Cognitive Reserve Index Questionnaire (CRIq) were administered. Handgrip strength,

gait speed and daily life autonomy were measured; a Frailty Index (FI) was eventually calculated. **Results:** Data from 105 patients were analyzed. CRIq was significantly correlated with MMSE ($r = 0.378$, $p < 0.01$), handgrip ($r = 0.347$, $p < 0.01$) and gait speed ($r = 0.220$, $p = 0.024$). Furthermore, CRIq was correlated with BADL ($r = 0.270$, $p = 0.005$), IADL ($r = 0.330$, $p = 0.001$) and inversely with FI ($r = -0.335$, $p < 0.01$). Significant correlations were found between TIB and MMSE ($r = 0.280$, $p < 0.05$), between TIB and CRIq ($r = 0.524$, $p < 0.01$), and between TIB and IADL ($r = 0.197$, $p = 0.043$). **Conclusion:** This preliminary report highlighted that patients with higher CR showed not only better overall cognitive functioning, but also better functional status and a lower degree of frailty. In the light of a multidimensional geriatric assessment, the integrative evaluation of CR in elderly might offer the opportunity to track possible trajectories of aging, since it appeared related either to cognitive status, either to functional outcomes and to frailty.

P103- THE COGNITIVE CORRELATES OF FRAILTY IN A MEXICAN-AMERICAN COHORT. Raymond F. Palmer, D. Royal (*University of Texas Health Science Center at San Antonio, San Antonio, USA*)

Background: The clinical syndrome of “physical” frailty has been conceived without regard for cognitive decline. Nevertheless, it has been suggested that frail elders exhibit frailty-specific cognitive impairments, and that the cognitive correlates of frailty may be dementing in their own right. Meanwhile, we have used confirmatory factor analysis (CFA) in a Structural Equation Model (SEM) framework to construct a latent dementia phenotype, “ δ ”. Our approach is modular and can be redirected to other clinical targets. **Objectives:** In this analysis, we create a δ ortholog representing the “cognitive correlates of frailty” (dF). **Methods:** First, we constructed a frailty index (iF) from wave-5 data collected as part of the Hispanic Established Population for Epidemiological Studies in the Elderly (H-EPESE). A δ ortholog targeting iF was then constructed from a cognitive battery that included the Mini-Mental Status Exam (MMSE) and CLOX: An Executive Clock-drawing task (CLOX). **Results:** The model fit the data well and dF exhibited factor determinance. dFrailty was strongly indicated ($r = 0.64$, $p < 0.001$) by iF and explained 41% of the index's variance. It was also significantly indicated by MMSE and CLOX scores. dF was strongly correlated ($r = 0.90$, $p < 0.001$) with Instrumental Activities of Daily Living (IADL), independently of age, gender and education. The remaining 59% of iF's variance had no significant association with IADL. The orthogonal latent variable “g”, dF's residual in Spearman's general intelligence factor “g”, was strongly indicated by all three cognitive performance measures. Nevertheless, it was weakly associated with IADL. Measure specific cognitive performance, residual to both dF and g', had no independent association with IADL. **Conclusion:** These results suggest that the frailty syndrome does indeed have specific cognitive correlates. These are strongly associated with IADL and therefore potentially “dementing”. Like δ , the cognitive correlates of frailty are extractable from Spearman's

g, which may constrain the biology and psychometric properties of frailty-specific cognitive changes. Independently of dF, cognition has little association with IADL. This suggests that frailty may be a major determinant of IADL performance in elderly MA, and possibly a major etiology of “all cause” dementia in that population.

P104- COGNITION AND FRAILTY: FELLOW TRAVELERS OR PARTNERS IN CRIME? Manuel Montero-Odasso^{1,2,3,4}, Frederico Pieruccini-Faria^{1,3}, Yanina Sarquis-Adamson³, Mark Speechley² ((1) *Department of Medicine, Division of Geriatric Medicine, Schulich School of Medicine & Dentistry, University of Western, Ontario, London, ON, Canada*; (2) *Department of Epidemiology and Biostatistics, Schulich School of Medicine & Dentistry, University of Western Ontario, London, ON, Canada*; (3) *Gait and Brain Lab, Parkwood Institute, Lawson Health Research Institute, London, ON, Canada*; (4) *School of Kinesiology, Faculty of Health Sciences, University of Western Ontario, London, ON, Canada*)

Background: Cognitive-frailty has been proposed as a distinctive entity which preludes dementia. **Objectives:** We aimed to examine the relationship between physical frailty, cognitive status, and gait performance as predictors of cognitive decline and incident dementia. **Methods:** Cohort study of 252 community older adults free of dementia at baseline with a 5 year follow-up. Inclusion criteria: > 65 years, English speaking, able to ambulate one city block. Exclusion criteria: hip/knee joint arthroplasty in past 6 months, Parkinsonism, major depression, and diagnosis of dementia (DSM-IV criteria). Cognition was assessed using the MoCA, the MMSE, and the Clinical Dementia Rating (CDR) scale was performed. Physical frailty was defined using the phenotypic criteria described by Fried and Walston. Cognitive-frailty was defined as the simultaneous presence of physical frailty with objective cognitive impairment, and absence of concurrent dementia. The main outcome measure was all-cause dementia (DSM-IV criteria). Cox Proportional Hazards models were used to estimate the risk of cognitive decline and incident dementia. **Results:** Over a 5-year follow-up, 53 participants experienced cognitive decline and 27 participants progressed to dementia (global incidence rate (IR): 73 per 1000-person/y). Participants with frailty had a higher prevalence of cognitive impairment (77%) compared to those without (54%, $p=0.02$) but the risk of progression to dementia was not significant. Adding cognitive impairment to the frailty phenotype (cognitive-frailty) predicted further cognitive impairment and progression to dementia. Dementia IR for frailty was 61 per 1000 person/y and for cognitive-frailty, 80 per 1000 person/y. However, when slow gait was combined with baseline cognitive impairment, it showed the highest risk of progression to dementia (HR: 35.9, 95%CI: 4.0–319.2; $p = 0.001$) with an IR of 130 per 1000 person/y. **Conclusion:** Frailty and cognitive impairment are common and often coexist in the same individuals. However, slowing gait seems to be the frailty component driving the association with future dementia.

E-HEALTH

P105- HYGIENE 2.0 : A PROTOCOL TO IMPLEMENT A RESPONSIVE WEBSITE SELECTING BATH TECHNOLOGY FOR FRAIL ELDERLY. Claudia Talbot-Coulombe¹, Karine Latulippe², Claudine Auger³, Dominique Giroux⁴, Noémie Séguin-Tremblay⁵, Josée Gauthier⁶, Catherine Genest⁷, Ernesto Morales⁸, Claude Vincent⁹, Manon Guay¹⁰ ((1) ((1) *Research Center on Aging, CIUSSS de l’Estrie – CHUS, Sherbrooke, QC, Canada*; (2) *Department of Studies on Teaching and Learning, Faculty of Education, Laval University, Quebec, QC, Canada*; (3) *School of Rehabilitation, Faculty of Medicine, University of Montreal and Center for Interdisciplinary Research in Rehabilitation in Greater Montreal, Montreal, QC, Canada*; (4) *Rehabilitation Department, Faculty of Medicine, Laval University and Centre d’excellence sur le vieillissement de Québec du CHU de Québec, Quebec, QC, Canada*; (5) *Research Center on Aging, CIUSSS de l’Estrie – CHUS, Sherbrooke, QC, Canada*; (6) *CIUSSS de la Mauricie-et-du-Centre-du-Québec, Trois-Rivières, QC, Canada*; (7) *CIUSSS de la Capitale-Nationale, Quebec, QC, Canada*; (8) *Rehabilitation Department, Faculty of Medicine, Laval University and Center for Interdisciplinary Research in Rehabilitation and Social Integration, Quebec, QC, Canada*; (9) *Rehabilitation Department, Faculty of Medicine, Laval University and Center for Interdisciplinary Research in Rehabilitation and Social Integration, Quebec, QC, Canada*; (10) *Research Center on Aging, CIUSSS de l’Estrie – CHUS and School of Rehabilitation, Faculty of Medicine & Health Sciences, University of Sherbrooke, Sherbrooke, QC, Canada*)

Background: Assisted bathing requires the most hours of home care. For the frail elderly and their caretakers, the bathroom presents the most risk factors for falls and injury. Bathroom adaptation is the primary reason for consultation in community occupational therapy and available resources cannot meet the increasing demand. The Hygiene 2.0 (H2.0) website (<https://algo.grismoir.com/>) addresses this need by offering a structured questioning to identify bathing assistive technology for the frail elderly living at home. **Objectives:** Our action-research protocol aims to establish a partnership between actors in the home care social economy enterprises (EÉSAD), the home care programs offered through the healthcare system and the private sector (e.g., assistive technology providers). This implies: 1) Adapting H2.0 to the home care service workers’ needs; 2) Designing an implementation model for H2.0 in order to formalize a partnership in the community; 3) Conducting pilot testing in two EÉSAD. **Methods:** 1) User-centered design and a multiple case study where a case represents a home care worker (n=9) from a EÉSAD (Québec, Canada) offering bathing assistance for the elderly. During testing, the home care worker will explore the H2.0 prototype with an elderly in his or her home, sharing their thoughts out loud. The unit of analysis is the usability of H2.0, allowing improving to the prototype after every three participants. 2) All collaborators will participate in the iterative modification of a preliminary logic model for the implementation of H2.0. Modifications suggested

will be integrated to the model throughout three meetings, or until a consensus is reached. 3) The adapted version of H2.0 (obj. 1) will be tested according to the implementation model developed (obj. 2). A pilot project using mixed methods in collaboration with two EÉSAD will be conducted with 20 older adults having difficulty bathing. **Results:** Anticipated results: responsive H2.0 website adapted to the users' needs, an implementation model and pilot data allowing scaling-up technology meeting needs of frail elderly and their caretakers issues during bathing.

P106- MACHINE-LEARNING MULTIMORBIDITY FRAILTY INDEX: COMPARISONS BETWEEN HYPOTHESIS- AND DATA-DRIVEN APPROACHES USING TAIWAN'S NATIONAL HEALTH INSURANCE RESEARCH DATABASE. Li-Ning Peng^{1,2,3}, Fei-Yuan Hsiao^{4,5,6}, Wei-Ju Lee^{1,2,7}, Shih-Tsung Huang⁴, Liang-Kung Chen^{1,2,3}
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Background: The theory of cumulative deficits using big data to develop the multimorbidity frailty index (mFI) has become a widely accepted approach in public health and healthcare services. However, constructing the mFI using the most critical determinants and stratifying different risk groups with dose-response relationships remain major challenges in clinical practice. **Objectives:** This study aimed to develop the mFI by using machine-learning methods that select variables based on the optimal fitness of the model and to further establish four entities of risk using a machine-learning approach as well as to ensure the dose-response relationship and the best distinction between groups. **Methods:** In this study, we used Taiwan's National Health Insurance Research Database to develop a machine-learning multimorbidity frailty index (ML-mFI) using the theory of cumulative diseases/deficits of an individual older person. Compared to the conventional mFI, in which the selection of diseases/deficits is based on expert opinion, we adopted the random forest method to select the most influential diseases/deficits that predict adverse outcomes for older people. To ensure that the survival curves showed a dose-response relationship with overlap during the follow-up, we developed the distance index and coverage index at any time point to classify the ML-mFI of all subjects into the categories of fit, mild frailty, moderate frailty and severe frailty. Survival analysis was conducted to evaluate the ability of the ML-mFI to predict adverse outcomes, such as unplanned hospitalizations,

intensive care unit (ICU) admissions and mortality. **Results:** The final ML-mFI model contained 38 diseases/deficits in this study. Compared with conventional mFI, both indices had similar distribution patterns by age and sex; however, among people aged 65-69, the mean mFI and ML-mFI were 0.037 (standard deviation (SD) 0.048) and 0.0070 (SD 0.0254), respectively. The difference may result from discrepancies in the diseases/deficits selected in the mFI and the ML-mFI. A total of 86,133 subjects aged 65 to 100 years were included in this study and were categorized into 4 groups according to the level of the ML-mFI. Both the Kaplan-Meier survival curves and Cox models showed that the ML-mFI significantly predicted all outcomes of interest, including all-cause mortality, unplanned hospitalizations and all-cause ICU admissions, at 1, 5 and 8 years of follow-up (P<0.01). In particular, a dose-response relationship was revealed between the four ML-mFI groups and adverse outcomes. **Conclusion:** The ML-mFI consists of 38 diseases/deficits that can successfully stratify risk groups associated with all-cause mortality, unplanned hospitalizations and all-cause ICU admissions in older people, which indicates that precise, patient-centered medical care can be a reality in an aging society.

P107- ADAPTING INPATIENT REHABILITATION INTERVENTIONS FOR THE FRAIL ELDERLY USING A 3D REPRESENTATION OF THE HOME ENVIRONMENT. Manon Guay¹, Genevieve Goyer², Mathieu Labbé³, Claudine Auger⁴, Janice Polgar⁵, Michelle Plante⁶, Natalie Chevalier⁷, Noémie Séguin-Tremblay⁸, Monia D'Amours⁹, François Michaud¹⁰
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Background: Following a fall or surgery, the frail elderly often require inpatient rehabilitation to regain a level of autonomy in their activities of daily living permitting them

to return home. Understanding the home environment prior to discharge is crucial. Occupational therapists (OTs) often depend on client's verbal descriptions, pictures and sketches when planning rehabilitation exercises and suggesting adaptations. The information obtained is therefore partial. MapIt is a new mobile application which scans a room producing a 3D representation with virtual measurements of environmental elements. This could provide a more complete representation of the home needed by inpatient rehabilitation OTs. **Objectives:** To target MapIt's clinical applications for inpatient rehabilitation of the frail elderly. **Methods:** Multiple case study where MapIt was introduced in three inpatient geriatric rehabilitation units over 40 days. Five OTs maintained a logbook and participated in four individual semi-structured interviews. A deductive thematic analysis of the logbooks and interview transcripts was corroborated by two additional OTs. **Results:** MapIt is useful for OTs in rehabilitation settings by allowing them to 1) See it: See the home environment, 2) Measure it: Take measurements of desired environmental elements, 3) Document it: Have a copy of the environment on hand, 4) Communicate it : Facilitate exchanges with the client and with colleagues. With MapIt, OTs gain a better understanding of the environment, which informs the rehabilitation intervention. Better communication could also improve the client's implementation of the therapeutic strategies. **Conclusion:** MapIt is a useful resource to optimise intensive rehabilitation for the frail elderly.

OSTEOPOROSIS & FRAILTY

P108- PREVIOUS DIAGNOSIS OF OSTEOPOROSIS IN ELDERLY PATIENTS WITH HIP FRACTURE.

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Background: As the age of the population increases, the incidence of osteoporosis and its direct consequence, fragility fractures, are also increasing. Hip fractures are associated with the greatest number of complications, functional deterioration, and mortality of up to 30% one year after the fracture. **Objectives:** The aim of this study is to determine the prevalence of previous diagnosis of osteoporosis in elderly patients who suffer hip fracture and its relationship with age distribution (75–84, 85–90 and >90 years old), gender, type of fracture and functionality. **Methods:** We enrolled 534 patients with hip fracture, aged 75 years or older in an Orthogeriatric Unit between December 2013 and November 2014. Underwent comprehensive geriatric assessment that evaluates comorbidities, medication use, ability to perform basic activities of daily living, place of residence, anesthesia risk as measured by the ASA score, type of fracture, type of surgery and anesthesia and in-hospital mortality. SPSS®, v.22.0. **Results:** The mean age was 86.1±7.3 years (75-105 years). 75.4 % female. 55% pertrochanteric fractures. (93%) underwent

surgery. Only 11.6% received general anesthesia. 64% walked independently, 69% had Barthel >60, 132 (25%) had a previous diagnosis of dementia, and 26% live in nursing home prior to fracture. We found a previous diagnosis of osteoporosis in 58 patients (10.9%). In these patients, statistically significant differences were shown for sex $p<0.05$ (12.8% female vs 5.2% male), age distribution $p<0.05$ (14.8%(75-84) vs 10.6% (85-89) vs 6.7% (>90) and the presence of anti-osteoporotic treatments $p<0.001$. All other measurements (Barthel Index, cognitive degree, type of fracture, ASA score and type of surgery, did not show statistically significant differences ($P>.05$). **Conclusion:** Patients in very advanced age showed neither significantly higher percentage of diagnosed osteoporosis, not significantly higher amount of preexisting osteoporosis-related medication. Although the prevalence of osteoporosis increases with age, the diagnosis and treatment prevalence decreased in higher age groups.

P109- MUSCLE AND BONE FUNCTIONS IN ELDERLY OSTEOPENIC-OBES: EFFECT OF INITIAL PROTEIN INTAKE.

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Background: Aging is associated with a decrease in bone density, muscle mass and a gain in fat mass which increase physical disabilities and falls. Nevertheless, the impact of obesity on bone density and architecture is still controversial. Furthermore, protein intake appears to be associated with maintenance of muscle and physical function, but also with bone density and architecture. However, the role of initial protein intake in osteopenic-obese older adults is still unclear. **Objectives:** To examine the influence of initial protein intake on muscle and bone function in osteopenic-obese older adults. **Methods:** Cross-sectional a-posteriori matched study design. Fourteen obese (total fat (%): men >25; women: >35) osteopenic (BMD T-score <-1.5) older adults (age >60 years old) were divided in 2 groups according to their initial protein intake (PROT- (N=7): <1g/kgBW/d or PROT+ (N=7): >1.2g/kgBW/d) and were matched for age (± 2 years) and gender. Body composition (Fat, fat-free and bone masses, DXA), muscle composition and bone architecture (QPCT), muscle function (grip strength, knee extension strength, muscle power), physical performance (walking speed (4m), TUG (3m), unipodal balance, stair and chair tests), cardiorespiratory function (6min walking test) and lifestyle habits (physical activity level: 3-axial accelerometer and nutritional status: food record) were assessed. **Results:** Our groups (PROT- vs. PROT+) were similar ($P>0.05$) in terms of age (66.3±3.8 vs. 65.4±2.2 years), BMI (26.9±5.2 vs. 26.3±3.9 kg/m²), body fat (total(%): 33.4±5.9 vs. 37.6±4.0), muscle quantity

(fat-free mass or limb muscle area) and quality (intra & sub-muscular adipose tissues), bone density (total hip or spine) and architecture (marrow, cortical or total area, and compressive or torsion strength), physical performance (walking speed(m/s): 0.75±0.13 vs. 0.75±0.06), cardiorespiratory function, lifestyle habits (steps: 7734±2867 vs. 8032±3418), except (by design) for the initial amount of protein intake (0.8±0.2 vs. 1.4±0.2 g/kgBW/d) respectively. **Conclusion:** The initial protein intake does not seem to influence bone architecture, muscle function, or physical performance in elderly osteopenic-obese. Obesity but also the level of protein intake above the official recommendation (>0.8g/kgBW/d) could explain these conclusions. Thus, future studies are needed to confirm our preliminary results.

NUTRITION AND AGING

P110- MNA-SF VS GLIM DIAGNOSTIC CRITERIA OF MALNUTRITION IN VERY OLD PATIENTS HOSPITALIZED AN ACUTE GERIATRIC UNIT.

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Background: The GLIM definition of malnutrition is the first intended to be used globally. GLIM uses five criteria (two phenotypic and three etiologic) for the diagnosis of malnutrition, which is made when at least one etiologic and one phenotypic criterion are present. MNA-SF is a validated widespread screening tool used in geriatric settings. GLIM and MNA have not been compared in acute geriatric care. **Objectives:** To measure the prevalence of malnutrition in older patients admitted to an acute geriatric unit using GLIM criteria and to assess the accuracy of the MNA-SF in predicting GLIM defined malnutrition. **Methods:** A prospective study was conducted among all patients older than 80 years old admitted to an acute geriatric unit. End-of-life situations and wearers of pacemakers were excluded. GLIM criteria and MNA-SF were assessed on admission. Muscle mass (one of the GLIM criteria) was estimated by bioimpedance (thresholds for low muscle mass: <21.4 kg in men; <14.1 kg in women). **Results:** 171 patients were included (mean age 92.9±3.7 years, 72% women). On admission, 55.6% were malnourished according to the GLIM criteria (84.2% met at least one etiologic criterion, 63.2% met at least one phenotypic criterion). 53.8% were malnourished using MNA-SF. However, there was no correlation between GLIM and MNA-SF (correlation coefficient $r=-0.05$, $p=0.076$). MNA-SF had low sensitivity (51.6%) and low specificity (43.4%) to detect malnutrition diagnosed with the GLIM criteria (ROC curve AUC=0.475). **Conclusion:** More than half of the very old patients admitted to an acute geriatric unit were malnourished according to the GLIM diagnostic criteria. A very similar proportion of patients had a MNA-SF suggesting malnutrition. However, MNA-SF had a low reliability to detect patients with GLIM defined malnutrition.

P111- MEALTIME OBSERVATION AND ASSISTANCES UNDERVALUED AS A STRATEGY TO OPTIMISING NUTRITION IN FRAIL OLDER ADULTS.

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Background: Hospitalised older adults are at risk of hospital associated decline (HAD). Optimising nutrition intake is an important modifiable factor in protecting against HAD and promoting recovery, but food intake and the quality of mealtimes are frequently overlooked nursing activities. **Objectives:** The study aim was to undertake an in-depth analysis of mealtime practices and to identify patient and mealtime factors associated with low food intake (<eating 50% of meal provided). **Methods:** We carried out structured observation of mealtimes using a validated tool examining patient positioning, mealtime set up and assistance. The primary outcome was food consumption categorised as 0, 25%, 50% 75% or 100% based on visual inspection of food trays. Data were also collected on patient characteristics. Data analysis used descriptive statistics and univariate logistic regression to examine the association between low food intake and mealtime and patient factors. **Results:** We included 295 mealtime observations on 63 patients aged 65 years and older. At 41% (n=122) of meals, patients ate half or less of the food provided. Meal time factors with a weak association with low intake were: allocated Red Tray (an indicator of nutrition risk), modified diet, and needing assistance. Breakfast time was the most important meal for food intake. Nearly half of the patients (31/63) ate 50% or less of the food provided on two or more occasions over a 48-hour period. Patient frailty and a moderate to high nutrition risk score were independently associated with low food intake. **Conclusion:** Patient factors are the strongest predictors of low food intake. Increasing the quality of the mealtime experience and more tailored nutrition plans could improve nutrition intake in frail older adults.

P112- FOUR-YEAR RISK OF MORTALITY IN MALNOURISHED OLDER ADULTS DIAGNOSED BY THE EUROPEAN SOCIETY FOR CLINICAL NUTRITION (ESPEN) AND THE GLOBAL LEADERSHIP INITIATIVE ON MALNUTRITION (GLIM) CRITERIA: DATA FROM THE SARCOPHAGE STUDY. Dolores Sanchez-Rodriguez¹⁻⁵, Médéa Locquet¹, Jean-Yves Reginster^{1,6}, Etienne Cavalier^{7,8}, Olivier Bruyère¹, Charlotte Beaudart¹ ((1) WHO Collaborating Centre for Public Health Aspects of Musculoskeletal Health and Aging, Division of Public Health, Epidemiology and Health Economics, University of Liège, Liège, Belgium; (2) Geriatrics Department, Parc Salut Mar. Barcelona, Spain; (3) Rehabilitation Research Group. Hospital Del Mar Medical Research Institute (IMIM). Barcelona, Spain; (4) School of Medicine, Universitat Autònoma de Barcelona. Barcelona, Spain; (5) School of Medicine, Universitat Pompeu Fabra. Barcelona, Spain; (6) Prince Mutaib Chair for Biomarkers of Osteoporosis, Biochemistry Department, College of Science, King Saud University, Riyadh, Kingdom of Saudi Arabia; (7) Royal Belgian Society of Laboratory Medicine; (8) Department of Clinical Chemistry, University of Liège, CHU – Sart Tilman. Liège, Belgium)

Background: The Global Leadership Initiative on Malnutrition (GLIM) criteria have been recently launched by consensus of the major nutrition societies. GLIM criteria are partly constructed on the previous definition of malnutrition developed by the European Society of Clinical Nutrition and Metabolism (ESPEN). **Objectives:** We aimed to assess the risk of mortality (and secondarily, the risk of institutionalization, hospitalization, falls, and fractures) during a 4-year follow-up according to baseline status of malnutrition in community-dwelling older adults from the SarcoPhAge (Sarcopenia and Physical Impairment with advancing Age) study. **Methods:** The SarcoPhAge study included 534 older adults ≥ 65 years old in Belgium, followed up from 2013 to 2019. Mortality and adverse health consequences were collected annually by interviews or phone-calls. Malnutrition was defined at baseline according to GLIM and ESPEN criteria. Cohen kappa coefficient measured the agreement between both criteria. Adjusted Cox-regression and Kaplan-Meier survival curves were performed for malnutrition. Logistic regression was used for the other outcomes. **Results:** From 534 subjects recruited, the records for 411 participants (73.2 \pm 6.05 years old; 55.7% women) had all the variables needed to apply GLIM criteria. Prevalence of malnutrition at baseline was 23.4% for GLIM and 7% for ESPEN criteria ($k=0.30$, low agreement). The adjusted Cox-regression showed a significant increased mortality risk according to malnutrition status both for GLIM (adjusted HR=4.41 [95%CI: 2.17-8.97]) and ESPEN (adjusted HR=2.76 [95%CI: 1.16-6.58]) criteria. Survival curves differed significantly between malnourished and non-malnourished groups, regardless of the definition used (Log-rank $p<0.001$ for both). Eleven subjects (3%) were institutionalized, 189 (51.6%) were hospitalized at least once, 149 (40.7%) fell at least once, and 35 (9.6%) had at least one fracture during the 4-year

follow-up. No association was found between malnutrition and 4-year risk of institutionalization, hospitalization, falls, or fractures ($p>0.05$). **Conclusion:** Malnutrition according to GLIM criteria was associated with a 4.4-fold higher mortality risk; double that of the ESPEN criteria, during a 4-year follow-up. No association was found between malnutrition according to these two criteria and incidence of other adverse health consequences. GLIM criteria anticipate outcome and might guide interventions, with important implications for clinical practice and research.

P113- HIGHER DOSE OF RESVERATROL ELEVATED CARDIOVASCULAR DISEASE RISK BIOMARKER LEVELS IN OVERWEIGHT OLDER ADULTS – A PILOT STUDY. R.T. Mankowski¹, L. You², C. Leeuwenburgh¹, T.M. Manini¹, S. Schneider¹, P. Qiu², S.D. Anton¹ ((1) Department of Aging and Geriatric Research, University of Florida, Gainesville, FL, USA; (2) Department of Biostatistics, University of Florida, Gainesville, Florida, USA)

Background: Older adults are at high risk of developing cardiovascular disease. Pre-clinical studies indicate that resveratrol (RSV), a polyphenol present mostly in grapes and red wine, may prevent development of cardiovascular disease. **Objectives:** Our hypothesis was that RSV will reduce biomarkers of cardiovascular disease risk in obese, rather healthy older adults in a dose-dependent manner. **Methods:** Older participants (65 years and older) were randomized to a 90 day RSV treatment with 300mg (n=10), 1000mg (n=9) or placebo (n=10). We measured levels of atherosclerosis development risk biomarkers i.e. oxidized low-density lipoprotein (oxLDL), soluble E-selectin-1 (sE-selectin), soluble Intercellular Adhesion Molecule-1 (sICAM-1), Soluble Vascular Cell Adhesion Molecule-1 (sVCAM-1), total plasminogen activator inhibitor (tPAI-1). Statistical significance was set at $p<0.05$. **Results:** Changes in sVCAM-1 300mg vs. 1000mg vs. placebo: (-10.4 \pm 43.8 ng/ml vs. 130.2 \pm 38.2 ng/ml vs. 15.1 \pm 51.4 ng/ml) and tPAI-1 300mg vs. 1000mg vs. placebo (-1.6 \pm 5.1 ng/ml vs. 15.2 \pm 3.5 ng/ml vs. 4.9 \pm 5.9 ng/ml) indicate significantly higher levels in a 1000mg group compared to a 300mg and a placebo groups. Other biomarkers (300mg vs. 1000mg vs. placebo: oxLDL, sEselectin-1 and sICAM-1) followed the same trend toward higher levels in the 1000mg group compared to the 300mg and placebo groups, without reaching statistical significance. **Conclusion:** This pilot project suggests that a higher dose of RSV may increase the levels of cardiovascular disease risk biomarkers in overweight older adults. Given no change in the cardiovascular disease risk biomarkers in response to a lower dose, future studies should test the effects of different doses of RSV on reduction of cardiovascular disease biomarkers in overweight, rather healthy older adults.

P114- ACTUAL NUTRITION IMPACT FOR RESIDUAL WORKING CAPACITY AND FRAILTY. Tomarevska Olena, Poliakov Oleksandr (*Institute of Gerontology by D.F. Chebotarev of National Academy of Medical Sciences of Ukraine, Kyiv, Ukraine*)

Background: Actual nutrition is a factor that continually effects physiological capacity and workability, the functional aging rate of an elderly persons. **Objectives:** The purpose of this study was to determine the relationship between nutrition and physiological abilities, the work performance, functional aging rate, residual working capacity and frailty of the elderly. **Methods:** It has been studied anthropometric and functional parameters of respiration, physical performance, mental capability, sensory skills, as well as the rate of functional aging in different aging groups: 20-30 years – 43 persons, 60-89 years -120 persons, 90 – 104 years - 36 persons. We have also analyzed the professional history, social status, and factual nutrition (according to the questionnaire proposed by the WHO and adapted for Ukraine) of the elderly. **Results:** The nutrition or diet factors influence on the problems dealing with working capability, reduction of the hand grip strength and endurance, independence and frailty (for elderly) in overall 10.53% for all mentioned factors. Right and left hand grip strength associate with protein consumption ($r = 0.253$; $r = 0.248$; $P < 0.01$ accordance) with variety of cereals ($r = -0.224$; $r = -0.227$ $P < 0.05$ accordance) also with variety of vegetables ($r = 0.209$; $r = 0.196$; $P < 0.05$ accordance) variety of fruits ($r = 0.254$; $P < 0.01$; $r = 0.216$; $P < 0.05$ accordance). It was studied features of an actual food at 36 centenarians of Ukraine which not only have lived to this old age, but also have the relatives who have lived to age of centenarians. It was established, that meals of Ukrainian centenarians include high percentage of vegetables, fruits and dairy products. Meanwhile menu has been deprived practically all basic alimentary pathology risk factors which accelerates biological age, creates certain preconditions to preservation of health and longevity. **Conclusion:** As a result of a comprehensive study and mathematical modeling was developed a quantitative method for assessing the residual working capacity for elderly persons.

P115- DEVELOPMENT OF A SCREENING METHOD FOR ASSESSING OLFACTORY CAPACITY OF EVERYDAY FOOD ODOURS IN AGEING POPULATIONS. Eva Honnens de Lichtenberg Broge¹, Karin Wendin^{1,2}, Grethe Hyldig³, Wender L.P. Bredie² ((1) *Department of Food Science, Section for Food Design and Consumer Behaviour, University of Copenhagen, Frederiksberg C, Denmark*; (2) *Department of Food and Meal Science, Kristianstad University, SE-291 88 Kristianstad, Sweden*; (3) *Department National Food Institute, Technical University of Denmark, Kemitorvet, Lyngby, Denmark*)

Background: Age-related decline in olfactory function has implications for health and nutrition due to reduced appetite and decreased sensory perception of food. Several studies have

investigated olfactory performance in the elderly, but studied mostly single odour components often less related to food and meals. Food odours are composed of multiple odorants and compensation for specific perceptual losses among elderly may occur. Therefore, it is relevant to study olfactory perception of complex food odours to improve understanding of odour perception in the context of foods and meals. **Objectives:** To develop a test method to screen young and elderly (60+) subjects on their olfactory capacity for everyday food odours. The method included a series of sniffing sticks with relevant and familiar complex food odours from primarily essential oils. **Methods:** The olfactory sniffing sticks test kit was developed in four steps: 1) Selection and validation of relevant, familiar and diverse food odours, evaluated on perceived familiarity. 2) Standardization of an ISO intensity reference level for the food odours in relation to n-butanol. 3) Assessment of shelf-life stability for the sniffing sticks within an 8 weeks period. 4) Evaluation of test-retest reliability for intensity and identification of the odours within a 2 weeks period. **Results:** 16 food odours were selected due to their diverse sensory characteristics. They were provided from a French manufacturer which may have compromised the familiarity in a Danish context as only 12 out 16 obtained satisfactory familiarity score. However 14 out 16 showed reliable results in a test-retest procedure. N-butanol, in two concentrations provided a satisfactory reference frame for the ISO intensity scaling. Furthermore the food odours were overall shelf-life stable within an 8 weeks period. **Conclusion:** A new odour test kit for everyday food odours was developed and validated for screening olfactory capacity (intensity perception, familiarity and identification) in elderly subjects. Based on the evaluations, 15 odours were included in the final test kit. This olfactory test reflects the complex stimulation of the olfactory system, when stimulated by eating a food, compared to odour test kits with single or few components which makes it relevant when customizing of meals for elderly to improve nutrition and well-being.

P116- NORDIC NUTRITION PROTEIN INTAKE RECOMMENDATION AND FRAILTY. KUOPIO OSTPRE-FPS STUDY. Masoud Isanejad¹, Joonas Sirola², Toni Rikkinen², Jaakko Mursu³, Heikki Kröger⁴, Sarang Latif Qazi², Marjo Tuppurainen⁵, Arja T Erkkilä³ ((1) *William and Duncan Building, University of Liverpool, Liverpool, UK*; (2) *Kuopio Musculoskeletal Research Unit, University of Eastern Finland, Kuopio, Finland*; (3) *Institute of Public Health and Clinical Nutrition, University of Eastern Finland, Kuopio, Finland*; (4) *Department of Orthopaedics and Traumatology, Kuopio University Hospital, Kuopio, Finland*; (5) *Department of Obstetrics and Gynaecology, Kuopio University Hospital, Kuopio, Finland*)

Background: Nordic nutrition recommendations (NNR) (2012) suggest protein intake ≥ 1.1 g/kg body weight (BW) to preserve physical function in Nordic older adults. However, no published study has used this cut-off to evaluate the association between protein intake and frailty. **Objectives:** This study

examined associations between protein intake, and sources of protein intake, with frailty status at the 3-year follow-up. **Methods:** Participants were 440 women aged 65-72 years enrolled in the Kuopio Osteoporosis Risk Factor and Prevention –Fracture Prevention Study. Protein intake g/kg BW and g/d was calculated using a 3-day food record at baseline 2003. At the 3-year follow-up (2006), frailty phenotype was defined as the presence of three or more, and prefrailty as the presence of one or two, of the Fried criteria: low grip strength adjusted for body mass index, low walking speed, low physical activity, exhaustion was defined using a low life satisfaction score, and weight loss >5% of BW. The association between protein intake, animal protein and plant protein, and frailty status was examined by multinomial regression analysis adjusting for demographics, chronic conditions, and total energy intake. **Results:** At the 3-year follow-up 36 women were frail and 206 women were prefrail. Higher protein intake ≥ 1.1 g/kg BW was associated with a lower likelihood of prefrailty (OR=0.45 and 95% confidence interval (CI) =0.01-0.73) and frailty (OR=0.09 and CI=0.01-0.75) when compared to protein intake <1.1 g/kg BW at the 3-year follow-up. Women in the higher. **Conclusion:** Protein intake ≥ 1.1 g/kg BW and higher intake of animal protein may be beneficial to prevent the onset of frailty in older women.

P117- THE ROLE OF OMEGA-3 IN THE PREVENTION AND TREATMENT OF SARCOPENIA. Jolan Dupont^{1,2}, Lenore Dedeeyne¹, Sebastiaan Dalle³, Katrien Koppo³, Evelien Gielen^{1,2} ((1) *Gerontology & Geriatrics, Department of Chronic Diseases, Metabolism and Ageing (CHROMETA), KU Leuven, Leuven, Belgium;* (2) *Department of Geriatric Medicine, UZ Leuven, Leuven, Belgium;* (3) *Exercise Physiology Research Group, Department of Movement Sciences, KU Leuven, Leuven, Belgium*)

Background: Sarcopenia is a geriatric syndrome with increasing importance due to the aging of the population. Progressive resistance training and protein supplementation are currently recommended for the prevention and treatment of sarcopenia. However, elderly are less responsive to these anabolic stimuli compared to healthy adults. Inflammation is considered an important contributor to this age-related anabolic insensitivity. Therefore, anti-inflammatory strategies, such as omega-3, are a promising strategy to combat sarcopenia. Furthermore, omega-3 were also shown to improve muscle anabolism through activation of the mTOR signalling pathway and reduction of insulin resistance. **Objectives:** Firstly, we performed a narrative review of literature that gives an overview of the current knowledge about omega-3 intake and sarcopenia defining parameters (grip strength, gait speed, muscle strength or physical performance). Secondly, we provided an overview of data on omega-3 supplementation and sarcopenia defining parameters. **Methods:** A literature search was conducted in November 2018, using electronic bibliographic databases (PubMed and EMBASE). The reference lists of all full texts retrieved during the search process or as identified in already published (systematic

reviews were scanned. Results were published in a narrative review (Dupont J. et al. 2019 Aging Clin Exp Res.) **Results:** Seven observational studies described the associations between omega-3 intake and sarcopenia defining parameters. Four interventional studies looked at the effect of omega-3 supplementation alone and suggested an improved muscle protein synthesis, improved gait speed and increased muscle strength and physical performance. Three studies combining exercise with omega-3 supplementation suggested an enhancing effect of the supplement on the exercise-induced gains in muscle mass and strength. We found one study combining omega-3 and protein supplementation with exercise, but omega-3 dosage was too low for conclusive results. **Conclusion:** Observational data on omega-3 intake and sarcopenia remain conflicting. From current interventional data we conclude that there is growing evidence for a beneficial effect of omega-3 supplementation in sarcopenic elderly, which may add to the effect of exercise and/or protein supplementation. However, the exact dosage, frequency and use (alone or combined with exercise and/or protein supplementation) in the treatment and prevention of sarcopenia still need further exploration.

P118- MNA-SF AND GLIM CRITERIA IN OLDER PERSONS WITH CANCER. P. Sobrini Morillo, C. Sánchez Castellano, A.J. Cruz Jentoft (*Hospital Universitario Ramón y Cajal, Madrid, Spain*)

Background: With the growing incidence of cancer in older persons, malnutrition rates have increased. Tumor-related malnutrition is a risk factor of treatment side effects. It reduces the quality of life and increases morbidity and mortality. Therefore, malnutrition screening and diagnosis are mandatory to implement proper nutritional support. **Objectives:** This study aimed to evaluate and compare the Short Form of Mini Nutritional Assessment (MNA-SF) nutritional screening tool with the new Global Leadership Initiative on Malnutrition (GLIM) diagnostic criteria for malnutrition among elderly patients with cancer. **Methods:** Patients ≥ 70 years old, with a G8 screening tool ≤ 14 , were referred to an oncogeriatrics consultation between february and september 2019. The data recorded comprehended, demographic variables (age, sex), type of tumor, functional (Barthel, Lawton Index, FAC) and mental (MMSE, Yesavage) status, nutritional (MNA-SF, GLIM criteria) and social assessment and number of drugs. IF-VIG, CIRS-G, Rockwood-MS, CCI-SF, SPPB and handgrip strength were used to estimate frailty. The ROC curve was used to evaluate the ability to accurately distinguish malnourished patients. To determine diagnostic concordance between the assessment and the new GLIM diagnostic criteria of malnutrition, retrospectively analyzed, Cohen's K statistic was calculated. **Results:** 34 patients were included, mean age 84.9 ± 5.6 , 41.2% were women. Gastrointestinal (29.4%) and gynecological (26.5%) neoplasms were most prevalent. 91.2% were independent or had mild dependence on BADL, 85.3% on IADL. 70.6% had no cognitive impairment and 50.4% had no depressive symptoms. Frailty scales showed a pre-frail patient profile, with good social support and a 7.6 ± 4 drugs on

admission. According to the new GLIM diagnostic criteria for malnutrition, 50% of the patients were malnourished. With the use of MNA-SF, 76.5% of the patients were found to be at risk of malnutrition. The ROC curve of MNA-SF had an area under the curve (AUC) of 0.15. No concordance was found between the MNA-SF and the malnutrition diagnostic results ($K=0$, $p<0.001$). **Conclusion:** In this small sample, most cancer patients were male, >80 years old, with low frailty index, good functional and mental status and at risk of malnutrition. The MNA-SF scale detected more risk cases so preconditioning and nutritional recommendations before specific oncological therapies could be made.

P119- ASSOCIATION BETWEEN SERUM 25-HYDROXYVITAMIN D CONCENTRATION AND MUSCLE MASS AND STRENGTH IN JAPANESE ELDERLY PEOPLE. Mana Yamamura¹, Jun Yasuda¹, Takumi Yokokawa², Satoshi Fujita¹ ((1) *Faculty of Sport and Health Science, Ritsumeikan University, Kusatsu, Japan;* (2) *Research Organization of Science and Technology, Ritsumeikan University, Kusatsu, Japan*)

Background: Serum 25-hydroxyvitamin D [25(OH)D] concentration is associated with muscle mass and strength in healthy elderly. However, there are several confounders, including body composition, nutrient intake, physical activity level and blood parameters which may also influence muscle mass. Previous studies have not thoroughly examined the relationship between serum 25(OH)D concentration and muscle indices by comprehensively considering the potential confounders in healthy elderly. **Objectives:** The purpose of this study was to investigate the relationship of serum 25(OH)D concentration with muscle mass and strength in healthy Japanese elderly. **Methods:** This cross-sectional study included 100 healthy elderly in Shiga prefecture in Japan (age: 68.2 ± 5.2 years, $M = 44$, $W = 56$). Total fat-free mass (TFFM) and appendicular (AFFM) were measured using dual-energy X-ray absorptiometry. In addition, handgrip strength and leg extension power were measured. A blood sample was collected in an overnight fasted state, and serum 25(OH)D concentration was assessed. Habitual dietary intake and physical activity were assessed. Protein intake, carbohydrate, and vitamin D intakes were adjusted for energy by the residual method. Association of serum 25(OH)D concentration with TFFM, AFFM, handgrip strength, and leg extension power was assessed by hierarchical multiple regression analysis with adjustment for age, gender, weight, energy, energy-adjusted protein, carbohydrate, vitamin D intakes, serum albumin concentration, and physical activity. **Results:** The mean serum 25(OH)D concentration of 100 participants was 88.3 ± 32.9 nmol/l. Low serum 25(OH)D status (< 50 nmol/l) was observed in 12.5% (8/100) of participants. The mean AFFM was 17.1 ± 3.7 kg, and handgrip strength was 29.3 ± 7.2 kg. Serum 25(OH)D concentration was significantly associated with AFFM ($\beta = 0.091$, $p = 0.033$), but not with TFFM ($\beta = 0.071$, $p = 0.090$), handgrip strength ($\beta = 0.115$, $p = 0.081$) and leg extension power ($\beta = -0.022$, $p = 0.781$). **Conclusion:** Serum 25(OH)D concentration is related to

AFFM Japanese healthy elderly people, even if confounders are comprehensively considered.

P120- DIETARY PROTEIN QUALITY PREDICTS MUSCLE QUALITY IN WOMEN. Nathaniel Johnson¹, Christopher J Kotarsky¹, Kara A Trautman¹, Adam Bradley¹, Sean Mahoney¹, Wonwoo Byun², Steven Mitchell³, Nathan Dicks⁴, Kyle J Hackney¹, Sherri N Stastny¹ ((1) *North Dakota State University, Fargo, ND, USA;* (2) *University of Utah, Salt Lake City, UT, USA;* (3) *Sanford Health, Fargo, ND, USA;* (4) *Concordia College, Moorhead, MN, USA*)

Background: Muscle quality, often defined as force produced per area or mass of muscle, declines as people age. **Objectives:** We hypothesized that dietary protein quality will better predict muscle quality than energy, carbohydrate, protein, fat, or leucine intakes when controlling for age, BMI, composition, and moderate to vigorous physical activity (MVPA). **Methods:** Strength was measured using isokinetic dynamometry at 60 degrees per second, leg composition (LC) was examined via dual-x-ray-absorptiometry, and MVPA was measured with accelerometry. Dietary intake was estimated using three-day food logs and ESHA software. Muscle quality was defined as right knee extensor peak torque relative to right leg lean mass. Protein quality was the ratio of total leucine over total protein intake. Multiple linear regression and stepwise linear regression models were used. **Results:** Ninety-four women (mean \pm SD; Age 40.6 ± 17.5 years; BMI 25.7 ± 5.18 kg/m²; LC 37.6 ± 6.63 % fat; MVPA 81.1 ± 31.7 min/day; Energy $1,977 \pm 528$ kcal/day; Carbohydrate 226.2 ± 73.3 g/day; Protein 86.3 ± 29.6 g/day; Fat 79.3 ± 24.2 g/day; Leucine 3.20 ± 2.52 g/day) completed the assessments. Only protein quality (mean \pm SEM; beta = 45.131 ± 22.303 ; $t = 2.023$; $p = 0.046$) was significant to the full regression model containing all covariates ($R = 0.495$; Adjusted $R^2 = 0.154$; $F(10, 83) = 2.688$; $p = 0.007$). To verify the importance of protein quality, a stepwise regression analysis using the same variables was performed and resulted in a model ($R = 0.422$; Adjusted $R^2 = 0.160$; $F(2, 91) = 9.869$; $p < 0.001$) that included protein quality (mean \pm SEM; beta = 28.755 ± 8.720 ; $t = 3.405$; $p = 0.001$) and energy intake (mean \pm SEM; beta = 0.000730 ± 0.000269 ; $t = 2.710$; $p = 0.008$). **Conclusion:** Dietary protein quality is positively associated with muscle quality when controlling for BMI, LC, MVPA, and energy, protein, fat, carbohydrate, and leucine intakes. The most parsimonious model included protein quality and energy intake, suggesting that they are most related to muscle quality.

P121- PROTEIN SUPPLEMENTATION INCREASE APOPTOTIC GENE EXPRESSION VIA INTERNAL PATHWAY IN EDL OF AGED RAT. Mohammad Mosaferi Ziaaldini, Seyyed Reza Attarzadeh Hoseini, Mehrdad Fathi (*Department of exercise physiology, Faculty of Sport sciences, Ferdowsi University of Mashhad, Mashhad, Iran*)

Background: It has been suggested that disruption of the apoptotic process may have an effect on the incidence

of sarcopenia. On the other hand, one of the dietary recommendations for seniors is to increase their daily protein intake. However, the effect of protein intake on apoptosis is not well understood. **Objectives:** The purpose of this study was to investigate the effect of eight weeks of protein whey supplementation on the expression of genes involved in the internal and external pathways of apoptosis of long extensor muscle of thumb of aged Wistar rats. **Methods:** This is an experimental studies. Statistical sample of this study consisted of 14 male Wistar rats (age: 20 months, weight: 200 ± 12 gr). They were randomly divided into supplement (n=7) and control (n=7) group. Supplement group received 0.375 gr per body weigh protein whey daily for eight weeks. The left thumb extensor muscle of all subjects was carefully separated and after freezing in liquid nitrogen transferred to -80 ° C. Quantitative Real time-PCR was performed to measure Bax, Bcl-2, caspase 3, 8 and 9 gene expression levels. Independent t-test and Mann-Whitney U test were used to compare the means and rankings. The hypotheses were tested at the significant level P<0.05. **Results:** Results showed that Bax, Caspase 3, Caspase 8, and Caspase 9 genes expression increased in all samples in training group compared to the control group but this increase was only significant for Bax, Caspase 9 and 3 gens (p < 0.05) and also Bcl-2 gene expression significantly decerased (P < 0.05) in comparison with control group. **Conclusion:** It seems that protein supplementation lead to activation of the internal pathway of apoptosis by increasing mitochondria permeability.

P122- NUTRITIONAL CHARACTERIZATION IN RELATION TO FRAILTY AND OBESITY- RESULTS FOR A NATIONAL SURVEY OF COMMUNITY DWELLING OLDER ADULTS. Assaf Buch^{1,2,3}, Avi Magid⁴, Limor Ben Haim², Naftali Stern^{2,3} ((1) *Robert H Smith Faculty of Agriculture, Food and Environment, The Hebrew University of Jerusalem, Rehovot, Israel*; (2) *Institute of Endocrinology, Metabolism and Hypertension, Tel Aviv Sourasky Medical Center, Tel-Aviv, Israel*; (3) *The Sackler Faculty of Medicine, Tel-Aviv University, Tel-Aviv, Israel*; (4) *Peres Academic Center, Rehovot, Israel*)

Background: The presence of obesity alongside with impaired aging in general, and with impaired muscular performance in particular, may result in a unique and growing phenotype of obese frail/sarcopenic, which may be hardly diagnosed by simple observation. Characterizing the nutritional intake of this phenotype is of a substantial relevance. **Objectives:** To characterize the nutritional intake among Frail Prone (FP) and obese subjects in a sample of community dwelling older adults in Israel. **Methods:** In this cross sectional study we evaluate the nutritional intake of frail, frail prone and robust subjects (with and without the presence of obesity), as well as their adherence to the Dietary Reference Intakes (DRI). Data were retrieved a series of national studies on the status of health and nutrition in different age groups in Israel (MABAT ZAHAV) for 2005-2006. The frailty likelihood presented here is based on a previous study from our group suggesting a non-direct validated model estimating frailty

based on 5 components. **Results:** Compared to the robust, FP subjects were more likely to have lower intake of several nutrients. Among them are: iron (mg) (mean 8.47 vs. 10.43, P < 0.0001), vitamin C (mg) (mean 123.51 vs. 103.87, P < 0.0001), folate (µg) (mean 263.55 vs. 301.97, P < 0.0001), vitamin A (IU) (mean 1075.09 vs. 1474.29, P = 0.004). The average overall adherence score according to the DRI (based on a sum of 8 nutritional components) was 1.62 among FP subjects, compared to 1.76 among robust subjects (P = 0.03). Obesity either defined by BMI or by WC had a lower «effect» on the nutritional intake differences as compared to frailty status. This observation was seen when obese subject were compared to non-obese subjects and as FP subjects were more likely to show a poor nutritional status regardless of the presence of obesity. **Conclusion:** Our results show a clear association between frailty and poor nutritional intake, regardless of the presence of obesity. Moreover, the functional status may better reflect nutritional gaps than obesity – challenging the concept of the frail-obese phenotype regarding to nutritional status.

P123- BONE DENSITY AND BONE STRUCTURE AMONG DYNAPENIC OBESE OLDER ADULTS: THE INFLUENCE OF PROTEIN INTAKE. Fanny Buckinx^{1,2}, Eva Peyrusque^{1,2}, Vincent Marcangeli^{1,2}, Guy El Hajj Boutros^{1,2}, Philippe Noirez^{1,3}, Mylène Aubertin-Leheudre^{1,2} ((1) *Département des sciences de l'activité physique, Groupe de recherche en activité physique adapté, Université du Québec à Montréal, Canada*; (2) *Centre de Recherche de l'Institut Universitaire de Gériatrie de Montréal, Montreal (Qc), Canada*; (3) *UFR STAPS Université Paris Descartes, Paris, France*)

Background: The loss of bone density during aging induces risks of falls, fractures and mobility decline. Moreover, bone structure seems to be a better predictor of fractures than bone density. These phenomena are exacerbated in the presence of sarcopenia. However, dynapenia alone or in combination with obesity is more involved in falls and loss of mobility than sarcopenia. Nevertheless, the impact of obesity on bone density and bone structure is still controversial. Furthermore, protein intake appears to be associated with maintenance of muscle, bone density and bone structure. To our knowledges, the impact of protein intake on bone density and bone structure among dynapenic-obese older adults is not known even if this condition reached around 20% of elderly. **Objectives:** To assess the influence of protein intake on bone density and bone structure among dynapenic-obese older adults. **Methods:** Twenty-six older adults (>= 60 years), obese (%fat: men >25 ; women: >35) and dynapenic (relative to body weight grip strength: men <0.61 ; women <0.44) were divided into 2 groups according to their initial protein intake : PROT-: < 1g/kg/d (n=13; 53.8% of women; 66.5±3.3 years) and PROT+: >1.2g/kg/d (n=13; 61.5% of women; 67.2±2,7 years). The following measurements were performed: relative to body weight grip strength using Lafayette dynamometer, body composition using DXA, femoral bone structure using CT-scan, nutritional intake using the 3-day food record method. **Results:** Excepted, by

design, for initial protein intake, both groups were comparable at baseline. The PROT- group had a higher ($p < 0.05$) marrow area (139 ± 54) than the prot + group (91 ± 38). In addition, the compressive loading strength was greater ($p < 0.05$) in the PROT- group (3019 ± 465) than in the PROT + group (2604 ± 560). Finally, the total bone area was larger ($p < 0.05$) in the PROT- group (650 ± 69) compared to the PROT + group (579 ± 91). **Conclusion:** Surprisingly, a lower protein intake but higher than RDA seems to protect bone structure but not bone density among dynapenic-obese older people. These results should be confirmed in larger studies designed to address this question.

P124- UNINTENTIONAL WEIGHT LOSS AND SARCOPENIA IN COMMUNITY-DWELLING OLDER ADULTS. Carolina Böettge Rosa¹, Dinara Hansen², Solange Beatriz Billig Garces², Melissa Côrtes da Rosa¹, Vera Elizabeth Closs¹, Carla Helena Augustin Schwanke¹ ((1) School of Medicine, Pontifical Catholic University of Rio Grande do Sul (PUCRS), Porto Alegre, RS, Brazil; (2) Cruz Alta University (UNICRUZ), Cruz Alta, RS, Brazil)

Background: Unintentional weight loss occurs in 15% to 20% of older adults and has been associated with morbidity, functional incapacity, risk of hip fracture, and overall mortality. While the impact of this condition is well established in frailty, studies involving sarcopenia are still insipient. **Objectives:** To investigate the association between unintentional weight loss and sarcopenia in community-dwelling older adults. **Methods:** A cross-sectional study was conducted among older adults (≥ 60 years) assisted in primary care. The unintentional weight loss was assessed by questions contained in three frailty assessment tools and one nutrition screening and assessment tool, described below: (1) "Have you recently lost weight such that your clothing has become more loose?" [Edmonton Frail Scale (EFS)]; (2) "Have you lost a lot of weight recently without wishing to do so? ('a lot' is: 6 kg or more during the last six months, or 3 kg or more during the last month)" [Tilburg Frailty Indicator (TFI)]; (3) "In the last year, have you lost weight unintentionally (i.e., not due to dieting or exercise)? (unintentional weight loss is: more than 4.5 kg or of at least 5% of previous year's body weight)" [Phenotype for Frailty (PF)]; (4) «Weight loss greater than 3 kg during the last 3 months" [Mini Nutritional Assessment (MNA®)]. Sarcopenia was identified by European Working Group on Sarcopenia in Older People (EWGSOP2) criteria. The data were analyzed with use of Pearson chi-square test ($P < 0.05$). **Results:** A total of 375 older adults were evaluated (69.9% female). The mean age was 72.7 ± 7.2 years (61-95 y). Sarcopenia was identified in 7.7% of the sample ($N = 29$). The frequency of unintentional weight loss in sarcopenics was 38% in TFI ($n = 11$; $P = 0.012$), 31% in EFS ($n = 09$; $P = 0.037$), 34.5% in PF ($n = 10$; $P = 0.072$) and 17.2% in MNA® ($n = 05$; $P = 0.210$). **Conclusion:** We observed that the unintentional weight loss evaluated by TFI and EFS (frailty assessment tools) was associated with sarcopenia. So, different ways to evaluate weight loss (amount and time) seems to influence this association. Funding: This study was financed

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P125- HOW DOES THE UTILISATION OF INDIRECT CALORIMETRY AFFECT WEIGHT CHANGE IN HOSPITALISED GERIATRIC REHABILITATION PATIENTS AT RISK OF MALNUTRITION? – THE NEED STUDY. Tugba Erbası¹, Jeewanadee Hettiarachchi¹, Bridget Agius², Andrea Bramley^{2,3}, Kate Fetterplace^{2,4}, Andrea B. Maier^{1,5}, Esmee M. Reijnierse¹ ((1) Department of Medicine and Aged Care, @AgeMelbourne, The Royal Melbourne Hospital, The University of Melbourne, Victoria, Australia; (2) Department of Clinical Nutrition, Allied Health, Royal Melbourne Hospital, Melbourne, Australia; (3) Department of Rehabilitation, Nutrition and Sport, School of Allied Health, College of Science, Health and Engineering, La Trobe University, Bundoora, Victoria, Australia; (4) Department of Medicine, The University of Melbourne, Melbourne, Victoria, Australia; (5) Department of Human Movement Sciences, @AgeAmsterdam, Faculty of Behavioural and Movement Sciences, Amsterdam Movement Sciences, Vrije Universiteit, Amsterdam, The Netherlands)

Background: Half of older adults admitted to hospital are malnourished. Malnutrition often leads to weight-loss and may lead to a loss of muscle mass, muscle strength and physical performance. Nutritional interventions should individualise nutritional requirements, particularly energy and protein. **Objectives:** To assess if energy requirements, determined by indirect calorimetry compared to usual care (predictive equations), can lead to a reduction in weight loss (primary outcome) and improvements in muscle mass, muscle strength and physical performance (secondary outcomes) in geriatric rehabilitation patients at risk of malnutrition. **Methods:** Geriatric rehabilitation inpatients were derived from the RESORT cohort (Royal Melbourne Hospital, Australia) and allocated by wards to either the indirect calorimetry or usual care group for the NEED study. Energy requirements were measured using indirect calorimetry; the results were utilised by dietitians in the indirect calorimetry group and concealed for the usual care group. Weights were obtained weekly. Food intake assessment, muscle mass (bioelectrical impedance analyser), handgrip strength (HGS) and physical performance (Short Physical Performance Battery (SPPB)) were measured at admission and discharge. Within-group and between-group differences were calculated for the changes in outcome measures during hospitalisation. **Results:** Twenty-one patients (indirect calorimetry $n = 12$; usual care $n = 9$) were included (mean age 81.7 ± 11 years; 12 males, 9 females). Preliminary results showed that in the indirect calorimetry group, five patients gained weight, four patients maintained weight and one patient lost weight during hospitalisation; the usual care group had four patients with weight gain and five patients maintaining weight. There were no significant within-group differences or between-group differences for changes in weight (indirect calorimetry: median 0.35 kg [IQR: -2.18; 2.00], usual care: median 0.55 kg [IQR: -4.20; 1.63]), muscle mass (indirect

calorimetry: median 0.50 kg [IQR: -0.75; 4.20], usual care: median 1.10 kg [IQR: -3.28; 5.25]), HGS (indirect calorimetry: median 1.50 kg [IQR: -4.00; 4.25], usual care: median 0.25 kg [IQR: -4.00; 15.4]) and SPPB (indirect calorimetry: median 2 points [IQR: 1; 4], usual care: median 2 points [IQR: 0; 5]). **Conclusion:** Indirect calorimetry may potentially assist in individualising nutritional interventions and may lead to better improvements in weight, muscle mass, HGS and physical performance.

P126- DOES FOOD AUTONOMY AFFECT DIETARY INTAKE IN COGNITIVE FRAIL PATIENTS: DATA FROM COGFRAIL STUDY. G. Soriano^{1,2}, S. Sourdet^{1,2}, B. Vellas^{1,2} ((1) *Gérontopôle, Centre Hospitalier Universitaire de Toulouse, Toulouse, France*; (2) *Inserm UMR1027, Université de Toulouse III Paul Sabatier, Toulouse, France*)

Background: Many older people have difficulties in performing daily living activities such as preparing meals and food shopping, which could be partly due to cognitive and physical decline [1]. These factors may influence food choice and represent a potential barrier to achieving good nutrition [2]. Nevertheless, the association between meal-related difficulties and nutritional risk, as well as dietary intake, has been understudied. **Objectives:** (1) To examine the prevalence of autonomy in food-related activities, as measured with Instrumental Activities of Daily Living Scale (IADL), among frail and pre-frail older subjects with an objective cognitive impairment (2) To characterize the association of food autonomy with an insufficient dietary intake and nutritional risk of cognitive frail older people. **Methods:** This is a secondary cross-sectional analysis using baseline data from the COGFRAIL study, which is a monocentric observational study of 345 cognitive frail and prefrail older participants, aged ≥ 70 years, with an objective cognitive decline. Dietary intake is evaluated with a dietitian, using a diet history method. Autonomy in food-related activities is assessed using IADL scale. Nutritional status was categorized according to the Mini Nutritional Assessment (MNA). **Results:** Ongoing analyses. Preliminary results show a mean energy intake of less than 1600 kcal and 65 g of protein per day, we considered all nutritional needs cannot be covered under this threshold. **Conclusion:** Frail older people, with cognitive impairment, are particularly at nutritional risk and insufficient dietary intake. Food autonomy has to be evaluated systematically to prevent nutritional risk in this population.

P127- RELATIONSHIP OF GRIP STRENGTH AND PHYSICAL CHARACTERISTICS WITH NUTRITIONAL INTAKES IN COMMUNITY-DWELLING ELDERLY. Chiharu Uno^{1,2,3}, kiwako Okada¹, Eiji Matsushita⁴, Sachiyo Shitasue⁴, Hiroshi Shimokata¹, Shosuke Satake^{5,6}, Masafumi Kuzuya^{2,3} ((1) *Graduate School of Nutritional Sciences, Nagoya University of Arts and Sciences, Nisshin, Aichi, Japan*; (2) *Institutes of Innovation for Future Society, Nagoya University, Nagoya, Aichi, Japan*; (3) *Department of Community Healthcare & Geriatrics, Nagoya University Graduate School of Medicine, Nagoya, Aichi, Japan*; (4) *School of Nutritional Sciences, Nagoya University of Arts and Sciences, Nisshin, Aichi, Japan*; (5) *Section of Frailty Prevention, Department of Frailty Research, Center for Gerontology and Social Science (CGSS), National Centre for Geriatrics and Gerontology (NCGG), Obu, Aichi, Japan*; (6) *Department of Geriatric Medicine, Hospital, NCGG, Obu, Aichi, Japan*)

Background: Nearly 32 million people in Japan are elderly aged 65 years or over, and this number will continue to increase. In order to extend the healthy life expectancy, disease prevention and health management of the elderly are important. Preventive intervention of sarcopenia is considered to be an important issue in promoting care prevention for the elderly. **Objectives:** The purpose of this study was to clarify the relationship of muscle weakness and physical characteristics with nutritional intakes. **Methods:** Subjects were 390 men and women (63 to 89 years old) in the Nagoya Longitudinal Study for Healthy Elderly (NLS-HE) in 2018, excluding those who had missing values of the examinations. Nutritional intakes were assessed by the food frequency questionnaire (FFQ). Low grip strength (GS) was diagnosed by Asian Working Group for Sarcopenia (AWGS) criteria. The cut-off value of GS was 26 kg for men and 18 kg for women. **Results:** The number of the subjects diagnosed with low GS was 64, (34 men and 30 women). Comparison was made between the low GS group and the normal group. There were no significant differences between the two groups in age, sex, number of teeth, chewing ability and occlusal force, whereas Mini Nutritional Assessment (MNA) score, walking speed at the normal and maximum speed, exercise habits, and percent of body fat were significantly lower in the low GS group than the normal group. Also, the rate of polypharmacy was significantly higher. In nutritional intakes, Vitamin D and B12 were significantly lower in the low GS group. In the intakes by food groups, fish and meat intakes were significantly lower, but the intakes of snack were significantly higher. Furthermore, the protein ratio and the amount of animal protein intakes were significantly lower in the low grip strength group. **Conclusion:** In this study, muscle weakness was related to lower intake of specific nutrients such as vitamin D, B12, and animal protein, independent of number of teeth, chewing ability, and occlusal force.

P128- DEVELOPMENT AND VALIDATION OF A FOOD FREQUENCY QUESTIONNAIRE TO ASSESS CALCIUM INTAKE OF MEXICAN POSTMENOPAUSAL WOMEN. Jorge Morales-Vargas¹, Jorge Morales-Torres¹, Aida Figueroa-Toscano², Estefany Carrillo-Sánchez², Araceli Guadián-Moreno¹, Paola Miranda-Alatraste³ ((1) *Morales Vargas Centro de Investigación SC, Mexico*; (2) *Universidad del Valle de Atemajac, Zamora, Mexico*; (3) *Instituto Nacional de Ciencias Médicas y Nutrición Salvador Zubirán, Mexico*)

Background: The status of calcium intake, the main mineral of the bone has no suitable biomarker to assess it. Its evaluation is relevant in clinical practice as in research. Postmenopausal women should be evaluated for risk factors for osteoporosis, including poor calcium intake. **Objectives:** To develop and validate a food frequency questionnaire (FFQ) to assess the calcium intake of Mexican postmenopausal women. **Methods:** After obtaining approval from the institutional ethics committee, a pilot study was performed including 25 Mexican women whose calcium intake was assessed through a 3 day food diary (3DFD). The FFQ was designed including the foods reported by the participants of the pilot study that provided more than 1.5% of the calcium requirement and that were reported by at least 2 participants. The FFQ was tested through a validation study that included 86 postmenopausal whom also completed the 3DFD. The validity of the FFQ was assessed with the interclass correlation coefficient (ICC) alongside a Bland-Altman analysis. **Results:** 84 postmenopausal women were assessed from June 21, 2019 to January 18, 2020. Participant's characteristics are shown in the Table 1. The FFQ underestimated mean calcium intake compared to 3 day food diary (-210 mg ± 141.28, P<0.60). The two methods were strongly correlated by the ICC (ICC= 0.8204, CI 0.72-0.88). The FFQ could identify individuals who consumed ≥1200 mg/day with a high sensitivity, and a reasonable specificity (Table 2). Figure 1 shows the agreement between the 3DFD and the FFQ were plotted against the average of the two measurements (Figure 1), the mean (solid line) and the 95% CI (broken lines) of the difference are shown. **Conclusion:** Conclusions: The FFQ's good sensitivity in identifying low calcium intake in postmenopausal women makes it useful also as an educational tool in diet counselling and for identifying subjects in need of supplementation. The difference between methods limits its utility as an epidemiological tool.

P129- DIETARY FACTORS IN PREDICTING FRAILTY AMONG COMMUNITY-DWELLING OLDER ADULTS. Helen YL Chan¹, Winnie KW So¹, Regina Cheung², KC Choi¹, Brenda Ho², Francis Li², TY Lee², Janet WH Sit¹, Martin MH Wong¹, SY Chair¹ ((1) *The Nethersole School of Nursing, Faculty of Medicine, The Chinese University of Hong Kong, HKSAR, China*; (2) *Neighbourhood Advice-Action Council, Hong Kong SAR, China*)

Background: Nutritional status has been recognized as a predictor of the level of frailty. However, little is known

about how the eating habits and dietary preferences associated with frailty, especially in the Chinese elderly population. **Objectives:** This study aims to identify dietary factors in predicting frailty among community-dwelling older adults. **Methods:** A multicentre cross-sectional correlational study was conducted in Hong Kong in 2018. Frailty was defined by using Fried's phenotype model. The FRAIL scale was used to classify level of frailty and the Mini-nutritional Assessment (MNA) was used to evaluate the nutritional status, in addition to anthropometric parameters. Association between nutritional status (at risk or malnourished vs normal) and frailty status was examined using ordinal regression in a hierarchical fashion for adjusting participant socio-demographics, health status, lifestyle characteristics, eating behaviours and dietary habits. All the statistical analyses were performed using IBM SPSS 25.0. All statistical tests were two-sided with level of significance set at 0.05. **Results:** A total of 610 Chinese older adults participated in the study. The prevalence of robust, pre-frail and frail were 30.9%, 48.1% and 20.8% respectively. One third of the participants were malnourished or at risk of malnutrition. Malnutrition and at-risk of malnutrition significantly increased the likelihood of frailty (OR 2.6, 95% CI 1.7 – 4.0). However, the level of frailty was not associated with age, gender, anthropometric measurements, eating behaviours, and use of dietary supplements. Other nutritional factors significantly increased the likelihood of frailty were chewing difficulties (OR 2.0, 95% CI 1.4 – 2.9) and inadequate consumption of vegetables (OR 2.2, 95% CI 1.4 – 3.7). However, good appetite significantly reduced the likelihood of frailty (OR 0.6, 95% CI 0.4 – 0.9). **Conclusion:** The findings showed that chewing difficulties and inadequate consumption of vegetables were associated with frailty, whereas good appetite was a protective factor. Hence, interventions for addressing chewing problem and promoting appetite and consumption of vegetables are imperative to counter frailty in the older population.

P130- POOR NUTRITIONAL STATUS IS ASSOCIATED WITH FATIGUE IN NURSING HOME RESIDENTS: A SUB-GROUP ANALYSIS FROM THE INCUR STUDY. Domenico Azzolino^{1,2}, Marco Proietti^{1,2,3}, Philippe de Souto Barreto^{4,5}, Yves Rolland^{4,5}, Bruno Vellas^{4,5}, Matteo Cesari^{1,2} ((1) *Geriatric Unit, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy*; (2) *Department of Clinical Sciences and Community Health, University of Milan, Milan, Italy*; (3) *Liverpool Centre for Cardiovascular Science, University of Liverpool, and Liverpool Heart & Chest Hospital, United Kingdom*; (4) *Department of Internal Medicine and Geriatrics, Gerontopole, CHU, Toulouse, France*; (5) *UMR INSERM, 1027 University of Toulouse III, Toulouse, France*)

Background: Fatigue is a symptom frequently complained by older people, leading to the inability to continue functioning at the normal level of activity. Fatigue may be reported as "lack of energy". Despite the unclear physio-pathological mechanisms underlying fatigue, nutritional status may represent one of the most promising way to understand it. **Objectives:** The aim of this study was to investigate whether

lack of energy was associated with nutritional status in nursing-home (NH) residents. **Methods:** We performed a cross-sectional analysis of the INCUR study cohort. Lack of energy was measured at baseline as part of the 10-items Geriatric Depression Scale. Nutritional status was evaluated according to Mini Nutritional Assessment Short-Form (MNA-SF). A 36-items frailty index (FI) was computed. Logistic regression models were performed to test the association of lack of energy with nutritional status. **Results:** A total of 573 NH residents were available for analysis. The median age (IQR) was 88 (83-91) years, with 411 (71.7%) females. At baseline, median MNA-SF (IQR) was 11 (9-12) with 71 (12.4%) patients that were malnourished. Among the patients included 42.9% (246 patients) reported lack of energy. At univariate logistic regression analysis MNA was inversely associated with lack of energy. At multivariate logistic regression analysis, adjusted for age, sex nursing home years and FI, we found that MNA was independently inversely associated with lack of energy (OR 0.88, 95% CI 0.81-0.96). Being malnourished is independently associated with lack of energy (OR 2.10, 95% CI 1.22-3.63). Among MNA components we found that Item A (decrease in food intake), Item C (reduced motricity) and Item D (psychophysical stress) were inversely associated with lack of energy (OR 0.54, 95% CI 0.37-0.80; OR 0.69, 95% CI 0.53-0.89; OR 0.48 95% CI 0.31-0.74; for each point respectively), independently each one and from the other confounders. **Conclusion:** In a cohort of very old NH residents, we found that an impaired nutritional status is associated with lack of energy. In particular, being malnourished bring a 2-fold risk of reporting lack of energy. More precisely, decrease in food intake, reduced motricity and psychophysical stress, each one were independently associated with lack of energy.

P131- CONTRIBUTION OF DIET AND ITS INTERACTION WITH PHYSICAL ACTIVITY AND PSYCHOSOCIAL WELL-BEING TO FUNCTIONAL TRAJECTORIES IN OLD AGE. Marguerita Saadeh^{1,2}, Federica Prinelli^{1,3}, Anna-Karin Welmer^{1,4}, Weili Xu¹, Davide L Vetrano^{1,5}, Serhiy Dekhtyar¹, Laura Fratiglioni^{1,6}, Amaia Calderón-Larrañaga¹ ((1) *Aging Research Center, Dept. NVS, Karolinska Institutet & Stockholm University, Sweden*; (2) *SWEAH, Dept. of Health Sciences, Lund University, Sweden*; (3) *Institute of Biomedical Technologies-National Research Council, Milan, Italy*; (4) *Functional Area Occupational Therapy & Physiotherapy, Karolinska University Hospital, Sweden*; (5) *Centro di Medicina dell'Invecchiamento, IRCCS Fondazione Policlinico «A. Gemelli» and Catholic University of Rome, Rome, Italy*; (6) *Stockholm Gerontology Research Center, Sweden*)

Background: While declines in physical function are a common feature of ageing, the rate of the loss varies substantially between individuals, and has been attributed to intrinsic but also extrinsic (modifiable) factors such as diet, physical activity, and psychosocial well-being. **Objectives:** (1) To assess the role of food and nutrient intake in the speed

of functional decline over 12 years of follow-up. (2) To explore whether such an association differs between levels of physical activity and psychosocial well-being. **Methods:** We analysed data from 2004 individuals aged 60+ from the population-based Swedish National study on Aging and Care in Kungsholmen (SNAC-K). The Mediterranean Diet Score, MDS (Trichopoulou et al.) and the Healthy Diet Indicator, HDI (WHO recommendations for saturated fatty acids, mono-disaccharides, cholesterol, PUFAs, protein and fibre) were calculated for each participant, based on baseline data from a validated food frequency questionnaire and the corresponding transformation into nutrient intake. Physical activity levels were assessed with questions about type, frequency, and intensity, and categorised as inadequate vs health/fitness-enhancing. We created a psychosocial well-being index by integrating variables linked to life satisfaction, positive/negative affect, social network and social participation. A global score of physical function was obtained by combining data on walking speed, balance, and chair stand tests. Linear mixed models were used and adjusted for age, sex, education, smoking, baseline number of chronic diseases and impaired activities of daily living, total energy intake and time to death/drop-out. **Results:** One standard deviation (SD) increase in the MDS was associated with a lower functional decline both cross-sectionally ($\beta=0.03$; $p=0.02$) and over the 12-year follow-up ($\beta^*_{\text{time}}=0.004$; $p=0.02$). Higher scores of the HDI were also significantly associated with a lower functional decline, but only cross-sectionally ($\beta=0.03$; $p=0.02$ for one SD increase). When stratifying the analyses by levels of physical activity and psychosocial well-being, the protective effect of high MDS was limited to subjects with health/fitness-enhancing physical activity ($\beta^*_{\text{time}}=0.004$, $p=0.016$) and high levels of psychosocial well-being ($\beta^*_{\text{time}}=0.006$, $p=0.04$), respectively. **Conclusion:** A high adherence to a Mediterranean dietary pattern, especially in combination with higher physical activity and psychosocial well-being, may slow down the age-related decline in physical function.

P132- A FOOD RE-EDUCATION AND A RESISTANCE EXERCISE PROGRAM IN THE CONTROL OF NON-TRANSMISSIBLE, DISEASES. Myrian Abecassis Faber, Jose David e Silva Gomes, Vanderlan Santos Mota, Rildo Figueiredo Pinheiro (*University of the State of Amazonas, Manaus, Brazil*)

Background: This cross-sectional study describes the application and follow-up of the self-care actions applied in a white male, 60 years old, 1.80 m tall, a former athlete, currently sedentary, who in January 2018 presented 6% of glycated hemoglobin in medical consultation - between 5.7 and 6.4%: pre-diabetes; fasting glycemia 107 (mg / dL); (mg /dL) and the postprandial dose between 113 and 164 mg / dL. Blood pressure between 140-150 mmHg; characterizing hypertension in stage. **Objectives:** The objective was applying and follow-up a food re-education program associated with a resistance training program to reduce non-communicable diseases. **Methods:** During 2019, a program of dietary

reeducation was carried out, with a few complex carbohydrates, an increase in proteins of high biological value, associated with a program of resistance exercises, which was adapted and individualized, obeying the individual's particularities. A short physical performance battery (SPPB) was also applied to assess walking speed, strength and muscle balance. This program was performed three times a week, under the supervision of a Physical Education professional. Capillary blood glucose was collected and analyzed 69 times and blood pressure 231 times, respectively. It was carried out a Basic training for 4 weeks aiming to rescue the muscular memory of the elderly, after beginning the adaptive phase of the physical valence training (cardiovascular endurance, localized muscular resistance); for 6 weeks and the specified. The loads corresponded to 80% of 1RM for 8-10 repetitions with three series and 2 to 3 minutes intervals at each stage of the training. We used the IBM SPSS Statistics 22 program to perform descriptive statistics. **Results:** The mean Glycemia was 107 (mg / dL), the 3 glycated hemoglobin analyzes showed 5.5; low risk of diabetes. Systolic blood pressure and diastolic blood pressure presented a mean of 113.95 ± 6.99 mmHg, and 78.32 ± 3.51 mmHg, respectively. We observed a gradual gain every 2 months of resistance training. The SPPB score changed from 3 to 4 points; performance between intermediate to high. **Conclusion:** Dietary re-education associated with a well-designed strength training program can result in the reduction of diabetes and hypertension, as well as strengthening the muscular system of the elderly.

P133- THE DIETARY INFLAMMATORY INDEX AND ITS ASSOCIATION WITH MUSCLE AND BRAIN OUTCOMES IN OLDER ADULTS: A SYSTEMATIC REVIEW. Beatriz Martins Vicente¹, Marcus Vinicius Lucio dos Santos Quaresma^{1,2}, Camila Maria de Melo³, Sandra Maria Lima Ribeiro^{1,4} ((1) *Department of Nutrition, School of Public Health, University of São Paulo - SP, Brazil;* (2) *São Camilo University Center, São Paulo - SP, Brazil;* (3) *Federal University of Lavras, Minas Gerais - MG; Brazil;* (4) *School of Arts, Sciences and Humanities, University of São Paulo - SP, Brazil*)

Background: Diet can be an important non-pharmacological aspect in order to prevent and/or attenuate brain and frailty outcomes in older adults. **Objectives:** To investigate, by a systematic review, studies associating the Dietary Inflammatory Index (DII) with brain and frailty outcomes in older adults. **Methods:** We searched the publications in PUBMED and LILACS databases up to June 2019. Inclusion and exclusion criteria were formulated based on PI(E)COS strategy (Population= Older adults, >= 60 years; Intervention/Exposition= Dietary Inflammatory Index; Comparison= Not applied; Outcomes= Brain and muscle outcomes; Study type= Randomized clinical trials, cohorts, cross-sectional, case-control studies). **Results:** Searches resulted in 206 publications, and after exclusion due to duplicity (n=26) and not compliance with exclusion and inclusion criteria (n=172), eight studies were selected. These studies were published from 2017 to 2019,

all of them were cross-sectional, with participants above 60 years old, and the outcomes investigated were frailty and frailty risk, survival free of disabilities (by Fried's frailty criteria, SPPB test, Lawton and Broady scales); memory, cognitive decline and risk of dementia (by MEEM, CERAD, GDS, PRIME-MD, DSST and Animal Fluency test). **Conclusion:** The data extracted from the articles showed significant association between DII and the outcomes investigated, namely, the more inflammatory diet was associated with higher odds to be frail and pre-frail, and to have any type of cognitive impairment. Therefore, the DII showed to be associated to brain and frailty outcomes in older adults, however, to understand causality, longitudinal studies are still necessary.

CELLULAR SENESENCE

P134- MODULATION OF THE MIR-34A/SIRT1 AXIS IN AGED SKELETAL MUSCLE BY THE SENOLYTIC DRUG ABT-263 (NAVITOCCLAX). Bharati Mendhe, Rachel Roberts, Carlos M. Isales, Meghan McGee-Lawrence, Sadanand Fulzele, Mark W. Hamrick (*Medical College of Georgia, Augusta University, Augusta, GA, USA*)

Background: It is well established that reactive oxygen species (ROS) are increased in skeletal muscle with age. We have recently shown that increased ROS with age is associated with increased expression of the senescence-associated microRNA miR-34a-5p (miR-34a) in skeletal muscle as well as in muscle-derived extracellular vesicles. These vesicles enriched in miR-34a are elevated in aged mouse serum, and can induce senescence in bone stem cells. The histone deacetylase Sirt1 is a validated target of miR-34a, and Sirt1 plays important roles in cell survival as well as in muscle hypertrophy with functional overload. Importantly, we previously found that miR-34a expression was much higher in muscle from aged female mice compared to male mice, a phenomenon others have observed in mouse cardiac muscle. **Objectives:** Here we tested the hypothesis that pharmacological ablation of senescent cells could modulate miR-34a and Sirt1 bioavailability in skeletal muscle of aged mice. We utilized the senescent drug ABT-263 (Navitoclax) since previous studies have shown that oral administration of ABT-263 removed senescent satellite (stem) cells in mouse skeletal muscle. **Methods:** Ten male and ten female C57BL6 mice, 24 months of age, received either ABT-263 (50 mg/kg BW, 100 uL) or vehicle by oral gavage for ten days. Tibialis anterior muscles were removed at the end of the study for examination of miR-34 and Sirt1 levels using RT-PCR and ELISA, respectively. **Results:** ABT-263 reduced miR-34a expression in both male and female mice, although the effect was more pronounced in male mice compared to females. ABT-263 significantly increased Sirt1 levels in male skeletal muscle but not in females. The changes in Sirt1 and miR-34a levels were not associated with significant differences in muscle fiber size over the treatment period. **Conclusion:** These findings suggest that certain senolytic compounds can modulate levels of senescence-associated miRNAs and their targets in aging skeletal muscle. These data also underscore the importance

of considering sex differences in the molecular mechanisms underlying age-related muscle atrophy.

EPIDEMIOLOGY

P135- FACTORS ASSOCIATED WITH FUNCTIONAL DISABILITY OR DEATH IN NON-OBESE ELDERLY WITH LOW MUSCLE MASS STATUS IN THE CITY OF SÃO PAULO - BRAZIL: SURVIVAL ANALYSIS. Miguel Naveira, Luiz Roberto Ramos, Solange Andreoni (*Postgraduate Program in Public Health - Department of Preventive Medicine, Federal University of São Paulo - UNIFESP, Brazil*)

Background: The growth of the elderly population is a worldwide phenomenon and is associated with profound changes in body composition. The purpose of this study was to describe the magnitude of the problem, to evaluate the associated factors and the relation with functional capacity in the study population. **Objectives:** to estimate the association between demographic factors, comorbidities and muscle mass index over time until functional disability or death appears in non-obese elderly individuals. **Methods:** longitudinal study of 335 elderly individuals aged 65 years or over, non-obese and absence of functional disability at the beginning of the cohort on the EPIDOSO project database. The variables gender, age, ethnicity, medical history, functional capacity and death were investigated. The low or normal muscle mass index (MMI) was obtained through anthropometric data and a predictive equation. The functional capacity was measured using a structured and validated multidimensional questionnaire. The deaths occurred in the period were investigated with relatives through household surveys, in registries and registries of the State System of Data Analysis Foundation. Estimates of event-free survival (functional disability or death) were calculated using Kaplan-Meier Curves using the Log-Rank test in the gross comparisons. A multiple Cox proportional hazards model was used to identify the independent effect of time predictors until onset of functional disability or death. **Results:** the mean time found for the onset of functional disability or death was 7.1 years (95%CI=[6.8; 7.5]). In the crude analysis, there were statistically significant differences in the time to occurrence of functional disability or death, by age group ($p < 0.001$), arterial hypertension ($p = 0.046$), diabetes mellitus ($p = 0.007$) and marginal statistical difference muscle mass level ($p = 0.105$). The factors associated with a greater risk of occurrence of functional disability or death were 75 to 79 years (HR=3.31; 95%CI [1.88; 5.85]), 80 to 84 years old (HR=4.30; 95%CI[2.22;8.31]) and 85 years or older (HR=8.22; 95%CI [3.87; 17.47]), both with $p < 0.001$ and presence of diabetes mellitus (HR=1.85; 95%CI [1.09; 3.12]) with $p = 0.022$. **Conclusion:** old age, mainly above 75 years and diabetes mellitus were important factors in the occurrence of functional disability or death in the elderly.

P136- SARCOPENIA AND ITS RELATION TO PROTEIN INTAKE ACROSS OLDER ETHNIC POPULATIONS IN THE NETHERLANDS: THE HELIUS STUDY. Berber G. Dorhout¹, Elvera Overdeest², Michael Tieland², Mary Nicolaou³, Peter J.M. Weijs², Marieke B. Snijder³, Ron J.G. Peters⁴, Irene G.M. van Valkengoed³, Annemien Haveman-Nie⁵, Lisette C.P.G.M. de Groot¹ ((1) *Division of Human Nutrition and Health, Wageningen University & Research, Wageningen, the Netherlands*; (2) *Faculty of Sports and Nutrition, Amsterdam University of Applied Sciences, Amsterdam, the Netherlands*; (3) *Department of Public Health, Amsterdam Public Health research institute, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands*; (4) *Department of Cardiology, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands*; (5) *Chair group Consumption and Healthy Lifestyles, Wageningen University and Research, Wageningen, The Netherlands*)

Background: A consequence of the ageing population is the increasing number of older adults with physical limitations. These limitations are mainly caused by decreased muscle mass and strength (sarcopenia). Treatment or rather prevention of sarcopenia is necessary, as it may lead to lowered quality of life, hospitalization, loss of independence and even mortality. Since older ethnic minorities are more likely to have an unfavourable health status compared to the majority population, variations in the prevalence of sarcopenia for ethnic minority groups are expected. Further investigation seems imperative to be able to target preventive interventions to those at high risk of sarcopenia within the population. **Objectives:** To examine the sarcopenia prevalence and its association with protein intake in an older multi-ethnic population in the Netherlands. **Methods:** We used cross-sectional data from the HELIUS (Healthy Life in an Urban Setting) study, comprising the largest ethnic populations living in Amsterdam, the Netherlands. In total 5161 individuals from Dutch, South-Asian Surinamese, African Surinamese, Turkish and Moroccan origin aged 55 years and over were included. Sarcopenia was defined according to the EWGSOP2. In a subsample (N=1371), protein intake was measured using ethnic-specific Food Frequency Questionnaires. Descriptive analyses were performed to study sarcopenia prevalence across ethnic groups in men and women, and logistic regression analysis were used to study associations between protein intake and sarcopenia. **Results:** Sarcopenia prevalence was found to be sex- and ethnic specific, varying from 29.8% in Turkish to 61.3% in South-Asian Surinamese men and ranging from 2.4% in Turkish up to 30.5% in South-Asian Surinamese women. Higher protein intake was associated with a 4% lower odds of sarcopenia in the total population (OR= 0.96, 95% CI 0.92-0.99) and across ethnic groups. **Conclusion:** Ethnic differences in the prevalence of sarcopenia and its association with protein intake suggest the need to target specific ethnic groups for prevention or treatment of sarcopenia.

P137- FRAILTY, OUTDOOR ACTIVITIES AND ACUTE RESPIRATORY INFECTIONS: FINDINGS FROM A COHORT OF COMMUNITY-DWELLING OLDER PEOPLE. Lin Yang, Lefei Han, Justina Liu (*The Hong Kong Polytechnic University, Hung Hom, Hong Kong*)

Background: Few studies have evaluated the relationship between frailty and acute respiratory illness (ARI), despite of increasing heavy burden of ARI in older people. **Objectives:** We conducted a prospective cohort study in community-dwelling older people in Hong Kong, to evaluate the impact of frailty on the risk of acute respiratory infections in the community setting and the potential modifying role of outdoor activities. **Methods:** We recruited and followed up participants who were Chinese and aged from 65 to 95 years, from December 2016 to May 2018. Frailty was measured by Fried frailty index (FFI) twice during the study period. Daily hours of outdoor activities were collected by a monthly activity journal (n=225) during the whole period, and by wearable GPS device from some participants for one week in summer (n=173) and winter (n=185), respectively. The ARI incidence was collected by monthly phone calls to the participants. We used a logistic regression model to estimate the odds ratio (OR) of ARI associated with frailty status (robust as reference group). **Results:** The participants were classified into three groups according to the FFI criteria: 56 (24.9%) as robust, 152 (67.6%) as pre-frail and 17 (7.6%) as frail groups. Of them, 68 reported ARI during the study period. According to the activity journals, daily hours of staying outdoors in the ARI participants were slightly less than those in without ARI (4.37 vs 4.46 in whole study period, 4.03 vs 4.60 in summer, 4.45 vs 4.84 in winter). While, the GPS data showed that the participants with ARI had longer daily hours of outdoors activities in summer (3.27 vs 3.14) but shorter in winter (4.20 vs 5.30), although none were statistically significant ($p > 0.05$). After adjustment for age, age, living alone or with family and daily hours of outdoor activities, we found that the frailty and pre-frailty groups had a higher risk of ARI incidence compared with the robust group, with OR 3.67 ($p = 0.047$) and 2.58 ($p = 0.017$), respectively. **Conclusion:** Frailty might be associated with a higher risk of ARI among older people, but the role of outdoor activities remains inconclusive.

P138- SHORT-TERM DECLINE IN MUSCLE FUNCTION IS ASSOCIATED WITH MORTALITY IN THE SARCOPHAGE STUDY. M. Locquet¹, C. Beaudart¹, J.-Y. Reginster^{1,2}, O. Bruyère¹ ((1) *WHO Collaborating Centre for Public Health Aspects of Musculoskeletal Health and Aging, Division of Public Health, Epidemiology and Health Economics, University of Liège, Liège, Belgium*; (2) *Prince Mutaib Chair for Biomarkers of Osteoporosis, Biochemistry Department, College of Science, King Saud University, Riyadh, Kingdom of Saudi Arabia*)

Background: Previous studies have investigated the association between impaired muscle health and mortality. However, muscle health is a dynamic entity which change

with time. **Objectives:** To assess the effect of a short-term decline of muscle health (i.e., over 1 year) and its association with long-term mortality (i.e., over 4 years). **Methods:** The SarcoPhAge cohort follows up 534 older Belgian adults to assess consequences of sarcopenia. An assessment of muscle mass (DXA), muscle strength (handheld dynamometer) and physical performance (by means of SPPB, including gait speed) are performed annually. All-causes deaths are collected annually. The association between short term (i.e. after one year) decline in muscle parameters and 4-year occurrence of deaths was tested using Cox model. ROC analyses were performed to assess performance of prediction of the different muscle components and to find optimal cut-points. Missing data were handled using multiple imputations. **Results:** From the 534 subjects recruited (73.5±6.2 years, 60.5 % women), 7 were discarded from our sample because they died during the first year. Therefore, the muscle decline was available on a sample of 527 subjects. 40 deaths occurred within the 3 first years of follow-up. A 1-point decrease in performance at SPPB test resulted in 15% higher risk of death (HR_{adjusted} = 1.15 [95%CI 1.07-1.25]). For each decrease of 0.1 m/s of gait speed, we observed an 8% higher risk of death (HR_{adjusted} = 1.08 [1.02-1.14]). A 1-kg decrease of muscle strength resulted in 15 % higher risk of death in men and 46% higher risk of death in women (HR_{adjusted} = 1.15 [1.07-1.24] and HR_{adjusted} = 1.46 [1.21-1.77], respectively). We did not find any association between short-term loss of muscle mass and the occurrence of death ($p=0.16$). Then, we tried to find cut-offs optimizing the sensitivity-specificity ratio and we found following results : over 1 year, a decline of SPPB superior or equal to 1, of gait speed superior or equal to 0.15 m/s and of muscle strength superior or equal to 1.8 kg in men and 2.8 kg in women. **Conclusion:** A short-term decline in muscle function is predictive of premature deaths.

P139- EXAMINING THE DIFFERENCES IN PREVALENCE OF SARCOPENIA IN A COHORT OF ACUTELY ILL OLDER ADULTS ACCORDING TO FNIH AND EWGSOP2 CRITERIA. Rachel Deer, Matthew Scholl, Elena Volpi (*University of Texas Medical Branch, Galveston, TX, USA*)

Background: Sarcopenia, the age-related progressive loss of muscle mass and function, is associated with an increased likelihood of adverse outcomes like falls, fractures, physical disability, and mortality. International consensus groups continue providing new definitions and clinical cut-off points despite over a decade of work in this area. **Objectives:** We examined the prevalence of sarcopenia using two of the most current operational definitions (Foundation of NIH Sarcopenia Project (FNIH) and the European Working Group on Sarcopenia in Older Persons 2 (EWGSOP2)) in a cohort of older adults (n=345, ≥ 65 yrs) hospitalized for an acute disease at UTMB hospital in Galveston (Jan 2014- May 2019). **Methods:** Testing included measures of: demographics (age, gender, race, education), body composition (DEXA), physical

function tests (SPPB, TUG, grip), psychological wellbeing and independence questionnaires, and chart review (comorbidity, length of stay). **Results:** We found 70% had low physical performance, 36% had low muscle strength, and 33% low lean mass. We compared multiple tests and cutoffs for each of the three groupings under the FNIH and EWGSOP2 and found there to be differences depending on the test used—especially for low performance which varied from 29%-75%. In our cohort, the prevalence of sarcopenia was 15.79% by EWGSOP2 and 13.59% by FNIH. The subgroupings were found to be near identical across almost all measures despite the definitions' discrepancies in cutoff points between FNIH and EWGSOP2. **Conclusion:** In conclusion, recent updates to the new EWGSOP2 make it almost indistinguishable to the older FNIH standard, but the new EWGSOP2 algorithm does provide a grading system to identify different levels of severity of sarcopenia.

P140- PREVALENCE OF FRAILTY IN OLDER PEOPLE IN CHILE: RESULTS OF THE 2016-2017 NATIONAL HEALTH SURVEY.

Claudia Troncoso-Pantoja¹, Yeny Concha-Cisternas^{2,3}, Ana Leiva-Ordoñez⁴, María Adela Martínez-Sanguinetti⁵, Fanny Petermann-Rocha^{6,7}, Ximena Díaz-Martínez⁸, Miquel Martorell⁹, Gabriela Nazar¹⁰, Natalia Ulloa¹¹, Igor Cigarroa-Cuevas², Carlos Celis-Morales^{7,12}, on behalf of ELHOC Research (Epidemiology of Lifestyle and Health Outcomes in Chile) ((1) *Departamento de Salud Pública, Facultad de Medicina, CIEDE-UCSC, Universidad Católica de la Santísima Concepción, Concepción, Chile;* (2) *Escuela de Kinesiología, Facultad de Salud, Universidad Santo Tomás, Chile;* (3) *Pedagogía en Educación Física, Facultad de Educación, Universidad Autónoma de Chile, Chile;* (4) *Instituto de Anatomía, Histología y Patología, Facultad de Medicina, Universidad Austral de Chile, Valdivia, Chile;* (5) *Instituto de Farmacia, Facultad de Ciencias, Universidad Austral de Chile, Valdivia, Chile;* (6) *Institute of Health and Wellbeing, University of Glasgow. Glasgow, United Kingdom;* (7) *British Heart Foundation, Glasgow Cardiovascular Research Centre, University of Glasgow. Glasgow, United Kingdom;* (8) *Grupo de Investigación Calidad de Vida, Departamento de Ciencias de la Educación, Universidad del BíoBío, Chillán, Chile;* (9) *Departamento de Nutrición y Dietética, Facultad de Farmacia, Universidad de Concepción, Concepción, Chile;* (10) *Departamento de Psicología, Centro Vida Saludable, Universidad de Concepción, Concepción, Chile;* (11) *Departamento de Bioquímica Clínica e Inmunología, Facultad de Farmacia y Centro de Vida Saludable de la Universidad de Concepción. Concepción, Chile;* (12) *Centro de Investigación en Fisiología del Ejercicio - CIFE, Universidad Mayor. Santiago, Chile*)

Background: The population is experiencing a fast growth in the number of older adults, therefore determine the prevalence of frailty could help to inform future strategies to reduce its social and health burden. **Objectives:** Determine the prevalence of frailty in Chilean older adults. **Methods:** 233 participants, aged >60 years, from the Chilean National Health

Survey 2016-2016 were included in this study. Frailty was assessed by Fried criteria modified, therefore people classified as frail should meet at least 3 out of the 5 criteria (low strength, low physical activity, low body mass index, slow walking pace and tiredness). **Results:** The prevalence of frailty was 10.9% (7.7% for men and 14.1% for women). The prevalence of pre-frailty was 59.0% whereas 30.1% was classified as normal. The prevalence of frailty increased with markedly with age, 58.2% and 62.4% of men and women, respectively, were frail at the age of 80. This prevalence increased to 89.9% and 86.9% for men and women at the age of 90. The prevalence of pre-frailty increased from 43.0% to 92.1% for men and from 76.4% and 77.5% for women from the age of 60 to 90 years, respectively. **Conclusion:** The prevalence of frailty increased markedly with age. With the Chilean population expected to increase their life expectancy and number of older adults, it is important to implement prevention strategies that allow for early identification of high-risk individuals.

P141- SARCOPENIA AND FALLS AS RISK FACTORS FOR DEATH AMONG BRAZILIAN OLDER ADULTS: A 10 YEAR FOLLOW-UP.

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Background: Sarcopenia has been increasingly recognized as leading to poor prognosis in health outcomes. Likewise, falls - although important at older ages - have not been studied frequently and may lead to an increased risk of death. We evaluated survival of elderly people living in São Paulo – Brasil in a 10-year follow-up, considering the presence of Sarcopenia at baseline and the occurrence of falls before the interview. **Objectives:** To investigate whether Sarcopenia and/or falls increase mortality among Brazilian older adults. **Methods:** Data came from the second (2006) and fourth (2015) rounds of the Health, Welfare and Aging Study (SABE), which begun in 2000, with a sample of the population over 60 years old in the city of São Paulo, Brazil. After the first round, follow-up was performed every five years. Sarcopenia was defined according to the consensus of the European Working Group on Sarcopenia in the Elderly (EWGSOP), and the occurrence of falls was assessed by direct questions answered by the elder or his caregiver. A multivariate analysis with robust estimation and control for exposure time was done using the Poisson regression model. **Results:** Mortality rates (per thousand person years) were: 19.6 (Non Sarcopenic, no falls) ; 35.6 (Non Sarcopenic with falls); 75.1 (Sarcopenic no falls)); and 68.6 (Sarcopenic with falls. The Poisson Regression resulted in Incidence rate Ratios (when compared to Sarcopenic, no falls) of 1.7 for Non Sarcopenic with falls; 2.5 for Sarcopenic elders with no falls and 2.2 for Sarcopenic with falls. **Conclusion:** Sarcopenia and the occurrence of falls are important risk factors for mortality. This finding highlights the importance of considering Sarcopenia in health risk assessment and developing educational programs to prevent falls.

P142- THE COMBINATION OF SARCOPENIA AND FRAILTY INCREASES THE ODDS OF COGNITIVE IMPAIRMENT IN ELDERLY SINGAPOREANS.

Ecosse L. Lamoureux,^{1,2} Alfred T.L. Gan¹, Ryan E.K. Man^{1,2}, Eva K. Fenwick^{1,2}, Bao Lin Pauline Soh³, Angelique Chan², David Ng², Chong Foong-Fong Mary⁴, Preeti Gupta¹ ((1) *Singapore Eye Research Institute and Singapore National Eye Centre, Singapore*; (2) *Duke-NUS Medical School, Singapore*; (3) *Singapore Institute of Technology, Health and Social Sciences, Singapore*; (4) *Saw Swee Hock School of Public Health, National University of Singapore, Singapore*)

Background: Individually, sarcopenia and frailty are known risk factors for cognitive impairment (CI) in older adults, but information on their conjoint presence on the increased risk of CI is unavailable in this same population. **Objectives:** We examined the association of the combined presence of sarcopenia and frailty with CI in elderly Singaporeans. **Methods:** We included individuals from The PopulatioN HEalth Profile in EldeRly Singaporeans study (PIONEER), a nationally-representative, population-based study of Singaporean Chinese, Malays, and Indians aged ≥ 60 years. Participants underwent body composition (dual energy x-ray absorptiometry - DXA); grip strength (hand dynamometer) and habitual 4m-walking speed assessments. Sarcopenia was defined using the Asian consensus as low appendicular lean mass (LALM; men < 7 kg/m², women < 5.4 kg/m²) and low muscle strength (LMS; men < 26 kg, women < 18 kg) or slow walking speed (SWS; < 0.8 m/s); and frailty was defined as meeting three or more of the following components: 1) unintentional weight-loss ≥ 4.5 kg in the past 6-12 months and/or BMI < 18.5 kg/m², 2) LMS, 3) self-reported exhaustion in the past one month, 4) SWS, and 5) low physical activity level. CI was determined using the Montreal Cognitive Assessment (MoCA) Basic scale. Logistic regression models were used to determine the cross-sectional sarcopenia-frailty and CI relationship. **Results:** Of the 487 included participants (mean age [SD]: 73.1 [8.3] years; 50.5% females), 248 (51%); 176 (36%); and 63 (13%) had neither sarcopenia nor frailty, either sarcopenia or frailty, and both sarcopenia and frailty, respectively. CI was present in 8 (3.2%) individuals without sarcopenia and frailty; 19 (10.8%) with either sarcopenia or frailty; and 16 (25.4%) individuals with both sarcopenia and frailty. In multivariable-adjusted analyses, presence of either sarcopenia or frailty was not significantly associated with higher odds of CI (odds ratio (OR) [95% confidence interval]: 1.84 [0.71-4.73]), while having both sarcopenia and frailty significantly increased the odds of CI by nearly 3.5 times (3.48 [1.19-10.12]). **Conclusion:** The co-presence of sarcopenia and frailty is independently associated with a higher risk of CI, compared to one condition alone, although longitudinal studies are needed to confirm this finding. Strategies to prevent the concomitant onset of sarcopenia and frailty may be warranted to potentially reduce the risk of CI in older adults.

P143- FRAILTY ASSOCIATED WITH CAR ACCIDENTS IN JAPANESE OLDER ADULTS. T Doi (*National Center for Geriatrics and Gerontology, Aichi, Japan*)

Background: Car accidents related to older adults increased with aging, particularly in Japan. Safety driving required robust of physical function. However, the association between frailty and car accidents was still unclear. **Objectives:** The aim of this study was to examine the association between frail status and car accidents. **Methods:** Participants were 12,013 older adults (45.4% women, mean age: 71.7 years) enrolled current drivers in the National Center for Geriatrics and Gerontology – Study of Geriatric Syndromes. The criterion of frailty used in this study was J-CHS index modified according to Fried’s criteria (CHS index). The components of frailty in J-CHS index were based on the original CHS index: shrinking (weight loss), weakness, poor endurance (exhaustion), low activity level, and slowness. Based on the presence numbers of these five components, our study defined “frailty” as 1 and over, i.e., including pre frail and frail. The data of car accidents were collected from self-reported history of car accidents during 2 years. **Results:** Among 12,013 participants, 1,117 participants (9.3%) had a history of car accident. Higher proportion of car accidents group was observed in shrinking (9.0% vs 11.1%, $p = 0.006$), exhaustion (9.1% vs 10.8%, $p = 0.033$), physical inactivity (9.0% vs 10.4%, $p = 0.035$) and slowness (9.0% vs 10.5%, $p = 0.032$), but not weakness (9.2 vs 9.9, $p = 0.447$). In a logistic regression analysis, frailty was independently associated with car accidents in an adjusted model (OR 1.26 [95%CI 1.11-1.43], $p < 0.001$). **Conclusion:** This population study reveals frailty associated with car accidents. The findings have contribution of enhancing utility of risk assessments among older drivers. Further studies were required to clarify risk of car accidents.model.

P144- PREVALENCE OF SARCOPENIA AS A COMORBID DISEASE: A SYSTEMATIC REVIEW AND META-ANALYSIS.

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Background: Sarcopenia shares risk factors with various other age-related diseases. **Objectives:** This meta-analysis aimed to determine the prevalence of sarcopenia as a comorbid disease. **Methods:** Medline, EMBASE and Cochrane databases were searched for articles from inception to 8th June 2018, reporting the prevalence of sarcopenia in individuals with a diagnosis of cardiovascular disease (CVD), dementia, diabetes mellitus or respiratory disease and, if applicable their controls. No exclusion criteria were applied with regards to definition of

sarcopenia, individuals' age, study design and setting. Meta-analyses were stratified by disease, definition of sarcopenia and continent. **Results:** The 63 included articles described 17,206 diseased individuals (mean age: 65.3±1.6 years, 49.9% females) and 22,375 non-diseased controls (mean age: 54.6±16.2 years, 53.8% females). The prevalence of sarcopenia in individuals with CVD was 31.4% (95%CI: 22.4-42.1%), no controls were available. The prevalence of sarcopenia was 26.4% (95% CI: 13.6-44.8%) in individuals with dementia compared to 8.3% (95% CI: 2.8-21.9%) in their controls; 31.1% (95%CI: 19.8-45.2%) in individuals with diabetes mellitus compared to 16.2% (95%CI: 9.5-26.2%) in controls; and 26.8% (95%CI: 17.8-38.1%) in individuals with respiratory diseases compared to 13.3% (95%CI: 8.3-20.7%) in controls. **Conclusion:** Sarcopenia is highly prevalent in individuals with CVD, dementia, diabetes mellitus and respiratory disease.

P145- INCIDENCE OF FRAILITY IN COMMUNITY DWELLING US OLDER VETERANS. Nagapratap Ganta¹, Sehrish Sikandar¹, Sergio J. Ruiz¹, Lubna A. Nasr², Tesil N. Sani¹, Nadeem Mohammed^{1,2}, Raquel Aparicio-Ugarriza^{1,2}, Victor Cevallos¹, Jorge G. Ruiz^{1,3} ((1) *Miami VAHS GRECC, USA*; (2) *Dept. of Public Health Sciences, U of Miami Miller School of Medicine, USA*; (3) *Dept. of Medicine, U of Miami Miller School of Medicine, USA*)

Background: Frailty, a state of vulnerability to stressors resulting from a loss of physiological reserve across multiple systems. Frailty is associated with higher morbidity, mortality and healthcare utilization. The national prevalence of frailty among US older Veterans was found to be as high a 45%. However, little is known about the incidence of frailty in older, community-dwelling Veterans. **Objectives:** Determine the incidence over 5 years of frailty among robust or prefrail community-dwelling older Veterans. **Methods:** This is a retrospective cohort study of 16897 community-dwelling Veterans 60 years and older who had determinations of frailty from July 2013-June 2014 and were followed until their last clinician visit before September 30, 2019. A 31-item VA Frailty Index (VA-FI) was generated at baseline and during each subsequent primary care encounter as a proportion of all potential variables (morbidity, function, sensory loss, cognition and mood and other) with data from electronic health records. The VA-FI categorized Veterans into robust (FI≤.10), prefrail (FI=>.10, <.21) and frail (FI≥.21). Using baseline and median duration of follow-up data based on event rates, incidence rates of frailty per 1000 person-years were calculated for robust, prefrail, combined (robust and prefrail) and gender groups. **Results:** Patients were 73.8% White, 90.6% non-Hispanic, 97.1% male, mean age 72.11 (SD=9.32) years. The proportion of robust, pre-frail and frail patients at baseline was 42.4% (n=7158), 36.7% (n=6209) and 20.9% (n=3530) respectively. Among robust Veterans surviving a median follow-up of 4.85 (IQR 3.03) years, 14.87% (1065/7158) became frail with an incidence rate of 37.02 cases/per 1000 person-years. Among prefrail Veterans 47.02% (2920/6209) became frail and the incidence rate was 154.99 cases/per 1000 person-years. Among

the combined group, 30% became frail, with an incidence rate of 83.70 per 1000 person-years. The proportion of Veterans becoming frail and the incidence rates were higher in women than men (32.64% vs. 29.73% and 106.20 vs 83.14 cases per 1000 person-years respectively). **Conclusion:** This study shows a high incidence of frailty in community-dwelling older US Veterans. Identification of older Veterans at high risk for frailty may assist in the development of interventions aimed at preventing frailty and its associated complications.

P146- THE CROSS-SECTIONAL ASSOCIATION OF COGNITIVE IMPAIRMENT WITH ANTICHOLINERGIC USE WAS NOT MODIFIED BY FRAILITY IN COMMUNITY DWELLING US OLDER VETERANS. Sergio J. Ruiz¹, Dhanya Baskaran¹, Victor Cevallos¹, Mercedes Rodriguez-Suarez², Jorge G. Ruiz^{1,3} ((1) *Miami VAHS GRECC, USA*; (2) *Miami VAHS Mental Health Service, USA*; (3) *Dept. of Medicine, U of Miami Miller School of Medicine*)

Background: Anticholinergic drugs are prescribed to treat a variety of medical conditions through pharmacological actions opposing the actions of acetylcholine. Anticholinergics and may contribute to frailty by causing cognitive, functional and physical impairment. Frailty represents a state of vulnerability to stressors resulting from a loss of physiological reserve across multiple systems. Frailty may potentially make patients more susceptible to the deleterious effects of anticholinergic medications on cognition. **Objectives:** Determine the cross-sectional association of anticholinergics with cognitive impairment according to frailty status among community-dwelling older Veterans. **Methods:** This is a cross-sectional study of 17,211 community-dwelling Veterans 60 years and older whose frailty status was assessed October 2018-October 2019. The use of medications (active/inactive) with high anticholinergic burden scale (ACB3) and cognitive impairment diagnoses (ICD codes for mild cognitive impairment/dementia) were obtained from electronic health records. A 30-item VA Frailty Index (VA-FI) was generated as a proportion of all potential variables at the time of the assessment. We compared robust (FI≤.10), prefrail (FI=>.10, <.21) and frail (FI≥.21) patients. After adjusting for age, gender, race, marital status, median household income, and BMI, odds ratios (ORs) and 95% confidence intervals (CIs) were calculated using binomial logistic regression with cognitive impairment as the outcome variable and anticholinergics (ACB3) as independent variables. We repeated the analysis according to frailty status. **Results:** Patients were 68% White, 97.6% male, mean age 75.45 (SD=7.98) years, 9.3% (1593) had cognitive impairment, 11.5% (n=1976) were taking ACB3 medications, 30.8% (5308) took them in the past and 57.5% (9927) never used them. The proportion of robust, pre-frail and frail patients was 32.1% (n=5524), 37.6% (n=6476) and 30.3% (n=5211) respectively. In binomial logistic regression, active and inactive ACB3 medications were associated with higher risk for cognitive impairment, adjusted OR=3.627, 95%CI=.2.8904.552, p<.0005 and OR=2.590, 95%CI=2.163-3.101, p<.0005 respectively.

The significant effects of active ACB3s remained regardless of frailty status: OR=3.288, 95%CI=1.579-6.848, $p<.0005$, OR=2.59695%CI=1.660-4.059, $p<.0005$, and OR=2.243, 95%CI=1.653-3.045, $p<.0005$) for robust, prefrail and frail respectively. **Conclusion:** This study shows that anticholinergic use was associated with cognitive impairment in older Veterans regardless of frailty status. Longitudinal studies may help clarify whether frailty status moderate the cognitive effects of anticholinergic medications.

P147- RACIAL DIFFERENCES IN ALL-CAUSE MORTALITY AFTER TRANSITION TO FRAILTY IN COMMUNITY DWELLING US OLDER VETERANS. Nagapratap Ganta¹, Sergio J. Ruiz¹, Angelica Torres-Morales², Victor Cevallos¹, Michael J. Mintzer^{1,3}, Jorge G. Ruiz^{1,2,3} ((1) *Miami VAHS GRECC, USA*; (2) *Jackson Memorial Hospital, USA*; (3) *Dept. of Medicine, U of Miami Miller School of Medicine*)

Background: Frailty, a state of vulnerability to stressors resulting from a loss of physiological reserve across multiple systems. The national prevalence of frailty among US older Veterans was found to be as high as 45%. Multiple studies have shown a higher prevalence of frailty and mortality in African Americans. However, little is known about racial-differences in all-cause mortality in older Veterans who had just transitioned to frailty. **Objectives:** Determine racial differences in all-cause mortality over 5 years among community-dwelling older US Veterans who transitioned to frailty. **Methods:** This is a retrospective cohort study of 3,756 community-dwelling Veterans 60 years and older who transitioned to frailty from July 2013-September 2019 and were followed until death or September 2019. A 31-item VA Frailty Index (VA-FI) was generated at baseline and during each subsequent primary care encounter as a proportion of all potential variables with data from electronic health records. The VA-FI categorized Veterans into robust (FI \leq .10), prefrail (FI \geq .10, $<$.21) and frail (FI \geq .21). At the end of follow-up, we aggregated data on mortality only on those Veterans who transitioned to frailty (robust/prefrail at baseline) and compared Whites and African Americans. After adjusting for age, gender, ethnicity, marital status and median household income, the association of race with mortality was determined using a multivariate Cox regression model. **Results:** Patients were 81.5% White, 18.5% African-American, 89.6% non-Hispanic, 96.8% male, mean age at frailty transition was 73.59 (SD=8.677) years. Over a median follow-up period of 1038 days (IQR=1047) from the time they transitioned to frailty, 760 deaths occurred (n=635, in Whites vs. n=125 in African Americans). African American Veterans had a lower risk for all-cause mortality than White Veterans, unadjusted hazard ratio (HR) =.595 (95%CI: .491-.721), $p<.0005$. However, these mortality differences disappeared after adjustment for covariates, adjusted HR =.777 (95%CI: .545-1.108), $p=.164$. **Conclusion:** Our study suggests that in community dwelling older US Veterans who had transitioned to frailty, race is not significantly related to overall survival when adjusting for other covariates.

P148- ASSOCIATION OF SARCOPENIC OBESITY WITH THE RISK OF ALL-CAUSE MORTALITY – RESULTS FROM THE HEALTH 2000 SURVEY WITH 15 YEARS OF FOLLOW-UP. Annamari Lundqvist¹, Sari Stenholm², Tommi Härkänen¹, Seppo Koskinen¹ ((1) *Public Health Evaluation and Projection Unit, Finnish Institute for Health and Welfare, Finland*; (2) *Department of Public Health, University of Turku, Finland*)

Background: Previous studies show that sarcopenic obesity (SO) is associated with higher risk of mortality. However, a consensus definition of SO is lacking, and more information is needed on the validity of simple measures applicable at a regular health care visit, such as anthropometric measurements and hand-grip strength or chair stand test. **Objectives:** To examine the association between SO and mortality, defining SO based on body mass index, waist circumference, hand-grip strength and chair stand test, in a representative sample of Finnish population. **Methods:** This study was based on 2,550 participants aged 55 years or over with data on anthropometrics, hand-grip strength and chair stand test from the nationally representative Health 2000 Survey. Baseline sarcopenic obesity was defined as having BMI \geq 30 kg/m² or waist circumference \geq 102 cm (men)/ 88 cm (women), and hand-grip strength $<$ 27 kg in men, $<$ 16 kg in women, or chair stand $>$ 15 s for five rises. Register-based follow-up data of the Statistic Finland containing 1,115 deaths during the 15 years of follow-up were individually linked with the baseline data. Survival analyses were based on Cox proportional hazards models using age as the time scale. **Results:** Mean age was 68.0 years (SD 9.4) and 58.3% were females. Overall prevalence of sarcopenic obesity was 24.4% at baseline. Sarcopenic obesity was associated with higher risk of mortality (HR 1.35, 95%CI 1.19-1.54) in an age and sex adjusted model. Further adjustments for education, smoking, alcohol use, and physical activity did not notably change the results (HR 1.27, 95%CI 1.10-1.46). **Conclusion:** Sarcopenic obesity, as defined based on anthropometric measurements as well as hand-grip strength or chair stand test, predicted higher mortality over 15 years of follow-up.

P149- FRAILTY PREVALENCE IN YOUNGER AND OLDER PATIENT WITH END-STAGE KIDNEY DISEASE (ESKD). Nadia Chu^{1,2}, Xiaomeng Chen¹, Jeremy Walston³, Dorry Segev^{1,2}, Mara McAdams-DeMarco^{1,2} ((1) *Department of Surgery, Johns Hopkins University School of Medicine, Baltimore, USA*; (2) *Department of Epidemiology, Johns Hopkins School of Public Health, Baltimore, USA*; (3) *Department of Medicine, Johns Hopkins University School of Medicine, Baltimore, USA*)

Background: Although frailty was originally characterized in community-dwelling older adults it is increasingly being studied and implemented for the care of adults of all ages with end-stage kidney disease (ESKD). The manifestation and prevalence of frailty in younger adults (18-64) with ESKD is unclear. **Objectives:** To study frailty in younger and older patients with ESKD. **Methods:** We leveraged a

prospective cohort study (2009-2019) of 4,298 adults with ESKD undergoing evaluation for kidney transplantation (KT) and 1,396 KT recipients. Frailty was measured at KT evaluation and admission for KT using the physical frailty phenotype (PFP) using the same thresholds as established in the original CHS cohort; however, dry weight was used for the shrinking component. We estimated the prevalence of frailty and each component by age. We then tested whether the risk factors for frailty differed by age (65+ vs. <65) using a Wald test for interactions. **Results:** Among KT candidates 25.9% were older adults and among recipients 21.1% were older adults. Frailty prevalence was 25.24 for older candidates and 18.8% for younger candidates; the corresponding prevalence for recipients was 20.8% and 14.3%. Older candidates were more likely to have slowness (21.1% vs. 10.5%) and weakness (60.9% vs. 42.4%) but less likely to report exhaustion (25.5% vs. 38.2%); there were no differences in unintentional weight loss or low activity. Among KT candidates, older age (65+: OR=1.78, 95% CI: 1.47-2.17), non-Hispanic black race (OR=1.31, 95% CI: 1.09-1.57), and renal replacement therapy (hemodialysis vs. no dialysis: OR=2.06, 95% CI: 1.61-2.64; peritoneal dialysis vs. no dialysis OR=1.78, 95% CI: 1.28-2.48) were all associated with frailty prevalence, but sex and ethnicity were not. There were no differences in the strength of these associations by candidate age (all p-values for interactions>0.1). Similar results were observed for KT recipients. **Conclusion:** Even among younger patients with ESKD seeking KT, there is a high prevalence of frailty and frailty risk increases with age. Clinicians caring for this vulnerable problem should recognize that younger patients with ESKD may experience frailty and screen for frailty during KT evaluation to identify patients who would benefit from pre-transplant interventions like prehabilitation.

P150- NUTRITIONAL STATUS AND NUTRITIONAL INTERVENTIONS IN GERIATRIC REHABILITATION – SYSTEMATIC REVIEWS.

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Background: Malnutrition and sarcopenia have a negative impact on mobility, risk of falls, fractures, physical disability and mortality. Currently, limited information is available on nutritional status and nutritional interventions in geriatric rehabilitation (GR) patients. **Objectives:** To characterize nutritional status and evidence of nutritional interventions with and without physical exercise in GR patients. **Methods:** Eight electronic databases were screened for nutritional status

and interventions in patients ≥ 60 years, admitted to GR, one search string was used for both topics. Pooled estimates were calculated for mean BMI and prevalence of (risk of) malnutrition (MNA). Meta-analyses were performed to quantify intervention effects on albumin, muscle mass, Barthel Index (BI), and hand grip strength (HGS). **Results:** 62 observational and 12 intervention studies were included out of 1717 references. Pooled estimates (95% confidence interval (CI)) for prevalence of malnutrition and risk of malnutrition were 13 (5-20)% and 47 (40-54)%. Pooled estimate (95%CI) for BMI was 23.8 (23.2-24.5) kg/m². Low protein and energy intake and vitamin D deficiency were prevalent. Intervention studies were heterogeneous in interventions and outcomes. Meta-analyses showed no significant effects on albumin (standardized mean difference (SMD) 0.34, 95% CI -0.13:0.80), muscle mass (mean difference (MD) 2.14 kg, 95% CI -2.17:6.45), BI (MD 2.85 points, 95% CI -7.59:13.29) and HGS (SMD -0.04, 95% CI -0.61-0.53), based on 3-4 studies. Eight interventions tested oral nutritional supplements (ONS) with protein, with or without exercise, 6 reported protein intake and showed an increase, 3/4 studies showed increased albumin levels and 4/7 reported improved functional outcomes. **Conclusion:** A high percentage of GR patients was affected by reduced nutritional status. Intervention studies were limited and heterogeneous, but studies with ONS improved nutritional outcomes, and functional outcomes in the majority of reporting studies. The results emphasize the need for malnutrition and sarcopenia screening and show benefits of protein supplementation in this population. Future well-designed, well-powered trials are needed to clarify existing controversial aspects. Therefore, feasibility of an intervention with a high-whey protein, leucine and vitamin D enriched ONS (FortiFit®), combined with resistance-type exercise in GR hip fracture patients will be investigated in a new intervention study (EMPOWER-GR).

P151- SARCOPENIA PREVALENCE THROUGH EWGSOP AND EWGSOP2 CRITERIA IN ELDERLY WOMEN RESIDENTS IN URBAN AND RURAL AREAS.

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Background: Sarcopenia is a progressive and generalized skeletal muscle disorder associated with an increased likelihood of adverse outcomes such as falls, fractures, physical disability and mortality. The geographical region of residence (urban and rural area) may affect the prevalence of sarcopenia due to

physical and environmental conditions. In 2018, the European Working Group on Sarcopenia in Older People (EWGSOP) updated the definition of sarcopenia (EWGSOP2). **Objectives:** To describe the prevalence of sarcopenia related to EWGSOP and EWGSOP2 criteria and to analyze the association between sarcopenia and geographical regions of residence. **Methods:** This is a cross-sectional study involving elderly women (60 years old or more) that were undergoing DXA in a radiology facility located in Palmeira das Missões (Southern Brazil). Sociodemographic data were collected through a questionnaire. For the diagnosis of sarcopenia, we used the criteria recommended by the EWGSOP (low muscle mass plus low grip strength and/or low gait speed), and EWGSOP2 (low grip strength plus low muscle mass and/or low gait speed). The study was approved by the University Ethics Committee. **Results:** Out of the 288 participants, 60.1% was married, 44.1% had education between 4 and 8 years of schooling, 71.2% was caucasian, and 93.1% was retired. The mean age was 67.6±5.8 years old (60-88). The frequency of sarcopenia in the total sample assessed by the EWGSOP and EWGSOP2 was 5.2% and 2.1%, respectively. The prevalence of sarcopenia by the EWGSOP was 73% in the urban area and 26.7% in the rural area (P= 0.007) and by the EWGSOP2 was 66.7% in the urban area and 33.3% in the rural area (P= 0.177). **Conclusion:** In a sample of elderly women from the Southern Brazil, the prevalence of sarcopenia was low through both consensus (EWGSOP and EWGSOP2), and was higher among urban area. **Funding:** This study was financed in part by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – Brazil (CAPES) - Finance Code 001.

P152- EFFECT OF GRIP STRENGTH ON FUNCTIONAL INDEPENDENCE MEASURE MOTOR SCALE AT ADMISSION IN THE DEPARTMENT OF REHABILITATION MEDICINE IN OLD PATIENTS WITH DISUSE SYNDROME. Mitsuru Majima (*Department of Rehabilitation Medicine, Saitama Medical University Hospital, Moroyama, Japan*)

Background: Patients with disuse syndrome have gradually increased with aging of inpatients in Saitama Medical University Hospital. Because these patients have been inactive in the acute phase, sarcopenia is likely to occur. Sarcopenia was graded by three criteria in EWGSOP2 ; muscle strength, muscle quantity and physical performance. Muscle volume can be measured only in limited medical centers. Many of patients with disuse syndrome can not walk even after the acute phase. For these reasons, muscle strength is the only quantitative factor reflecting sarcopenia, especially in old patients with disuse syndrome after the acute phase. **Objectives:** to show 1) muscle strength in old patients with disuse syndrome after the acute phase, 2) effect of muscle strength on activities of daily living (ADL). **Methods:** Subjects were old patients with disuse syndrome admitted in the department of rehabilitation medicine (RM) in Saitama Medical University Hospital from January 2011 to December 2018. Inclusion criterion were as follows; 1) patient age was 65 or older 2) patients could not

walk independently at admission in the department of RM Exclusion criterion were as follows; 1) patients with motor paresis, contracture of fingers 2) patients in inactivity before the onset of the disease causing disuse syndrome. Grip strength (GS) was measured by handheld dynamometer. Cut-off point of GS set by AWGS in 2019 was adopted; 28kg for men and 16kg for women, ADL was evaluated using functional independence measure motor scale (mFIM) one week after admission in the department of rehabilitation medicine . Percentage of GS below cut-off point was shown in men and women respectively. Effect of GS on mFIM was investigated using regression analysis. **Results:** Ninety nine out of 186 patients were subjects in this study. Median age was 77.0 years in men (n=51), 79.0 years in women (n=48). Only two in men and one in women were below GS cut-off point. Correlation coefficient between GS and mFIM was 0.379(p=0.0052) in men, 0.415(p=0.0025) in women respectively. **Conclusion:** GS was below cut-off point in most of the subjects. GP may affect ADL after the acute phase in old patients with disuse syndrome.

P153- CHANGES IN FUNCTIONAL ABILITY, PHYSICAL STRENGTH, VIGOUR, MORBIDITY AND SOCIAL FUNCTION WITH DECREASING TIME TO DEATH, VERSUS WITHINCREASING CHRONOLOGICAL AGE - AND ITS IMPACT ON LIFE-SATISFACTION. A STUDY OF A LONGITUDINAL AND EXTINCT COHORT WITH 20 YEARS OF FOLLOW-UP. Janne Petersen¹, Annette Johannesen² ((1) *Center for Clinical Research and Prevention, Copenhagen University hospital, Frederiksberg, Denmark and Section of Biostatistics, Department of Public Health, University of Copenhagen, Denmark;* (2) *Center for Clinical Research and Prevention, Copenhagen University hospital, Frederiksberg, Denmark*)

Background: The population of older people increase worldwide. Higher chronological age and approaching death is generally connected to functional decline, morbidity, fatigue, and lack of social relations. We need more knowledge on which factors are important for well-being and a good life-satisfaction at the end of life. **Objectives:** The objectives of this study are to describe differences in how functional ability, physical strength, vigour, morbidity, and social function changes with increasing chronological age compared with time to death. Moreover, to study how these measures modifies the associations between chronological age/biological age and life-satisfaction. **Methods:** A cohort study of 1001 persons born in 1914 (494 men and 507 women). The participants were investigated at age 70, 75, 80, 85 and 90, and followed until the death of all in 2016. Changes in functional ability, physical strength, vigour, morbidity and social function were depicted both as functions of age and as function of time to death. Moreover, using repeated measurement models, we modelled the modifying effect of functional ability, physical strength, vigour, morbidity and social function on the association between time to death and life-satisfaction. **Results:** The preliminary results showed that measures of social function were stronger correlated with chronological age than time to

death, whereas measures of functional ability, physical strength and morbidity were stronger associated with time to death than with chronological age. From the age of 70 and forwards participants have a high life-satisfaction in general, however, a decline is seen as persons get older and with proximity to death. Measures of functional ability (e.g. going shopping) and morbidity (e.g. self-related health) had a significantly increasing effect on life-satisfaction with increasing age. Whereas social function (e.g. living alone, meeting friends) did not significantly modify the decrease in life satisfaction with increasing age. **Conclusion:** Physical strength, functional ability and morbidity were measures mostly linked to biological aging, while social functioning was strongly correlated with chronological age. Functional ability and self-related health are important factors to prevent age-related decrease in life satisfaction.

P154- FRAILTY STATUS AND TWO-YEAR COGNITIVE DECLINE IN COMMUNITY-DWELLING OLDER JAPANESE WOMEN. Hiroyuki Sasai, Yosuke Osuka, Narumi Kojima, Hunkyung Kim (*Research Team for Promoting Independence and Mental Health, Tokyo Metropolitan Institute of Gerontology, Japan*)

Background: Previous studies mostly conducted in Western countries support that physical frailty predicts future cognitive decline in general older populations. However, longitudinal evidence on this association is limited, especially among older Japanese women. **Objectives:** This study has investigated the prospective associations of frailty status with cognitive decline over two years among community-dwelling older Japanese women, including which individual frailty components (i.e., slowness, weakness, exhaustion, low activity, and unintentional weight loss) could predict cognitive decline. **Methods:** This study was a two-year population-based cohort study conducted in a metropolitan area of Tokyo, Japan. Data were collected in October 2017 (baseline) and September 2019 (follow-up) and analyzed between December 2019 and January 2020. Participants were community-dwelling older Japanese women, aged 65 to 80 years at the baseline, without any neurological diseases or cognitive impairment as measured by a Mini-Mental State Examination (MMSE) score of ≥ 24 points. Cognitive decline was defined as a drop of two points or more in the MMSE score over two years. The physical frailty phenotype was classified by the Japanese version of Cardiovascular Health Study criteria. Multiple Poisson regression analyses with a robust error variance were applied to assess risk ratios (RRs) of two-year cognitive decline across the baseline frailty statuses (robust [reference category], prefrail, or frail). **Results:** Of the 522 women analyzed, 219 (42.0%) were prefrail (1 or 2 components), and 17 (3.3%) were frail (≥ 3 components) at the baseline. At the follow-up, 17 (5.9%) robust, 29 (13.2%) prefrail, and 6 (35.3%) frail women experienced cognitive decline. After being adjusted for various confounding factors including age, educational attainment, and baseline MMSE score, the RRs of cognitive decline were 2.05 (95% confidence interval [CI]: 1.11, 3.80) in the prefrail and 3.68 (95%CI: 1.64, 8.27) in the frail women. Among the five frailty components,

slowness (RR: 2.19, 95%CI: 1.04, 4.62), weakness (RR: 2.85, 95%CI: 1.64, 4.94), and unintentional weight loss (RR: 1.78, 95%CI: 1.01, 3.14) were significantly associated with cognitive decline. **Conclusion:** Over the two-year period, approximately 10% of women experienced cognitive decline. Baseline physical frailty status, particularly slowness, weakness, and unintentional weight loss, predicted this decline. Intervention strategies targeting physical frailty may help delay cognitive decline in older Japanese women.

ANIMAL MODELS

P155- ESTRADIOL DEFICIENCY AND SKELETAL MUSCLE APOPTOSIS: CONTRIBUTION OF MICRORNAS. Sira Karvinen¹, HannaKaarina Juppi¹, Gengyun Le², Christine Cabelka², Tara Mader², Dawn Lowe¹, Eija Laakkonen¹ ((1) *Gerontology Research Center, Faculty of Sport and Health Sciences, University of Jyväskylä, Jyväskylä, Finland*; (2) *Divisions of Rehabilitation Science and Physical Therapy, Department of Rehabilitation Medicine, Medical School, University of Minnesota, Minneapolis, USA*)

Background: Menopause leads to estradiol (E2) deficiency that is associated with decreases in muscle mass and strength. Yet the mechanistic role of E2 in the loss of muscle mass has not been established. Programmed cell death termed apoptosis has been proposed a key signaling route in skeletal muscle homeostasis, including muscle aging and sarcopenia. To date several microRNAs (miRs) have been found to regulate key steps in apoptotic pathways. **Objectives:** Here we studied the effect of E2 deficiency on miR-signaling in skeletal muscle apoptosis. Our aim was to reveal whether E2-responsive miRs have mechanistic role in inducing skeletal muscle apoptosis. **Methods:** We utilized C57BL6 mice with three study groups; Sham (normal estrous cycle, n=8), OVX (E2 deficiency, n=7) and OVX+E2 (high E2 supplemented by pellet, n=4). In our setup, OVX and OVX+E2 groups represent the extremes of E2 level. Six weeks following the sham or OVX surgery, mice were sacrificed, gastrocnemius muscles were harvested and RNA isolated. miR-profile was studied with NGS and candidate miRs verified using qPCR. The target proteins of the miRs were found using in silico analysis (Target scan) and target proteins measured at mRNA (qPCR) and protein levels (Western blot). **Results:** Of the apoptosis-linked miRs found, four (122-5p, 133a-3p, 483-3p and 491-5p) indicated differential expression patterns between OVX and OVX+E2 groups. In qPCR verification, OVX had lower expression in all of the studied miRs compared with OVX+E2 (p=0.050). Accordingly, OVX had higher expression of cytochrome c and caspases 3, 6 and 9 compared with OVX+E2 at the mRNA level (p<0.050). At protein level, OVX had greater cytochrome c and active caspase 9 compared with OVX+E2 (p<0.050). **Conclusion:** In muscle from E2 deficient mice (OVX vs. OVX+E2 group), several apoptosis-linked miRs were down regulated concomitant with higher mRNA expression of the target proteins. Furthermore, E2 deficiency was associated with higher cytochrome c and active caspase 9 protein levels. To conclude, E2 deficiency

down regulated several miRs related to apoptotic pathways that may lead to increased apoptosis and reduced skeletal muscle mass.

P156- DECIPHERING GENOMICS OF SARCOPENIA VIA ZEBRAFISH MODEL. Alon Daya¹, Rajashekar Donaka², David Karasik^{2,3} ((1) *The Faculty of Marine Sciences, Ruppin Academic Center, Michmoret, Israel;* (2) *The MusculoSkeletal Genetics Laboratory, The Azrieli Faculty of Medicine, Bar-Ilan University, Safed, Israel;* (3) *Hebrew SeniorLife, Hinda and Arthur Marcus Institute for Aging Research, Boston, Massachusetts, USA*)

Background: Although sarcopenia's pathogenesis is multifactorial, with its major phenotypes, muscle mass and muscle strength, being highly heritable, its genetic underpinning is not well studied. **Objectives:** Summarize evidence for use of zebrafish as a model system to decode the sarcopenia's GWAS findings. **Methods:** Several genome-wide association studies (GWAS) of muscle-related traits were published recently, providing dozens of candidate genes, many of them with unknown function. Therefore, animal models are required not only to identify causal mechanisms, but also to clarify the underlying biology and to translate this knowledge into new interventions. Over the past several decades, small teleost fishes had emerged as a powerful system for modeling the genetics of human diseases. Due to their amenability to rapid genetic intervention and the large number of conserved genetic and physiological features, small teleosts, such as zebrafish (*D. rerio*), are indispensable for skeletal muscle genomic studies. **Results:** We summarize the evidence supporting the utility of small fish model for accelerating our understanding of human skeletal muscle in norm and disease. The following stable mutants (mostly knockouts) exist for the «monogenic muscle» diseases (human gene, fish mutant, disease): for Duchenne and Becker muscular dystrophy (MD), *sapje/dmd* (homology of human DMD gene); for Limb-girdle MD, *popdc1S191F* (BVES); for Bethlem myopathy and Ullrich congenital MD, *col6a1ama605003* (COL6A1); for nemaline myopathy, *froto27c* (MYO18B), and *tmod4trg* (TMOD4); for Merosin deficient congenital MD, *lama2cl501/cl501*; *candyfloss/lama2* (LAMA2); for limb-girdle MD, *bvesic11/ic11* (POPDC1), *heltg287* (TTN), and «foie gras» (TRAPPC11); for Native American myopathy, *stac3mi34* (STAC3), as well as fish homologues of the ACVR1, CACNB1, CAVIN4, CMS, DAG1, FHL1, FLNC, VCP and other human genes. These models provide evidence of muscle-related gene's conservancy and similarity of skeletal muscle morphology and physiological phenotypes. We will outline challenges in interpreting zebrafish mutant phenotypes and translating them to human disease. **Conclusion:** We conclude with recommendations of future directions to leverage.

P157- CENTENARIAN OFFSPRING ARE LESS FRAIL AND GENETICALLY DISTINCT THAN AGE-MATCHED CONTROLS: A FUNCTIONAL AND TRANSCRIPTOMIC ANALYSIS. J Vina (*Freshage Research Group-Department of Physiology, Faculty of Medicine, University of Valencia, CIBERFES, INCLIVA, Valencia, Spain;* *Freshage Research Group-Department of Physiotherapy, Faculty of Physiotherapy, University of Valencia, CIBERFES, INCLIVA, Valencia, Spain;* *Servicio de Geriatria. Hospital de la Ribera. Alzira, Valencia, Spain*)

Centenarians exhibit extreme longevity and a compression of morbidity. We showed previously that centenarians display a unique genetic signature, in terms of mRNA and miRNA profile, which is similar to that found in young people and different from that found in octogenarians. Centenarian offspring seem to inherit centenarians' compression of morbidity, as measured by lower rates of age-related pathologies such as hypertension, diabetes, strokes, and heart attacks. We therefore hypothesized that they will also display a lower incidence of frailty. In this study, we aimed to ascertain whether centenarian offspring are endowed with such "genetic footprint" and a lower incidence of frailty, when compared to their contemporaries. For this purpose, we collected plasma and peripheral blood mononuclear cells from 88 septuagenarians, 88, age-matched centenarian offspring (but not sons or daughters of the centenarians included in this study) and 63 centenarians. miRNA expression and mRNA profiles were performed by the Genechip miRNA 4.0 Array (Affimetrix) and Genechip Clariom S Human Array (Affimetrix), respectively. Frailty Phenotype was determined by meeting three or more of the following criteria: unintentional weight loss, low grip strength, exhaustion, slow gait speed, and low physical activity. We found that miRNA and mRNA expression patterns in centenarians are similar to centenarian offspring and different to non-centenarian offspring ($p < 0.01$). Importantly, we found a lower incidence of frailty among centenarians' offspring ($p < 0.01$), when compared to their contemporaries. Taken together, our results indicate that centenarian offspring resemble centenarian characteristics and that they enjoy significantly less frailty than their less fortunate contemporaries that are not sons or daughters of centenarians. This lower incidence of frailty may be a key feature to achieve extraordinary ageing.

PRECLINICAL STUDIES

P158- A PROSPECTIVE OBSERVATIONAL STUDY OF UNKNOWN HYPOGLYCEMIC EPISODES IN OLDEST OLD DIABETIC PATIENTS. F. Hennekinne, M. Mennecart, J. Bleuet, T. Constans, B. Fougère (*Department of Geriatrics Medicine, Tours University Hospital, Tours, France*)

Background: Hypoglycemic episodes increase in older patients and their consequences are more significant. **Objectives:** The aim of this prospective observational study is to explore unknown hypoglycemic episodes diagnosed

by continuous glucose monitoring in older type 2 diabetic patients and to describe the link between the occurrence of hypoglycemia and glycosylated hemoglobin (HbA1C) level. **Methods:** We included 36 patients with type 2 diabetes aged 75 years or over hospitalized during 19 consecutive months in a geriatric acute care unit in Tours University Hospital in France. Demographic characteristics, type of diabetic treatment, Mini Mental State Examination, HbA1c levels, albumin and creatinin level were recorded. Continuous glucose monitoring (CGM) was used to detect hypoglycemia for a maximum of 5 days, and capillary blood glucose measurements (CBGM) were also performed 4 to 8 times a day. Patients with at least one blood glucose measure lower than 70 mg/dL were compared with others for demographic, clinical and biological parameters. **Results:** Seventeen patients experienced hypoglycemia. These groups did not differ in demographic characteristics and in diabetic drug class. Among these patients, 5 had an episode of severe hypoglycemia (< 40 mg/dL) and 14 patients had nocturnal episodes, more often between 4 and 8 am. Twelve patients had unrecognized hypoglycemia by CBGM. The average duration of hypoglycemic episodes was 4.1 hours. There was no difference in the HbA1c levels between the two groups (mean 7.5%, p=0.86). **Conclusion:** The prevalence of hypoglycemia is underestimated in the oldest diabetic population receiving hypoglycemic drugs. Measurements of CBGM and HbA1c level in the target may overlook nocturnal and prolonged hypoglycemic episodes. Our study showed the benefit of CGM in older diabetic patients in order to detect unknown hypoglycemia. More prospective studies are needed to explore factors that predict hypoglycemia.

P159- ROLE OF ADIPOCYTE HAPTOGLOBIN IN AGED-RELATED MUSCLE WEAKNESS. Marie Catenacci, Sophie Le-Gonidec, Alizée Dortignac, Ophélie Pereira, Romain Madeleine, Jean-Philippe Pradère, Philippe Valet, Cedric Dray (UMR1048 INSERM, Université Fédérale de Toulouse - Université Paul Sabatier Toulouse III, France)

Background: Healthy lifespan does not increase proportionally compared to global lifespan leading to an increased number of disabled aged persons. To increase healthy lifespan, locomotion could be considered in the future as the main targetable outcome to fight against the frailty to dependency transition. The so-called sarcopenia, characterized as the loss of muscle mass and function, affects 6 to 22% of the populations over 65. Mechanistically, sarcopenia is associated with an imbalance between protein synthesis and degradation, an increase of muscle inflammatory processes, a reduction of mitochondria-driven metabolism and an exacerbated fibrosis. Several therapeutic strategies have been proposed such as hormonal replacement but, regarding the adverse effects, these strategies have been abandoned. In this context, we hypothesize that, through a modified secretory profile, adipose tissue could play a crucial role in the muscle loss of function. We previously promoted an unbiased proteomic study and identified haptoglobin as an up-regulated cytokine overproduced by the adipose tissue during aging. **Objectives:**

In this context, our project proposes to better understand the role of adipocyte haptoglobin in age-related muscle weakness. **Methods:** To do so, we used complementary in vitro and in vivo models of haptoglobin supplementation and strategies of adipocyte haptoglobin over-expression/deletion. Impacts of such interventions have been monitored by measuring myogenic processes as well as muscle aging. Moreover, a human cohort in progress will help to constitute a new biobank by collecting blood, adipose and muscle from sarcopenic individuals in order to evaluate the role of haptoglobin on sarcopenia (INSPIRE cohort). **Results:** The results obtained in vivo and in vitro suggest that haptoglobin treatments induced an age-dependent decrease in muscle mass. Moreover, these protocols indicated a muscle-specific role of haptoglobin when we measured the fiber diameter. In addition, a direct effect of haptoglobin on differentiation alteration was also observed in in vitro human muscle cells. **Conclusion:** These results suggest that haptoglobin induces effects according to the age, the muscle type and the dose on muscle physiology. Thus, a better knowledge of adipocyte haptoglobin production could help to better apprehend the age-related muscular complications.

P160- NRF2 ACTIVATOR IMPROVES AGE-RELATED MUSCULOSKELETAL DYSFUNCTION THROUGH IMPROVED MITOCHONDRIAL FUNCTION AND PROTEIN SYNTHESIS IN A NOVEL GUINEA PIG MODEL. Robert V. Musci¹, Kendra Andrie², Zackary Valenti¹, Maureen Walsh¹, Margaret Campbell², Sydney Bork², Joseph Sanford^{1,2}, Mary Afzali², Qian Zhang¹, Martin A. Javors⁴, Benjamin F. Miller⁵, Kelly S. Santangelo², Karyn L. Hamilton^{1,3} ((1) Department of Health and Exercise Science, Colorado State University, Fort Collins, CO, USA; (2) Department of Microbiology, Immunology, Pathology, Colorado State University, Fort Collins, CO, USA; (3) Columbine Health Systems Center for Healthy Aging, Colorado State University, Fort Collins, CO, USA; (4) UT Health San Antonio, San Antonio, TX, USA; (5) Oklahoma Medical Research Foundation, Oklahoma City, OK, USA)

Background: Sarcopenia contributes to loss of independence and increases risk of mortality. Mitochondrial dysfunction and loss of proteostasis are two interrelated hallmarks of aging with well-established roles in skeletal muscle function. Mitochondrial dysfunction increases cellular oxidative stress and impairs ATP-generating capacity. Consequentially, oxidatively-damaged proteins accumulate; however, a dysfunctional mitochondrial reticulum cannot sufficiently provide energetic resources to repair the proteome. In skeletal muscle, this impaired proteostasis and mitochondrial dysfunction promote sarcopenia. Thus, improving mitochondrial function by increasing endogenous antioxidants could attenuate age-related loss of muscle function. **Objectives:** Using a phytochemical Nrf2 activator (Nrf2a), we sought to determine if upregulation of cytoprotective genes would improve mitochondrial function and gait, an integrative metric of musculoskeletal function. **Methods:** We utilized Dunkin-Hartley (DH) guinea pigs that develop primary osteoarthritis

and experiences age-related skeletal muscle dysfunction by 9 months of age (~20% of their maximal predicted lifespan). We treated young (2mo) and older (5mo) DH guinea pigs for 3 and 10 months, respectively, daily with a Nrf2a. We assessed metrics of gait monthly to measure the effect of Nrf2a on age-related musculoskeletal dysfunction. We evaluated the effect of Nrf2a on skeletal muscle protein turnover using the stable-isotope deuterium oxide. We also assessed soleus mitochondrial function using high resolution respirometry. **Results:** While Nrf2a did not affect gait in young guinea pigs, 10 months of Nrf2a treatment maintained stride length ($p=0.067$) in older male and stance width ($p<0.05$) in older female guinea pigs compared to untreated controls. Nrf2a improved ($p=0.089$) ADP Vmax in young females and old males compared to their respective controls. Nrf2a also increased uncoupled electron transport system capacity in both male and female guinea pigs of both ages ($p<0.05$). Nrf2a augmented contractile protein synthesis in the soleus of old male and female guinea pigs ($p=0.071$), but did not prevent the age-related declines in the gastrocnemius. **Conclusion:** In summary, long-term Nrf2a treatment improved skeletal muscle mitochondrial function, increased contractile protein synthesis, and maintained aspects of gait. Together, our findings provide evidence that targeting the transcription factor Nrf2 mitigates the decline in musculoskeletal function in a model of osteoarthritis and sarcopenia, with concomitant improvements in mitochondrial function and protein turnover.

P161- SUPPORTING MUSCLE BUILDING IN SARCOPENIA: MECHANISM OF ACTION OF THE SPECIFIC NUTRIENT COMBINATION OF ACTISYN(TM). Janneke van Wijngaarden¹, Francina J Dijk¹, Miriam van Dijk¹, Lisette CPGM de Groot², Yves Boirie^{3,4}, Yvette C Luiking¹ ((1) Danone Nutricia Research, Utrecht, The Netherlands; (2) Division of Human Nutrition and Health, Wageningen University & Research, Wageningen, the Netherlands; (3) University of Clermont Auvergne, INRA, Human Nutrition Unit, Centre for Research in Human Nutrition Auvergne, Clermont-Ferrand, France; (4) University Hospital Clermont-Ferrand, Clinical Nutrition Unit, Clermont-Ferrand, France)

Background: Sarcopenia is a muscle disease rooted in adverse muscle changes that accumulate across the lifespan. Multiple factors cause or worsen sarcopenia, with aging as the primary factor and malnutrition, inactivity and diseases as secondary factors. **Objectives:** To design a nutritional strategy to manage sarcopenia. **Methods:** Our research program investigated 1) specific nutrient deficiencies in sarcopenic older adults, 2) muscle protein synthesis (MPS) response in cells and rodent models, and 3) effect of a specific nutrient combination (whey protein, leucine and vitamin D - ActiSyn(TM), present in the medical nutrition supplement FortiFit(R), on MPS in older adults. **Results:** Cross-sectional studies indicated a significantly lower intake of protein (-6%) and vitamin D (-36%) in sarcopenic versus healthy older adults ($p<0.05$) [Verlaan, Clin Nutr 2017], and higher prevalence of sarcopenia

among those with lower blood levels of leucine, total essential amino acids (EAA) and 25(OH)D ($p<0.05$) [ter Borg, JNHA 2019]. In vitamin D deprived C2C12 myotubes, vitamin D supplementation resulted in further activation of leucine-stimulated MPS ($p<0.05$ vs leucine alone) by sensitizing the Akt/mTOR signalling pathway [Salles, Mol Nutr Food Res 2013]. In aged mice, MPS was stimulated by leucine-enriched whey protein ($p<0.05$), but not by leucine administration alone [Dijk, Clin Nutr ESPEN 2018]. Intake of a leucine-enriched whey protein supplement in healthy older adults resulted in higher postprandial blood levels of leucine and EAA compared with casein protein-based supplements ($p<0.001$) [Luiking, Clin Nutr 2016; van Wijngaarden, Clin Nutr 2017]. Moreover, it stimulated MPS in healthy ($p<0.05$ vs iso-caloric control) [Kramer, JCEM 2015] and sarcopenic older adults ($p<0.01$ vs baseline) [Kramer, Clin Nutr 2017]. It enhanced the MPS response to standardized breakfast ($p=0.001$ vs breakfast only) [Chanet, JNutr 2017] and resulted in a higher postprandial MPS response than an isocaloric dairy-like control ($p<0.05$) [Luiking, Nutr J 2014]. **Conclusion:** The specific combination of whey protein, leucine and vitamin D (ActiSyn(TM)) provides the right environment for muscle building in sarcopenia, where these nutrients are often deficient. This combination acts through a proven anabolic mode of action with optimal nutrient bioavailability for the muscle to stimulate MPS. FortiFit and ActiSyn are trademarks of N.V. Nutricia.

P162- A PROSPECTIVE NON-INVASIVE MICROWAVE-BASED IN-VIVO TISSUE-ANALYSIS TOOL FOR EARLY DIAGNOSIS AND MANAGEMENT IN AGE-RELATED SARCOPENIA: INITIAL PROOF-OF-CONCEPT INVESTIGATIONS IN THE NETHERLANDS. M.D. Perez¹, A. Koochek², T.J. Blokhuis³, R. Augustine¹ ((1) *Microwaves in Medical Engineering Group, Solid State Electronics, Department of Engineering Sciences, Angstrom Laboratory, Uppsala University, Uppsala, Sweden;* (2) *Department of Food Studies, Nutrition and Dietetics, Uppsala University, Uppsala, Sweden;* (3) *Maastricht University Medical Center, Traumatology Department, 6229 HX Maastricht, The Netherlands*)

Background: Age-related Sarcopenia is a major responsible for premature death, poor quality of life and several adverse outcomes, which lead to higher health care costs. Despite its recent incorporation as a muscle disease (ICD-10-CM M62.84), early identification of this disease remains challenging. Mostly, due to classification and diagnostic criteria, which are predominantly based on technically advanced assessment tools, which may not be available in all clinic settings. Recently, a non-invasive technique to analyze variations in biological tissues considering the effect of physiological and biological properties on microwave signals is being studied for its potential to determine muscle mass, with possible applications in the early diagnosis of this disease. **Objectives:** Therefore, the principal objective of this study is to preliminarily test the potential of this technique as a new tool for early diagnosis of age-related Sarcopenia in a clinical setting. **Methods:**

Muscle surface area are going to be assessed by abdominal computational tomography (CT) on the third lumbar spine vertebra (L3) and bioimpedance measurements among 50 men and women, aged ≥ 60 years in the Maastricht University Medical Center, The Netherlands. Participants will also be subjected to measurements done with the device under test (DUT) (the proposed technique) in the same location. The data collected from the three different measurements are analyzed looking for correlation. Laboratory experiments made from synthetic materials emulating human tissues and from ex-vivo porcine tissues are used for optimization and interpretation of the clinical measurements. **Results:** Up-to-now, the campaign has just started and there is no enough data to give a preliminary result. Initial laboratory experiments prove that the thickness of the fat and muscle tissues is correlated to the system response. **Conclusion:** This prospective device will estimate the muscle mass locally using microwave electromagnetic principles. The results of this study can contribute to reveal the potential of this approach as a tissue-analysis tool for early diagnosis and management of age-related Sarcopenia. The results might also provide useful evidence to consider in a future planned prospective cohort study, which aims to examine the impact of dietary biomarkers and genetic factors on the incidence of age-related Sarcopenia in older adults.

P163- EVALUATION OF CROSS-SECTIONAL AREA OF RECTUS FEMORIS MUSCLE USING SINGLE ELEMENT ULTRASONIC TRANSDUCER WITH OPTICAL TRACKER. Yueh-Cheng Yang, Hui-Hua Chiang, (*Biomedical Engineering Department, National Yang Ming University, Taipei, Taiwan*)

Background: Sarcopenia has become a serious problem in this aging society. At present diagnosis of sarcopenia consist of physical performance and muscle quantity. DEXA has been widely applied to examine muscle quantity in clinical but it's radioactive, inconvenient and unaffordable in remote area. As a result, there are more studies in ultrasound in replace of DEXA. **Objectives:** Based on others researches CSA might be a suitable parameter to evaluate the muscle quantity. We develop a cheaper ultrasonic imaging system to evaluate the cross-sectional area (CSA) of rectus femoris (RF) muscle. **Methods:** We use a CMOS image sensor combing with digital signal processor to detect the displacement of single element ultrasonic transducer. Therefore, we combine US A-mode signal with displacement into B-mode image. By circling region of interest (ROI), we can obtain the CSA of RF muscle. Then, we use Siemens S3000 evaluating the CSA in the same region to testify the reliability. **Results:** We recruited 10 young college students undergoing the experiment. The result shows that the correlation coefficient is up to 0.96. **Conclusion:** In conclusion, our device can successfully evaluate the CSA of RF muscle. Moreover, our system using single element ultrasonic transducer is much cheaper than linear transducer in practice. It can be affordable in remote village or somewhere lacking in medical resource.

CLINICAL TRIALS

P164- FRAILTY, CLINICAL, AND PSYCHOSOCIAL STATUS AMONG OLD CAREGIVERS IN BELGIUM: A CASE-CONTROL STUDY. Camille Nicolay¹, Sandra Higuete², Sandra De Breucker¹ ((1) *Geriatric Department, Hôpital Erasme, Brussels, Belgium;* (2) *Geriatric Department, Hôpital ISPPC-Charleroi, Charleroi, Belgium*)

Background: Ten percents of Belgian population are considered to be informal caregivers. Little is known about their frailty status and their physical health. **Objectives:** We compared the frailty status, the clinical and psychosocial status of old caregivers with controls (>65). We analyzed the association of frailty status according to Fried's criteria and Rockwood frailty index (FI) with the characteristics of caregivers and controls in multiple regression analysis. **Methods:** Eighty six caregivers and 105 gender and age-matched controls were included. Frailty was assessed by the Frailty Phenotype (Fried) and the 40-deficit Frailty Index (FI). Social data, SF-12 Health Survey, basic and instrumental ADL, Geriatric Depression Scale, Mini Nutritional Assessment, Mini-Cog, Cumulative Illness Rating Scale-Geriatric, usual gait speed, handgrip strength, and Burden scale (Zarit) were collected. **Results:** The prevalence of frailty was similar in caregivers and controls with the FI ($p=0.479$) but higher with the Fried's criteria ($p=0.001$). Compared with the control group, caregiving was associated with a lower mental quality of life ($p<0.001$), a higher risk of depression ($p<0.001$), a higher consumption of antidepressant ($p=0.02$), a lower nutritional status ($p=0.019$), a more frequent help from health care providers ($p=0.005$), and more problems to maintain physical contacts with a social network ($p=0.008$). In multiple regression, the Fried's criteria adjusted for age, gender, marital status and incomes were associated with the age, the grip strength, the physical quality of life, the gait speed and the nutritional status ($R^2=0.79 - p<0.0001$), while FI was associated with the risk of depression, the use of antidepressants, the physical quality of life, the cognitive status and basal & instrumental ADL ($R^2=0.85 - p<0.0001$) in caregivers. **Conclusion:** The prevalence of frailty is similar in caregivers and controls when using FI, but higher in caregivers with Fried's criteria. Compared with controls, caregiving is associated with poorer health and psychological issues. While Fried's criteria focus on physical frailty, the FI is more related with geriatric syndromes like depression, cognitive disorders, loss of autonomy, and quality of life. This study could help researchers to choose between frailty scales before starting a study about older caregivers.

P165- EFFECTS OF EXERCISE AND BETA-HYDROXY-BETA-METHYLBUTYRATE SUPPLEMENTS ON MUSCLE THICKNESS AND QUALITY IN OLDER WOMEN WITH MUSCLE ATROPHY: SECONDARY ANALYSES OF A RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED TRIAL. Yosuke Osuka¹, Narumi Kojima¹, Ken Nishihara², Kyohsuke Wakaba³, Daiji Miyauchi⁴, Kiyoji Tanaka³, Hunkyung Kim¹ ((1) *Research Team for Promoting Independence and Mental Health, Tokyo Metropolitan Institute of Gerontology, Tokyo, Japan;* (2) *Department of Physical Therapy, Saitama Prefectural University, Japan;* (3) *Faculty of Health and Sport Sciences, University of Tsukuba, Japan;* (4) *Kyowa Co., Ltd., Japan*)

Background: A combined exercise and beta-hydroxy-beta-methylbutyrate (HMB) supplementation program appears to be useful for increasing muscle mass and improving muscle function, but its effects on muscle thickness and quality are unclear in individuals with muscle atrophy. **Objectives:** We aimed to examine the effects of exercise and/or HMB supplementation on muscle thickness and quality in older women with muscle atrophy as secondary analyses of a previously conducted randomized, double-blind, placebo-controlled trial. **Methods:** A total of 156 older women with a skeletal muscle mass index of <5.7 kg/m² were randomly allocated to one of the four groups (exercise + HMB, exercise + placebo, education + HMB, and education + placebo). The participants were provided exercise programs twice weekly or education programs every two weeks and calcium-HMB (1,500 mg) or placebo supplements once daily for 12 weeks. The outcomes were changes in muscle thickness and quality parameters. Thicknesses of the rectus femoris and the vastus intermedius were measured using a B-mode ultrasound device. The muscle quality of the rectus femoris was evaluated on ultrasound images processed using a dedicated software and was expressed as the echo intensity of the image on a scale of 0 (black) to 256 (white). **Results:** Among the 156 participants, 149 were followed up at week 12, and their data were included in the intention-to-treat analyses. Significant increases in vastus intermedius thickness were observed in the exercise + HMB and exercise + placebo groups, while no significant increases were observed in the education + HMB and education + placebo groups. Analyses of variance did not show any significant interactions between exercise and HMB or main effects of exercise and HMB on any of the outcomes. **Conclusion:** There was no favorable effect of exercise and HMB supplementation on muscle thickness and quality in older women with muscle atrophy; thus, the effectiveness of exercise and HMB supplementation could not be confirmed. Future studies should examine the effectiveness on muscle thickness and quality using more accurate imaging techniques, such as computed tomography or magnetic resonance imaging.

P166- EFFECT OF SIT-TO-STAND EXERCISES COMBINED WITH PROTEIN-RICH ORAL SUPPLEMENTATION IN OLDER PERSONS: THE OPEN STUDY. Helena Grönstedt¹, Sofia Vikström², Tommy Cederholm³, Erika Franzén⁴, Yvette C Luiking⁵, Åke Seiger⁶, Anders Wimo⁷, Gerd Faxén-Irving⁸ ((1) *Stockholms Sjukhem R&D unit, Stockholm;* *Allied Health Professionals, Function Area Occupational Therapy & Physiotherapy, Karolinska University Hospital, Stockholm, Sweden;* (2) *Stockholms Sjukhem R&D unit, Department of Neurobiology, Care Science and Society, Division of Occupational Therapy, Karolinska Institutet, Stockholm, Sweden;* (3) *Department of Public Health and Caring Sciences, Clinical Nutrition and Metabolism, Uppsala University & Department of Geriatric Medicine, Uppsala University Hospital, Uppsala & Theme Aging, Karolinska University Hospital, Stockholm, Sweden;* (4) *Stockholms Sjukhem R&D unit, Stockholm;* *Department of Neurobiology, Care Science and Society, Division of physiotherapy, Karolinska Institutet, Stockholm & Allied Health Professionals, Function Area Occupational Therapy & Physiotherapy, Karolinska University Hospital, Stockholm, Sweden;* (5) *Danone Nutricia Research, Nutricia Advanced Medical Nutrition, Utrecht, The Netherlands;* (6) *Department of Neurobiology, Care Science and Society, Division of Clinical geriatrics, Karolinska Institutet, Stockholm, Sweden;* (7) *Department of Neurobiology, Care Science and Society, Division of Neurogeriatrics, Karolinska Institutet, Stockholm, Sweden;* (8) *Stockholms Sjukhem R&D unit, Stockholm, Department of Neurobiology, Care Science and Society, Division of clinical geriatrics, Karolinska Institutet Stockholm & Allied Health Professionals, Function Area Clinical Nutrition, Karolinska University Hospital, Stockholm, Sweden*)

Background: Nursing home (NH) residents are often undernourished and physically inactive contributing to sarcopenia and frailty. Mobility is identified by older NH residents as being key to their quality of life and well-being. The combination of protein supplementation and physical exercise has been shown to be most effective to maintain and increase muscle mass. **Objectives:** The Older Persons Exercise and Nutrition (OPEN) study aimed to investigate the effects of sit-to-stand exercises (STS) integrated into daily care combined with a protein-rich oral nutritional supplement (ONS), on physical function, nutritional status, body composition, health-related quality of life and resource use. **Methods:** Residents in eight NH were randomized by NH units into an intervention group (IG) or a control group (CG) (n=60/group). The IG was offered a combination of STS (four times/day) and ONS (2 bottles/day providing 600 kcal and 36 g protein) for 12 weeks. The participants resided in NH units (dementia and somatic care), were ≥75 years and able to rise from a seated position. The 30 seconds Chair Stand Test (30sCST) was the primary outcome. Secondary outcomes were balance, walking speed, dependence in ADL, nutritional status and body composition, health-related quality of life and resource use. Data was analyzed using descriptive and inferential statistics including regression models. **Results:** Altogether 102 residents (86±5

years, 62% females) completed the study. No improvement in the physical function assessments was observed in the IG, whereas body weight increased significantly (2.05 ± 3.5 kg, $p=0.013$) vs the CG. Twenty-one (of 52) participants with high adherence to the intervention, i.e. at least 40% compliance to the combined intervention, increased their fat free mass (2.12 kg (0.13, 4.26 IQR), $p=0.007$ vs CG. Logistic regression analyses indicated that the Odds Ratio for maintained/improved 30sCST was 3.5 (CI 1.1, 10.9, $p=0.034$) among the participants with high adherence compared to the CG.

P167- DESIGN AND POPULATION BASELINE FEATURES OF THE SARA-OBS STUDY: CHARACTERIZING SARCOPENIA AND SARCOPENIC OBESITY INPATIENTS AGED 65 YEARS AND OVER, AT RISK OF MOBILITY DISABILITY. Waly Dih¹, Cendrine Tourette¹, Carole Margalef¹, Amy Chen², René Lafont^{1,3}, Pierre Dilda¹, Stanislas Veillet¹, Samuel Agus² ((1) *Biophytis, Sorbonne Université – BC9, Paris, France*; (2) *Biophytis, Cambridge, USA*; (3) *Sorbonne Université, CNRS - Institut de Biologie Paris Seine (BIOSEPE), Paris, France*)

Background: Sarcopenia is a geriatric condition characterized by loss of muscle mass and functions and can contribute to risks of falls, fractures and hospitalization. SARA-OBS is a multicenter, observational trial designed to better characterize age-related sarcopenia in a community dwelling population at risk of mobility disability. This is part of a clinical program that strives to provide more understanding of the target population in order to further develop a potential sarcopenia medical intervention. SARA-OBS study rationale, design and main baseline characteristics are presented. **Objectives:** The objective is to characterize sarcopenia and sarcopenic obesity in older adults through evaluation of their physical performance and body composition. Changes in baseline characteristics after a 6-month period will be assessed and used for development of a phase 2 interventional study on the efficacy and safety of an investigational drug, BIO101. **Methods:** Participant recruitment was based on age (≥ 65 years), SPPB score ≤ 8 and body mass based on the FNIH criteria. Physical functions were assessed by two walking tests (400m walk test and the 6-minute walk test), the SPPB, the handgrip strength test and the stair climb power test. Patient reported outcomes were also assessed with the SF-36 and the SarQol questionnaires. **Results:** 218 subjects were included in this study and the main screen failures were SPPB scores and body mass criteria. Baseline characteristics indicated that the average BMI was high, ~61% of the participants were women and that the ALM/BMI in men was lower than the FNIH threshold (0.69 vs 0.789) but was similar in women (0.52 vs 0.52). 400m gait speed was 0.83 m/s, the mean total SPPB score was 6.12 with the gait speed component of <0.8 m/s and the chair stand sub-score of 1.73. **Conclusion:** This population has a similar 400m gait speed as the populations in LIFE and SPRINT-T studies at baseline. However, the SPPB total score and the chair stand sub-score correspond more closely with the SPRINT-T study. Addressing the loss of physical function and preventing mobility disability

is still an unmet need of older adults. SARA-OBS included a population representative of a suitable target for subsequent interventional studies aimed to fulfill this need.

P168- DEVELOPMENT OF AUTOMATED ULTRASONIC MUSCLE MASS MEASUREMENT SYSTEM AND SARCOPENIA CLINICAL RESEARCH. Yen-Lung Chen, Hui-Hua Chiang (*Department of Biomedical Engineering, National Yang-Ming University, Taipei, Taiwan*)

Background: In whole world, the elderly formally entered the aging society, and the patients with sarcopenia were high-risk groups in the fall. More than 20% of the elderly suffered moderate injuries due to falls. The sarcopenia as defined by the EU's sarcopenia working group refers to progressive reduction in muscle mass and decreased muscle function. **Objectives:** It is expected to provide diagnostic tools and techniques for the rapid determination of sarcopenia and muscle strength. At the same time, it will also be developed toward portable devices to facilitate the diagnosis of the aging of muscle function in the elderly at home to take care of the health and well-being of the elderly. **Methods:** At present, the clinical measurement part is assisted by the radiation department of the Veterans General Hospital to collect and measure the subjects. clinical testing methods are mainly for older people over 65 years of age. The walking speed test is firstly performed on the method. If it is normal, then the grip strength test is performed. If the grip strength is too small, the femoral rectus femoris muscle volume test should be performed. Generally, dual energy is used. Dual-energy X-ray absorptiometry (DXA) is used for testing. If the walking speed is too slow, the DXA test should be performed directly. The test value is less than 6.0 (kg/m²) in woman and less than 7.0 (kg/m²) in man. That is, it is determined as a sarcopenia patient. Since DXA has a small amount of free radiation, high cost, and a large space occupation, we expect to obtain a wide range of data through ultrasonic scans. Back-end development algorithms are calculated to determine if there is sarcopenia and how severe it is. **Results:** At present, the rectus femoris muscle volume obtained by using ultrasound has a highly linear relationship with the appendicular muscle mass measured by DXA ($R^2=0.87, P<0.001$), and has the ability to distinguish whether it is sarcopenia. **Conclusion:** The use of muscle volume of rectus femoris can improve the accuracy of sarcopenia prediction. In the near future, this plan will be used to develop automated ultrasonic scanners.

P169- SPONTANEOUS PHYSICAL ACTIVITY LEVEL IN SARCOPENIC OLDER WOMEN SUBMITTED TO RESISTANCE TRAINING AND SUPPLEMENTATION WITH FISH OIL. Natália Maira da Cruz Alves¹, Carolyn Anne Greig², Karina Pfrimer¹, Priscila Carvalho³, Ellen Cristine de Freitas³, Thiago Neves¹, Olga Laura Sena Almeida¹, Daniela Dalpubel¹, Roberta Cristina Cintra Taveira¹, Eduardo Ferriolli¹ ((1) *Department of Clinical Medicine, Faculty of Medicine of Ribeirão Preto - University of São Paulo (USP), Ribeirão Preto, SP, Brazil;* (2) *School of Sport, Exercise and Rehabilitation Sciences, University of Birmingham - Edgbaston, Birmingham - UK;* (3) *São Paulo State University (Unesp), Araraquara, SP, Brazil*)

Background: Although sarcopenia has multifactorial causes, the decline in physical activity has been considered a very important aspect for its development. Since the promotion of higher levels of physical activity can attenuate the progression of sarcopenia, it is possible that the participation in a programmed training increases the spontaneous physical activity of the participants. **Objectives:** To investigate if the participation of sarcopenic older women in a resistance training program and supplementation with fish oil leads to changes in the level of spontaneous physical activity (sedentary time and number of steps). **Methods:** Randomized, double-blind, placebo-controlled clinical trial. Thirty-two older women, aged ≥ 65 years, participated in the study. All participants were classified as sarcopenic based on the criteria of the European Consensus on Sarcopenia 2010 (EWGSOP). The participants were divided into two experimental groups: (1) Exercise group + placebo (EP) and (2) Exercise group + fish oil (EFO). Both groups underwent a resistance exercise program over 14 weeks, consisting of three weekly supervised sessions. All volunteers were instructed to take two capsules of food supplement at each main meal, lunch and dinner (4g/day). The EP group used capsules composed of sunflower oil as placebo, and the EFO group fish oil capsules, (EPA 440mg and DHA 220mg). Measurements of the level of spontaneous physical activity were made before and after the intervention by using the ActiPal® physical activity monitor (Glasgow, UK), for a period of seven consecutive days, during which the volunteers were instructed to maintain their normal routine. The volume of the quadriceps muscle in the pre and post intervention periods was calculated from the images obtained by magnetic resonance imaging. For statistical analysis, a linear regression model with mixed effects was used to compare longitudinal data on mean intra-group differences between groups and moments. For all analyzes, a significance level of 0.05 was adopted. **Results:** Both groups showed an increase in muscle volume after the intervention (47.4 cm³ (13.5%) and 15.1 cm³ (4.9%), respectively). Regarding the level of spontaneous physical activity, both groups had a similar sedentary time and number of steps, at both times (average 8.9h and 8,608 steps in the pre-intervention period and 8.3h and 8,844 steps in the post-intervention period for the EP group, and 9.6hrs and 9,869 steps in the pre-period and 9.0h and 7,045 steps in the post-intervention period in the EOP group). **Conclusion:** Although

sarcopenic older women supplemented with fish oil showed a higher increase in muscle volume, the level of spontaneous physical activity remained unchanged both in the pre and post intervention periods and between groups, indicating that the increase in muscle volume was not associated with significant changes in the level of spontaneous physical activity.

FUNCTIONAL ASSESSMENT

P170- SENSOR-BASED PHYSICAL FRAILTY AND COGNITIVE FUNCTION MEASURES AS PREDICTORS OF IN-HOSPITAL OUTCOMES IN ABDOMINAL SURGICAL PATIENTS. Martha Ruiz¹, Audrey Cohen², Miguel Pena², Mohammad Hamidi³, Bellal Joseph³, Hossein Ehsani², Mindy Fain^{4,5}, Jane Mohler^{2,4,5}, Nima Toosizadeh^{2,4,5} ((1) *Department of Public Health, University of Arizona, Tucson, Arizona, USA;* (2) *Department of Biomedical Engineering, College of Engineering, University of Arizona, Tucson, Arizona, USA;* (3) *Department of Surgery, College of Medicine, University of Arizona, Tucson, Arizona, USA;* (4) *Arizona Center on Aging, University of Arizona, Tucson, Arizona, USA;* (5) *Division of Geriatrics, General Internal Medicine and Palliative Medicine, Department of Medicine, University of Arizona, Tucson, Arizona, USA*)

Background: Regardless of improvements in surgical and anesthetic practices, older surgical patients often experience postoperative complications. The purpose of this study was to investigate the association between physical frailty and cognitive function using a validated upper-extremity function (UEF) test with in-hospital outcomes in aging adults undergoing abdominal surgery. **Objectives:** To recognize frailty and cognitive function as a risk factor for in-hospital adverse outcomes. **Methods:** We administered pre-operative UEF tests, within 24-hours after admission, among patients aged 40 years and older undergoing emergent/urgent abdominal surgery. The UEF involved two tests; 20- and 60-sec of respectively fast and consistent elbow flexion, while angular velocity was measured via two wearable motion sensors applied to the wrist and upper-arm of the dominant arm. UEF physical score was calculated, based on slowness, weakness, flexibility, and exhaustion (range: resilient=0-frail=1). UEF cognitive score was assessed based on motor function variability within a dual-task performance that involved UEF motor task and a cognitive task of counting backwards by threes (range: Cognitive Normal=0-Cognitive Impairment=1). Adverse outcomes included: length of stay, complications, and death during their hospital stay. A logistic regression model was used to assess the association between UEF physical and cognitive scores (independent variables) and in-hospital outcomes (dependent variable). **Results:** A total of 75 participants (mean age 60.7±11.6 years) completed the preoperative UEF assessment. Thirty-six participants with an average age of 63.7±10.3 years experienced at least one adverse outcome while in the hospital. While age independently predicted in-hospital outcomes with receiver operating characteristic area under the curve (ROC-AUC) of 62%, this prediction improved by adding

either the UEF physical or the cognitive score. The physical score predicted in-hospital outcomes with a ROC-AUC of 80%, and the cognitive scores predicted in-hospital outcomes with a ROC-AUC of 77%. **Conclusion:** The proportion of emergency surgical procedures increases with age, and population trends indicate that this demand will increase significantly. Results from the current study showed that sensor-based measures of physical and cognitive function can provide an objective tool for predicting adverse outcomes, with potential applications for other surgical procedures. Risk stratification can help to establish targeted management strategies to improve the healthcare system and patient-centered outcomes.

P171- QUALITY VS. QUANTITY OF GAIT: REPEATABILITY OF SENSOR-BASED WALKING CHARACTERIZATION IN OLDER ADULTS. Danya Pradeep Kumar¹, Kaveh Laksari^{1,3}, Christopher Wendel², Jane Mohler^{1,2}, Hossein Ehsani², Nima Toosizadeh^{1,2,4} ((1) *Department of Biomedical Engineering, University of Arizona, Tucson, AZ, USA;* (2) *Arizona Center on Aging, Department of Medicine, University of Arizona, Tucson, AZ, USA;* (3) *Department of Aerospace and Mechanical Engineering, University of Arizona, Tucson, AZ, USA;* (4) *Division of Geriatrics, General Internal Medicine and Palliative Medicine, Department of Medicine, University of Arizona, Tucson, AZ, USA*)

Background: While sensor-based daily physical activity (DPA) gait performance has been demonstrated to be an effective measure of physical frailty, it is not clear how repeatable the DPA gait parameters are between different days of measurement, especially across frailty groups. **Objectives:** To evaluate the test-retest reliability (repeatability) of DPA gait performance parameters (stride time, variability, and irregularity) and quantitative measures (number of steps and walking duration) between two separate days of assessment among older adults. **Methods:** DPA was acquired for 48-hours from older adults (age \geq 65 years) using a tri-axial accelerometer motion-sensor attached to the trunk. Purposeful continuous walking bouts (\geq 60s) without long pauses ($>$ 1.7s) were identified from acceleration data and used to extract gait performance parameters, including stride time, power spectral density (PSD) slope (representing the variability of walking cycles), dominant frequency of walking, and gait irregularity (sample entropy, representing predictability of walking cycles). To assess repeatability, intraclass correlation coefficient (ICC) was calculated using two-way mixed effects F-test models for day-1 vs. day-2 as the independent random effect. Repeatability tests were performed once for all participants and once within each frailty group (non-frail and pre-frail/frail). **Results:** Data from 63 older adults, 29 non-frail (age: 74.97 \pm 7.10 years) and 34 pre-frail/frail (age: 81.26 \pm 8.94 years) were analyzed. Within all 63 participants with purposeful walking bouts on both the days, gait performance parameters of stride-time and gait variability parameters (slope and dominant frequency of walking) showed excellent test-retest reliability values (ICC \geq 75%) while quantitative parameters, including number

of steps and walking duration showed poor test-retest reliability results (ICC $<$ 30%). Among gait performance parameters (stride time, dominant walking frequency and sample entropy), we observed higher repeatability among the pre-frail/frail group with ICC $>$ 78% compared to ICC $<$ 53% for non-frail individuals. **Conclusion:** From our study, it is evident that gait performance parameters including average step- and stride-time and frequency-domain gait variability parameters provided higher test-retest reliability compared to quantitative measures. Further, gait performance parameters showed higher repeatability among pre-frail/frail volunteers between the two days compared to non-frail volunteers, which may be attributed to a lack of functional capacity among frail individuals for performing more intense and more variable physical tasks.

P172- THE USEFULNESS OF LOWER LEG MUSCLE ULTRASONOGRAPHY IN THE DETECTION OF SARCOPENIA AND THE EVALUATION OF MUSCLE QUALITY IN OLDER ADULTS. Ken Sugimoto¹, Masaaki Isaka^{1,2}, Taku Fujimoto¹, Yukiko Yasunobe¹, Hiroshi Akasaka¹, Keyu Xie¹, Shino Yoshida¹, Yuri Onishi¹, Hitomi Kurinami¹, Yasushi Takeya¹, Koichi Yamamoto¹, Hiromi Rakugi¹ ((1) *Geriatric and General Medicine, Osaka University Graduate School of Medicine, Suita, Osaka, Japan;* (2) *Physical Therapy, Osaka Yukioka College of Health Science, Ibaraki, Osaka, Japan*)

Background: While evaluation methods for skeletal muscle characteristics which are necessary to know the pathogenesis of sarcopenia are being considered, ultrasonography is attracting attention as a method simultaneously evaluate quantitative and qualitative evaluation of skeletal muscle. Although we have found many, the statements that examined the relation between muscle thickness, echo intensity, physical function, and sarcopenia by quadriceps muscle ultrasonography in the previous report, there are few reports for the lower leg muscles. **Objectives:** We conducted a study to examine whether the lower leg muscle ultrasonography is useful for evaluating sarcopenia index and muscle quality (muscle strength per unit muscle mass) evaluation in comparison with the quadriceps ultrasonography. **Methods:** The participants were 52 patients over 65 years old (27 males, 25 females). The muscle thickness of the quadriceps muscle, tibialis anterior muscle, gastrocnemius muscle, soleus, and echo intensity were measured by ultrasonography, and the relationship between lower extremity muscle mass, muscle strength, physical function, and muscle quality was examined. **Results:** The muscle thickness of quadriceps muscle, tibialis anterior muscle, soleus muscle was related to lower extremity muscle mass, grip strength, leg muscle strength, and only quadriceps muscle was related to gait speed. The echo intensity of the quadriceps, tibialis anterior, gastrocnemius was related to, grip strength, leg muscle strength, and only the tibialis anterior muscle was related to gait speed. The muscle thickness and the echo intensity of tibialis anterior muscle and soleus muscle are highly correlated with the quadriceps. The echo intensity of the tibialis anterior muscle, as well as that of the quadriceps

muscle, showed a high correlation with the muscle quality of lower extremity. **Conclusion:** Concerning the assessment of sarcopenia using ultrasonography, muscle thickness and echo intensity evaluation by tibialis anterior muscle showed the same utility as them by the quadriceps muscle, and echo intensity of the tibialis anterior muscle can be a marker of muscle quality.

P173- PHASE ANGLE AND PHYSICAL PERFORMANCE MEASURES IN COMMUNITY DWELLING OLDER ADULTS FROM BRAZIL. Matheus Lucena Germano¹, Cristiano dos Santos Gomes¹, Juliana Fernandes de Sousa Barbosa^{1,2}, Raysa Freitas^{1,3}, Alvaro Campos C. Maciel¹, Ricardo Oliveira Guerra¹ ((1) *Federal University of Rio Grande do Norte – Brazil*; (2) *Federal University of Pernambuco - Brazil*; 3 *University of Melbourne- Australia*)

Background: Phase angle (PhA) is emerging as a measure of great clinical relevance provided through bioimpedance assessment and its related to health adverse outcomes such as osteoporosis and sarcopenia. On the other hand, poor physical performance as gait speed and grip strength in elderly is associated with poor health conditions. We hypothesized it is plausible that those two measures might be related and can be used as a tool in clinical practice. **Objectives:** To investigate the relationship between PhA and physical performance measures in community-dwelling older adults from Brazil. **Methods:** This cross-sectional study enrolled 253 older adults of both sexes who had a comprehensive health evaluation including physical performance tests (Gait speed and handgrip Strength) and electrical bioimpedance screening. Linear regression models were used to estimate the associations between PhA and physical performance measures. **Results:** The mean age of 72.06 ± 3.49 and 72.88 ± 4.90 for men and women respectively. hand grip strength (n: 0,248; p-value < 0,05) and gait speed (n: 0,212; p-value < 0,05) were independently correlated with PhA. **Conclusion:** PhA could help to easily identify elderly on the onset of present health adverse outcome and guide specific interventions by clinicians.

P174- PHYSICAL DOMAIN OF THE KIHON CHECKLIST: A POSSIBLE SURROGATE FOR PHYSICAL FUNCTION TESTS IN OLDER PEOPLE. Shosuke Satake^{1,2}, Kaori Kinoshita¹, Yasumoto Matsui³, Hidenori Arai⁴ ((1) *Section of frailty prevention, Department of Frailty Research, Center for Gerontology and Social Science, National Center for Geriatrics and Gerontology (NCGG), Aichi, Japan*; (2) *Department of Geriatric Medicine, NCGG*; (3) *Department of Orthopedics, NCGG, Aichi, Japan*; (4) *President, NCGG, Aichi, Japan*)

Background: In Japan, we have a simple yes/no questionnaire to assess multiple functions in daily living for older adults; the Kihon Checklist (KCL). In the questionnaire, 5 questions to assess mobile functions are included. **Objectives:** We examined whether the 5-item questions in the physical domain of the KCL (KCL-phys) could be a surrogate of validated measurements of physical functions. **Methods:**

Subjects were 465 independent and ambulatory seniors aged 65 years or older who had been consulted in our frailty clinic. All of them received grip strength test, dual energy X-ray absorptiometry, physical performance tests, cognitive examination, and the KCL questionnaire. Among them, we excluded 2 subjects with missing data, and 8 with moderate cognitive impairments. We examined the relationships between scores of the KCL-phys and usual gait speed, Short Physical Performance Battery (SPPB), and Timed Up and Go (TUG) with the Spearman's rank correlation. The score of the KCL-phys were counted when the subject meets any criteria with each question as previously reported. Also, we evaluated the cutoff point of the KCL-phys equivalent to slow gait speed (<0.8m/s), low SPPB score (SPPB < 8), and slow TUG (TUG >= 20 sec) with the receiver operating characteristic (ROC) curve analysis. **Results:** The mean values of age, body mass index, and prevalence of sarcopenia were 77.4 years old (women 67.9%), 23.7 (kg/m²), and 22.9 (%), which were no differences between sexes. On the other hand, physical functions of gait speed, SPPB, and TUG were all worse in women than in men. Relationships between the scores of the KCL-phys and usual gait speed, SPPB, and TUG were moderate with the coefficients of -0.595, -0.589, and 0.544, respectively (p<0.0001 for all). The area under the ROC curve of the KCL-phys score equivalent to slow gait speed, low SPPB score, and slow TUG were 0.791, 0.820, and 0.792, respectively. The cutoffs were thought to be the best at 3 points of the KCL-phys to identify low physical functions based on the Youden Index. **Conclusion:** Physical domain of the KCL could be a surrogate of assessments of physical functions in older people.

P175- RELATIONSHIP BETWEEN A NEWLY DEVELOPED HAND GRIP STRENGTH MEASUREMENT SYSTEM AND THE KIHON CHECKLIST FOR ASSESSING FOR FRAILTY STATUS. Yasuo Suzuki^{1,2}, Yasumoto Matsui¹, Yuji Hirano¹, Izumi Kondo¹, Tetuya Nemoto¹, Naoki Itoh¹, Hidenori Arai¹ ((1) *National Center for Geriatrics and Gerontology, Japan*; (2) *Nihon Fukushi University, Japan*)

Background: We have developed a new type of grip strength measurement that addresses the time axis in evaluating physical function. It can measure the dynamic force, response in gripping performance, and maximum grip strength. The “Kihon Checklist” (KCL) is used to screening the frail elderly, based on the Japanese long-term care insurance system. However, the relationship between the gripping performance and KCL has not been well investigated. **Objectives:** The purpose of this study was to introduce a novel automatic reading method for dynamic force parameters in gripping performance and to evaluate their relationship with the KCL. **Methods:** The subjects comprised 248 patients (94 men, 154 women, average age 78.2 ± 6.0 years) who visited the Integrated Healthy Aging Clinic (Locomo-Frail outpatient clinic in Japanese) of our Hospital. The four indices of grip force response measured were: reaction start time (RST), time constant (TC), maximum

value of force (MVF), and force rising slope (FRS). We examined the relationship between these four indices and seven categories of the KCL; activities of daily living (ADL), physical functions and fall, nutrition state, oral functions, outdoor activities, cognitive functions and mood, using Spearman's correlation coefficient. **Results:** In the female right hand, the MVF was only significantly correlated with ADL and overall scores; whereas, in the female left hand, the MVF and the FRS were significantly correlated with many items (ADL, physical functions and fall, nutrition state, outdoor activities, and cognitive functions). The time-dependent items (RST and TC) were significantly correlated with outdoor activities in the female left hand and significantly correlated with ADL and oral functions in the male left hand. However, in the right hand, the time-dependent items were not correlated with any of items in KCL in both sexes. **Conclusion:** Our newly developed grip strength measurement system could automatically calculate not only the maximum grip strength but also the time response of the grip force. Moreover, their relationship with KCL was clearly indicated. The relationship between detailed grip strength response indicators and KCL items differed between men and women, and the left hand was correlated with more items than the right hand.

P176- IDENTIFICATION OF COMMUNITY-DWELLING OLDER ADULTS WITH SHOULDER DYSFUNCTION: EVALUATION OF THE DASH SURVEY. Ranyah Almadawi, Rao Gullapalli, Michael Terrin (*University of Maryland School of Maryland, Baltimore, USA*)

Background: Rotator cuff (RC) tear and shoulder pain are both highly prevalent in older populations. Routine medical screening for shoulder dysfunction is uncommon for community-dwelling older adults. The Disabilities of the Arm, Shoulder and Hand (DASH) survey estimates self-reported dysfunction of both upper limbs in a composite score. DASH offers a quick method to identify older adults with potential dysfunction in either shoulder, which otherwise may go unrecognized during routine medical visits. **Objectives:** 1. To determine if DASH, American Shoulder and Elbow Surgeons (ASES) and Simple Shoulder Test (SST) surveys are related to one another in older adults. 2. To assess DASH, ASES and SST score relationships to the SF-36 physical functioning (PF) subcomponent score, shoulder forward flexion range of motion (FF-ROM) and shoulder abduction range of motion (ABD-ROM) in older adults. **Methods:** Cross-sectional study: Twenty-three community-dwelling-older-adult volunteers [mean age, 69.7 ± 6.8 years; range, 61 to 84 years; female, 65%] with no history of RC surgery and no history of shoulder injury or shoulder physical therapy in the prior 3 months completed shoulder magnetic resonance imaging (MRI) and DASH, SF-36, Charlson Co-Morbidity Index (CCI), Katz activities of daily living (ADLs) and Lawton instrumental ADLs (IADLs) surveys. For the shoulder ipsilateral to MRI, participants completed ASES, SST, visual analog scale for pain (VAS) surveys; and shoulder FF-ROM and ABD-ROM. Descriptive statistics and Spearman rank order correlation (ρ)

were performed. **Results:** Frequencies: RC tear (supraspinatus tendon) on MRI: 47.8%; shoulder pain ≥ 2 on VAS: 56.5%; no limitation (score=6) on Katz ADLs: 91.3%; no limitation (score=8) on Lawton IADLs: 95.6%. Means: CCI, 3.0 ± 1.0; DASH, 16.6 ± 7.5; ASES, 81.4 ± 19.2; SST 70.2 ± 29.4; SF-36 PF, 81.7 ± 19.7; FF-ROM, 144.1 ± 31.4; ABD-ROM, 133.3 ± 31.7. Range of correlation among DASH-ASES-SST surveys: ($r_{\text{hol}}=0.92-0.95$, $p<0.001$). Range of correlation for DASH-ASES-SST with SF-36 PF ($r_{\text{hol}}=0.61-0.69$, $p<0.002$), FF-ROM ($r_{\text{hol}}=0.72-81$, $p<0.001$), ABD-ROM ($r_{\text{hol}}=0.74-0.82$, $p<0.001$). **Conclusion:** DASH, ASES and SST correlate well, and all three surveys show a consistent relationship with SF-36 physical functioning, FF-ROM and ABD-ROM. Next steps would be to evaluate the feasibility of DASH to identify older adults with shoulder dysfunction during routine medical visits.

P177- ASSOCIATION BETWEEN PHYSICAL FITNESS AND ESTIMATED GLOMERULAR FILTRATION RATE IN ELDERLY PERSONS. Jae Seung Chang^{1,3}, In Deok Kong^{2,3} ((1) *Mitohormesis research center, Wonju Gangwon-do, South Korea*; (2) *Department of Physiology*, (3) *Yonsei Institute of Sports Science & Exercise Medicine, Yonsei University Wonju College of Medicine, Korea*)

Background: Physical performance is closely associated with chronic diseases and dysfunction of numerous organ systems. Old persons with chronic renal failure have shown the apparent decline in physical performance, especially in the end-stage. However, it is unclear whether the subclinical kidney dysfunction is associated with skeletal muscle function deficit in the elderly population. **Objectives:** The aim of this study is to determine the association between renal function and skeletal muscle function deficit in old persons without nephropathy. **Methods:** Eight hundred fifty-four Korean elderlies (female, 75.3%) aged 65 to 89 years were included in the cross-sectional analysis. Of the participants, 135 elderlies (female 57.0%) were available for the 1-year follow-up test session. All participants were interviewed face-to-face and received measures of anthropometry, body composition and serum biomarkers of metabolic diseases. Estimated Glomerular Filtration Rate (eGFR) was calculated using the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation based on serum creatinine concentration. Skeletal muscle function deficit was defined as a combination of weakness and slowness based on the handgrip strength to body mass index ratio (HS/BMI, men < 1.0, women < 0.56) and converted timed up-and-go to walking speed (TUGspeed < 0.8 m/s). **Results:** The subjects with 30 ≤ eGFR < 45 mL/min/1.73m² showed significantly lower physical performance for muscular strength and functional mobility than those with 45 ≤ eGFR < 60 and eGFR > 60 mL/min/1.73m², respectively (all for $p < 0.05$). Logistic regression analysis indicated the significant association between eGFR and skeletal muscle function status even after adjustment for potential confounders (p for trend < 0.01). Moreover, the prospective observational analysis by ANCOVA showed the significant effects of enhancement in HS/BMI [$F(2,$

122) = 4.89, $p = 0.009$] and TUGspeed [$F(2, 122) = 9.50$, $p < 0.001$] on the improvement in eGFR during 1-year follow-up. **Conclusion:** Taken together, skeletal muscle function status is associated with even moderately reduced eGFR in an older population. These results suggest that maintenance of physical and functional fitness may be a contributory factor for preserving renal function in elderly persons.

P178- USING SARC-F TO SCREEN LOW MUSCLE STRENGTH AND PHYSICAL PERFORMANCE AMONG COMMUNITY-DWELLING OLDER ADULTS FROM NORTHEAST BRAZIL. Saionara Maria Aires da Câmara¹, Allen Suzanne França¹, Pedro Rafael de Souza Macêdo¹, Tiago Novais Rocha¹, Allen Suzanne França¹, Catherine Pirkle² ((1) *Faculty of Health Sciences of Trairi, Federal University of Rio Grande do Norte, Santa Cruz, RN, Brazil*; (2) *Office of Public Health Studies, University of Hawaii at Manoa, Honolulu, HI, USA*)

Background: SARC-F is a brief and useful test to identify older people at risk of sarcopenia-associated adverse outcomes. Previous studies with older populations have suggested that it may be useful to screen those with severe sarcopenia. Its ability to screen sarcopenia among low-income Brazilian older adults is still unknown and its association with sarcopenia diagnostic criteria may be useful to understand its utility among this population. **Objectives:** This study aims to evaluate the validity of SARC-F in screening low muscle strength and low physical performance among a low-income sample of older adults. **Methods:** In a cross-sectional study, 62 community-dwelling older-adults (≥ 60 years old; men and women) from Santa Cruz (Northeast Brazil) answered the SARC-F questionnaire and were classified as sarcopenic (≥ 4) and non-sarcopenic (< 4) according to SARC-F scores. They were also evaluated in relation to the sarcopenia criteria of muscle strength (handgrip strength) and physical performance (SPPB). The cutoff of < 16 Kg for women and < 27 kg for men were used to classify those with low muscle strength. A SPPB score of ≤ 8 was used to classify low physical performance. A Chi-square test was used to assess the association between the SARC-F and the objective parameters of sarcopenia. Sensitivity and specificity of the SARC-F according to the objective functional parameters were also assessed. **Results:** The sample was composed by 71% of women, with mean age of 72.4 (± 1.06) years old. According to SARC-F, 24.2% of the sample was sarcopenic. Low muscle mass and low physical performance were identified in 37.1% and 46.8% of the sample respectively. Sarcopenia was significantly associated to low muscle mass ($p < 0.01$) and low physical performance ($p < 0.001$). The sensitivity of SARC-F in identifying those with low muscle mass was of 67% and specificity of 59%. For low physical performance, sensitivity and specificity were of 45% and 94% respectively. **Conclusion:** SARC-F has a moderate ability to identify the sarcopenia criteria of low muscle mass and low physical function among older adults from a low-income setting. Since it is a simple measure, it can be advantageous for low-income and rural communities.

P179- ASSOCIATION BETWEEN MENOPAUSAL STATUS AND DIAGNOSTIC CRITERIA FOR SARCOPENIA AMONG COMMUNITY-DWELLING MIDDLE-AGED WOMEN. Saionara Maria Aires da Câmara¹, Pedro Rafael de Souza Macêdo¹, Tiago Novais Rocha¹, Allen Suzanne França¹, Catherine Pirkle² ((1) *Faculty of Health Sciences of Trairi, Federal University of Rio Grande do Norte, Santa Cruz, RN, Brazil*; (2) *Office of Public Health Studies, University of Hawaii at Manoa, Honolulu, HI, USA*)

Background: Menopause marks a critical transition towards older adulthood for women and studies suggest that it is associated to several sarcopenia parameters, such as muscle mass and physical functioning. Understanding how the menopausal transition associates to sarcopenia diagnostic criteria may help to direct screening tests for middle-aged populations and to identify earlier those at higher risk of sarcopenia. **Objectives:** To evaluate the association between menopausal status and sarcopenia diagnostic criteria (muscle strength, muscle quantity and physical performance). **Methods:** In a cross-sectional study, 389 community-dwelling women from Northeast Brazil (40-65 years-old) were evaluated in relation to menopausal status using the Stages of Reproductive Aging Workshop classification (premenopausal, perimenopausal or postmenopausal), and in relation to sarcopenia diagnostic criteria according to European Working Group on Sarcopenia in Older People (EWGSOP2): muscle strength (grip strength - handheld dynamometer), muscle quantity (appendicular muscle mass adjusted for height through bioelectrical impedance) and physical performance (gait speed). Association between menopausal status and sarcopenia criteria was evaluated with multiple linear regression models adjusted for covariates (current age, education, family income, walking, BMI, reproductive history). **Results:** Among the participants, 26.7% were classified as premenopausal, 39.1% as perimenopausal, and 34.2% as postmenopausal. Menopausal status was significantly associated to grip strength, since premenopausal women were significantly stronger than perimenopausal or postmenopausal women, even in the fully adjusted analyses ($B = 2.26$; 95% CI = 0.39: 4.12). Muscle quantity and gait speed were not significant according to menopausal status. **Conclusion:** Perimenopausal and postmenopausal status are associated with less muscle strength among middle-aged women. Muscle weakness may be the first sarcopenia parameter that is affected by women's aging and should be tracked among middle-aged to women for early identification of sarcopenia risk..

P180- THE PRELIMINARY STUDY RELATED TO POSTURAL STABILITY IN ELDERLY PATIENTS. K Inoue (*Saiseikai Mukojima Hospital, Tokyo, Japan*)

Background: We speculate maintaining good postural stability is the key to good ADL in elderly patients. This is a preliminary study to evaluate which factor relates to good postural stability. **Objectives:** We evaluated 69 patients (22 males and 47 females) over 65 years old. The average age

was 75.8 years old ranging 65 to 97. **Methods:** We measured Index of Postural Stability (IPS) using gravicoder GW-5000 manufactured by ANIMA. The IPS was advocated by Mochizuki in 2000. It was defined following this equation; $IPS = \log[(\text{area of stability limit} + \text{area of postural sway}) / \text{area of postural sway}]$. Larger IPS means better postural stability. The average IPS in each age was already known. IPS was calculated automatically through gravicoder. We divided these patients into two groups by the results of IPS. Group A with the patients whose IPS was larger, Group B with the patients whose IPS was smaller than the average in their age. We compared the following items between the two groups. Nutrition (albumin, calcium, magnesium, ferritin, vitamin B1, B12, 1,25-D3, Zinc in blood test), Bone status (Bone density, % of YAM), Spino-pelvic parameters (Pelvic Incidence (PI), Lumbar Lordosis (LL), Pelvic Tilt (PT) using whole spine X-ray photograph). **Results:** Ten patients were classified into Group A and 59 patients were into Group B. The average age was 77.6 ± 6.1 years old in Group A and 75.5 ± 5.7 in Group B. In Group A, LL and PT were respectively 49.7, 17.1. In Group B, 36.1, 23.7. LL and PT were significantly different between the two groups. PI minus LL is an important indicator to determine the spino-pelvic balance. It is known that $PI - LL < 10$ means good spino-pelvic balance. In Group A, PI minus LL was 1.7 ± 16.9 . In Group B, it was 15.7 ± 17.0 . According to nutrition and bone status, Albumin was significantly higher in Group B. **Conclusion:** Our results showed spino-pelvic alignment related to the postural stability. This suggests good spino-pelvic alignment is likely the key to good postural stability.

P181- PHYSICAL PERFORMANCE IN A HEALTHY COMMUNITY-DWELLING OLDER COHORT - WHICH ARE MOST RELEVANT TESTS FOR THE IDENTIFICATION OF DETERIORATION? LONGITUDINAL DATA OF THE AEQUIPA -VERSA STUDY. R. Diekmann¹, S. Hellmers¹, S. Lau², J.M. Bauer², A. Hein¹ ((1) *Assistive Systems and Medical Devices, Department of Health Services Research, Carl von Ossietzky University Oldenburg, Germany*; (2) *Geriatric Medicine, Heidelberg University, Ruprecht-Karls-Universität Heidelberg, Germany*)

Background: Physical performance is of main relevance for quality of life and independence in the community. Identification of deterioration of physical performance helps to start early interventions to stay independently in old age. **Objectives:** To determine physical performance of community-dwelling older adults above 70 years by using a comprehensive geriatric assessment to find most sensitive tests for functional decline. **Methods:** Older community-dwelling adults aged 70+. Analysis of baseline and 6 (t1) and 24 months (t2) of follow-up data of Hand Grip Strength (HGS), Stair Climb Power Test (SCPT), Timed up and go test (TUG), Short Physical Performance Battery (SPPB), 4m gait speed (4mGS), 5-time chair rise test (5TCR), 6 minute walking test (6mWT) and frailty categories according to Fried. Results are shown in mean (\pm SD) in total numbers and percentage. **Results:** 251

participants ($75.4 \text{ y} \pm 3.89$) were included, 148 (59%) female. Overall physical performance was on high level, above geriatric cut-offs for physical disabilities at baseline: (HGS female: $22.13 (\pm 4.76)$ kg, HGS male $38.56 (\pm 7.31)$ kg, SCPT (time) $5.85 (\pm 1.17)$ s, SCPT (Power) $218.66 (\pm 50.71)$ W, TUG $8.50 (\pm 1.68)$ s, 4m GS $2.78 (\pm 0.49)$ s, 5TCR $12.44 (\pm 3.04)$, SPPB $10.97 (\pm 1.04)$ points., 6MWT $435.50 (\pm 74.14)$ m). 67.7% were robust according to Fried Frailty phenotype. Within 2 years, HGS deteriorated most ($-16.95 (\pm 11.55)\%$) followed by SCPT ($-9.15 (\pm 16.84)\%$). All tests showed a decline except 5TCR ($+2.78 (\pm 14.24)\%$). **Conclusion:** Physically active, community-dwelling older people show a high level of functional performance, far from geriatric cut-offs indicating physical disabilities. Nevertheless, after two years a clinically relevant reduction of strength in upper (handgrip) and lower extremities (stair climb) was detected. These data may be relevant for the identification of older individuals who may benefit from early intervention exercise programs to keep them physically independent as long as possible. 5TCR showed divergent results and could be of special interest for continuous measurements to identify gradual decreases in functional performance.

P182- LOW MUSCLE MASS, SARCOPENIA AND THEIR ASSOCIATION WITH THE COMPREHENSIVE GERIATRIC ASSESSMENT IN OLDER CANCER PATIENTS. Cecília Helena Peinado de Sampaio Mattos¹, Olga Laura Sena Almeida¹, Natália Maira da Cruz Alves¹, Karina Pfrimer¹, Fernanda Maris Peria², Eduardo Ferriolli¹ ((1) *Department of Internal Medicine, Ribeirão Preto Medical School, University of São Paulo, Brazil*; (2) *Department of Medical Images, Hematology and Medical Oncology, Ribeirão Preto Medical School, University of São Paulo, Brazil*)

Background: Sarcopenia is characterized by loss of skeletal muscle mass and strength and it is a frequent finding in oncology, being associated with reduced quality of life, impairment in the response to antineoplastic therapy and increased toxicity, especially in older patients. **Objectives:** The aim of the present study was to evaluate the association between low muscle mass (LMM) assessed by computed tomography (CT) analysis and sarcopenia considering the revised European consensus published by the European Working Group on Sarcopenia in Older People (EWGSOP2) with the variables of the comprehensive geriatric assessment (CGA) in older oncological patients. **Methods:** For this purpose, 67 patients (50.7% female; mean age of 76.8 ± 7.9 years) followed at the Oncogeriatric Outpatient Clinic of a University Hospital were enrolled. Clinical data were obtained from electronic medical records and the skeletal muscle mass evaluation was performed using CT (in the height of the third lumbar vertebra). For LMM and sarcopenia classification, specific cutoff points were adopted. CGA variables were compared between LMM and Normal Skeletal Muscle Mass (NSMM) and between sarcopenic and non-sarcopenic individuals. Groups were compared by the independent t test (R Core Team®, $p < 0.05$). **Results:** The most frequent tumors were breast, intestine, stomach and lung, at different stages of the

disease. The prevalence of LMM was 78.6% and the prevalence of sarcopenia was 50%. Of all CGA variables evaluated, Hand grip strength (16,53±6,46) and Katz scale (4,87±1,68) were associated with LMM and sarcopenia. **Conclusion:** The results highlight the importance of early geriatric clinical assessment of older cancer patients, considering the association of CGA variables with low muscle mass and most important, to sarcopenia, for the possible reversal of functional and nutritional impairments and for the indication or appropriate planning of cancer therapy.

P183- RELATION OF FUNCTIONAL CAPACITY, MOBILITY AND INFLAMMATORY MEDIATORS IN COMMUNITY OLDER WOMEN. Lygia Paccini Lustosa¹, Patricia Parreira Batista¹, Jéssica Rodrigues de Almeida¹, André Gustavo Pereira de Andrade², Aimée de Araújo Cabral Pelizari¹, Stephanie Aguiar¹, Leani de Souza Máximo Pereira¹ ((1) *Physical Therapy Department - Universidade Federal de Minas Gerais, UFMG, EEEFTO, Belo Horizonte, MG, Brazil;* (2) *Sports department - Universidade Federal de Minas Gerais, UFMG, EEEFTO, Belo Horizonte, MG, Brazil*)

Background: Functional tests in the older person reflect the integrity of the interrelationship between muscle mass and function, vascular, endocrine and neurological aspects of central and peripheral command. The reduction in functionality, muscle mass and strength associated with advancing age is related to the increase of circulating proinflammatory cytokines in plasma, which in turn predisposes the individual to negative repercussions, such as the development of chronic diseases, falls and disability. They can identify changes in the intrinsic capacity of the older people. **Objectives:** To compare older women who reported being active or sedentary regarding functional capacity and plasma indices of inflammatory mediators. **Methods:** Participated community older women (60 years or older), recruited for convenience. Those unable to walk were excluded; acute musculoskeletal diseases; lower limb fractures in the last year; neurological diseases and sequelae; history of cancer in the last five years and cognitive impairment (Mental State Mini-Exam). All responded to clinical and demographic information, performed the Short Physical Performance Battery (SPPB), Timed up and go (TUG) and plasma tests of sTNFr1 and IL-6 (ELISA method). Correlation analysis by Spearman test. 5% significance level. Approval by the Research Ethics Committee/ UFMG (CAAE: 14129513.7.1001.5149). **Results:** 97 older women participated, with a mean age of 73.29 ± 6.3 y; number of comorbidities 2.55 ± 1.92 and medications in use of 3.06 ± 2.08. Mean of body mass index were 27.18 ± 4.52 kg/m². There was a significant negative relationship between the SPPB test and sTNFr1 (rho= 0.29; p= 0.003) and a significant positive relationship between TUG and sTNFr1 (rho= 0.57; p= 0.001). Other relationships were not significant (p> 0.05). **Conclusion:** Older women with better functional capacity presented lower plasma dosage of sTNFR1. The results suggest influence between these variables - functional capacity, mobility and inflammatory process - and no causal factor can be attributed. In these case,

longitudinal studies are needed to verify functional performance vulnerability factors and their causal relationship with circulating inflammatory mediators in plasma. However, these results point to the importance of evaluating these variables in daily clinical practice.

P184- RELATIONSHIP BETWEEN SUBJECTIVE WELL-BEING, FUNCTIONALITY AND INFLAMMATORY MEDIATORS IN COMMUNITY OLDER WOVEN. Patricia Parreira Batista¹, Stephanie Aguiar¹, André Gustavo Pereira de Andrade², Jéssica Rodrigues de Almeida¹, Leani de Souza Máximo Pereira¹, Lygia Paccini Lustosa¹ ((1) *Physical Therapy Department - Universidade Federal de Minas Gerais, UFMG, EEEFTO, Belo Horizonte, MG, Brazil;* (2) *Sports department - Universidade Federal de Minas Gerais, UFMG, EEEFTO, Belo Horizonte, MG, Brazil*)

Background: Perceptions of health and well-being in the older people are identified as subjective aspects by the International Classification of Functioning (ICF), with direct and indirect interference with overall performance, activities of daily living, social relationships and independence. Subjective well-being is associated with the form of coping adopted with a health condition, adaptability and resilience. Positive and negative physiological repercussions on functionality and interaction with the family and social network may be consequences of inadequate adaptation and perception of subjective well-being. **Objectives:** To explore the relationship between subjective well-being, functionality and plasma indices of inflammatory mediators in community older wovnen. **Methods:** Participated community older women (60 years or older), recruited for convenience. Those unable to walk were excluded; acute musculoskeletal diseases; lower limb fractures in the last year; neurological diseases and sequelae; history of cancer in the last five years and cognitive changes (Mini-Mental State Examination). All answered about clinical and demographic data and information about subjective well-being. They performed tests of functional capacity (Short Physical Performance Battery – SPPB) and mobility (Timed Up and Go - TUG). Plasma dosages of sTNFr1 and IL-6 were by ELISA method. Correlation analysis by Spearman test. Significance level of 5%. Approval by the Research Ethics Committee/ UFMG (CAAE: 14129513.7.1001.5149). **Results:** 97 elderly women participated, with a mean age of 73.29 ± 6.3 years; number of comorbidities 2.55 ± 1.92, final SPPB score 9.6 ± 1.98, TUG of 11.26 ± 3.96 seconds; body mass index of 27.18 ± 4.52kg/m². There was a significant positive relationship between subjective well-being and SPPB (rho= 0.27; p= 0.007) and TUG (rho= 0.23; p= 0.02). Other associations were not significant (p> 0.05). **Conclusion:** The results showed a significant association of subjective well-being with functional capacity in the older women. However, this condition was not associated with inflammatory markers, suggesting the need for further studies. On the other hand, it can be thought that the identification of personal strategies and perception of health and well-being act as barriers and/ or facilitators in a functional rehabilitation process, indicating the need for a

multidisciplinary approach.

P185- STATE OF THE SCIENCE OF TECHNOLOGY USE AND FRAILTY FOR COMMUNITY DWELLING OLDER ADULTS: A SCOPING REVIEW. Chava Pollak, Sharon Wexler, Lin Drury (*Pace University, New York, NY, USA*)

Background: The United States Census Bureau projects a rise in the population aged 65 and over from 43.1 million in 2012 to 83.7 million by 2050. The projected rise in the elderly population represents an accompanying increase in geriatric syndromes. Frailty is a common geriatric syndrome defined as a clinically recognizable state of increased vulnerability to adverse outcomes related to a decline in physiologic reserve. This decline in reserve places the individual at increased risk for poor health outcomes including falls, disability, hospitalization, institutionalization and mortality. Various effective interventions for frailty are established in the literature. The body of knowledge on the role of technology in reducing frailty is less abundant. **Objectives:** To summarize available evidence on frailty and technology use for community dwelling older adults. **Methods:** A comprehensive search of computerized databases was conducted in the following databases published between 2013-2018: Cinahl, Pubmed, and Academic Search Complete. The PRISMA search strategy was utilized for this review. Articles were included if they met the following criteria: 1) focused on community dwelling adults aged 65 and over; 2) peer-reviewed; 3) published in the English language; 4) featured randomized controlled trials (RCTs), cohort studies or qualitative research; and 5) included an operationalized definition for frailty. **Results:** The database searches yielded a total of 183 articles. 41 duplicates were removed. 114 results were excluded based on title and abstract. 32 relevant articles were retrieved for full text examination. 18 articles were excluded based on inclusion/exclusion criteria. References of 14 included articles were hand searched for relevant works. Four additional relevant articles were identified. The final analysis included 18 articles. **Conclusion:** Current research focuses on assessment and diagnosis as opposed to intervention studies. Methodological weaknesses limit generalizability and validity of findings. Few studies utilize frailty as an outcome measure thus, limiting available research directly related to frailty. Emerging technologies represent potentially effective, flexible and integrative solutions for frailty assessment, monitoring and intervention in the home environment. More research is needed on the potential for technological tools as interventions for frailty in community dwelling elderly specifically, for the purpose of detection and prevention of pre-frailty.

P186- ASSOCIATION BETWEEN POSTURAL ALTERATIONS, GAIT, BALANCE, AND STRENGTH WITH FRAILTY AND FALLS IN OLDER VETERANS: A STUDY PROTOCOL. Inae C. Gadotti¹, Raquel Aparicio Ugarriza^{2,3}, Fernanda Civitella¹, Jorge G. Ruiz^{2,4}, Edgar Ramos Vieira¹ ((1) *Department of Physical Therapy, Florida International University, Miami, FL, USA;* (2) *VA Geriatric Research, Education and Clinical Center - GRECC, Miami, FL, USA;* (3) *Department of Public Health, University of Miami Miller School of Medicine. Miami, FL, USA;* (4) *Department of Medicine, University of Miami Miller School of Medicine. Miami, FL, USA*)

Background: There are several studies on the association of balance and gait impairments with frailty and falls in older adults. However, little is known about the associations between postural alterations, frailty and falls in older adults in general and among older veterans. Also, inter-relations among postural alterations, balance, strength, gait impairments, falls and frailty in older adults are not well known. **Objectives:** The objective of this study is to evaluate if postural alterations, gait and balance impairments are associated with falls and frailty in older veterans. **Methods:** Sixty veterans, 60 years old or older, will participate on a voluntary basis. One-hour long assessments will be completed at baseline, 6, and 12 months. Participants will fill out a questionnaire including information on demographics (age, sex, height, and weight), health conditions, falls (history, characteristics, and fear of falls), mobility impairments, physical activity level, medication history, medication changes and adherence, and health care utilization. Frailty status will be assessed based on Fried's frailty phenotype. The following physical health variables will be assessed: sagittal head and neck posture using photogrammetry, spinal curvatures using flexicurve, deep neck flexors activation by performing the craniocervical flexion test with a pressure biofeedback, grip strength using a dynamometer, usual and fast gait analysis using a GAITRite, balance using a force plate, and lower limb functional strength based on chair stands in 30s. Differences among the variables by frailty status and falls history will be assessed using MANOVAs. **Results:** The results will be presented at conferences and published in scientific journals. **Conclusion:** The results of this study may inform interventions to reduce frailty and falls in older veterans and possible among non-veterans as well.

P187- SARCOPENIA OF RESPIRATORY MUSCLES AND MALNUTRITION INDUCE ONSET AND RECURRENCE OF PNEUMONIA IN AGED PEOPLE. Tatsuma Okazaki¹, Midori Miyatake¹, Yoshimi Suzukamo¹, Shinichi Izumi¹, Koichi Kozaki², Takae Ebihara² ((1) *Department of Physical Medicine and Rehabilitation, Tohoku University graduate School of Medicine, Sendai, Miyagi, Japan;* (2) *Department of Geriatric Medicine, Kyorin University School of Medicine, Tokyo, Japan*)

Background: The number of deaths caused by pneumonia is increasing. The guidelines for pneumonia recommend optimal application of antibiotics based on a pathogen-oriented strategy. Despite wide distribution of these guidelines, pneumonia demonstrates high mortality in aged people. Thus, for developing the next strategy for pneumonia management in aged people, new targets are required. With aging, the loss of skeletal muscle mass and strength occurs, which is named sarcopenia. The sarcopenia phenotype is associated with malnutrition. Little is known about relationship between muscles and pneumonia, however, we reported that aspiration pneumonia induced respiratory muscle atrophy. Impaired swallowing and/or cough functions often induce pneumonia in aged people. The swallowing muscle weakness is associated with impaired swallowing function. The strong respiratory muscles generate effective cough, which clears the airways and prevents pneumonia. **Objectives:** To investigate presently unknown relationships between onset or recurrence of pneumonia in aged people and; respiratory muscle strength; swallowing muscle strength; and malnutrition. **Methods:** A cross-sectional cohort study consisted of 47 patients aged 70-year-old and older admitted to the hospital by pneumonia, and 35 controls. The respiratory muscle strength was measured by a hand-held multi-functional spirometer with a pressure sensing transducer. The swallowing muscle strength was evaluated by measuring tongue pressure. A bioelectrical impedance analysis evaluated muscle and body fat masses. Malnutrition was evaluated by serum albumin level and body fat mass. **Results:** The respiratory (both the inspiratory and the expiratory) and the tongue muscle strengths, body trunk muscle mass, serum albumin level, and body fat mass divided by height² were lower in aged pneumonia patients than in controls. Body trunk muscles include the respiratory and swallowing muscles. The multivariate logistic regression model showed the low inspiratory and expiratory respiratory muscle strengths, the low body trunk muscle mass divided by height², and the low serum albumin level as risk factors for onset of pneumonia. For recurrence of pneumonia within 6 months after the onset of pneumonia, low body fat mass divided by height² was a risk factor. **Conclusion:** Above findings suggest that the respiratory muscles and malnutrition as new targets of the new management strategy for pneumonia in aged people.

P188- DEPRESSION AND POLYPHARMACY IMPACTS ON THE PHYSICAL FUNCTION OF OLDER ADULTS WITH HIV. DATA FROM THE HIV-FUNCFRAIL STUDY. Fátima Brañas¹, Antonio Antela², María José Galindo³, Miguel Torralba⁴, Pablo Ryan¹, Fernando Dronda⁵, Margarita Ramírez⁶, Carmen Busca⁷, Isabel Machuca⁸, Jorge Vergas⁹, María Jesús Bustinduy¹⁰, Alfonso Cabello¹¹, Matilde Sánchez-Conde⁵ ((1) *Hospital Universitario Infanta Leonor, Madrid, Spain;* (2) *Complejo Hospitalario Universitario de Santiago, Santiago, Chile;* (3) *Hospital Clínico, Universitario de Valencia, Valencia, Spain;* (4) *Hospital Universitario de Guadalajara, Guadalajara, Mexico;* (5) *Hospital Universitario Ramón y Cajal, Irycis, Madrid, Spain;* (6) *Hospital Universitario Gregorio Marañón, Madrid, Spain;* (7) *Hospital Universitario La Paz, Madrid, Spain;* (8) *Hospital Universitario Reina Sofía, Córdoba, Spain;* (9) *Hospital Clínico San Carlos, Madrid, Spain;* (10) *Hospital Universitario Donostia, San Sebastián, Spain* (11) *Fundación Jiménez Díaz. Madrid, Spain*)

Background: More than 50% of the people with HIV are older than fifty years. Data about this population are still scarce and mainly focused on comorbidity instead of on physical function and frailty. HIV-FUNCFRAIL Cohort is one of the four European Cohorts of older HIV adults launched in 2018. **Objectives:** Our main objective in this work was to know the factors associated to physical impairment. **Methods:** Longitudinal prospective cohort study. Patients from the “HIV-FUNCFRAIL: Multicenter spanish cohort to study frailty and physical function in 50 years or older HIV-infected patients” were included. Eleven centers participated. We recorded sociodemographic data, comorbidities and variables related to HIV infection. Physical function was measured by gait speed and SPPB and frailty according to Frailty Phenotype. Other components of the Comprehensive Geriatric Assessment such as depression and cognitive impairment were evaluated too. **Results:** 563 were included. Median age was 56.2 (53.7–60.6). 25.8% were women. At baseline median CD4 count was 672.5 (473.5 – 904.5). Viral load was undetectable in 91.2%. 30% of the patients had > 4 comorbidities and 21.8% had polypharmacy. 97.5% of the patients were able to walk independently and 97% were completely independent for the activities of daily living. More than half were prefrail, 5.8% prefrail and 42.6% were robust according to Frailty Phenotype. 17.7% of the patients had a SPPB score < 9 and 5.4% had a gait speed < 0.8m/sg. In the univariate analysis we found association between physical impairment defined as SPPB score < 9 with: diabetes, COPD, osteoarthritis, comorbidities number, MOCA test < 20, GDS-SF >9 and age. But in the multivariate analyses the factors associated were just: polypharmacy [OR 2.5 (1.47-4.22) p= 0.001], GDS-SF >9 [3.09 (1.63-5.84) p=0.001]. **Conclusion:** Functional impairment was prevalent among older adults with HIV in their middle-age. Polypharmacy doubles the risk of functional impairment and depression increases the risk three-fold. Therefore, polypharmacy, depression and physical function should be

assessed in all the older adults with HIV in order to implement early prevention intervention to avoid physical impairment.

BIOMARKERS AND IMAGING

P189- ACUTE SARCOPENIA IN HOSPITALIZED OLDER PEOPLE: ASSESSMENT OF MUSCLE STIFFNESS THROUGH ELASTOGRAPHY.

Sophie Bastijns, Anne-Marie De Cock, Maurits Vandewoude, Stany Perkisas (*University of Antwerp, Antwerp, Belgium*)

Background: Acute sarcopenia is defined as a decline in muscle mass and muscle function within 28 days after hospitalization or acute illnesses, sufficiently to meet the sarcopenia criteria. Muscle ultrasound is an objective and non-invasive technique that can measure muscle quantity and quality. Muscle elastography can furthermore measure muscle stiffness, which is regarded as an important qualitative parameter. **Objectives:** The primary aim of the study is to assess the effect of acute hospitalization on muscle stiffness. The secondary aim is to evaluate other influencing parameters. **Methods:** This study is a prospective, observational study. Patients admitted for at least 7 days to one of the Geriatrics departments of the ZNA Antwerp hospitals are included. Rectus femoris (RF) and vastus lateralis (VL) muscle stiffness are measured through elastography on day 1 of admission, and then every 7 days until discharge. **Results:** Preliminary results show significant differences between RF and VL values in men, but not in women. In RF, a non-significant downwards trend is seen for elastography between day 1 and day 8. In VL, a non-significant downwards trend is seen in women, but also a non-significant upwards trend is seen in men between day 1 and day 8. In RF, a non-significant trend of decreasing stiffness is seen with increasing age in men, but an increase is seen in women. A significant negative correlation is seen between elastography of RF and VL on day 1 and hand grip strength on day 1. **Conclusion:** This study seeks to gain insight in parameters affecting muscle stiffness and of the evolution of muscle stiffness after acute illness or hospitalization. A trend of decreasing muscle stiffness is seen after seven days of hospitalization and illness. This study showed no direct relation between age and muscle stiffness. A decrease in muscle stiffness results in higher hand grip strength and therefore better muscle performance. More data and longer follow-up periods are needed and are expected by March 2020.

P190- A COMBINED MRI MEASUREMENT OF MUSCLE VOLUME AND MUSCLE FAT INFILTRATION PREDICTS SURVIVAL IN HEMODIALYSIS.

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Background: Sarcopenia is a prevalent condition in hemodialysis patients and it's associated with poor quality of life, hospitalization and mortality. Recent research using magnetic resonance imaging (MRI) has demonstrated the importance of proper body size-adjustment in the assessment of muscle mass, and that the addition of muscle fat infiltration reflecting muscle quality, improves functional correlations and prediction of hospitalization in sarcopenia. It is not yet demonstrated if this new MRI method, combining body size-adjusted muscle volume and muscle fat infiltration, improves the evaluation of sarcopenia in hemodialysis patients.

Objectives: To investigate if adverse muscle composition, defined using MRI, predicts survival and comorbidity in hemodialysis patients. **Methods:** In 2014, 11 patients on hemodialysis were scanned using rapid whole body fat and water separated MRI. Following 5 years, survival and comorbidity index (nCI) were recorded using electronic health care records. Thigh muscle fat infiltration (MFI) and Fat-free muscle volume (FFMV) normalized with height² was assessed using AMRA Research (AMRA Medical, Linköping Sweden). A z-score describing the deviation from expected FFMV/height² was calculated using sex and BMI-matched virtual controls (FFMVVCG) and MFI adjusted (MFIadj) was calculated using the sex-specific population mean. For these calculations, normative data from 9615 subjects in UK Biobank was used. To estimate a combined muscle score (Musclecomb), MFIadj and FFMVVCG were projected on the linear regression line describing the normal population relationship between MFIadj and FFMVVCG in the UK Biobank dataset. Spearman rank correlation was estimated comparing MFIadj, FFMVVCG and Musclecomb to nCI. Wilcoxon signed-rank test was used to estimate the association to survival. ROC values and confidence interval were also calculated. **Results:** Musclecomb (combined muscle score) was significantly correlated to comorbidity (p<0.05) and predicted survival (p<0.05) while MFIadj (adjusted muscle fat infiltration) and FFMVVCG (deviation from an individual's expected muscle volume) did not reach significant level on either test. The ROC values for predicting

survival were 0.86 (0.61-1.00) for FFMVCG, 0.82 (0.55-1.00) for MFIadj, and 0.89 (0.69-1.00) for Musclecomb.

P191- BONE ANALYTES AS BIOMARKERS OF FRAILITY AND CARDIOVASCULAR DISEASE RISK IN FEMALES. Kevin Boreskie^{1,2}, Chris Oldfield¹, Jacqueline Hay¹, Rakesh Arora², Todd Duhamel¹ ((1) *Institute of Cardiovascular Sciences, St. Boniface Hospital Albrechtsen Research Centre, Winnipeg, Manitoba, Canada;* (2) *Max Rady College of Medicine, Rady Faculty of Health Sciences, University of Manitoba, Winnipeg, Manitoba, Canada;* (3) *Department of Surgery, Max Rady College of Medicine, University of Manitoba, Winnipeg, Manitoba, Canada*)

Background: Frailty is a risk factor for cardiovascular disease (CVD). As declines in bone metabolism and impaired inflammatory response are often associated with frailty, bone analytes and inflammation markers involved in these signaling pathways may act as biomarkers of frailty-related disease progression. **Objectives:** This study sought to examine differences in systemic bone analyte and inflammation marker concentrations based on CVD risk profile and frailty status. **Methods:** 1030 females with no prior CVD were stratified into low or high CVD risk groups based on their Framingham risk scores. Frailty was assessed using the Fried phenotype of frailty. Greedy matching with pre-frailty as the exposure variable was used to identify a set of 26 closely matched pairs in both the low and high CVD risk groups for a total of 104 females in a case-control design. Factorial ANOVA was used to compare differences in log transformed concentrations of 15 bone and inflammation analytes based on frailty status, CVD risk, and their potential interaction. **Results:** Differences for IL-6 (5.25 ± 14.30 vs. 1.35 ± 1.74 pg/mL, $p=0.001$), leptin (12628.48 ± 10472.90 vs 7562.96 ± 4972.25 pg/mL, $p=0.023$) and TNF α (1.41 ± 1.83 vs 0.89 ± 0.40 pg/mL, $p=0.06$) systemic concentrations were found with high CVD risk status compared to low. No differences in bone or inflammation analyte concentration were found based on frailty status, nor were any interaction effects. **Conclusion:** There was a difference in inflammatory marker concentrations based on CVD risk status indicating that higher CVD risk is associated with impaired inflammatory response in females. There was no difference in bone or inflammation analytes in the pre-frail group compared to their robust peers as these females may be too early in the progression of frailty to have these signs of impaired bone health and inflammation.

P192- LOSS OF SKELETAL MUSCLE AND ADIPOSITY MEASURED BY COMPUTED TOMOGRAPHY PREDICTS SURVIVAL IN ADVANCED BILIARY TRACT CANCER PATIENTS. Se Eung Oh¹, Jee Hung Kim¹, Hei-Cheul Jeung^{1,2} ((1) *Division of Medical Oncology, Department of Internal Medicine, Yonsei University Health System, Yonsei University College of Medicine, Seoul, Korea;* (2) *Pancreato-biliary Cancer Center, Gangnam Severance Hospital, Yonsei University College of Medicine, Seoul, Korea*)

Background: Biliary tract cancer (BTC) is a highly lethal disease, and improved prognostication methods should be sought. Sarcopenia (low muscle mass), poor muscle quality (low muscle attenuation) and excess adiposity (subcutaneous and visceral) can be surrogate markers of sarcopenia and related frailty. However this hypothesis has not been demonstrated conclusively in BTC patients. **Objectives:** To evaluate associations of all four body composition measures, derived from clinically acquired CT at the time of initial diagnosis, with overall survival in advanced BTC patients. **Methods:** We measured skeletal muscle index (SMI), mean muscle attenuation (MA), visceral adipose tissue index, and subcutaneous adipose tissue index via computed tomography at the level of the L3 vertebra. Clinical data were extracted from patients' charts. **Results:** A total of 601 patients (58% males, median age 67 [range 30–91]) were included in this study, 65% were metastatic and 35% were recurrent disease. During the follow-up duration (median of 9.4 months; range 0.1 month to 128 months), 570 patients (95%) died. Sarcopenia, defined as low L3SMI (lower than 39 cm²/m² for women and lower than 55 cm²/m² for men) was noted in 463 patients (77%), and 162 patients (27%) had low muscle radiodensity. For adiposity, 31% and 29% of patients had low subcutaneous and visceral fat, respectively. When we combined this four factors and grouped the patients, no risk group (n =67) had the best overall survival (median 14.6 months, 95% CI, 11.7-17.5), while the patients who suffered all the risk factors (n=12) showed the poorest survival (median 2.5 months, 95% CI, 0-5.7) which was statistically significant (log-rank test <0.001). This classification was independent factor for survival in multi-variate analysis along with other clinical factors, carcinoembryonic antigen (CEA), neutrophil-to-lymphocyte ratio, white blood count, platelet, and cholesterol (HR 1.271, 95% CI 1.126-1.435). **Conclusion:** Sarcopenia, MA, and adiposity independently predict mortality in patients with BTC and can be utilized as surrogate markers for prognosis.

P193- DUAL BIOMARKER APPROACH TO DISTINGUISH CARDIAC AND NON-CARDIAC FRAILITY. Erik Fung, Qi Li, Suyi Xie, Leong Ting Lui, Jean Woo (*Faculty of Medicine, The Chinese University of Hong Kong, Hong Kong SAR*)

Background: Frailty is a clinical syndrome of reduced systemic physiological reserve that phenotypically overlaps with heart failure. NT-proBNP is a cardiac-specific marker that increases with ventricular stress, whereas growth differentiation

factor 15 (GDF-15) is a non-tissue specific systemic marker that increases with inflammation, tissue injury and possibly inflammaging. **Objectives:** This study aims to determine if combination of NT-proBNP and GDF-15 organised in a 2x2 matrix can classify cardiac dysfunction with and without frailty, non-cardiac frailty, and non-frailty. **Methods:** This is a cross-sectional analysis of a prospective cohort study (phase 1), Undiagnosed heart Failure in Older adults (UFO), that recruited community-living older adults aged ≥ 60 years in a ratio of 1:1:1 for robust, pre-frail and frail status classified by the FRAIL scale. Participants without a history of heart failure and meeting the eligibility criteria were entered into the study. NT-proBNP and GDF-15 levels were measured using the Roche Cobas Elecsys platform. Echocardiography and 6-minute walk distance (6MWD) were documented. Informed consent was obtained from all participants. The study was approved by the local institutional review board. **Results:** 306 older adults with a median age of 74.7 years were recruited into the study. 104 were robust, 107 were pre-frail and 95 were frail, with 6MWD of 405.25, 318.66 and 249.94 metres. Overall, $<5\%$ of participants had systolic dysfunction (defined as left ventricular ejection fraction $<50\%$), whereas 19.3% had at least moderate diastolic dysfunction. Splitting NT-proBNP (B) and GDF-15 (G) levels along the median resulted in 4 groups in a 2x2 matrix: B[low]G[low], B[low]G[high], B[high]G[low] and B[high]G[high], with 6MWD of 375.67, 320.47, 360.16 and 264.62 metres, respectively. Logistic regression adjusting for age and sex determined hypertension (OR 1.50) and diabetes (OR 2.17) as explanatory factors for elevated GDF-15 through analysis of B[low]G[high] vs. B[low]G[low] ($1.9 \times 10e-06$ and $2.17 \times 10e-17$, respectively). On the other hand, cardiac dysfunction evident in elevated NT-proBNP (B[high]G[low] vs. B[low]G[low], and B[high]G[high] vs. B[low]G[low]) was ascertained by correlation with abnormal echocardiographic diastology represented most prominently by increased left atrial volume index ($r=0.37$, $P=5.8 \times 10e-11$). **Conclusion:** A 2x2 dual biomarker approach utilising NT-proBNP and GDF-15 may assist in subclassification of cardiac (diastolic) dysfunction and frailty.

P194- ATROPHY OF HIPPOCAMPUS, PARAHIPPOCAMPUS AND ENTORHINAL CORTEX MEASURED WITH MRI IN ELDERLY WITH FRAILTY COMPARED NORMAL AND PRE-FRAILTY. Kenji Harada, Seongryu Bae, Sangyoon Lee, Keitaro Makino, Ipeei Chiba, Osamu Katayama, Yohei Shinkai, Hiroyuki Shimada (*Department of Preventive Gerontology, Center for Gerontology and Social Science, National Center for Geriatrics and Gerontology, Aichi, Japan*)

Background: Frailty was occurred frequently in elderly and known as higher risk of Mild Cognitive impairment (MCI) and dementia than healthy elderly. Hippocampus, parahippocampus and entorhinal cortex as memory system is considered one of the key regions of dementia especially Alzheimer's disease. In addition, atrophy of these regions presumably related to higher risk of Alzheimer's disease. On the other hand, it is

poor understood about neural substrates of relationships frailty and higher incident rates of MCI and dementia. **Objectives:** The purpose of this study, therefore, to clarify differences of atrophy level of hippocampus, parahippocampus and entorhinal cortex and total gray matter between healthy, pre-frail and frail in elderly. **Methods:** A total 1,220 elderly were measured brain structure with 3T-MRI, and 1,117 were fulfilled inclusion criteria in this study. Structural brain images were preprocessed and total hippocampal volume was estimated using FreeSurfer v6.0.0 and ubuntu 16.04 LTS. We classified participants into three groups as healthy, pre-frail and frail characterized by 0, 1 or 2 and 3 or more of the following 5 domains respectively: low activity, slowness, weight loss, exhaustion and weakness. We compared total gray matter or hippocampal volume between healthy, pre-frail and frail in elderly with one way analysis of covariance (ANCOVA) adjusted for sex, age, educational years, drinking and smoking habit, geriatric depression scale points and estimated total intracranial volume (eTIV) and multiple comparison using bonferroni correction. **Results:** The prevalence of pre-frail and frail was 49.2% and 5.9% respectively. Hippocampus, parahippocampus and entorhinal cortex volume were significantly decreased in elderly with frail compared healthy and pre-frail (Hippocampus: $P=0.002$ and $P=0.014$; Parahippocampus: $P=0.002$ and $P<0.001$; entorhinal cortex: $P=0.024$ and $P=0.043$ respectively). In contrast, Total gray matter volume was not significantly difference between three groups. **Conclusion:** Hippocampus, parahippocampus and entorhinal cortex were atrophied in elderly with frailty compared healthy or pre-frail elderly. It might be neural substrates of higher risk of dementia in elderly with frailty.

P195- LOW ALANINE AMINOTRANSFERASE (ALT) BLOOD LEVELS ARE ASSOCIATED WITH HIGH 1-YEAR MORTALITY RATES IN OLDER ADULTS FOLLOWING REHABILITATION FOR HIP FRACTURE. Rasekh Kashkosh¹, Irina Gringauz¹, Jonathan Weissmann², Gad Segal^{3,4}, Michael Swartzon⁵, Abraham Adunsky^{1,4}, Dan Justo^{1,4} ((1) *Geriatrics Division, Sheba Medical Center, Tel-Hashomer, Israel*; (2) *Biomedical Engineering Department, Tel-Aviv University, Israel*; (3) *Department of Internal Medicine T, Sheba Medical Center, Tel-Hashomer, Israel*; (4) *Sackler School of Medicine, Tel-Aviv University, Israel*; (5) *Miami Orthopedics and Sports Medicine Institute, Miami, Florida*)

Background: Low Alanine Aminotransferase (ALT) blood levels prior to rehabilitation are associated with poor rehabilitation outcomes in terms of low mobility and function in older adults following hip fracture. **Objectives:** We have hypothesized that low ALT blood levels prior to rehabilitation are also associated with 1-year mortality in this population. **Methods:** Included were 456 older adults (age ≥ 60 years, median age 83 years, 82.5% women) admitted for rehabilitation following hip fracture. ALT blood levels were documented between one and six months prior to rehabilitation. Excluded were patients with ALT blood levels over 40 IU/L possibly consistent with liver injury. The study group included patients

with low (10 IU/L or lower) ALT blood levels, and the control group included patients with high-normal (11-40 IU/L) ALT blood levels. The main outcome was all-cause mortality one year following rehabilitation admission. **Results:** The study group included 142 (31.1%) patients with low ALT blood levels, and the control group included 314 (68.9%) patients with high-normal ALT blood levels. Overall, 52 (11.4%) patients died within one year following rehabilitation admission. Compared with the control group, patients with low ALT blood levels had significantly higher 1-year mortality rates (17.6% vs. 8.6%, OR 2.27, 95%CI 1.27-4.08). Cox regression analysis showed that low ALT blood levels prior to rehabilitation were associated with 1-year mortality (HR 1.61, 95%CI 0.91-2.84) together with peripheral vascular disease (HR 2.69, 95%CI 1.08-6.68) – independent of age, gender, albumin serum levels, length of rehabilitation, and rehabilitation outcomes. **Conclusion:** Low ALT blood levels prior to rehabilitation are associated with 1-year mortality in older adults following hip fracture.

P196- CIRCULATORY PATTERN OF CYTOKINES, ADIPOKINES AND BONE MARKERS IN POSTMENOPAUSAL WOMEN WITH LOW BMD.

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Background: In addition to some well-characterized bone turnover markers, cytokines and adipokines have also been suggested to be linked to osteoporosis seen in menopause. However, there is much controversy on the possible association between these markers and bone mineral density (BMD). **Objectives:** This study was aimed at measuring circulatory levels of selected cytokines and adipokines in postmenopausal women with normal and low BMD. **Methods:** The study population included 71 post-menopausal women, 25 of whom 25 had normal BMD, 31 had osteopenia and 13 had osteoporosis. Circulatory levels of selected pro-resorptive (TNF-a, IL-1b, IL-6, IL-8, IL-12, IL-17), anti-resorptive (IFN-g, IL-4, IL-10, IL-13, TGF-b) and five adipokine markers (adiponectin, adiponectin, lipocalin-2/NGAL, PAI-1 and resistin) were measured using the Multiplex system and read on the Magpix ELISA platform. Further, two bone turnover markers (P1NP, CTX) as well as estradiol levels were assayed from the same samples. **Results:** While circulatory levels of cytokines were comparable between groups, women with low BMD had statistically significantly higher median circulatory levels of adipokines as compared to those with normal BMD. Further, while levels of CTX were not different between the two groups; P1NP, P1NP/CTX ratio and estradiol levels were significantly lower in women with low BMD. Levels of adiponectin, P1NP, P1NP/CTX ratio and estradiol correlated significantly with BMD of the hip and spine. **Conclusion:** While the associations between the studied markers and BMD may be complex and multivariate, our data provide insights into the possible use of circulatory levels of cytokines, adipokines and bone turnover

markers on the pathogenesis of postmenopausal osteoporosis.

P197- ASSOCIATIONS BETWEEN DIFFUSION TENSOR IMAGING PARAMETERS AND SPPB SCORES IN OLDER ADULTS. Lingxiao He, Philippe Barreto, Yves Rolland, Bruno Vellas, the MAPT/DSA Study Group (*Gérontopôle de Toulouse, Institut du Vieillissement, Centre Hospitalo-Universitaire de Toulouse, Toulouse, France*)

Background: With the application of diffusion tensor imaging (DTI), a few studies have found that some white matter (WM) structures were closely related to impaired gait speed. However, the evidence is still sparse and the WM structural association with overall lower-body physical function, which can be evaluated by Short-Physical Performance Battery (SPPB), has never been investigated among older adults. **Objectives:** The aim of this study is to explore the associations between WM structures (evaluated by DTI parameters) and SPPB scores among older adults. **Methods:** Data of 209 participants (75 ± 4 years old), who were recruited in the Multidomain Alzheimer's Preventive Trial (MAPT) study and with no dementia at baseline level, were analysed in this study. Based on the functional magnetic resonance imaging data, DTI parameters of fractional anisotropy (FA), mean (MD), axial (AD) and radial diffusivity (RD) were calculated in 48 WM structures that were annotated by the John Hopkins University white matter parcellation atlas. Linear regression was used to analyse the association between SPPB score and each DTI parameter while controlling for age, gender, body mass index, physical activity level, total intracranial volume, cardiovascular risk and time interval between the DTI and SPPB measurement. **Results:** Three DTI parameters (the MD and RD of left corticospinal tract, and the MD of right cerebral peduncle) were associated with the SPPB score at a p-value < 0.05. **Conclusion:** The findings indicate that WM structures of corticospinal tract and cerebral peduncle might be related to overall lower-body physical function of older adults. Further studies on the changes of these WM structures with physical function alterations during ageing will be more informative.

P198- MUSCLE TEXTURE FEATURES DERIVED FROM COMPUTED TOMOGRAPHY (CT) ARE ASSOCIATED WITH ALL-CAUSE MORTALITY IN OLDER ADULTS. Leon Lenchik¹, Ryan Barnard¹, Peggy M. Cawthon², Stephen B. Kritchevsky¹, Robert D. Boutin³, Fang-Chi Hsu¹ ((1) *Wake Forest School of Medicine, Winston-Salem, NC, USA*; (2) *University of California San Francisco, San Francisco, CA, USA*; (3) *Stanford University School of Medicine, Stanford, CA, USA*)

Background: CT-derived skeletal muscle index and skeletal muscle density (SMD) have been independently associated with mortality in older adults. Although SMD is a commonly used measure of myosteatosis on CT images, more novel muscle texture (i.e., radiomic) features may provide an alternative measure of muscle quality, independent of SMD. There have been no prior studies on the association of CT-derived muscle

texture features and mortality. **Objectives:** To examine the association of skeletal muscle texture features with all-cause mortality in older adults from the National Lung Screening Trial (NLST). **Methods:** The relationship between CT-derived skeletal muscle texture and all-cause mortality over 6 years was determined in 13,279 participants (39% women, age range 60-74 years, mean age 64.8) in the NLST. Using CT images at the level of T12 vertebra, paraspinous muscle was automatically segmented using machine learning algorithm, and muscle texture features determined using PyRadiomics. 75 second order (and higher) texture features were grouped into 5 categories: Gray Level Dependence Matrix (GLDM), Gray Level Co-occurrence Matrix (GLCM), Gray Level Run Length Matrix (GLRLM), Gray Level Size Zone Matrix (GLSZM), and Neighbouring Gray Tone Difference Matrix (NGTDM). Muscle texture features often indicate greater or lower heterogeneity/complexity of an image. Associations between standardized muscle texture variables and all-cause mortality were determined using Cox proportional hazards models, adjusted for age, sex, race, body mass index, pack years of smoking, presence of type 2 diabetes, chronic lung disease, cardiovascular disease, cancer at enrollment, and SMD. Multiple comparisons were accounted for using false discovery rate testing. **Results:** After a mean 6.41 ± 1.11 years of follow-up, 1188 (8.95%) participants died. In fully adjusted models, the following muscle texture features were associated with mortality: GLDM-DependenceEntropy (Hazard Ratio (HR) per standard deviation (SD)=0.88, $p < 0.001$), GLDM-DependenceNonUniformity (HR per SD=0.91, $p = 0.011$), GLDMSmallDependenceLowGrayLevelEmphasis (HR per SD=1.15, $p < 0.001$), GLRLM- GrayLevelNonUniformity (HR per SD=0.89, $p < 0.001$), GLSZM- Small Area Low Gray Level Emphasis (HR per SD=1.08, $p = 0.003$), NGTDM-Coarseness (HR per SD=1.06, $p = 0.005$), NGTDM-Strength (HR per SD=1.06, $p = 0.003$). Each of these associations were in the direction that suggested greater heterogeneity of the image was associated with increased mortality. **Conclusion:** In a large multicenter cohort of community-dwelling older adults, CT-derived muscle texture features indicating greater heterogeneity were associated with mortality, independent of common covariates including skeletal muscle density.

P199- USEFULNESS OF SERUM GROWTH DIFFERENTIATION FACTOR 15 AS A BIOMARKER OF SARCOPENIA IN COMMUNITY-DWELLING OLDER ADULTS. Miji Kim¹, Chang Won Won² ((1) Department of Biomedical Science and Technology, College of Medicine, East-West Medical Research Institute, Kyung Hee University, Seoul, Korea; (2) Department of Family Medicine, College of Medicine, Kyung Hee University, Seoul, Korea)

Background: Growth differentiation factor 15 (GDF15) has been related with disease progression, mitochondrial dysfunction, and mortality. Elevated GDF-15 level was recently reported to be associated with poorer physical performance in very healthy community-dwelling adults. However, until

now, the relationship of serum GDF-15 level with sarcopenia in community-dwelling older adults has not been well characterized. **Objectives:** This study aimed to investigate the association between serum GDF-15 levels and sarcopenia in community-dwelling older adults. **Methods:** We analyzed 929 participants (mean age, 75.9 ± 8.9 years; 48.0% men) who underwent measurement of serum GDF-15 level and sarcopenia parameters, using their baseline data from the Korean Frailty and Aging Cohort Study. Participants with reduced kidney function, specifically an estimated glomerular filtration rate (eGFR) from creatinine of < 60 ml/min/1.73 m², were excluded. Serum GDF-15 level was quantified with an enzyme-linked immunosorbent assay kit. Appendicular skeletal muscle mass was measured using dual-energy X-ray absorptiometry. Sarcopenia status was determined in accordance with the Asian Working Group for Sarcopenia (AWGS) 2019 guidelines. **Results:** According to the AWGS 2019 algorithm, 154 (16.6%) of the participants in the whole study population were classified as having sarcopenia. GDF-15 concentration had significant negative correlations with appendicular lean mass (men, $r = -0.183$, $p < 0.001$ and women, $r = -0.118$, $p = 0.009$), grip strength (men, $r = -0.150$, $p = 0.001$ and women, $r = -0.113$, $p = 0.013$), and gait speed (men, $r = -0.148$, $p = 0.002$ and women, $r = -0.137$, $p = 0.002$). In the multivariate analysis adjusted for potential confounders, the highest GDF-15 quartile (≥ 1245 pg/ml) was associated with a greater risk of sarcopenia (odds ratio [OR] = 1.95; 95% confidence interval [CI], 1.15–3.31) than the lowest quartile (< 885 pg/ml). These associations remained unchanged (OR = 1.90; 95% CI, 1.14–3.23) after further adjustment for potential biomarkers (e.g., myostatin, dehydroepiandrosterone, and insulin-like growth factor-1). The OR per unit increase in log-transformed GDF-15 level was 3.59 (95% CI, 1.21–10.70). **Conclusion:** Higher circulating GDF-15 levels were independently associated with a greater risk of sarcopenia in community-dwelling older adults. GDF-15 may be considered a promising biomarker of sarcopenia.

P200- BIOMARKERS OF FRAILTY IN COMMUNITY-DWELLING OLDER ADULTS – A LITERATURE REVIEW FOCUSING ON THE LINK BETWEEN NUTRITION AND FRAILTY. Zhongyuan Liu¹, Hui Ling Tai², Dieu Thi Thu Huynh¹ ((1) Abbott Nutrition Research and Development, Asia-Pacific Center, Singapore; (2) Department of Biological Sciences, National University of Singapore)

Background: Frailty has been recognized as an emerging public health problem in rapidly aging populations worldwide. Use of biomarkers to identify frailty has been suggested for early frailty screening. Among multiple risk factors of frailty, inadequate nutrition such as inadequate intake of protein and vitamin D has been shown to be associated with increased risk of frailty. Therefore, nutritional biomarkers could be useful for early screening of frailty. **Objectives:** To review the evidence of potential biomarkers, especially nutritional biomarkers for early screening of frailty in community-dwelling older adults. **Methods:** A literature search was conducted using PubMed and Scopus databases. Studies evaluating blood

biomarkers and frailty in community-dwelling older adults from 2000 to 2019 were included. Information on the definition of frailty, study design, characteristics of the study populations, and the associations between biomarkers and frailty was summarized. **Results:** In total, 95 studies were identified in which 60 observational studies were published since 2015. Majority of studies used physical frailty. Other definitions such as multidimensional, social and frailty were also used. 123 biomarkers were identified. Cross-sectional and longitudinal studies consistently showed that low level of vitamin D was associated with frailty. Emerging scientific evidence suggested that abnormal level of albumin, low levels of high-density lipoprotein (HDL), beta-hydroxy beta-methylbutyrate (HMB), Vitamin B6 (measured by Pyridoxal-5-phosphate), carotenoids, or α -tocopherol (vitamin E), and high level of dp-ucMGP (marker of vitamin K) could have the potential for frailty screening. Besides nutritional biomarkers, the evidence showed that inflammatory markers such as C-reactive protein (CRP), interleukin-6 (IL-6), and fibrinogen, and endocrine-related markers such as hemoglobin, dehydroepiandrosterone sulfate (DHEAS), and hemoglobin A1C could be useful for screening frailty. Additionally, there is evidence suggesting that some oxidative or immune-related markers were associated with frailty. **Conclusion:** Vitamin D could be a useful nutritional biomarker for early frailty screening in the community setting. Other nutritional biomarkers, inflammatory markers and endocrine-related markers could be associated with frailty. Further research is needed to validate and refine other potential biomarkers.

P201- THE VALIDATION OF ULTRASONOGRAPHIC MEASURES OF QUADRICEPS MUSCLE MASS IN PATIENTS WITH END STAGE LIVER DISEASE.

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Background: End stage liver disease (ESLD) is associated with reduced muscle mass with a reported incidence of sarcopenia of 40-60% (Bhanji, 2017). Loss of muscle mass in ESLD patients has a negative impact on clinical outcomes including mortality and recovery rates from liver transplantation (Montano-Loza, 2014). Previous research has investigated loss of muscle mass in ESLD via appendicular skeletal muscle mass and psoas muscle cross sectional area (CSA) using DXA and magnetic resonance imaging (MRI) respectively. However, the quadriceps muscle group has high functional significance and thus should be investigated in ESLD patients in whom function may be limited. Ultrasound (US) offers a non-invasive, bedside

imaging assessment of quadriceps muscle mass. However, ESLD may be associated with increased subcutaneous fat which can present an operational challenge for US and thus its application in ESLD patients requires validation. **Objectives:** The aim of this research is to validate the accuracy of ultrasonographic measures of quadriceps muscle mass by comparison with the gold standard of MRI. **Methods:** 24 parallel MRI and US were collected from patients with an ESLD diagnosis and awaiting liver transplant (12 patients, age 52±10yrs, BMI 28.4±6.4). Participants underwent US scanning of both left and right quadriceps followed directly by an MRI. Specifically, measures of vastus lateralis (VL) muscle thickness (MT) and quadriceps CSA were obtained at 50% femur length during longitudinal and extended field of view US respectively. To enable direct comparison with quadriceps CSA obtained during MRI, an oil capsule was placed upon the leg to mark the exact location of US image collection. All procedures received research ethics committee approval and written informed consent from the participants. **Results:** A significant ($p<0.001$, $n=24$) positive correlation was found between VL MT and quadriceps CSA obtained via MRI ($r^2=0.42$). Similarly, there was a significant positive correlation ($p<0.0001$, $n=22$) between CSA obtained via extended field of view US and MRI ($r^2=0.97$). Bland-Altman plots demonstrated a bias of $-0.07 \pm 1.4\text{cm}^2$, with 95% limits of agreement of -2.96cm^2 and 2.83cm^2 . **Conclusion:** Our data demonstrate that the assessment of quadriceps CSA and VL MT via US may offer a suitable bedside alternative to MRI in patients with ESLD.

P202- A RAPID POINT OF CARE ULTRASOUND MARKER FOR MUSCLE MASS AND MUSCLE STRENGTH IN OLDER ADULTS.

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Background: Sarcopenia is defined as the gradual age-associated loss of both muscle quantity and strength in older adults, and severe sarcopenia affects subject performance (such as reduced gait speed). It is a devastating condition, predicting an increase in mortality, falls, fractures and hospitalizations. Current clinical criteria diagnose sarcopenia through Dual X-ray Absorptiometry (DXA) measures of muscle mass, a test that cannot be performed at the bedside and is rarely used to find this condition. Point-of care ultrasound (PoCUS) is rapidly becoming a standard part of the physical exam, and has the potential to become a quick, noninvasive marker for both muscle mass and function. **Objectives:** We examined the relationship between ultrasound measures of muscle mass (vastus medialis thickness, MT) and other measures of muscle quantity (appendicular skeletal mass, ASM; mid-

arm biceps circumference, MABC). We also examined the association between MT and measures of muscle strength (grip strength) and muscle performance (gait speed) in an older adult population. **Methods:** 150 older adults (age \geq 65; mean age 80.0 ± 0.5 years, 66 women, 84 men) were recruited sequentially from geriatric medicine clinics. Each subject had appendicular skeletal muscle mass (ASM, by bioimpedance assay), grip strength, mid-arm biceps circumference (MABC), gait speed, and an ultrasonic measure of muscle quantity (MT, vastus medialis muscle thickness) measured. Our initial models contained age, sex, bmi, and MT as predictor variables, and our outcome variables were ASM, grip strength, MABC and gait speed. **Results:** In our final parsimonious models, MT showed a strong significant correlation with all measures of muscle mass, including ASM (Standardized $\beta = 0.204 \pm 0.058$, $R^2 = 0.58$, $p < 0.001$) and MABC (Standardized $\beta = 0.141 \pm 0.067$, $R^2 = 0.77$, $p = 0.038$). With respect to measures of muscle quality, there was a strong significant correlation with grip strength (Standardized $\beta = 0.156 \pm 0.058$, $R^2 = 0.51$, $p = 0.008$) but not with subject performance (gait speed). **Conclusion:** MT showed strong correlations with both measures of muscle mass (ASM and MABC) and with muscle strength (grip strength).

NEW DRUG DEVELOPMENTS

P203- EFFECT OF LOQUAT LEAF EXTRACT ON MUSCLE CONTRACTION-INDUCED MUSCLE PROTEIN SYNTHESIS SIGNALING PATHWAY. Riki Kosugi¹, Yung-Li Hung², Toshiharu Natsume³, Shuichi Machida⁴ ((1) Faculty of Health and Sports Science, Juntendo University, Inzai, Chiba, Japan; (2) Institute of Health and Sports & Medicine, Juntendo University, Inzai, Chiba, Japan; (3) COI Project Center, Juntendo University, Bunkyo-ku, Tokyo, Japan; (4) Graduate School of Health and Sports Science, Juntendo University, Inzai, Chiba, Japan)

Background: Loquat (*Eriobotrya japonica*) leaves are commonly used in teas and folk medicines. Recently, loquat leaf extract (LLE) has been reported to promote muscle protein synthesis in vitro. Additionally, resistance exercise has been shown to promote muscle protein synthesis in vivo. It is considered that LLE and resistance exercise might have a synergistic effect on activating muscle protein synthesis. However, this has never been investigated. **Objectives:** The purpose of the present study was to investigate whether LLE enhances the muscle contraction-induced activation of muscle protein synthesis signaling in rats. **Methods:** Male Wistar rats (12 weeks old, $n = 6-7$ /group) were categorized into a control (CON) group, an LLE-administered (LLE) group, an electrical muscle stimulation (EMS) group, and an EMS with LLE (EMS+LLE) group. Rats were administered LLE (1.5 g/kg/day) or distilled water once in a day by oral gavage for 7 days. On the seventh day, 3 h post-LLE administration, the gastrocnemius muscle of the right legs of EMS group and EMS+LLE group rats were stimulated by EMS (100 Hz, 30 V) through 5 sets of 10 isometric contractions (7 s contraction, 3 s rest) with 3 min inter-set intervals. Rats were then sacrificed

and their gastrocnemius muscles were rapidly excised 3 h post-EMS. Expression levels of muscle synthesis-related proteins [protein kinase B (Akt), mammalian target of rapamycin (mTOR), and ribosomal protein S6 kinase beta-1 (p70S6K)] were determined by western blotting. **Results:** No significant differences were observed in body weight, water intake, and diet intake among the groups. Akt phosphorylation at Ser473 was found to be significantly increased in the EMS+LLE group compared to that in CON group; mTOR phosphorylation at Ser2448 did not show a significant difference. p70S6K phosphorylation at Thr389 was found to be significantly increased in the EMS group compared to that in CON group, while the EMS+LLE group was observed to have significantly higher p70S6K phosphorylation at Thr389 than the EMS group. **Conclusion:** Our study suggests that LLE enhances the muscle contraction-induced activation of p70S6K phosphorylation.

P204- KYNURENIC ACID, A NEW THERAPY FOR METABOLIC AGING. Sophie Raynal, Fawzia Mouveaux, Armel Nijman, Karine Bardin-Deval, Micheline Kergoat, Valérie Autier (*Metabrain Research, Maisons-Alfort, France*)

Background: Metabolic aging has emerged as a new sedentary related syndrome combining metabolic diseases and sarcopenia, a degenerative loss of skeletal muscle mass, quality, and strength associated with aging. It has been recently shown that Kynurenic acid (KA), a key metabolite of Tryptophan/ Kynurenine pathway, improved glycemic control and lipid profile in rodents. **Objectives:** To show that KA has a key role in metabolic aging, we have evaluated its effect on muscle function and mass in vitro and in vivo in muscle cell line and in a model of hindlimb immobilization in mouse. **Methods:** In vitro in C2C12 muscle cells we measured the ability of KA to inhibit myostatin gene expression (endogenous inhibitor of muscle growth), stimulate protein synthesis and enlarge muscle cell size. Differentiated cells were exposed to KA for 2h30 for protein analysis, 6h for gene study and the 5 days of differentiation for cell enlargement examination. In vivo, muscle mass (tibialis and soleus) was measured after a 1 week-hindlimb immobilization in mice treated or not with KA (3mg/kg.day per os). **Results:** In vitro, KA significantly and dose-dependently inhibited myostatin gene expression, stimulated protein synthesis and enlarged C2C12 muscle cells. In mice, KA treatment significantly reduced tibialis and soleus muscle wasting induced by immobilization. **Conclusion:** We demonstrated for the first time the positive impact of KA on muscle function and mass preservation offering a promising therapy for patients affected by metabolic aging, who do not currently benefit from relevant therapeutic solutions.

PHYSICAL EXERCISE

P205- PHYSICAL EXERCISE IN A VIRTUAL ENVIRONMENT CONTEXT TO IMPROVE PHYSICAL FUNCTIONING IN THE ELDERLY.

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Background: As people age they are more likely to fall. Although most fall-related injuries are minor, they can cause significant pain and discomfort, affect a person's confidence and lead to loss of independence. Some falls can cause serious long-term health problems. One strategy to promote greater adherence and motivation to intervention in Physical Therapy is the use of virtual environment (VE) programs associated with a balance exercise programs as an effective method of preventing falls. **Objectives:** The purpose of this study was to analyze the benefit of a virtual environment exercise program in non-institutionalized elderly at the end of six weeks. **Methods:** In this randomized controlled trial 80 Non-Institutionalized elderly were included. 40 Subjects, age 81.6±7.9 yrs constituted the experimental group (EG); and 40, age, 81.9±76.1 yrs constituted the control group (CG). The EG was submitted to 6 weeks of a VE exercise program performed on a Nintendo Wii, and to a set of recreational activities. The CG only performed the activities. The instruments used in the present study to evaluate performance were Tinetti's index, which evaluates the static balance and the gait to quantify the risk of fall, and the Fullerton's functional fitness tests to assess physical parameters such as strength, aerobic endurance, flexibility and agility/balance. **Results:** At the end of the 6 weeks of intervention in a virtual environment, significant improvements in upper limb strength, agility and static balance were observed. In the intragroup comparison, it was possible to verify improvements in all physical fitness battery tests. The values of functional fitness tests were significantly different ($p < .05$) between EG and CG groups for the following variables: 30-second chair stand 15.1±3.1 vs. 10.8±2.9 times; arm curl 16.8±3.5 vs. 13.8±4.6 times; 8-foot up-and-go 9.7±2.3 vs. 15.8±5.1 sec; two min. step 126.8±34.9 vs. 75.7±34.8 steps, respectively; as well as for the Tinetti index. **Conclusion:** This study, suggests that exercise in VE context applied to non-institutionalized elderly, promotes improvements in mobility, in lower limbs muscular strength, and may help to reduce the risk of falls by improving the static and dynamic balance.

P206- THE EFFECTS OF HIGH INTENSITY INTERVAL TRAINING ON CIRCULATING AND MUSCLE MICRORNA LEVELS AND INFLUENCE OF L-CITRULLINE.

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Background: The small non-coding microRNAs (miRs) are endogenous regulators of gene expression. They bind to complementary sequence on target messenger RNA transcripts resulting in translational repression or target degradation. They are involved in the skeletal muscle response to training in animals and humans (Kirby, 2015). **Objectives:** The aim of our study was to measure the effects of High Intensity Interval Training (HIIT) associated or not with L-Citrulline on the expression of serum and muscle miRs in a group of men. **Methods:** We selected 9 men (mean age: 66.6 ± 2.9 years, 6 men in the placebo group and 3 in the L-Citrulline group, 10 gr/day) from a cohort of 56 men and women submitted for 12 weeks to HIIT (Buckinx, 2018). We evaluated the expression of serum and muscle miRs before and after training. The quantification of miR expression was performed using the Next Generation Sequencing (NGS) technique (EXIQON). For statistical analysis, the measurements were normalized with the TMM method (Trimmed Mean of M-values). **Results:** We identified 225 miRs from serum and 379 miRs from muscle above the detection limit (≥ 1 TPM, Tags Per Million). After Benjamini-Hochberg correction, 5 serum miRs from the L-Citrulline group had a significantly different level of expression before and after training: 744-5p, 106b -5p, 484, 151a-3p and -6511a-3p ($p < 0.05$, 5% FDR). No miR of the placebo group had a significantly altered expression. In muscle, our approach revealed 59 miRs with a significantly different level of expression before and after training in the placebo group and 8 in the L-Citrulline group, 7 of which were common to both groups. These miRs were different from those highlighted at the serum level. The 5 most-expressed muscle miRs with the greatest difference in expression before and after training were 483-5p, 504-5p, 542-3p, 483-3p and 146b-5p ($p < 0.05$, 5% FDR). **Conclusion:** With the NGS approach, we identified 65 miRs differentially expressed before and after HIIT. Expression of circulating miRs appears to be influenced by L-Citrulline. The next validation step will be to measure these specific miRs in the entire cohort to determine the clinical utility of these markers.

P207- FROM HOSPITAL TO DOMICILE (THE HODOM PROJECT): A PRESCRIBED EASY-TO-DO MULTICOMPONENT INTERVENTION TO COUNTER FRAILITY IN OLDER ADULTS. Kristell Pothier¹, Elina Van Dendaële¹, Amal Aidoud², Clara Le Douget¹, Noémie Ferre¹, Nathalie Bailly¹, Bertrand Fougère² ((1) *Université de Tours, EA 2114, Laboratoire de Psychologie des Ages de la Vie et Adaptation (PAVeA), Tours, France;* (2) *Centre Hospitalier Régional Universitaire de Tours, Service de gériatrie, Tours, France*)

Background: Recent interventional studies on frailty used multicomponent programs (physical exercise, cognitive stimulation, and nutritional supplementation) with some promising results. However, these emerging programs developed to counter the multidimensional concept of frailty still need methodological improvements to be completely effective. **Objectives:** The objective of this innovative project is to develop personalized multicomponent interventions that could be easily used by frail older adults in order to reverse physical, cognitive and psychosocial symptoms associated with frailty. Three original and specific action levers will be used to insure a better effectiveness: 1/to target a key population (hospitalized frail older adults who will be discharged to home), 2/to use a real multicomponent program (physical exercises simultaneously associated with cognitive and social components that mimic daily gestures), and 3/to encourage adherence through medical prescription. **Methods:** One hundred and twenty frail older adults (≥ 75) will be recruited from the Geriatrics Unit of the University Hospital of Tours (France), and randomly assigned to one of the two study arms: the Intervention Group (IG), who will receive a medical prescription of an adapted multicomponent intervention, vs the Control Group (CG; no intervention). Twelve-week programs will be adapted according to observed intrinsic capacities of the frail older adults. Including exercises will be based on effective international physical programs, with original cognitive and social components added to the physical exercises. All participants will perform pre- and post-tests to compare their physical health (gait speed, balance, and strength), cognitive health (global cognition and executive functions), and psychosocial health (self-efficacy and quality of life) before and after the three-month program. **Results:** A pilot study to this RCT has already started in Tours. The international Conference on Frailty and Sarcopenia Research would be the perfect opportunity to share preliminary results. The intervention will be considered as feasible if IG participants adhere to $> 75\%$ of the prescribed exercise and as effective if we observe significant improvements in all clinical outcomes for IG participants, compared to the CG. **Conclusion:** Final objective will be to disseminate to a large number of individuals the idea that several concrete ways exist to age well.

P208- OPPORTUNITIES FOR PREHABILITATION IN ADVANCED OVARIAN CANCER PATIENTS. Amanika Kumar, Clarissa Polen-De, Gladys Asiedu Carrie Langstraat, Aminah Jatoi (*Mayo Clinic, Rochester, Minnesota, USA*)

Background: Frailty in patients with advanced stage ovarian cancer (OC) is common and associated with increased oncologic and surgical morbidity and mortality. Prehabilitation is one option to reverse frailty in this subset of patients. **Objectives:** Our aim was to investigate potential barriers and facilitators of prehabilitation during neoadjuvant chemotherapy (NACT) in OC patients. **Methods:** We identified 16 patients who underwent NACT from 2016-2018 at a large volume single institution. Patients underwent a semi-structured one-on-one phone interview. Transcripts from interviews were read by 4 independent reviewers to identify emerging themes related to patients' experience, functioning and exercise during chemotherapy. **Results:** Five primary themes emerged following analysis of the participants transcripts. Participants were overall willing to participate in exercise during chemotherapy, with 12/16 patients stating they would walk or did walk at least 30 minutes daily during treatment; this was linked to a strong motivation to improve surgical and survival outcomes. Only 1/16 patients stated they were not interested in exercise during treatment. Most notable, patients' motivations were tied closely to physician recommendation. Patients prominently identified a shift in health as a priority following their ovarian cancer diagnosis, which subsequently lead to an increase in daily activities and exercise. Surgery and improvement in mental well-being were strong motivators for patients to start or continue an exercise program. Participants also identified barriers to exercise during treatment including a variety of treatment related and non-treatment related concerns, including neuropathy, nausea, pain, program availability, time and most significantly fatigue. Despite this, most retrospectively thought they would have been willing to exercise with modifications. Almost all participants voiced the importance of a supportive treatment community, including their medical care team, family, friends and the local community. **Conclusion:** Patients with advanced ovarian cancer demonstrated high motivation and willingness to exercise during chemotherapy when there was a perceived benefit to overall survival. Prehabilitation may be a helpful to improve outcomes, but a prehabilitation strategy should be designed specifically for the patients with the most need and designed with barriers and motivators in mind.

P209-DIFFERENCES OF EXERCISE PROGRAMS ON THE GAIT CHARACTERISTICS OF OLDER ADULTS WITH SUBJECTIVE COGNITIVE DECLINE: RANDOMIZED CONTROL TRIAL. Kosuke Fujita^{1,2}, Hiroki Umegaki², Aiko Inoue¹, Huang Chi Hsien^{1,2}, Hiroyuki Shimada³, Masahumi Kuzuya^{1,2} ((1) *Institute of Innovation for Future Society, Nagoya University Nagoya, Japan;* (2) *Department of Community Healthcare and Geriatrics, Nagoya University Graduate School of Medicine Nagoya, Japan;* (3) *Department of Preventive Gerontology, Center for Gerontology and Social Science, National Center for Geriatrics and Gerontology Obu, Japan*)

Background: Gait disorder in older adults could lead fatal consequence following falling or reducing physical activity, especially in individual with pre-clinical / clinical cognitive decline. Effectiveness of exercise intervention for the gait characteristics has been examined in previous studies, however, evidence about differences between exercise modality such as aerobic training (AT) and resistance training (RT) for the acute and long phase is unclear. **Objectives:** The aim of the present study was to compare the effect of different exercise modality on the gait characteristics of older adults with pre-clinical cognitive decline. **Methods:** 415 individuals (mean age, 72.3 years) with self-reported cognitive decline were enrolled in randomized controlled trial. Subjects assigned to AT group (n = 104), RT group (n = 102) and AT+RT group (n = 104) underwent exercise intervention 2 days a week for 26 weeks. Subjects assigned to control group (n =105) were provided information about healthy aging. Gait characteristics were examined before, just after the intervention and after the 26 weeks of follow-up period using an electronical walkway system. **Results:** In the analyses about the change between pre and just after the intervention period, all of three exercise groups significantly improved gait velocity (AT, p < 0.01; RT, p < 0.01; AT+RT, p < 0.01), stride time (AT, p < 0.01; RT, p = 0.03; AT+RT, p < 0.01), cadence (AT, p < 0.01; RT, p = 0.02; AT+RT, p < 0.01), stride length (AT, p < 0.01; RT, p = 0.04; AT+RT, p < 0.01) and double support time (AT, p < 0.01; RT, p < 0.05; AT+RT, p < 0.01), and AT+RT group improved significantly with CV of step width (p < 0.05). In the analyses about the change between pre and follow-up period, RT group only had improvements with gait velocity (p < 0.05), stride length (p = 0.03) and double support time (p = 0.04). **Conclusion:** All exercise interventions could improve gait characteristics of older adults with pre-clinical cognitive decline. For the purpose of maintain improved gait characteristics for a long phase, RT is likely to be recommended.

P210- THE EFFECTS OF GAMOTION (A GIANT EXERCISING BOARD GAME) ON PHYSICAL CAPACITY, MOTIVATION AND QUALITY OF LIFE AMONG NURSING HOME RESIDENTS: A RANDOMIZED CONTROLLED TRIAL. Fanny Buckinx¹, Quentin Marchal², Paulin Hurtrez², Olivier Bruyère^{1,2}, Jean-Yves Reginster¹, Alexandre Mouton² ((1) *WHO Collaborating Center for Public Health aspects of musculoskeletal health and ageing. Division of Public Health, Epidemiology and Health Economics, University of Liège, Belgium;* (2) *Department of Sport and Rehabilitation Sciences, Multidisciplinary Research Unit on Health and Society, University of Liège, Liège, Belgium*)

Background: In 2017, Mouton et al. highlighted promising results of a giant exercising board game on ambulatory physical activity and a broader array of physical and psychological outcomes among nursing home residents. However, some limitation of this game should be acknowledged (e.g. too long, too bulky, exercises too simple). Taking into account these weaknesses, we decided to develop and validate a new version of a giant exercising board game: the GAMotion. **Objectives:** To evaluate the impact of GAMotion on physical capacity, motivation and quality of life among nursing home residents. **Methods:** A one-month randomized controlled trial was performed in two comparable nursing homes. Eleven participants (71.63±8.15 years; 7 men) meeting the inclusion criteria took part in the intervention in one nursing home, whereas 10 participants (84±7.57 years; 4 men) were assigned to the control group in the other institution. The GAMotion required participants to perform strength, flexibility, balance and endurance activities. The assistance provided by an exercising specialist decreased gradually during the intervention in an autonomy-oriented approach based on the self-determination theory (Ryan & Deci, 2002). Physical capacity (i.e. quantitative evaluation of walking using Locomotrix; grip strength using Jamar dynamometer; knee extensor isometric strength using MicroFET2; fall risk using Tinetti test; dynamic balance using Timed Up and Go test (TUG) and physical abilities using SPPB test), motivation (i.e. using Behavioral Regulation in Exercise Questionnaire-2) and quality of life (i.e. using EQ-5D questionnaire) were assessed at baseline and at the end of the intervention. A two-way repeated-measure analysis of covariance (ANCOVA) was used to assess time*group (intervention vs. control group) effects. **Results:** Globally, during the intervention period, the experimental group displayed a greater improvement in symmetry of steps (p=0.04), Tinetti score (p<0.0001), TUG (p=0.02), SPPB (p<0.0001), knee extensor isometric strength (p=0.04), grip strength (p=0.02), 3 domains of the EQ-5D (i.e. mobility, self-care, usual activities : p<0.0001) and intrinsic motivation (p=0.02) compared to the control group. **Conclusion:** The effects of GAMotion on physical capacity, motivation and quality of life of nursing home residents confirm the results obtained with the previous version of the giant exercising board game.

P211- PHYSICAL EXERCISE AND HEALTH EDUCATION IN HOSPITALIZED FRAGILE ELDERLY IN A GERIATRICS ACUTE UNIT: PRELIMINARY RESULTS OF THE AGE CAR PLUS STUDY. Jennifer Mayordomo Cava^{1,2,3}, Sofía González Chavez¹, Cristina Carrasco¹, Teresa Zarralanga Lasobras², Johanna Vásquez Grande¹, Fernando Gómez-Olano Picabea¹, Iván Ariza Segovia¹, Javier Ortiz Alonso^{1,2,3,4}, José Antonio Serra Rexach^{1,2,3,4} ((1) *Geriatrics Department, Hospital General Universitario Gregorio Marañón, Madrid, Spain*; (2) *Instituto de Investigación Sanitaria Gregorio Marañón, Madrid, Spain*; (3) *Consorcio de Investigación en Red Fragilidad y Envejecimiento Saludable, CIBERFES, Madrid, Spain*; (4) *Facultad de Medicina, Universidad Complutense de Madrid, Spain*)

Background: In-hospital stay, even in short stays, is associated with functional impairment in older patients. **Objectives:** The AGE CAR Plus study aims to evaluate the effectiveness of a program of physical exercise and health education to prevent functional deterioration during the in-hospital stay. **Methods:** Randomized clinical trial. Patients older than 74 years admitted to the ACE of the General University Hospital Gregorio Marañón were included. Exclusion criteria were baseline Barthel (15 days before admission) less than 20 points, severe cognitive impairment or unable to walk. The intervention (GI) consisted of a physical exercise program (strengthening of lower limbs, walking, and inspiratory muscle training) and health education during in-hospital stay. The control group (GC) received the usual care. In the preliminary analysis, the effect of the intervention, GI vs. GC, on functional capacity (Barthel Index) from baseline to admission and discharge was compared (ANOVA of repeated measures in the 3 study periods). **Results:** From May 2018 to February 2019, 55 patients were included: 28 GC and 27 GI. The CG and GI were similar in sex (women 47.3%), age (86.5±5.1 vs. 87.6±4.5), comorbidities (Charlson: 2.3±1.8 vs. 2.9±2.1), cognitive impairment (Pfeiffer: 6.8±2.7 vs. 7.5±1.6), fragility (Fried >=3: 69% in both p=0.297) and physical situation (SPPB: 3.6±0.6 vs. 3.9±3.4). p <0.05 for all variables. The functional situation, both baseline and admission, was similar in both groups (Barthel at baseline: GC, 79.6±25.1; GI, 77.7±28.1, p=0.7; Barthel at admission: GC, 60.9±25.1 vs 61.5±28.1, p=0.935). There were no significant differences in the mean days of admission 5.9±4.7, p=0.1). The average number of exercise sessions was 5.4 sessions of approximately 30 minutes each. Significant effects of the intervention were found in the Barthel at discharge (GC 63.0±27.1, GI 75.9±21.6; F(2, 98)=5.8; p=0.004). **Conclusion:** Conclusion: The preliminary analysis of results indicates that a simple in-hospital exercise program could improve the functional status at the discharge of fragile patients over 74 years hospitalized for acute disease. Funding: Instituto de la Salud Carlos III (PI17/02021), CIBERFES, Fondo Europeo de Desarrollo Regional (FEDER). The authors declare no conflicts of interest.

P212- EFFECT OF A PHYSICAL EXERCISE PROGRAM ON THE FUNCTIONAL CAPACITY OF HOSPITALIZED ELDERLY: PRELIMINARY ANALYSIS OF THE FUNCTIONAL ASSESSMENT USING ALUSTI TEST. AGE CAR PLUS STUDY. Sofía González Chávez¹, Jennifer Mayordomo-Cava^{1,2,3}, Cristina Carrasco¹, Teresa Zarralanga Lasobras², Johanna Vásquez Grande¹, Paula Lavandera¹, Fernando Gómez-Olano Picabea¹, Iván Ariza Segovia¹, Ana Grau¹, Paula Aldama¹, José Antonio Serra Rexach^{1,2,3,4} ((1) *Geriatrics Department, Hospital General Universitario Gregorio Marañón, Madrid, Spain*; (2) *Instituto de Investigación Sanitaria Gregorio Marañón, Madrid, Spain*; (3) *Consorcio de Investigación en Red Fragilidad y Envejecimiento Saludable, CIBERFES, Madrid, Spain*; (4) *Facultad de Medicina, Universidad Complutense de Madrid, Spain*)

Background: In-hospital stay, even in short stays, is associated with functional impairment in older patients. **Objectives:** The AGE CAR Plus study aims to evaluate the effectiveness of a program of physical exercise and health education to prevent the functional deterioration during the in-hospital stay. **Methods:** Randomized clinical trial. Patients older than 74 years admitted to the ACE of the General University Hospital Gregorio Marañón were included and randomized at admission in control group (CG) or intervention group (IG). Exclusion criteria were baseline Barthel (15 days before admission) less than 20 points, severe cognitive impairment or unable to walk. Both groups received usual care, and patients in intervention group also performed simple supervised exercises (strengthening of lower limbs, walking, and inspiratory muscle training). In the preliminary analysis, we analyzed the effect of the intervention on changes in Short Physical Performance Battery (SPPB) and Alusti Test, at admission and discharge, by t-test of repeated measures in the 2 study periods. **Results:** From May 2018 to February 2019, 55 patients were included: 28 GC and 27 IG. The CG and IG were homogeneous in sex (women 47.3%), age (86.5±5.1 vs. 87.6±4.5), comorbidities (Charlson: 2.3±1.8 vs. 2.9±2.1), cognitive impairment (Pfeiffer: 6.8 ± 2.7 vs. 7.5±1.6), fragility (Fried >=3: 69% p=0.297), and functional-physical capacity (SPPB: 3.6± 0.6 vs 3.9±3.4; Alusti, 61.4±14.1 vs 60.2±13.0). p <0.05 for all variables. A significant effect of the intervention was found, with a higher mean score in the Alusti test in the IG (CG: 63.5±12.4 vs 67.3±12.5; F(1,50)=4.6; p=0.038), not finding such differences with the SPPB (4.0±2.3 vs 4.5±3.4; F(1,48) =0.47; p=0.496). **Conclusion:** The preliminary analysis shows that the Alusti test could be used as an evaluation test for functional capacity in hospitalized elderly patients. A physical exercise program during hospitalization in an acute unit improves the functional capacity assessed by the Alusti test at discharge significantly. Funding: Instituto de la Salud Carlos III (PI17/02021), CIBERFES, Fondo Europeo de Desarrollo Regional (FEDER). The authors declare no conflicts of interest.

P213- ASSOCIATIONS OF PHYSICAL FITNESS COMPONENTS WITH COGNITIVE FUNCTION AMONG OLDER ADULTS WITH DEMENTIA.

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Background: Cognitive impairment is a highly prevalent, poorly managed, and disabling consequence of dementia. Exercise training that improves physical fitness can represent a promising approach for managing cognitive impairment in persons with dementia. **Objectives:** The aim of this cross-sectional study investigated the association of physical fitness and balance with cognitive function. **Methods:** Sixty-four institutionalized older adults, aged 78.0±8.4 years, with dementia, predominately female (70%) and with dementia due to Alzheimer's Disease (53.1%). Regression analyses were used to examine associations between physical fitness components (Senior Fitness Test), balance (Tinetti index) and cognitive function (Mini-Mental State Examination). **Results:** Univariate regression indicates a significant association between the strength of the upper body (p=0,047) and aerobic endurance (p=0,037) with the cognitive function in older people with dementia. **Conclusion:** These results suggest an association between the specific dimensions of physical fitness and cognitive function. Consequently, multicomponent exercise-based therapeutic strategies aiming to improve physical fitness could be an important nonpharmacological strategy for dementia management.

P214- SEX DIFFERENCE IN ASSOCIATION OF PHYSICAL AND/OR COGNITIVE ACTIVITY WITH COGNITIVE IMPAIRMENT IN OLDER ADULTS.

Satoshi Kurita, Takehiko Doi, Kota Tsutsumimoto, Sho Nakakubo, Hideaki Ishii, Hiroyuki Shimada (*Section for Health Promotion, Department of Preventive Gerontology, Center for Gerontology and Social Science, National Center for Geriatrics and Gerontology, Aichi, Japan*)

Background: Women had higher risk of cognitive impairment or dementia compared to men. Although studies reported physical activity (PA) and/or cognitive activity (CA) had protective association with cognitive impairment among older adults, it is unknown whether the association is depended on sex or not. **Objectives:** The purpose of the present study was to examine the sex differences in the association of PA and/or CA with cognitive impairment in community-dwelling older adults. **Methods:** A community-based cohort survey was conducted in a total of 2726 participants (mean age 75.5 ± 3.9 years; 51.8% female) who met the study criteria. Time of moderate-to-vigorous intensity PA was measured using an accelerometer. CA was assessed by the frequency of engaging in 6 activities using a CA scale including reading, doing crossword puzzles, and playing board games or cards. Participants were categorized into four groups based

on quartile 1 (low) and 2 to 4 (high) values of PA and CA. Cognitive impairment was defined by at least 1 out of 4 neuropsychological tests having a result at least 1.5 standard deviation below the reference threshold. **Results:** In both sex, the prevalence of cognitive impairments showed significant differences among 4 groups; that of low PA/low CA group, low PA/high CA group, high PA/low CA group, and high PA/high CA group were respectively 30.6%, 18.0%, 20.4%, and 14.1% for male (p <0.001) and 28.1%, 18.8%, 21.8%, and 15.4% for female (p <0.01). In binomial logistic regression models for male, all groups showed a low odds ratios of cognitive impairment compared to the low PA/low CA group (odds ratio = 0.50 to 0.66, all p <0.05), while for female, only high PA/high CA group had significant association with cognitive impairment (odds ratio = 0.53, 95% confidence interval = 0.32 to 0.88, p = 0.015). **Conclusion:** In male, PA and CA are associated with cognitive impairment even in the case of low engagement in either PA or CA. In female, higher engaging in both activities are associated with cognitive impairment. Female older adults may need to engage in more activities than male to acquire benefit on preventing cognitive impairment.

P215- OPTIMAL RESISTANCE EXERCISE TRAINING FOR OLDER ADULTS TO INCREASE MUSCLE MASS: A SYSTEMATIC REVIEW AND META-ANALYSES.

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Background: Resistance exercise training (RET) can increase muscle mass and strength in older adults, but evidence regarding the most effective protocol is lacking. **Objectives:** The objectives of this systematic review and meta-analysis were: (1) to determine the optimal variance of RET factors [equipment, total training dose, number of exercises, volume (sets and repetitions), frequency, length of intervention, progression, intensity, session duration, training structure, adherence, and attrition] to increase muscle mass (primary outcome) and muscle strength (secondary outcome); and (2) to compare these results with international RET guidelines. **Methods:** A systematic search was conducted using five databases (MEDLINE, CINAHL, Cochrane, Embase, and SPORTDiscus) from inception until 30th August 2018. Included studies were randomised controlled trials, with a mean/median age of participants ≥65 years, comparing RET to a comparison group and reporting muscle mass pre- and post-intervention. **Results:** Ninety-nine articles

(139 interventions) were included in the systematic review and 64 in the meta-analyses (86 interventions). There was considerable heterogeneity in the number for interventions that detected significant increases in muscle mass (50/139, 36%) and muscle strength (61/86, 71%). Of those muscle strength interventions 9/24(38%), 52/74(70%), 20/26(77%) and 4/4 (100%) interventions reported a significant increase in handgrip strength, lower body muscle strength, upper body muscle strength and whole body muscle strength respectively. RET factors associated with the greatest gains in muscle mass and muscle strength were: use of combination of equipment, seven to eight exercises per session with three lower body exercises, a volume of three to four sets and 12 to 15 repetitions per exercise, a frequency of two-three days per week, intervention length of greater than six weeks, progressive intensity, intervention duration of 15-45 minutes, and in a supervised individually training structure. These results align with current guidelines provided by American, Australian, Japanese, British, Canadian and Japanese societies. **Conclusion:** Not all RET interventions are effective for improving muscle mass and strength, but our meta-analysis suggests that adhering to the current RET guidelines for older adults are likely to be most effective.

P216- THE ASSOCIATION BETWEEN DIFFERENT COMBINATIONS OF PHYSICAL ACTIVITY AND SEDENTARY TIME ON THE RISK OF FRAILTY. Duarte Barros, Andreia Pizarro, Arnaldina Sampaio, Joana Carvalho (*Research Center in Physical Activity, Health and Leisure, Faculty of Sports, University of Porto, Portugal*)

Background: Sedentary time (Sed) and low physical activity (i.e. low levels of moderate-to-vigorous physical activity [MVPA]) are different behaviours associated with negative health outcomes, but how synergetic combinations of these behaviours impact the risk of frailty are still unexplored. **Objectives:** To examine the relationship between different combinations of sedentary time and MVPA in the risk of being frail. **Methods:** A cross-sectional study including 152 community dwelling elders (74.37±6.29 years; 66.4% female) accessed frailty through the phenotype of frailty. Daily Sed and MVPA were objectively measured using accelerometry. Sed and MVPA were ranked by the median and then participants were categorized into one of four groups: LowSed+LowMVPA, LowSed+HighMVPA, HighSed+LowMVPA and HighSed+HighMVPA. **Results:** Overall, 13.2% of the participants were frail. MVPA was associated with reduced odds of being frail (OR 0.958 IC: 0.938- 0.979, $p < 0.001$). Moreover, compared to the HighSed+LowMVPA, the groups Lowsed+HighMVPA (OR 0.34 IC: 0.127-0.825, $p = 0.018$) and Highsed+HighMVPA (OR 0.086 IC: 0.027-271, $p < 0.001$) were associated with reduced odds of being frail. **Conclusion:** MVPA seems associated with reduced odds of being frail, irrespective of sedentary time.

P217- DEFRAIL (DIET AND EXERCISE FOR FRAILTY): PRELIMINARY RESULTS ON THE EFFECT OF A NOVEL MULTI-COMPONENT GROUP EXERCISE PROGRAM AND PROTEIN SUPPLEMENTATION ON FRAILTY IN OLDER ADULTS. Pádraig Bambrick^{1,2}, Niamh Phelan¹, Thomas Byrne³, Ríona Mulcahy^{1,2}, Michael Harrison³, John Cooke^{1,2} ((1) *Department of Geriatric Medicine, University Hospital Waterford, Waterford, Ireland;* (2) *Royal College of Surgeons in Ireland, 123 St. Stephen's Green, Dublin, Ireland;* (3) *Department of Sport & Exercise Science, Waterford Institute of Technology, Waterford, Ireland*)

Background: Sarcopenia is central to frailty and the strongest evidence for reversal lies in the combination of resistance exercise and protein supplementation. Unfortunately, uptake amongst older adults remains low, partly due to a lack of suitable exercise programs. Delivery by health professionals alone will not achieve widespread participation. **Objectives:** DEFRAIL aims to develop a novel exercise program (focused on resistance training), feasible for delivery to frail older adults in a group setting without the input of health professionals, and to examine its effect when combined with commercially-available protein-supplemented milk. **Methods:** A multi-component exercise program was designed by expert consensus using a modified Delphi process. Participants were recruited from Geriatric Medicine clinics and primary care, with assessments at baseline, after eight weeks of regular activity and then after the eight-week intervention. The primary outcome measure was the change in the Fried Frailty Criteria (FFC) during the intervention compared with the period of regular activity. Secondary outcome measures included the Timed Up & Go (TUG) and 30-second sit-to-stand (30STS) tests. **Results:** The first 12 participants to complete the program (7 females, 5 males, mean age 84, range 78-91) had a median FFC score of 3 (interquartile range (IQR) 3,3), i.e. frail, both at baseline and after the period of regular activity period, but had improved to 2 (IQR 1,2), i.e. pre-frail, following the intervention. Similarly, the median TUG was 17.5 (IQR 14.6,19) at baseline, increasing to 18.8 (IQR 15,22.2) after the period of regular activity, improving to 15.5 (IQR 13.2,18.7) following the intervention. The median 30STS was 6 (IQR 3,8) at baseline, 6 (IQR 5,7) after the period of regular activity, improving to 8 (IQR 6,9) following the intervention. **Conclusion:** Median frailty improved from frail to pre-frail for the first 12 DEFRAIL participants. This program could allow increased community-based participation in resistance exercise for frail older adults. Further work now includes completion of the intervention and analysis of data on a range of secondary outcome measures (assessments of cognition, mood, pain, body mass composition and biochemical markers of frailty).

P218- THE EFFECT OF A TARGETED EXERCISE INTERVENTION DELIVERED TO MILDLY FRAIL OLDER PEOPLE IDENTIFIED USING THE ELECTRONIC FRAILTY INDEX. Nimra Khan, Gurch Randhawa, David Hewson (*Institute for Health Research, University Square, Luton Bedfordshire, UK*)

Background: Exercise interventions have been shown to improve functional status and quality of life of frail older people, and in some cases to reverse frailty status. It is important that such interventions are targeted to those people who would benefit the most. **Objectives:** The objective of this pilot study was to assess the effectiveness of a physical activity intervention given to mildly frail older people, who were identified using Electronic Health Records (EHR). **Methods:** The electronic Frailty Index (eFI) was used to identify mildly frail older people and offer them a physical activity intervention of their choice. The pilot study was offered in one area of Luton (UK), with invitation letters sent by the participants GP. Participants were tested before and after a 12-week programme of strength, balance and mobility, delivered in a weekly session lasting one hour. Participants were assessed at baseline for motivation using the patient activation measure (PAM), physical function using the Short Physical Performance Battery (SPPB), and fear of falling using the Falls Efficacy Scale International (FES-I). Each test was carried out in a follow-up test after the programme had concluded. Bootstrapped paired T-Tests were used to assess the effect of the intervention. **Results:** Twenty-seven people aged 74.6 ± 5.4 years took part in the intervention. The PAM scores improved from 74.5% to 83.6% (9.1, 95% CI: 2.9, 14.7), which is twice the Minimal Clinically Important Difference (MCID) of 4. For SPPB, there was an improvement from 8.5 to 9.8 (1.27, 95% CI: 0.71, 1.86). The average increase was greater than the MCID for a substantial improvement of 1.0. When FES-I was assessed, only three people (11%) had high concern about falling. There was no significant improvement in FES-I after the intervention (-2.5, 95% CI: -5.3, -0.2). After the intervention, 62% of participants choose to pay for the continuation of the programme. **Conclusion:** The findings of this study suggest that a targeted exercise programme including strength and balance training can significantly improve motivation and functional status among mildly frail older people identified using the eFI, with the majority choosing to continue exercising.

P219- EFFECT OF DIFFERENT EXERCISE PROGRAMS ON FRAILTY IN OLDER ADULTS LIVING IN LONG-TERM NURSING HOME RESIDENTS: THE AGING-ON DUAL-TASK RANDOMIZED CONTROLLED TRIAL. Chloe Rezola-Pardo MSc¹, Susana Maria¹, Haritz Arrieta¹, Jose Javier Yanguas², Leire Goikoetxea³, Jon Irazusta¹, Ana Rodriguez-Larrad¹ ((1) *Department of Physiology, University of the Basque Country, Leioa, Bizkaia, Spain;* (2) *Fundación Bancaria “La Caixa”, Palma (Illes Balears), Spain;* (3) *Centro Julián Rezola, Matia Fundazioa, Donostia, Spain*)

Background: Despite frailty has traditionally been examined from a physical standpoint, recent studies advocate for the existence of cognitive frailty (1), and suggest that both physical and cognitive frailty are interrelated. Thus, interventions should aim to prevent or attenuate the effects of frailty from a multidimensional perspective. **Objectives:** To evaluate the effects of three different exercise programs on frailty among older adults living in long-term nursing homes (LTNH). **Methods:** 128 participants (67.3% female) met the following criteria: aged 70 years, scored 50 on the Barthel Index, scored 20 on MEC Test (an adapted version of MMSE in Spanish) and capacity to stand up and walk 10m independently. Participants were randomly assigned to a progressive multicomponent group (MCG; n=43), a multicomponent dual-task group (DTG; n=42), or to a walking group (WG; n=43). The MCG underwent a 3-month moderate intensity strength and balance exercise program twice a week. The DTG performed simultaneous cognitive training (attention, inhibitory control, calculations and semantic memory) to the MC program. The WG walked up to 20 minutes per day for 7 days a week. Frailty was measured through the following tests: Fried frailty index (FFI), the Tilburg frailty index (TFI) and the Study of Osteoporotic Fractures (SOF). **Results:** The FFI revealed reductions in frailty in all groups, although only the MCG and the WG reached statistical significance ($P < 0.05$). As for the TFI and SOF tests, no statically significant differences were found in any of the groups. However, there was a positive trend in TFI in the DTG ($P = 0.07$). No group-by-time interactions were found in any of the frailty tests used ($P > 0.05$). **Conclusion:** Our study showed no differences between interventions regarding frailty. However, the MCG and the WG showed significant reductions in phenotypic frailty, whereas the DTG showed a positive trend in the TFI, which takes into account physical, psychological and social domains. Therefore, further studies should explore the effects of different exercise modalities on frailty from a broad perspective in older adults living in LTNHs. References: Kelaiditi et al 2013. *J Nutr Health Aging*. 2013;17(9):726–34.

P220- EFFECT OF RESISTANCE TRAINING ON MUSCLE FIBER AFTER RESISTANCE TRAINING IN ELDERLY MEN. Philippe Noirez^{1,2}, Iraj Hashemi¹, Deborah Kopoin¹, Pierrette Gaudreau³, Marc Bélanger², Gilles Gouspillou², José A Morais⁴, Aubertin-Leheudre¹ ((1) *INSERM U1124, Université de Paris, Paris, France*; (2) *Department of Exercise Science, Université du Québec à Montréal, Montréal, Canada*; (3) *Département de médecine, Université de Montréal, Montréal, Canada*; (4) *Division of Geriatric Medicine, McGill University Health Centre, Montreal General Hospital, Montreal, Canada*)

Background: Aging leads to a loss of muscle strength and functional capacity. These phenomena can be slow down by daily exercise practice or resistance training intervention. **Objectives:** The aim of this study was to investigate in elderly men muscle fiber size and type after resistance training. **Methods:** Among sedentary older men who completed a 12-week mixed power training program, 8 were biopsied in the vastus lateralis before and after the program. Cross sections were performed on these muscles, followed by triple immunohistochemical staining with antibodies directed against laminin, myosin heavy chain (MyHC)-1 and MyHC-2a coupled with staining with secondary fluorescent antibodies. Immunostaining analysis of laminin allowed us to determine fiber size and these of MyHCs to determine fiber type. **Results:** The size of the muscle fibers remained the same between before and after the mixed power training ($p=0.71$). There was no significant difference in the percentage of expression of MyHC-1, 2a, 2x ($p=0.67$, $p=0.34$, $p=0.5286$) between before and after intervention. In addition, there was no difference in the size of fiber expressing MyHC-1 between before and after the training ($p=0.97$). However, significant increase in the sizes of fiber expressing MyHC-2a and MyHC-2x (respectively $p=2e-04$, $p<.0001$) after the mixed power training was observed. **Conclusion:** In elderly men, an increase of the size in fibers both expressing MyHC-2a and MyHC-2x in vastus lateralis muscle could explained the improvement on muscle mass observed previously (Carvalho et al. ACER 2019). To confirm the mechanism explanation of this promising exercise modality, mitochondrial parameters should be also analyzed.

P221- ROLE OF SEDENTARY BEHAVIOR AND PHYSICAL ACTIVITY IN SKELETAL MUSCLE HEALTH IN MIDDLE-AGED MEN AND WOMEN. Fátima Baptista¹, Vera Zymbal¹, Diana Luís¹, Filomena Carnide² ((1) *Exercise and Health Lab, CIPER, Faculdade de Motricidade Humana, Universidade de Lisboa, Portugal*; (2) *Biomechanics and Functional Morphology Lab, CIPER, Faculdade de Motricidade Humana, Universidade de Lisboa, Portugal*)

Background: Muscle (in)activation related with sedentary behavior (SB) and physical (in)activity (PA) is a risk for sarcopenia in older adults. Although age is not yet a risk factor for sarcopenia in adulthood, other factors such as lifestyle

may significantly contribute to its progression. **Objectives:** Considering the primary and secondary prevention of sarcopenia, the aim of this study was to analyze associations of SB and PA with markers of muscle strength (lower limb muscle power) and muscle mass (fat mass (FM) to fat free mass ratio (FFM) in adult women and men with and without deficits in these markers. **Methods:** Participants were 225 apparently healthy adults (147 women) with a mean age 45.2 ± 9.4 yrs, employed in activities requiring office work. FM and FFM were evaluated by bioelectrical impedance analysis (BIA, 50 kHz BIA 101 RJL, Akern Bioresearch, Florence, Italy Akern). Muscle power relative to body mass ($P_{max}/mass$) was assessed during a single two-legged jump on a force platform (Leonardo Mechanograph, Novotec Medical, Pforzheim, Germany). SB and PA were assessed by accelerometry (ActiGraph, GT3X model, Fort Walton Beach, FL, USA) during four consecutive days (2-week+2-weekend days). The variables analyzed were time spent per day in SB, in light-, moderate-, vigorous-, moderate to vigorous- intensity PA, total PA and breaks per day of SB. Multiple linear regressions were performed by stepwise to examine associations of SB and PA with muscle power and FM/FFM, separately for men and women with and without muscular deficits. For the identification of deficits (<-0.5 SD), muscle power and FM/FFM were standardized separately for men and women having as reference their respective mean. **Results:** Linear regressions by stepwise evidenced an association of SB with muscle power in women with muscular deficit ($\beta = -0.360$, $p = 0.017$, $adjR^2 = 11,9\%$) and an association of vigorous PA with FM/FFM in men without muscular deficit ($\beta = 0.501$, $p < 0.001$, $adjR^2 = 23,5\%$). No associations were observed between SB or PA with muscle power or FM/FFM in other groups. **Conclusion:** SB was negatively evidenced in women with muscle power deficit while vigorous PA revealed to be associated with FM/FFM in men without FFM deficit. Funded by Portuguese Science and Technology Foundation; project C MUP-ERI/HC I/0046/2013

P222- FUNCTIONAL PERFORMANCE AND INFLAMMATORY MEDIATORS BETWEEN ACTIVE AND SEDENTARY COMMUNITY OLDER WOMEN. Patricia Parreira Batista¹, André Gustavo Pereira de Andrade², Jéssica Rodrigues de Almeida¹, Aimée de Araújo Cabral Pelizari¹, Leani de Souza Máximo Pereira¹, Lygia Paccini Lustosa¹ ((1) *Physical Therapy Department, UFMG - EEFPTO, Belo Horizonte, Brazil*; (2) *Sports department UFMG - EEFPTO, Belo Horizonte, Brazil*)

Background: The practice of regular physical activity in the older people leads to the decreased of the loss of muscle mass and function with advancing age, and enhances the functionality in activities of daily living and social interaction. In addition, exercise promotes gains in the quantity and quality of muscle fibers and improves muscle strength and power, acting as a protective factor for negative health-related outcomes such as falls, frailty, and hospitalizations. Regular practice of physical activity is known to modify the chronic proinflammatory condition common in the older people. Probably, exercise

reduces the drive of catabolic stimuli from this pro-inflammatory cascade, modifies the metabolism and production of cytokines in tissues and organs, promoting protective and anti-inflammatory effect in the body. **Objectives:** To compare older women who reported being active or sedentary regarding functional capacity and plasma indices of inflammatory mediators. **Methods:** Participated women (60 years or older), recruited for convenience. Those unable to walk were excluded; acute musculoskeletal diseases; lower limb fractures in the last year; neurological diseases and sequelae; history of cancer in the last five years and cognitive impairment (Mental State Mini-Exam). All informed clinical and demographic data and performed the tests Short Physical Performance Battery (SPPB) and Timed up and go (TUG). Plasma dosages of sTNF α and IL-6 were by ELISA method. Comparison was by independent Student t test. Approval by the Research Ethics Committee / UFMG (CAAE: 14129513.7.1001.5149). **Results:** Fifty-two sedentary older women participated (74.35 ± 6.97 ys.); number of comorbidities of 2.83 ± 2.07 ; body mass index of 26.81 ± 4.25 kg/m². From the active group were 45 elderly women (72.07 ± 5.23 ys.); comorbidity number of 2.22 ± 1.67 ; body mass index of 27.6 ± 4.81 kg/m². There was significant difference between groups in SPPB ($p = 0.017$), TUG ($p = 0.001$) and sTNF α ($p = 0.01$). **Conclusion:** The results showed that the active older women had better functional and mobility performance and worse plasma sTNF α levels. In this case, one can think about the possible influence of body mass index in these older women, which should be explored in future studies.

P223- LONG-TERM EFFECTS OF COMPREHENSIVE GERIATRIC INTERVENTION IN COMMUNITY-DWELLING OLDER ADULTS. Yuya Watanabe¹, Tsukasa Yoshida², Yosuke Yamada², Keiichi Yokoyama³, Emi Yamagata¹, Motoko Miyake³, Yasuko Yoshinaka³, Misaka Kimura³ ((1) *Doshisha University, Kyotanabe Kyoto-fu, Japan*; (2) *National Institutes of Biomedical Innovation, Health and Nutrition, Kyoto, Japan*; (3) *Kyoto University of Advanced Science, Kyoto, Japan*)

Background: Our research group designed a comprehensive geriatric intervention program (CGIP) consisting of resistance exercise, physical activity increments, oral functional care, and a nutritional guide. We conducted a 12-week intervention and investigated the effects. After the short-term intervention, we followed up the all participants. We hypothesized that the follow-up could mitigate the loss of short-term intervention effects. **Objectives:** The aim of this study was to compare physical functions before and after the 12-week intervention, and the end of the follow-up. **Methods:** A total of 526 were willing to participate in the 12-week CGIP. We encouraged them to increase their daily steps and to carry out the program by using daily self-monitoring logs. The participants were randomly assigned to two groups [class-styled session (CS) group 251; home-based (HB) group 275] based on their residential districts. While CS group attended 90-minute weekly sessions and independently executed the program on other days, HB group did not attend the weekly sessions but

received instructions on program execution. After the short-term intervention, all participants were instructed to carry out the GCIP habitually. Also, three optional sessions for all participants were held in order to recommend implementation of the program. Physical functions, such as knee extension strength (KES), maximum walking speed (MWS), and anterior thigh muscle thickness (MT) were measured before and after the short-term intervention, and the end of the follow-up. **Results:** Of the 526 participants identified, 312 (CS 153; HB 159) took part in the measurements after the follow-up. Thus, we analyzed their data. A significant interaction were observed in MWS ($P=0.033$). The 12-week CS intervention significantly improved MWS ($P<0.001$). But, MWS in CS group significantly decreased after the follow-up ($P=0.003$). There was no significant difference between before the intervention and after the follow-up in MWS in CS group. On the other hand, no significant change was observed in HB group. Significant time effects were observed in KES and MT ($P<0.001$). Both 12-wk interventions significantly improved KES and MT. While KES was maintained even after the follow-up, MT was significantly decreased. **Conclusion:** The results suggested that appropriate follow-up helps to preserve short-term intervention effects.

P224- REDUCED COGNITIVE DEFICITS IN MILD COGNITIVE IMPAIRMENT SUBJECTS AND ALZHEIMER DISEASE MODERATE PATIENTS BY NON-PHARMACOLOGICAL THERAPEUTIC. I. Ben Ayed^{1,3}, N. Castor³, R. Bouwazra¹, Ch. Aouichaoui¹, S. Ben Omor², Z. Tabka¹, F. El Massioui³ ((1) *Département de Physiologie et des Explorations Fonctionnelles, Unité de Recherche Physiologie de l'exercice et Physiopathologie : de l'intégré au Moléculaire « Biologie, Médecine et Santé » (UR12ES06), Faculté de Médecine de Sousse -Tunisie*; (2) *Service de Neurologie, Hôpital Universitaire Sahloul Sousse Tunisie*; (3) *Laboratoire Cognition Humaine et artificielle (CHart ; EA 4004), UFR de Psychologie. Université Vincennes / Saint-Denis, Paris 8 - France*)

Background: With the increasing prevalence of Alzheimer disease and the current absence of drugs therapeutic, non-pharmacological strategies are definitively necessary. Physical intervention is often proposed to aid in preventing or slowing cognitive decline. Recent studies suggest that combining physical exercise with cognitive stimulation may have more global effect. **Objectives:** We aimed at assessing effect of aerobic exercise alone or combined to intellectual exercises on major cognitive functions: Attention (Stroop), Problem solving (Hanoi Tower) and Working memory (digit span). Subjects were trained twice a week for eight weeks. Cognitive functions were assessed before training (base line), at the fourth and at the eighth weeks. To evaluate persistency of the effect, subjects were assessed one month after the end of training. **Methods:** Two groups were randomly constituted Mild cognitive impairment subjects (MCI) and Alzheimer disease moderate patients (ADM). Each group was subdivided into three sub groups according to the task to be performed.

Aerobic exercise (pedaling) alone or combined to cognitive games presented on screen. Control groups performed a reading task. **Results:** An effect of training on cognitive functions was observed in ADM as well as in MCI subjects. However, only ADM patient's performances were further improved by adding cognitive games. After four weeks, the observed effects were still maintained in both groups. MCI results were obviously better than those of ADM. There was no significant change in performances for control groups. **Conclusion:** Aerobic exercise induce cognitive improvement in ADM and MCI patients. Combined physical exercise and cognitive games potentiated this effect mainly in ADM group. This procedure has long lasting beneficial effect. This supports the necessity of regular aerobic exercise to prevent cognitive deficits in aging cognitive deficits.

P225- EFFECTIVENESS OF A MULTIMODAL INTERVENTION FOR PREVENTING MOBILITY DISABILITY RISK ON ELDERS WITH DIAGNOSIS OF SARCOPENIA. Marc Bonnefoy¹, Aymeric Courta², Marie-France Nguyen², Marion Merdinian², Sophie Watelet², Mahdi Harchaoui², Alice Laurent², Gisèle Debray², Mélanie Tomatis², Leo Delaire² ((1) *Service de médecine gériatrique, Groupement hospitalier Lyon-Sud, Hospices civils de Lyon, France, Unité Inserm 1060 - CaRMEN, Lyon, France, Université Claude Bernard Lyon 1-Faculté Lyon Sud-Ouest, France;* (2) *Service de médecine gériatrique, Groupement hospitalier Lyon-Sud, Hospices Civils de Lyon, France*)

Background: Increasing physical activity represent a key therapeutic intervention to prevent the loss of mobility disability for enhancing health related quality of life. Hence, we have set up a primary and secondary prevention care path through exercise training and nutrition to improve mobility and physical performances. **Objectives:** Our primary goal is to integrate a prevention care path into daily life of elders who may present a mobility disability risk. We aim to improve quality of life and mobility. **Methods:** Our program includes 70 years or more who present a risk of developing a mobility disability. Initially, we identify and screen a risk of mobility disability in wide elders communities. We diagnose mobility disability risk factors, sarcopenia and frailty, in Day Hospital (dietician, geriatrician and a kinesiologist). We use The EWGSOP2 algorithm to diagnose sarcopenia. The patient then attend a 3-months training program, including 2 sessions per week. Sessions combine resistance exercises and balance training during 60 minutes. We support the patient for his own project of long-term maintenance quality of life between physical activity and nutrition. **Results:** 152 patients have been seen after 20 sessions. Physical performance was significantly improved after 3 months of intervention (SPPB $p < 0,001$, gait speed $p < 0,001$ and Time-up-and-Go $p < 0,001$) likewise grip strength ($p < 0,001$). The "SarQoL" score was also significantly higher ($p < 0,001$). Sub-group SPPB ≤ 8 with severe sarcopenia improve significantly more its score ($+1.6 \pm 1.9$ $p < 0,001$) comparing to the overall population ($+0.6 \pm 1.7$). Moreover, there was a significant difference ($p < 0,001$) for

SPPB at baseline between responders (7.6 ± 2.3) and non-responders (9.8 ± 2.0). **Conclusion:** Our intervention enhances mobility through physical performance benefits. We can make the assumption that adverse events will be occurring less and physical dependence will be delayed, regarding gait speed improvement. Patients with lower physical performance are responding better than the overall population meaning that our intervention is more specially indicated for patients with severe sarcopenia. Furthermore, our program sustains motivation for physical activity and exercise after 3 months. We were able to show that it was possible to set up a comprehensive and effective care path for frail and sarcopenic elderly people.

P226- HIIT TO COUNTERACT PRE-SARCOPENIA IN MIDDLE-AGED ADULTS, A RANDOMIZED CONTROLLED TRIAL. Lara Vlietstra^{1,2}, Debra L. Waters^{1,2}, Kim Meredith-Jones¹ ((1) *Department of Medicine, University of Otago, Dunedin, New Zealand;* (2) *School of Physiotherapy University of Otago, Dunedin, New Zealand*)

Background: Middle-aged adults who are pre-sarcopenic are at the highest risk of developing sarcopenia due to the progressive nature of the syndrome. **Objectives:** To determine whether high intensity interval training (HIIT) results in greater improvements in body composition, compared to a control group, in middle-aged adults with pre-sarcopenia. **Methods:** Eighty-two sedentary adults (40-50 yrs) with a low appendicular skeletal muscle mass index (ASMI) were randomized into control ($n=41$) or intervention group ($n=41$) using stratified randomization based on age, sex and BMI. Low ASMI (ASM/ht^2) was determined by DXA (Lunar Prodigy, GE Healthcare) using age- and sex-specific cut-scores as proposed by Prado. The control group received one education session on general physical activity recommendations. The intervention was supervised, group-based, high-intensity aerobic and resistance interval training (HITT), 3 times weekly for 20-weeks. An intention-to-treat mixed model linear regression, with a random effect, was used to analyse group differences for body composition. **Results:** 85.4% of the sample were female, the mean age was 45.1 yrs (3.1) and the mean BMI at baseline was 25.8 kg/m² (3.5). 71 people (87%) completed the intervention, 39 people in the HITT group and 32 in the control group. No adverse events were reported. Significant group differences were observed for total muscle mass (0.73 kg, 95%CI: 0.065-1.398), leg muscle mass (0.40 kg, 95%CI 0.121-0.681), ASMI (0.21 kg/m², 95%CI 0.087-0.331) and visceral fat mass (-80.96 g, 95%CI -154.668- -7.244) post 20 week intervention. No significant group differences were observed for total fat mass (-0.58 kg, 95%CI -1.671-0.050), arm fat mass (-0.00 kg, 95%CI -0.149-0.146), leg fat mass (-0.21 kg, 95%CI -0.636-0.225), trunk fat mass (-0.41 kg, 95%CI -1.039-0.221), percentage body fat (-0.98 %, 95%CI -2.005-0.055), arm muscle mass (0.16 kg, 95%CI -0.001-0.324), trunk muscle mass (-0.09 kg, 95%CI -0.944-0.759), body weight (0.19 kg, 95%CI -0.906-1.283), BMI (0.09 kg/m², 95%CI -0.311-0.508) or waist circumference (1.25 cm, 95%CI-1.323-3.824 cm). Physical function outcomes will be reported in March. **Conclusion:**

Our study indicated that group-based HIIT is an effective, tolerable and safe exercise modality to increase total body and appendicular muscle mass, and to decrease visceral fat, in middle-aged adults with pre-sarcopenia.

P227- IMPACT OF CURRENT PHYSICAL ACTIVITY LEVEL ON FUNCTIONAL CAPACITIES AND BODY COMPOSITION AMONG ELDERLY PEOPLE: DOES AGE AND SEX MATTER? Fanny Buckinx^{1,2,3}, Éva Peyrusqué^{1,2}, Jordan Granet^{1,2}, Mylène Aubertin-Leheudre^{1,2} ((1) Department of Exercise Science, Groupe de recherche en activité physique adapté (GRAPA), Université du Québec à Montréal, Montréal (Qc), Canada; (2) Centre de Recherche de l'Institut Universitaire de Gériatrie de Montréal, Montréal (Qc), Canada; (3) WHO Collaborating Centre for Public Health Aspects of Musculoskeletal Health and Ageing)

Background: Aging is related to body composition modifications and functional capacities declines. It is recognized that being active can prevent these changes and improve quality of life. However, it is unclear if gender or age influence this relationship and if a sub-type of voluntary physical activity is more efficient to maintain these physical parameters. **Objectives:** To assess the association between current physical activity level or type and functional capacities and body composition among elderly people and to examine if age (< or >= 65 yrs old) or sex modulate the relationship. **Methods:** Functional capacities using different validated tests (i.e. grip strength, Timed Up and Go, sit-to-stand, muscle power, alternate step test, leg extension, VO₂ max), body composition (fat & fat-free masses) using DXA were assessed. Current global (total) and specific (aerobic, resistance or body and mind) physical activity levels (duration) were obtained through a questionnaire. Multiple regressions, adjusted on age, sex and BMI, were performed to assess the relationship between current physical activity level and functional capacities or body composition. Sub-group analysis, according to the sex and age (<65y vs. >= 65y) were also performed by means of Pearson Correlations. **Results:** A total of 525 subjects (61.7±8.1years; women: 68.9%; BMI=26.4±4.8kg/m²) were enrolled. After adjustment on confounding factors, total current physical activity level has positive impact on total fat mass (%; β =-2.09, p=0004) and balance (β =0.10; p=0.05). Moreover, current body & mind activities influence total fat-free mass (kg; β =-0.22, p=0.02) and balance (β =0.17; p=0.001) whereas resistance activities influence fat-free mass (kg; β =0.17; p=0.05), fat mass (%; β =-0.16; p=0.04) and sit-to-stand test (β =-0.10; p=0.05). Sub-analysis shows that total physical activity level was significantly associated with fat mass, sit-to-stand test, balance and VO₂ max in women but not in men. Moreover, among people under 65 y, the time spent on cardio activities does not affect functional capacities and body composition. Nonetheless, among people aged 65 y and over, the time spent on resistance activities is associated with functional capacities and body composition. **Conclusion:** Being active is associated with body composition and functional capacities, especially among women aged 65 years and over.

P228- AN INDIVIDUALIZED AND PROGRESSIVE MULTICOMPONENT PHYSICAL EXERCISE PROGRAM FOCUSED ON FUNCTIONING MAINTAINS AUTONOMY AND REDUCES FRAILTY IN LONG TERM CARE HOMES. SINGLE GROUP INTERVENTIONAL STUDY. Itxaso Mugica-Errazquin¹, Nagore Arizaga³, Janire Virgala³, Julen Gomez¹, Garbiñe Lozano¹, Yune Aranburu⁴, Udane Elordi¹, Maider Kortajarena¹, Ana Rodriguez-Larrad², Jon Irazusta² ((1) University of the Basque Country, Nursing II department, Hondarribia, Spain; (2) University of the Basque Country, physiology department, Hondarribia, Spain; (3) University of the Basque Country, doctoral school, Hondarribia, Spain; (4) La Salle Nursing home, Hondarribia, Spain)

Background: Low physical fitness, frailty and dependency are highly prevalent in people living in long term nursing homes (LTNH). Multicomponent physical exercise, including strength, balance and endurance, has demonstrated to be effective for improving physical fitness and reducing frailty in LTNH. However, there is no evidence that this type of programs are capable to improve or even maintain the levels of autonomy in activities of daily living (ADL) of this population. **Objectives:** The major aim is to ascertain whether a new approach of 6 months, individualized and progressive multicomponent program focused on functioning maintains autonomy in older adults living in LTNHs; the secondary aim is to assess the effects on frailty and physical fitness. **Methods:** 77 people living in LTNH, between 70 and 103 years, participated in this single group interventional study. Inclusion Criteria were: >=70years, >=50 Barthel index, >=20 MEC-35 and be able to stand up from a chair and walk 10 meters with or without one person/technical assistance. The intervention consisted of 3 months of a progressive multicomponent physical exercise program (EP) aiming to improve the physical condition, followed by 3 months of physical exercises focused on functional ADL with the objective of maintaining/improving autonomy of the participants. Barthel index was used to assess autonomy level in ADL, frailty was measured by Fried Frailty index and Short Physical Performance Battery (SPPB) was used to assess physical fitness. The study is registered in U.S Clinical Trial (NCT04221724) and approved by the Committee on Ethics in Research of the University of the Basque Country (M10/2018/171). **Results:** During the 3 first months of EP participants lowered the score in the Barthel index (p<0,001). However, participants showed significant improvements in frailty (Fried frailty index p<0,01) and in physical fitness (SPPB p<0,001). From the 3rd to 6th months, while physical fitness of participants did not change, they improved autonomy in ADL, and decreased frailty non-significantly. When comparing the effects of the entire intervention, Barthel index did not change significantly and physical fitness and frailty improved (SPPB p< 0,001; Fried p<0,005). **Conclusion:** This new approach of 6 months of individualized and progressive multicomponent program focused on daily functioning maintains autonomy in activities of daily living, improves physical fitness and reduces frailty in older adults living in LTNHs.

P229- LOW PRE-TRAINING SERUM ALBUMIN LEVEL MIGHT RESTRICT THE EFFECT OF LOW-LOAD RESISTANCE TRAINING ON MUSCLE THICKNESS.

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Background: In previous study, we found that low-load resistance training using own body weight and elastic band even only biweekly could induce muscle hypertrophy in older adults after 12 weeks of training. However, it is unclear whether levels of different blood parameters before training associated with the effects of training. **Objectives:** This study aimed to clarify whether levels of different blood parameters before training influenced the effect of low-load resistance training on lower limb muscle thickness (MT). **Methods:** Sixty-nine community-dwelling Japanese subjects aged 69.4±6.5 years (49 women and 20 men) volunteered for this study and participated in a low-load resistance training program using their own body weight and elastic band. The training was performed biweekly for 12 weeks. Each participant's MT at the anterior aspects of the thigh (AT) was measured using a B-mode ultrasound device. Further, the levels of the following blood parameters were assessed before and after the training program: serum albumin (Alb), hemoglobin (Hb), total cholesterol (TC), and hemoglobin A1c (HbA1c). We checked the first quartile value of each blood parameter to establish the cutoff criteria for reduced levels—serum Alb = 4.1 g/dL, Hb = 12.6 g/dL, TC = 181 mg/dL, and HbA1c = 5.3%. Participants were divided into low or normal groups in each blood parameter, and their data were analyzed using two-way analysis of variance. **Results:** When using the abovementioned criteria, biweekly low-load resistance training increased MT at the AT in every group after training. The interaction between time and groups was only detected with low (<4.1 g/dL) versus normal (≥4.1 g/dL) serum Alb levels. In this case, there was no difference in MT at the AT before training, but participants in the normal serum Alb level group had greater MT after training than those in the low serum Alb level group. **Conclusion:** The effect of low-load resistance training on lower limb MT appears to be limited in participants with low pre-training serum Alb level.

P230- COMPLEX KINESIOTHERAPY IN MUSCLE FUNCTION AND WEIGHT LOSS IMPROVING IN OBESITY PATIENTS. V.A. Vasileva, L.A. Marchenkova, M.A Eryomushkin (*Russia Moscow*)

Objectives: It was to estimate the affect of complex 3-week treatment with 4 kinesiotherapy methods on body weight loss and muscle function in patients with obesity. **Methods:** 80 men and women aged 21-69 years old with alimentary obesity were enrolled in the study (mean age 52.4±11 years, weight 111.3±24.5 kg, BMI 40.3±8.1 kg/m², waist circumference WC 113.4±16 cm, hip circumference HC 124.2±16 cm). The

complex kinesiotherapy administered daily for 3 week and included interactive sensorimotor trainings on double unstable platform, kinesiohydrotherapy in a pool, special complex of physical exercises in a gym and ergocycle trainings. Weight, WC, HC, fall number for last 3 weeks were measured at baseline and after the treatment was completed. Muscle strength and walking speed functional tests results assessment (10-meters-walk test, Up-and-go test, 4 special tests for back and abdomen muscle endurance to static and dynamic loading) were performed at baseline and in 3 weeks. **Results:** There was a significant reduction in body weight (111.3±24.4 kg at baseline vs 107.9±23.1 kg in 3 weeks; p=0.000), in BMI (40.3±8.1 vs 39.1±7.7 kg/m²; p=0.000), in WC (113.4±15.9 vs 109.2±15.1 cm; p=0.000) and in HC (124.1±15.5 vs 119.7±14.1 cm; p=0.000) in treated obese patients. 10-meters-walk speed increased from 0.84±0.15 m/sec at baseline to 0.88±0.17 m/sec in 3 weeks (p=0.000). Up-and-go test results improved from 8.4±2.1 to 7.9±2.09 sec (p=0.000). We registered statistically significant elevation of the endurance to static loading in abdomen muscles from 13.1±9.7 to 16.49±12.8 sec (p=0.000) and in back muscles from 14.8±11.9 sec to 18.6±14.9 sec (p=0.000). The endurance to dynamic loading increased in abdomen muscles from 29.9±11.2 to 34.84±11.93 times (p=0.000) and also in back muscles from 9.1±7.4 to 12.2±9.2 times (p=0.000). Fall number markedly decreased from 0.14 ±0.34 at baseline to 0.0 (95%CI: 0.02; 0.25) after completion of treatment. **Conclusion:** Investigated complex treatment with 4 kinesiotherapy methods promotes body weight loss, WC and HC reduction in obesity. 3-week special training of obese patients is associated with increasing in gate speed and lower extremities muscle strength, and it also causes improvement in static and dynamic loading endurance of back and abdomen muscles. Those changes may probably improve balance function and decrease risk of falling in obese patients.

P231- EFFECTS OF A NEW EXERGAME ON OLDER ADULTS' BALANCE AND SHORT PHYSICAL PERFORMANCE BATTERY (SPPB) SCORES.

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Background: Integrating technological advances into clinical practice can be challenging. Physical therapists have been developing serious games/exergames for a variety of rehabilitation purposes, but uptake has been slow. Games with virtual scenarios are an engaging and affordable way to encourage and increase physical activity levels. Serious games have been developed to adapt virtual gaming environments to patients' needs and evolving capabilities. Games can improve adherence and therapy effectiveness. The sensory and motor stimulation while playing serious games can help geriatric rehabilitation to improve mobility and balance. **Objectives:** This study analyzed the effects of a new serious game on the balance of older adults. **Methods:** This was a pilot quasi-experimental design study in which older adults completed

six sessions of dynamic balance training using the VirtualTer serious game that uses the Kinect sensor for motion capture. This game was developed by researchers from the Federal University of Rio Grande do Norte in Brazil. The game consists of static and dynamic tasks for training balance. It involves stationary walk, lateral reaching and climbing steps up and down. It has 3 phases with increasing the level of difficulty. The participants were evaluated before and after the program using the Berg Balance Scale (BBS) and the Short Physical Performance Battery (SPPB). T-test for dependent samples was used to analyze the pre vs. post data. **Results:** Twenty three participants participated in the study (age = 72±8; sex = 65% women). The results indicate improvement in BBS scores (pre: 50±6; post: 51.4±6; p = 0.006) and SPPB scores (pre: 10±2; post: 11±2; p = 0.01). **Conclusion:** Playing the VirtualTer serious game improved balance in older adults.

P232- FEASIBILITY AND PRELIMINARY EFFECTS OF SILVER YOGA ON THE PHYSICAL HEALTH IN PREFRIL OLDER ADULTS: A PILOT STUDY. Helen Chan¹, Duncan Wong², Cindy Fan² ((1) *The Nethersole School of Nursing, The Chinese University of Hong Kong, HK;* (2) *Silver Yoga Lab, HK*)

Background: Evidence showed that both frail and prefrail significantly increase the risk of developing or worsening disability in activities of daily living, poor quality of life and institutionalisation. Yoga has been consistently reported as effective intervention in improving physical functioning in terms of balance, lower limb strength, mobility and body flexibility. **Objectives:** To assess the feasibility of silver yoga in older adults and to examine the preliminary effects of silver yoga on their physical health. **Methods:** This was a one group pre-test post-test study conducted in a community centre. People who aged 60 and above, were mentally competent, home-living, and classified as prefrail based on physical phenotypes using Fried criteria, were eligible to the study. The silver yoga class included eight 1.5-hour weekly sessions delivered by two experienced yoga instructors with specialized training in Silver Yoga. Senior Fitness Test (SFT) was conducted to assess changes in physical health. Paired t-test was used to compare the within-subject differences across 2-month time. **Results:** A total of 25 older adults were recruited. There were significant improvement in six dimensions of the SFT, including upper extremity muscle strength, lower extremity muscle strength, upper body flexibility, lower body flexibility, agility and dynamic balance, and aerobic endurance (ps < 0.001). All participants except one completed the yoga programme, with high level of satisfaction. In addition to the effects of physical conditions, the participants also appreciated it as mind-soothing and relaxing. **Conclusion:** The findings showed that silver yoga is well-received by older adults generally, with significant effects in improving their physical fitness. More rigorous study is needed to examine its effects in a longer term and also in a more holistic manner.

NUTRITION INTERVENTION

P233- THE EFFECTS OF OMEGA-3 SUPPLEMENTATION ON SYSTEMIC INFLAMMATION AND MUSCULAR ADAPTATIONS TO RESISTANCE EXERCISE IN ELDERLY: A RANDOMIZED CONTROLLED TRIAL. Sebastiaan Dalle¹, Evelien Van Roie², Katrien Koppo¹ ((1) *Exercise Physiology Research Group, Department of Movement Sciences, KU Leuven, Leuven, Belgium;* (2) *Physical Activity, Sports and Health Research Group, Department of Movement Sciences, KU Leuven, Leuven, Belgium*)

Background: With aging skeletal muscle tissue becomes less responsive to anabolic stimuli, eventually contributing to muscle wasting. Inflammation is considered an important player in this age-related anabolic insensitivity. Recent reports provide a promising role for omega-3 polyunsaturated fatty acids (ω -3) in (muscle) health, as they possess systemic anti-inflammatory properties and stimulate muscle anabolic signaling. **Objectives:** We investigated whether ω -3 supplementation improves the systemic inflammation and muscular adaptations (i.e. strength, mass, molecular signaling) to resistance exercise in an elderly population. **Methods:** Twenty-three elderly (65-84y; 8♀) were randomized to receive either ω -3 (~3g/d) or an isocaloric amount of corn oil (PLAC) during 14 weeks. After two weeks of supplementation, participants engaged in resistance exercise (RE; 3x/week) for 12 weeks. Prior to and after completion of the intervention, muscle and blood tissue, parameters of body composition, muscle strength and functionality were assessed. **Results:** Upon RE, 1-RM significantly improved in PLAC (+23.5%) and in ω -3 (+30.4%), irrespective of condition. Isometric strength significantly improved in ω -3 (+12.2%), but not in PLAC (-0.3%). Muscle volume did not change following RE. Plasma CRP levels decreased, though not non-significantly, in ω -3 (-28.9%), whereas only a small increase was observed in PLAC (+6.9%). ω -3 supplementation nor RE affected the muscle anabolic sensitivity (Akt phosphorylation) in response to a protein bolus. **Conclusion:** This study confirms that ω -3 PUFAs improve the gains in isometric but not in dynamic muscle strength upon RE in elderly. However, this was not associated with changes in anabolic sensitivity or systemic inflammation. Further analyses will investigate whether the ω -3 induced gains in strength can be related to systemic hormones or muscle molecular signaling (mTOR signaling, inflammation).

P234- PRIORITISING EARLY NUTRITIONAL INTERVENTION TO HELP PREVENT WORSENING SARCOPENIA AND DECONDITIONING IN THE ACUTE SETTING FOR THE OVER 75S. Marriyah Hasan, Meera Suresh, Clarence Chikusu, Caroline Goodger (*Nutrition and Dietetics, St. Peter's Hospital, Chertsey, UK*)

Background: Deconditioning is a common phenomenon in patients over 75 years old in acute settings. It is well known that poor nutritional status has a major impact on adverse outcomes in frailty and can exacerbate sarcopenia (1). Currently, there is

limited research exploring the impact of dietitians on optimising nutritional status in acute settings in older populations for frailty and sarcopenia. **Objectives:** Compare the impact of dietetic intervention on the change in frailty scores between a patient group (n=125; mean age 87.07 years) who received dietetic intervention (DI) and a patient group (n=254; mean age 86.79 years) who did not receive dietetic intervention (NDI). **Methods:** A 5-month retrospective study (August-December 2018) was undertaken at the Older Persons Short Stay Unit at a district hospital in England. Frailty scores were calculated based on the Rockwood model of clinical frailty. Dietary intake was recorded and analysed using a standardised nutritional profile of hospital meals. The DI group was given standardised dietetic care including oral nutrition support and build up dietary advice. Descriptive statistics were used to determine frequencies. **Results:** The DI had higher frailty scores (mean of 5.6; range: 3-8) and a higher mortality rate (35%). The NDI had a mean score of 4.73 (range: 1-8) and mortality rate of 18%. The average oral intake for energy and protein for patients in the DI group prior to dietetic intervention was 40% lower than the ESPEN recommendations. Despite the higher frailty scores and mortality rates in the DI group, progression in their frailty score was slower compared to the NDI group (24% vs 38%). **Conclusion:** The results highlight the importance of a timely referral for early dietetic intervention which is crucial for optimisation of better clinical outcomes in these patients. A dietitian is a key member of the MDT and can prevent further deterioration in muscle mass and the impact on patients' frailty and independence and also slow down the progression of sarcopenia and frailty. This has long term impact on health and social services by reducing length of stay, hospital re-admissions and the increasing burden on social care.

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P235- INADEQUATE PROTEIN INTAKE IN (PRE) SARCOPENIC OLDER PEOPLE CAN BE IMPROVED WITH A PROTEIN POWDER SUPPLEMENTATION WITHOUT AFFECTING DIETARY PROTEIN OR ENERGY INTAKE. Lenore Dedejne¹, Jolan Dupont¹, Sabine Verschuere², Katrien Koppo³, Jos Tournoy^{1,4}, Evelien Gielen^{1,4} ((1) *Gerontology & Geriatrics, Department of Chronic Diseases, Metabolism and Ageing (CHROMETA), KU Leuven, Leuven, Belgium;* (2) *Department of Rehabilitation Sciences, KU Leuven – Leuven, Belgium;* (3) *Exercise Physiology Research Group, Department of Movement Sciences, KU Leuven, Leuven, Belgium;* (4) *Department of Geriatric Medicine, UZ Leuven, Leuven, Belgium*)

Background: While the protein Recommended Dietary Allowance (RDA) for healthy adults is 0.8g protein/kg bodyweight (BW)/day (d), expert groups recommend a protein intake up to 1.5g protein/kg BW/d for older people with chronic diseases. In addition, at least 25-30g protein (whereof at least 2.5g of leucine) is recommended per meal. **Objectives:** We aim to assess in (pre)sarcopenic older people the daily energy and protein quantity and quality intake, and their change due

to supplementation. **Methods:** Dietary protein quantity, and quality (plant/animal source, amount of amino acids, amount of leucine and leucine distribution over a day) and dietary energy intake were calculated from four day estimated dietary records of (pre)sarcopenic participants of the ENHANCE study (ClinicalTrials.gov NCT03649698) before and after a 12-week supplementation period. Participants received an individualized protein supplement (Resource® Instant Protein, Nestlé), to achieve a total (dietary + supplemental) intake of 1.5g protein/kg BW/d. **Results:** 51 (pre)sarcopenic adults (73.61 ±6.47 years, 53% female) had an average dietary protein intake of 1.06 ±0.26 g/kg BW/d, which is higher than the RDA, but below the 1.5g/kg BW/d recommended by experts. 20 (pre)sarcopenic adults were supplemented with protein powder, which improved the total protein intake to 1.55 ±0.26g/kg BW/d without affecting dietary protein or energy intake. Moreover, supplementation increased the protein intake to at least 29 g protein/meal without affecting dietary intake. More than 60% of dietary protein intake was of animal origin. Leucine intake at baseline was insufficient at all meals, but increased to at least 2.81 g at lunch and dinner by supplementation without affecting dietary leucine intake. **Conclusion:** Community-dwelling (pre)sarcopenic older people do not reach the recommended protein intake proposed by expert groups. Individualized protein supplementation results in adequate intake of protein without substantial change in dietary intake.

P236- LARGER HEALTH BENEFITS IN SEVERE OBESE (BMI OVER 35) OLDER ADULTS WITH TYPE 2 DIABETES DURING COMBINED LIFESTYLE INTERVENTION. Robert Memelink¹, Peter Weijts^{1,2} ((1) *Faculty of Sports and Nutrition, Center of Expertise Urban Vitality, Amsterdam University of Applied Sciences, Amsterdam, The Netherlands;* (2) *Department of Nutrition and Dietetics, Internal Medicine, Amsterdam University Medical Centers, Amsterdam, the Netherlands*)

Background: Weight loss is a main treatment goal in obese older adults with DM2. Combined lifestyle interventions (CLI) may be more effective in preserving muscle mass during weight loss. Whether severe obese benefit similar to less obese is unknown. **Objectives:** Our PROBE-study showed an increase in muscle mass during CLI in obese older adults (55+) with DM2. Do severe obese (BMI > 35 kg/m²) benefit similarly to less obese. **Methods:** In a post-hoc analysis, 97 out of 123 enrolled older adults had both body weight and protein intake data before and after a 3-month CLI consisting of dietary advice (-600 kcal/day) and resistance exercise. A selection of assessments were appendicular skeletal muscle mass (ASMM, by DXA), physical performance (Wmax; by cycle ergometer steep ramp test), quality of life (RAND-36 physical component summary score (PCS), visceral adipose tissue (VAT, by DXA), CRP, insulin sensitivity and resistance (Matsuda, HOMA-IR; by OGTT), blood pressure (SBP, DBP). Linear regression analysis was used with protein intake (g/kg, except for ASMM being included in kg) as independent and assessments after

3-months as dependent (with assessment before intervention as confounder) for both groups BMI>35 (severe obese n=28) and BMI≤35 (n=69). **Results:** Mean age was 67, mean BMI was 33.3, sex 62M/35F and protein intake during intervention was 93+30 gram/day. Mean weight loss was -2.6+2.9kg and fat loss -2.8+2.3kg. Per 20g protein intake increase 175+62g muscle was preserved (p=0.006). However, this appeared 68+168 (p=0.686) vs 204+67g (p=0.003) for severe obese vs not severe obese. Severe obese showed higher response for Wmax (+60.9+26.3 (p=0.033) vs -4.3+8.3) and PCS (+10.5+5.3 (p=0.058) vs -1.7+1.7), for VAT (-58.9+32.1 (p=0.079) vs +2.5+6.6) and CRP (-2.5+1.4 (p=0.081) vs +0.3+1.3), for insulin sensitivity (Matsuda +1.2+0.6 (p=0.044) vs +0.4+0.4) and insulin resistance (HOMA-IR -5.3+2.4 (p=0.034) vs +0.2+0.6), SBP (-19.1+9.4 (p=0.055) vs -1.3+4.2) and DBP (-16.7+6.7 (p=0.022) vs +1.2+2.4). While whole group and not severe obese group showed no significant effect. **Conclusion:** These results suggest that severe obese might benefit even more from combined lifestyle intervention compared to less obese older adults with DM2. Further investigation is needed to confirm these findings and identify potential mechanisms.

P237- FACTORS INFLUENCING THE EFFICACY OF NUTRITIONAL INTERVENTIONS ON MUSCLE MASS IN OLDER ADULTS: A SYSTEMATIC REVIEW AND META-ANALYSIS. Esmee M. Reijnierse¹, Aitana Martin-Cantero¹, Benjamin M.T. Gill², Andrea B. Maier^{1,3} ((1) *Department of Exercise Science, Groupe de recherche en activité physique adapté (GRAPA), Université du Québec à Montréal, Montréal (Qc), Canada;* (2) *Centre de Recherche de l'Institut Universitaire de Gériatrie de Montréal, Montréal (Qc), Canada;* (3) *WHO Collaborating Centre for Public Health Aspects of Musculoskeletal Health and Ageing, Canada*)

Background: Nutritional interventions have been shown to stimulate muscle protein synthesis. To optimize muscle mass preservation and gains, several factors, including type, dosage, frequency, timing, duration and compliance have to be considered. **Objectives:** This systematic review and meta-analysis aimed to summarize these factors influencing the efficacy of nutritional interventions on muscle mass in older adults. **Methods:** Data Sources: A systematic search was performed using the electronic databases MEDLINE, EMBASE, CINAHL, Cochrane Central Register of Controlled Trials and SPORTDiscus, from inception date to 22nd November 2017, in accordance with the PRISMA guidelines. Inclusion criteria included randomized controlled trials, mean/median age ≥65 years and reporting muscle mass at baseline and post-intervention; exclusion criteria included genetically inherited diseases, anabolic drugs/hormone therapies, neuromuscular electrical stimulation, chronic kidney disease, kidney failure, neuromuscular disorders and cancer. Data Extraction: Extracted data included study characteristics (population, sample size, age, sex), muscle mass measurements (method, measure, unit), effect of the intervention versus the control group, and nutritional intervention factors i.e. type, composition, dose, duration, frequency, timing and

compliance. Data Analysis: Standardized mean differences and 95% confidence intervals were calculated from baseline to post-intervention for the intervention and control group. A meta-analysis was performed using a random-effects model and grouped by the type of intervention. **Results:** Twenty-eight articles were included encompassing 2190 participants (mean age 75.7 years, SD 2.22). Amino acids, creatine, beta-hydroxy-beta-methylbutyrate, and protein with amino acids supplementation significantly improved muscle mass. No effect was found for protein supplementation alone, protein and other components, and poly-unsaturated fatty acids. High inter-study variability was observed regarding the dose, duration and frequency, coupled with inconsistency in reporting timing and compliance. **Conclusion:** Overall, nutrition alone is an effective intervention to improve muscle mass in older adults. Due to the substantial variability of the intervention factors among studies, the optimum profile is yet to be established.

P238- EFFECTS OF CITRULLINE WITH OR WITHOUT EXERCISE ON MUSCLE FUNCTION AND PHYSICAL PERFORMANCE AMONG OLDER ADULTS: A SYSTEMATIC REVIEW. Fanny Buckinx^{1,2,3}, Mylène Aubertin-Leheudre^{1,2} ((1) *Department of Exercise Science, Groupe de recherche en activité physique adapté (GRAPA), Université du Québec à Montréal, Montréal (Qc), Canada;* (2) *Centre de Recherche de l'Institut Universitaire de Gériatrie de Montréal, Montréal (Qc), Canada;* (3) *WHO Collaborating Centre for Public Health Aspects of Musculoskeletal Health and Ageing, Canada*)

Background: Physical and functional capacities decline with age. One new potential intervention is oral citrulline supplementation (CIT) since CIT seems to increase muscle protein synthesis, mass, size and strength, improve mobility but also decrease adipose tissue mass, particularly visceral depot in old rats. Furthermore, exercise is known to be another efficient intervention. However, studies assessing CIT supplementation combined or not with exercise on muscle function and mobility in older human adults are emerging and literature conclusions are needed to help health professionals. **Objectives:** Establish the potential effectiveness of Citrulline supplementation combined or not with exercise on muscle function and physical performance via a systematic review of randomized controlled trials (RCTs) in Human aged 50 years and older. **Methods:** The Preferred Reporting Items for Systematic reviews and Meta-Analysis (PRISMA) statement has been followed. Medline, Cochrane central register for RCTs and Scopus databases have been searched. Studies selection and data extraction have been performed by two researchers independently. Methodological quality of each included studies was assessed using the Quality Assessment of Diagnostic Accuracy Studies-2 (QUADAS-2) tool. **Results:** Based on PRISMA guideline, 103 references have been identified. Among this number, only 6 RCTs (250 participants) matched the inclusion criteria (e.g RCTs, age>50yrs, human, CIT supplementation, muscle or physical parameters) and were included in the systematic review. Among these studies, 5/6 reported beneficial effects of CIT on muscle

mass. Effects on muscle strength is reported on 4/6 studies but when CIT is combined to exercise better improvements in upper muscle strength are observed. Finally, 3/6 studies reported beneficial effect of CIT on physical performance but suggested that CIT with exercise displayed greater improvements in walking speed than exercise or CIT alone. The overall quality of studies was rather high. **Conclusion:** CIT supplementation seems able to improve muscular and physical factors in specific elderly people (malnourished, women, hypertensive, obese, dynapenic-obese) compared to placebo. More importantly, CIT with exercise is more efficient than exercise or CIT alone. However, due to the small number (6) and heterogeneity (dose, duration, population) of the studies, further investigations are needed to confirm its promising intervention for health professionals.

P239- THE FORTIFIT (R) CLINICAL TRIAL PROGRAM FOR SARCOPENIA, A CONDITION OF MUSCLE LOSS.

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Background: The medical nutrition supplement FortiFit (R), containing the specific nutrient combination ActiSyn™, is designed to support muscle building in sarcopenia (muscle loss). ActiSyn (whey protein, leucine and vitamin D) provides high bioavailability of leucine and essential amino acids for the muscle; the nutrients in ActiSyn act together to optimize the muscle protein synthesis response in a state of sarcopenia where these nutrients are often deficient. Preclinical and acute human studies confirmed this mode of action. **Objectives:** To demonstrate the longer-term effects of FortiFit supplementation on muscle building in healthy and sarcopenic older adults and on muscle preservation in obese (diabetic) older adults during a weight-loss lifestyle intervention. **Methods:** Our clinical research program investigated the effects on muscle mass, strength and function in healthy and sarcopenic older adults and in obese and type 2 diabetic patients. Muscle mass was measured by DEXA; strength and function by handgrip strength, 5-times chair-stand test and Short Physical Performance Battery (SPPB). All studies were randomized-controlled trials with an intervention duration of 6 to 13 weeks. **Results:** A significant increase in appendicular lean mass and leg lean mass was observed in healthy older adults after 6 weeks supplementation ($p < 0.05$ vs non-caloric control) [Chanet, JNutr 2017]. In sarcopenic

older adults, 13-week intervention increased appendicular lean mass (0.17kg, 95%CI 0.004-0.338kg; $p = 0.045$ vs iso-caloric control) [Bauer, JAMDA 2015]. Moreover, during a 13-week lifestyle intervention of energy restriction and resistance exercise training in obese older adults with or without type 2 diabetes, FortiFit preserved appendicular lean mass ($p < 0.05$ vs iso-caloric control) [Verreijen, AJCN 2015; Memelink, Clin Nutr 2018]. A significant improvement was observed in chair-stand time after 13-week intervention in sarcopenic older adults (-1.01s, 95%CI -1.77 to -0.19s; $p = 0.018$ vs isocaloric control), but improvements in handgrip strength and SPPB (primary outcomes) were only significant versus baseline ($p < 0.05$) and not versus control [Bauer, JAMDA 2015]. **Conclusion:** The medical nutrition supplement FortiFit effectively supports muscle building in healthy, sarcopenic and obese older adults. Moreover, the improvement in chair-stand time observed in sarcopenic older adults is clinically relevant.

INTRINSIC CAPACITY

P240- RELATIONSHIPS AMONG KNOWLEDGE, HEALTH LITERACY, AND HEALTH BEHAVIOR IN OLDER PERSONS WITH CHRONIC KIDNEY DISEASE. Chayabha Vorrappittayaporn, Porntip Malathum, Noppawan Phinitkhajorndech (*Ramathibodi School of Nursing, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Bangkok, Thailand*)

Background: Chronic kidney disease (CKD) is commonly found in older persons and it affects the quality of life and economic burden. Knowledge and health literacy have been reported as fundamental factors for persons with chronic illness to perform health behavior. However, from a literature review, relationships among knowledge, health literacy, and health behavior in older persons with non-dialysis CKD have rarely been reported. **Objectives:** To examine relationships among knowledge, health literacy, and health behavior in older persons with chronic kidney disease. **Methods:** Nutbeam's conceptual framework of health literacy was used to guide the study. The sample recruited by purposive sampling consisted of 98 older persons with non-dialysis Stage 4 to 5 CKD, who sought healthcare services at a CKD Clinic in a university hospital, Thailand. Data were collected by interviews using the questionnaires about the demographic data, knowledge about care of CKD, health literacy, and health behavior of older persons with CKD and then were analyzed using descriptive statistics and Spearman's Rho correlation coefficients. **Results:** The sample consisted of 52 men and 46 women with their age ranging from 60 to 88 years ($M = 73.02$, $SD = 7.26$). The analysis revealed that the sample had the mean scores of total knowledge about care of CKD, health literacy, and health behavior at a high level. Health literacy was positively associated with health behavior ($r = .30$, $p = .001$), but knowledge about care of CKD was not significantly associated with health literacy ($r = .13$, $p = .092$), nor health behavior ($r = .16$, $p = .057$). **Conclusion:** Only health literacy was significantly positively related to health behavior. Although

knowledge is fundamental of health literacy, it was not significantly related to health literacy nor health behavior in this study. It is explained that health literacy is the ability and skills that might link knowledge of individuals to perform behaviors. Thus, healthcare providers should find strategies for enhancing health literacy of older persons with CKD to promote appropriate health behavior, thereby delaying complications.

P241- INTRINSIC CAPACITY: A SOCIAL INEQUALITY AND LIFE COURSE PERSPECTIVE. Emmanuel Gonzalez-Bautista, Kelly Virecoulon Giudici, Maria Montoya Martínez, Philippe De Souto Barreto (*Gérontopole of Toulouse, Institute of Ageing, Toulouse University Hospital, Toulouse, France*)

Background: Handgrip strength (GS) is linked to the vitality domain of the intrinsic capacity (IC) construct and is a marker of sarcopenia and frailty. Low GS is a predictor of adverse health outcomes like disability onset and mortality. Small increases in GS have been reported after exercise interventions, suggesting that life-course determinants rather than short-term determinants influence GS. **Objectives:** To assess social inequality in the distribution of GS and the association of GS levels with a proxy of social determinants of health (SDH) among adults and older adults. **Methods:** Secondary analysis from wave 1 (2007-2010) of the World Health Organization (WHO) Study on global AGEing and adult health (SAGE), which is nationally-representative of six countries, including 16,903 participants aged ≥ 60 years and 20,168 < 59 y. GS was computed in kg. Wealth quintiles were assigned according to ownership of household assets. The last level of education of the participant and his/her mother was self-reported (the latter was used as a marker of early life SDH). Social inequality was estimated using pairwise comparisons among the average of GS of the extreme social groups; and gradient inequality by the slope index of inequality (multivariate linear regression to adjust for age, sex, body mass index). Estimations were weighted to consider the complex design of the sample. **Results:** Average GS was 22.2 kg for participants ≥ 60 y and 29.8kg for < 59 y. Participants ≥ 60 y who reported a postgraduate level of education or higher showed 51% (9.3kg) higher GS than their illiterate counterparts (34%, 8.0kg, for participants < 59 y). GS was on average 12% higher in participants ≥ 60 y in the most top wealth quintile compared to those in the lowest quintile (11% in < 59 y). In the multivariate models, GS was 2.5kg higher in urban than rural participants and 5.1kg higher among participants whose mothers had completed ≥ 9 years of education compared to those whose mothers were illiterate. Slope coefficients were significant after controlling for confounders. **Conclusion:** Grip strength displayed an unequal distribution among social groups and also among groups of early life exposures, which suggests that vitality as a domain of IC is shaped by the SDH and built through the life course.

P242- FRAIL ADULTS EXHIBIT A 25% LOWER INTRINSIC CAPACITY THAN ROBUST IN THE POPULATION OF THE TOULOUSE FRAILTY HOSPITAL. Emmanuel González-Bautista, Philippe de Souto Barreto, Sandrine Sourdet, Davide Angioni, Yves Rolland, Bruno Vellas (*Institute of Aging, Gérontopôle of Toulouse, Toulouse University Hospital, University of Toulouse, Toulouse, France*)

Background: Intrinsic capacity (IC) is the composite of the physical and mental abilities of an individual. The distribution and correlates of IC in older adults (OA) have not been reported using an integrative score with routinely-collected clinical data. It is not clear how IC is associated with multi-systemic biochemical age-related processes captured by alterations in standard clinical laboratory tests. **Objectives:** To describe the distribution and correlates of IC in a population of older adults from the Frailty Day Hospital of Toulouse and to test its cross-sectional association with low or high haemoglobin or high CRP, accounting for frailty status. **Methods:** Using routinely collected cross-sectional data of 2,324 first visits of OA aged 60+ to the Frailty Day Clinic of Toulouse (2011-2016), we calculated an index of IC (biomarkers and validated scales for five WHO domains). Low/high haemoglobin levels or high CRP levels served as indicators of acute and middle-term multisystem disruption. We used descriptive statistics to learn the distribution of IC across sex, age, education and Fried frailty categories. Multivariate linear models were used to test the hypothesis that higher IC holds a negative association with the multi-system deficits depicted by altered laboratory tests. **Results:** 63% of the population was female, and 50% was frail. Our IC score has theoretical limits (0-1). Overall, the IC was: mean=0.65, SD=0.11, min=0.28, max=0.91. On average IC men scored 0.68 (IC95% 0.67, 0.69) and women 0.63 (IC95% 0.63, 0.64). The relationship found between IC and age was not linear. Frail older adults displayed 25% less IC than their robust counterparts and 17% less IC than their pre-frail counterparts. If frail OA would return to robust in this population, the average IC would potentially* rise 19%. Disruption in haemoglobin or CRP was inversely and significantly associated with the IC score after adjusting for age², sex, level of education and Fried frailty status. **Conclusion:** The population attending the Toulouse frailty clinic displayed highly-heterogeneous IC levels, with frail OA showing significantly lower levels than robust OA. The association between IC and age is not linear. Sex, age, education, frailty status and disruption in haemoglobin or CRP levels were all significantly associated with IC in a multivariate model.

INTEGRATED CARE (ICOPE)**P243- A MULTIMODAL EXERCISE PROGRAM FOR IMPROVING MUSCLE FUNCTION IN ELDERLY FROM THE PERUVIAN AIRFORCE HOSPITAL IN 2018.**

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Background: Recommendations provided for the integrated care for older people (ICOPE) guideline to put in practice multimodal exercise, including progressive strength resistance training for improving intrinsic capacity. **Objectives:** Finding the benefits of a multimodal exercise program on muscle function in elderly from Peruvian Air Force hospital in 2018. **Methods:** This was an intervention (pre experimental), analytical, prospective and longitudinal study. A total of 24 outpatients were included. **Results:** The median age was 75±7.01 years old. Using The Short Physical Performance Battery (SPPB) we found an improvement in balance score, gait speed and chair stand test and were statistically significant. We found no statistical significance in grip strength and calf measurement. **Conclusion:** Our multimodal exercise program gives a positive impact in muscle function including physical performance and balance in elderly patients from the Peruvian Air Force Hospital

P244- FACTORS PREDICTING PROFESSIONAL NURSES' CARING BEHAVIOR FOR OLDER PERSONS IN A UNIVERSITY HOSPITAL.

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Background: Older persons tend to be hospitalized increasingly because of the complex interaction among acute problems, age-related changes, and chronic diseases. Qualified nursing care needs knowledge, understanding, and a positive attitude towards the care of older persons. However, little is known about factors that predict the caring behavior of nurses to care for hospitalized older persons. **Objectives:** To examine the predictability of selected factors to explain intention to care and caring behavior for older persons of professional nurses. **Methods:** The theory of reasoned action was used to guide the study. The proportionate stratified random sampling was used to recruit a sample of 150 professional nurses from clinical wards providing care for older patients in a university hospital. Data were collected using 6 questionnaires and then analyzed with descriptive statistics, Pearson's product-moment correlation, and multiple regression analysis with the Enter

method. **Results:** Almost all of the sample were female, with their age ranging from 23 to 54 years (M = 30.4). Factors related to professional nurses' intention to care were perceived caring climate in organization and attitude toward caring for older persons. Also, factors related to caring behavior for older persons were perceived caring climate in an organization, intention to care, and attitude toward caring for older persons. Through multiple regression analysis, perceived caring climate in an organization, attitude toward caring for older persons, and basic knowledge about older persons jointly predicted 8.7% of the variance in intention to care. Together, perceived caring climate in an organization, intention to care, attitude toward caring for older persons, and basic knowledge about older persons accounted for 32.3% of the variance in caring behavior for older persons of professional nurses. The perceived caring climate in an organization was the strongest predictor of caring behavior, whereas basic knowledge about older persons was not a significant predictor. **Conclusion:** The findings support the notion of the theory of reasoned action. It is suggested that strategies to promote perceived caring climate in an organization, attitude toward caring for older persons, and intention to care should be established and maintained to promote caring behavior for older persons of professional nurses.

P245- THE ROLE OF THE SOCIAL CONTEXT IN FRAIL HOSPITALIZED PATIENTS.

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Background: Environmental and social conditions play a major influence in the development and progression of negative health-related outcomes. They represent crucial elements when taking clinical decisions and planning the care plans of frail patients. Nevertheless, they still often remain overlooked because priority is given to the clinical manifestations. **Objectives:** The aim of this study is to explore the importance of social support in the definition of major health-related outcomes among hospitalized patients compared to other critical factors of older persons (i.e., frailty, age). **Methods:** Data were retrospectively collected from the medical records of patients aged 70 years and older admitted to the Geriatric Unit of the Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico (Milan, Italy). A 42-items Frailty Index (FI) was computed from clinical variables recorded during the first days of hospitalization (i.e., medical history, cognitive, functional and social assessment, physical examination, laboratory tests). Mortality, length of hospital stay above the median, and risk of institutionalization were the outcomes of interest. **Results:** We included 87 patients (mean age 87.5, SD 6.3 years, women 75.9%). Six patients died during the hospital stay (6.9%). The median duration of hospital stay was 12 (IQR 7-20) days. Twenty-seven patients were discharged to other institutions (31%). The mean FI was 0.39 (SD 0.12). The FI showed a statistically borderline association with mortality (OR 1.07, 95% C.I. 0.99-1.15, p=0.09), and was predictive of longer

length of stay (OR 1.05, 95% C.I. 1.00-1.09, $p=0.05$), even after adjustment for confounders. The presence of a caregiver was the only factor significantly associated with the discharge at home of patients (OR 0.23, 95% C.I. 0.08-0.68, $p=0.01$) at the multivariate analysis. Age had no significant association with the three studied outcomes. **Conclusion:** Health systems should be organized according to an integrated model of care in order to adequately address the complex health needs of older people. Social and environmental context plays a critical role in determining the person's health trajectory. Social factors (as the presence of a caregiver) may play a stronger role in clinical decisions than biological or clinical aspects.

P246- INTEGRATED CARE IN THE EMERGENCY DEPARTMENT BY EARLY CGA & THERAPIST INTERVENTION. Clarence Mwelwa, Patrick Chikusu, Amritha Narayanan, Meera Suresh, Francesca Rawlings, Asadullah Khan, Ferass Abbasi (*Ashford & St Peters NHS Foundation Trust, Chertsey, Surrey, UK*)

Background: The Acute Therapy Team was formulated after the integration of an Older Persons Assessment and Liaison Team (OPAL) with Medical Ward Therapists. The team was spread across all acute areas. This team worked closely with the Acute Geriatric and Frailty Clinical Team and it was recognised that length of stay, and improved patient experience and overall outcomes would be improved with earlier assessment and CGA planning at the front door allowing closer collaborative working between the clinicians and therapists. **Objectives:** To enhance service improvement and prevent the impact of sarcopenia and frailty syndromes leading to greater hospital stay and disability as a consequence of a delay to assessment by clinicians and therapists in the acute setting. Through the screening of Frailty Syndrome risk and sarcopenia risk patients by the ED Geriatrician and junior doctor, there would be a speedier response to therapy led interventions thereby reducing the conversion rate from ED and also therefore improving overall outcomes in length of stay and reduced disability through prolonged hospital stay. **Methods:** Consultant geriatrician and junior doctor (OPSSU team) to go to the emergency department in the mornings and see up to 6 patients in CDU/A&E beds; the use of a the Rockwood Frailty Score template identified those patients at risk of Frailty Syndrome and likely to benefit from early Therapy intervention. These patients would have been highlighted as having the potential to be discharged within 24 hours. A 3 month data collection period from was chosen with data collected Monday to Friday only. Data examined was categorised as follows: New patients, Follow-ups; How many patients were seen on day of ED attendance vs after day of attendance?; Number of patients seen by therapists same day of ED attendance Number of patients not seen by therapists day of attendance; Which team was looking after the patient from a clinically; How much time spent with patients; Therapy led plan after initial assessment; An integrated assessment too was instrumental in the CGA component of the therapy and clinical assessments. **Results:** 88% of patients seen by therapists in ED are new

patients referred. 28% of patients referred are seen on the actual date of ED attendance. The rest are seen later admission episode. 53% of therapy time is spent doing non-face to face tasks such as documentation. but up to 65% of patients have a discharge plan put in place after being seen by therapists in the ED. **Conclusion:** A great deal of time is spent by therapists on documentation during assessment. This has a negative impact on the amount of time dedicated to clinical assessments and physiological and functional assessments required in the CGA. There is a large number of patients referred by the clinical team to the therapists for review but a majority of patients are seen elsewhere during an admission episode and not in the ED. Streamlined assessments and screening tools are recommended & planned for the future model of care.

P247- CLINICAL BENEFITS OF INTEGRATED INVENTION PROGRAM FOR FRAILTY IN TAIWAN. Yi-Chun Cheng¹, Li-Ning Peng^{1,2} ((1) *Center for Geriatrics and Gerontology, Taipei Veterans General Hospital, Taipei, Taiwan;* (2) *Aging and Health Research Center, National Yang Ming University, Taipei, Taiwan*)

Background: Older people with frailty are at risk of adverse outcomes, such as falls, disability, hospital admission, long term care placement, poorer quality of life, and mortality, which denotes the importance of sarcopenia in the health care for older people, and integrated intervention program may prevent those. **Objectives:** To evaluate the effectiveness of an integrated intervention program among those community-dwelling frail older people in north Taiwan. **Methods:** A total of 435 participants over 65 years old mild to moderate disability and mild cognitive impairment persons were recruited from a community-dwelling frail older people in north Taiwan during August 2017 and July 2019, frail older people were invited for the study. A 12 weeks integrated intervention program was provided for all participants. They attended the 2 hours program once per two weeks and physical activity, high protein diet education, and cognitive stimulation activity were included in the integrated intervention program. Comprehensive geriatric assessments were performed before and after the intervention program, including basic demographic data, risk for malnutrition (by MNA-SF), mood condition (by GDS-5), cognitive condition (by MMSE), weakness (by handgrip strength), exhaustion (by self-report in CHS) slowness (by gait speed) and time-up-go test. Pretest on the 1st week before intervention and post-test on the 12th week to compare the difference between twice evaluate consequence. **Results:** Overall, 435 participants were identified as having pre-frailty (55.6%) and frailty (8.5%) according to the AWGS 2019 criteria. And there are 17.1% of participants have cognitive decline. Study population comprised female (76%), mean age (73.9±6.9 years), mean MMSE (26.5±3.8), mean MNA-SF (12.9±1.3), GDS-5 (0.43±0.94), CHS (1±1.0), handgrip strength (male 32.6±7.9kg, female 22.1±4.6kg), hypertension (46%), stroke (3.4%), cancer (5.7%). According to the result of multiple linear regression analysis, showed that through the integrated intervention programs, those frail older people cloud

to improve their cognitive condition ($p < 0.001$), mood condition ($p < 0.001$), and usual gait speed ($p < 0.001$). **Conclusion:** Through the 6 weeks integrated intervention program for 12 weeks, those frail older people could improve their cognitive condition, mood condition, and usual gait speed.

BODY COMPOSITION

P248- SINGLE-FREQUENCY BIOIMPEDANCE ANALYSIS EQUATION FOR ESTIMATION OF APPENDICULAR SKELETAL MUSCLE MASS IN COMMUNITY-DWELLING SINGAPOREAN OLDER ADULTS. AWK Tan¹, J Chew^{2,3}, JP Lim^{2,3}, A Yeo³, CN Tan³, S Yew³, S Yu^{4,5,6}, WS Lim^{2,3} ((1) Department of Endocrinology, Tan Tock Seng Hospital, Singapore; (2) Department of Geriatric Medicine, Tan Tock Seng Hospital, Singapore; (3) Institute of Geriatrics and Active Ageing, Tan Tock Seng Hospital, Singapore; (4) Aged and Extended Care Services, The Queen Elizabeth Hospital, Central Adelaide Local Health Network, South Australia, Australia; (5) Adelaide Geriatrics Training and Research with Aged Care (G-TRAC Centre), University of Adelaide, South Australia, Australia; (6) National Health and Medical Research Council Centre for Research Excellence in Frailty and Active Ageing, University of Adelaide, South Australia, Australia)

Background: Low appendicular skeletal muscle mass (ASM), an integral component of current sarcopenia definitions, is commonly measured using bioimpedance analysis (BIA). BIA equations for estimation of ASM are not generalizable across population groups and instrument types, potentially giving rise to inaccurate results when applied inappropriately. There is a lack of BIA prediction equations for Asian populations, none of which have been developed or validated for Singaporean older adults. **Objectives:** To develop a BIA prediction equation for estimation of ASM in community-dwelling older Singaporean adults. **Methods:** We studied 230 healthy community-dwelling subjects (mean age 67.2 years) from the GERILABS-2 cohort. BIA was performed using a single-frequency instrument. The reference method used for ASM measurement was dual-energy x-ray absorptiometry (DXA). We first identified independent ASM predictors by assessing the correlation of demographic, anthropometric and BIA variables with DXA-measured ASM. The best-fitting prediction equation was derived from these variables using stepwise (backward elimination and forward selection) linear regression with bootstrap validation. Using Asian Working Group for Sarcopenia (AWGS) cutoffs, we then compared anthropometric, strength and physical performance parameters between normal and low BIA-derived ASM groups. **Results:** The derived BIA equation incorporated 4 predictors – impedance index, weight, gender and body mass index (BMI), i.e. $ASM(kg) = 2.098 + (0.155 \times \text{Impedance Index}) + (0.202 \times \text{Weight}) + (-1.397 \times \text{Gender}) + (-0.252 \times \text{BMI})$, where males = 0, females = 1 and impedance index = $\text{height}(cm^2)/\text{resistance}$. The r^2 and standard error of the estimate of this regression model were 0.93 and 0.91kg respectively, with impedance

index accounting for 87.3% of its variability. Individuals with low BIA-derived ASM have significantly smaller mid-arm and calf circumference and weaker grip strength, compared to individuals with normal BIA-derived ASM ($p < 0.001$). Physical performance was similar in both groups. **Conclusion:** We have developed a valid single-frequency BIA prediction equation which can provide good estimates of ASM in community-dwelling older Singaporean adults. Validation of this prediction equation in an independent sample of population is required to establish its accuracy and precision.

P249- MIDDLE-AGED MEN WITH LOW APPENDICULAR LEAN MASS HAVE LOW BONE MINERAL DENSITY: WASEDA'S HEALTH STUDY. Taishi Midorikawa¹, Suguru Torii², Satoshi Iizuka², Ryoko Kawakami², Kumpei Tanisawa², Katsuhiko Suzuki², Koichiro Oka², Mitsuru Higuchi², Shizuo Sakamoto² ((1) College of Health and Welfare, J.F. Oberlin University, Machida, Japan; (2) Faculty of Sport Sciences, Waseda University, Tokorozawa, Japan)

Background: It has been well known that appendicular lean mass (ALM) and skeletal muscle mass index (SMI), which is the ratio of ALM to height^2 (m), is positively proportional to regional bone mineral density (BMD) in elderly men. However, there is limited information about these relationships in middle-aged men. **Objectives:** The purposes of this study were to investigate the difference in BMDs (arms, lumbar spine, pelvis, legs, and subtotal: total body without head area) in middle-aged men with low and normal SMI ($ALM/\text{height}^2 \leq 7.0$ kg/m² from Asian Working Group for Sarcopenia: AWGS), and to determine the associations between ALM, SMI, and BMDs. **Methods:** Three hundred and two middle-aged Japanese men between 40 and 65 years of age participated in this study. ALM and BMD measurements were taken using dual-energy x-ray absorptiometry (DXA, Delphi A-QDR, Hologic). **Results:** Based on the definition from AWGS, the prevalence of low SMI was approximately 7% in middle-aged men. The subjects with low SMI (low SMI group, $n = 22$, 6.6 kg/m²) had significantly lower body weight (58.2 vs. 70.4 kg), BMI (19.9 vs. 23.9 kg/m²), and fat mass (12.2 vs. 14.9 kg) compared to the normal group ($n = 280$, 8.2 kg/m²), although there were no differences in age (51 vs. 52 years), standing height (170.9 vs. 171.4 cm), and body fat percentage (20.6 vs. 20.8 %) between the two groups. BMDs were significantly lower in low SMI group than normal group for regional body parts (arms 0.729 vs. 0.765 g/cm²; lumbar spine 0.925 vs. 0.991 g/cm²; pelvis 1.043 vs. 1.138 g/cm²; legs 1.144 vs. 1.205 g/cm²) and subtotal (0.916 vs. 0.972 g/cm²). Moreover, body weight, fat mass, ALM, and SMI were positively correlated with BMDs using partial regression analysis controlling for age in all subjects, except for fat mass vs. lumbar spine BMD. In a stepwise multivariable model, ALM was more closely related to BMDs, except in the case of pelvis. **Conclusion:** These results suggest that in order to maintain the regional BMD in middle-aged men, a key factor is to maintain or increase both ALM and SMI.

P250- APPENDICULAR MULTI-FREQUENCY BIOELECTRICAL IMPEDANCE PARAMETER AND ITS EQUATIONS IN THE ASSESSMENT OF SARCOPENIA.

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Background: The societies on sarcopenia have recently accepted the use of bioelectrical impedance analysis (BIA) in the assessment of appendicular skeletal muscle mass (ASM). Several BIA equations and devices have been introduced, which analyze the whole body composition, including the trunk and excluding the left arm and left leg at 50kHz. It is necessary to measure the APPENDICULAR body segments of impedance parameters with a specific frequency (Hz) that optimally analyze the muscle for valid assessment of ASM. Prior our study, literature-based BIA equations and the two devices estimated ASM at >75% of R² (coefficient of determination) with the significant constant-errors rated as «poor». **Objectives:** Thus, the aims of this study were (1) externally cross-validate the equations and devices of BIA on the appendicular skeletal muscle mass and (2) develop valid equations based on APPENDICULAR bioimpedance parameters at the specific frequency (kHz) that reflects the muscle for estimating ASM; **Methods:** 201 community dwelling Koreans over 70-year-old (77±4.4yrs, 107 females and 94 males) participated. ASM was predicted using BIA-based equations available in literature and BIA devices and compared to DXA outcomes which is the gold standard. We conduct internal cross-validation and stepwise multiple linear regression to develop ASM-formulas with segmental multi-frequency BIAs. **Results:** Our new prediction formulas were developed by the appendicular impedance(Z) index = Height² / (Z of right arm + Z of left arm + Z of right leg + Z of left leg) at higher than 50kHz and the appendicular reactance(Xc) = Xc of right arm + Xc of left arm + Xc of right leg + Xc of left leg at 5kHz. R²s were over 93%, SEE was under 0.90kg of ASM with the subject rating as «Excellent» for men and «Good» for women. **Conclusion:** We found that our new protocol resulted in higher agreement with DXA and improved BIA accuracy for this specific age group. Clinicians can use this lower cost protocol and equations to better diagnose sarcopenia in larger cohorts with comparable to measurement of DXA.

P251- GREATER PROTEIN INTAKES ARE ASSOCIATED WITH IMPROVED BODY COMPOSITION IN WOMEN.

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Background: Greater protein intake throughout the lifespan may be related to better body composition through the preservation of lean body mass during aging. **Objectives:** We sought to determine whether an association between dietary protein intake (PI) and body fat percentage (BF) exists among women when controlling for dietary and lifestyle factors. **Methods:** Body composition and lean body mass were examined via dual-energy X-ray absorptiometry, grip strength (GS) was assessed using a hand grip dynamometer, and moderate-to-vigorous physical activity (MVPA) was measured by accelerometry. Dietary intakes were estimated via three-day food logs and ESHA software. Multiple linear regression and stepwise linear regression models were used. **Results:** A total of 94 women (mean ± SD; age 40.6 ± 17.5 years) finished all assessments. A full regression model (i.e., containing all covariates; R = 0.863; adjusted R² = 0.710; F(11,82) = 21.662; p < 0.001) was created using fat, carbohydrate, protein and leucine intake (g/day), protein quality (g/day of leucine over g/day of protein), energy intake (kcal/day), age (years), lean body mass (kg), BMI (kg/m²), GS (kg), and MVPA (min/day). Only BMI (mean ± SEM; beta = 1.244 ± 0.119; p < 0.001), GS (mean ± SEM; beta = -0.401 ± 0.099; p < 0.001), and PI (mean ± SEM; beta = -0.113 ± 0.048; p = 0.021) were significant to the full regression model. To verify their importance, a stepwise regression using the same variables was performed and resulted in a model (F(3,90) = 74.994; p < 0.001; R = 0.845; adjusted R² = 0.714) that included BMI (mean ± SEM; beta = 1.330 ± 0.093; p < 0.001), GS (mean ± SEM; beta = -0.347 ± 0.079; p < 0.001), and PI (mean ± SEM; beta = -0.048 ± 0.016; p = 0.003). **Conclusion:** Greater protein intakes are associated with lower BF in women when controlling for various covariates. We theorize that greater protein intakes preserve lean body mass which results in improved body composition. More specifically, a one gram per day increase in dietary protein is predicted to decrease BF by 0.113% when controlling for all other variables.

P252- PREDICTION EQUATION FOR MUSCLE MASS OVERESTIMATES MUSCLE MASS IN PATIENTS WITH RHEUMATOID ARTHRITIS. Leonardo Peterson dos Santos^{1,2}, Rafaela C E Santo^{1,2}; Lidiane I Filippin³, Priscila Lora⁴, Ricardo M Xavier^{1,2} ((1) *Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil*; (2) *Serviço de Reumatologia do Hospital de Clínicas de Porto Alegre, Porto Alegre, Brazil*; (3) *Universidade La Salle, Canoas, Brazil*; (4) *Universidade do Vale do Rio dos Sinos, São Leopoldo, Brazil*)

Background: Rheumatoid arthritis (RA) is a disease characterized by chronic inflammation that may lead to loss of muscle mass. Total-body skeletal muscle mass (SMM), specifically appendicular skeletal muscle, is a key diagnostic feature for the assessment of geriatric syndromes associated with skeletal muscle wasting, such as sarcopenia. **Objectives:** To compare the anthropometric equation that estimate SMM with body composition measurements derived from DXA in RA patients. **Methods:** 90 Patients diagnosed with RA according to ACR/EULAR criteria were recruited. Body composition was assessed by total body dual-energy x-ray absorptiometry (DXA) for measurement of appendicular lean mass index (ALMI, kg/m²). On the prediction equation for muscle mass proposed by Lee et al (Variables included on Lee equation: body weight, height, age, sex and race) was used to generate estimates of SMM, stratified by BMI. Frequency analysis, independent student's t test and intraclass correlation coefficients (ICC) were performed. Statistical significance was considered as $p < 0.05$. **Results:** Of the 90 patients analyzed, most were women (86.7%; 78/91), with mean age of 56.5±7.3 and median disease duration time of 8.5 (3-18) years. The mean of BMI was 27.39±5.14. Thirty (33.3%) RA patients had normal weight, forty patients (44.4%) were overweight and twenty patients (22.2%) were obese. In normal weight patients, just like overweight and obese patients, the estimates of SMM obtained by Lee equation were higher than those obtained by DXA measurements (Obese: Lee 10.66±1.19 vs DXA 7.10±0.73; Overweight: Lee 8.63±0.99 vs DXA 6.57±0.82; Normal weight: Lee 7.14±0.85 vs DXA 6.03±0.71; $p < 0.05$). The Lee equation estimates showed ICC of 0.78 (0.66 - 0.85) with DXA measurements. When stratified by BMI, Lee equation showed ICC of 0.87 (0.72 - 0.94) for normal weight, 0.83 (0.68 - 0.91) for overweight and 0.77 (0.42 - 0.90) for obese with DXA. **Conclusion:** The muscle mass index by Lee equation overestimates the muscle mass in overweight or obese RA patients compared to DXA. Thus, sarcopenic RA patients may be wrongly classified as normal by the equation. This is probably related to the obese cachexia that these patients often present. More studies are necessary to analysis to better prediction equations for muscle mass in RA patients.

P253- SARCOPENIC OBESITY: PROSPECTIVE DESCRIPTIVE STUDY OF THE HOSPITALIZED GERIATRIC POPULATION. Marie Gédon¹, Jérôme Boulé¹, Didier Albert¹, Muriel Rainfray², Claire Roubaud², Isabelle Bourdel-Marchasson² ((1) *Geriatric Department, Pau Hospital, Pau, Nouvelle Aquitaine, France*; (2) *Geriatric Department, Bordeaux University, Bordeaux, Nouvelle Aquitaine, France*)

Background: Muscle aging and the increased prevalence of obesity in the geriatric population create a new area of research: sarcopenic obesity. In prospective cohorts of non-hospitalized subjects, it is associated with an increased risk of developing physical limitation. Hospitalization is an event with high risk of loss of independence. The impact of sarcopenic obesity during this episode isn't known yet. **Objectives:** Analyze the evolution of functional independence during a hospitalization in an acute geriatric ward, looking for a link between the presence of sarcopenic obesity and a decline of independence. Early readmission, length of stay and changes in body composition during hospitalization were also examined. **Methods:** Prospective descriptive monocentric cohort study carried out in an acute geriatric ward of the Pau Hospital. Sarcopenia was diagnosed using the European Working Group on Sarcopenia in Older People algorithm by an impedancemeter. A BMI over 30 was used to report obesity. Functional independence was rated on the ADL Katz scale. **Results:** 92 patients were included. Sarcopenic obesity was diagnosed in 5.43% of cases, sarcopenia and obesity in 59% and 21% of patients, respectively. The greatest variation in functional independence during hospitalization was observed in sarcopenic obese patients (mean variation of 2 out of 6 points, $p = 0.046$). A total of 15 early readmission at 1 month were counted, with the highest rate for sarcopenic obese (60%, but 16% at the sample level) ($p = 0.045$). The average length of stay was 17.4 days. **Conclusion:** Sarcopenia is common in patients hospitalized in geriatrics, and when associated with obesity, there is greater variation in functional independence and more readmissions.

P254- COMPARATIVE EFFECTIVENESS OF THREE METHODS FOR BODY COMPOSITION ASSESSMENT IN THE VERIFICATION OF MANIFESTATIONS OF SARCOPENIA IN OBESE PATIENTS. V.A. Vasileva, L.A. Marchenkova (*Moscow, Russia*)

Background: Known that is sarcopenic obesity, excessive accumulation of adipose tissue is detected, with a decrease in muscle mass and strength, which is already over the age of 30 years. Modern diagnostic methods have their drawbacks for the diagnosis of sarcopenic obesity. BodPod quality and timeliness of diagnosis of signs of sarcopenia in obese patients is improved, which ultimately will contribute to an earlier targeted treatment of sarcopenia and an improvement in its prognosis. BodPod methodology can be recommended for use in complexes for the diagnosis of sarcopenic obesity. **Objectives:** to compare the effectiveness of three methods of

body composition assessment such as bioimpedans analysis (BIA), air-replacement bodyplatismography (BodPod) and Dual X-ray absorptiometry Total body program (DXA Total Body) in the verification of reducing of skeletal muscle mass as sign of sarcopenic obesity in obese patients. **Methods:** The study group included 95 patients aged 21-69 y.o. (average age 53,9±11,05 years) with BMI≥30.0 kg/m². The control group included 37 patients aged 37-69 y.o. (average age 50,73±10,6 years) of the same age without obesity with BMI 20.0-29.9 kg/m². Body composition was tested using BIA, BodPod and DXA with calculating fat, lean and skeletal muscles mass (kg) and % in all the patients. **Results:** According to BIA the groups differ only in fat mass (FM) 42.75 (4.8;6.3) vs. 33.15 (28.4;35.5) kg; p=0.036 and did not differ (p>0.05) in lean (LM), skeletal muscle mass (SMM) and in % of FM and SMM. According to BodPod analyses groups differed in the FM 3.4 [36.81;69.94] vs 31.02 [23.22;38] kg, p=0.007, % FM 45.4 [42.1;53.8] vs 37.7 [28.6;41.1], p=0.003 and % LM - 54.6 [46.2;57.9] vs 62.3 [58.9;71.4], p=0.003, but had statistically equivalent values of LM 55 [49.48;67.77] vs 40.36 [33.12;49.06] kg, p=0.19. According to DXA Total Body analyses statistically significant differences (p<0.05) have been identified between the groups in FM and % FM of the hands, feet, trunk, total body (p>0.05), but not in LM and % LM (p>0.05). **Conclusion:** From methods of body composition assessment, air-replacement bodyplatismography (BodPod) is the most sensitive in the verification of skeletal muscle mass reduction in obese patients. This method shows that patients with obesity have a significantly reduced muscle mass compared with normal weight or overweight subjects.

P255- HIGH LIPID ACCUMULATION PRODUCT AND LOW ESTIMATED GLUCOSE DISPOSAL RATE INDICATE INCREASED CARDIO-METABOLIC RISK AND DECREASED INSULIN SENSITIVITY IN POSTMENOPAUSAL WOMEN WITH SARCOPENIC OBESITY. Eleonora Poggiogalle, Carla Lubrano, Lucio Gnessi, Stefania Mariani, Mikiko Watanabe, Andrea Lenzi, Lorenzo Maria Donini (*Department of Experimental Medicine, Sapienza University, Rome, Italy*)

Background: In overweight and obesity excess energy and changes in body composition may favor the onset of metabolic derangements. Combined with excess adiposity, the age-related decline in lean body mass can accelerate the development of insulin resistance and the consequences in terms of cardiovascular risk. **Objectives:** The aim of our study was to investigate the association between the phenotype of sarcopenic obesity and cardio-metabolic risk in postmenopausal women. **Methods:** Postmenopausal women were recruited among subjects admitted to the High Specialization Centre for the Care of Obesity (CASCO), at the Sapienza University, Rome, Italy. Fat mass (FM) and fat-free mass (FFM) were assessed by DXA. Obesity was defined as body fat ≥ 35%. Appendicular skeletal muscle mass (ASMM) was calculated. Sarcopenia was defined as ASMM/weight < 2SD than the sex-specific mean of a young population. The cut- point was

ASMM/weight < 0.2347. The Lipid Accumulation product was calculated: LAP = (waist circumference cm -58) × triglycerides mmol/l. The estimated Glucose Disposal Rate (eGDR) was calculated. High-sensitivity C-reactive protein (hs-CRP) was measured. **Results:** 335 women were included (age: 58.7 ± 7.2 years, BMI: 37.1 ± 6.3 kg/m²). Sarcopenia was diagnosed in 57.6% of study participants. Sarcopenic obese women were older than nonsarcopenic women (59.4 ± 6.7 vs. 57.7 ± 7.7 years, p=0.04). LAP was higher in sarcopenic obese women compared to their nonsarcopenic counterparts (96.8 ± 51.3 vs. 87.7 ± 55.8, p=0.03) after adjustment for age, body fat, and hs-CRP levels. Estimated GDR was significantly lower in sarcopenic obese women (4.02 ± 2.28 vs. 5.55 ± 2.36, p=0.03) after adjustment for age and body fat. An inverse association emerged between the index of sarcopenia, ASM/weight, and LAP (beta: -3.9*10⁻⁵, SE: 1.9*10⁻⁵, p=0.03), independent of age, body fat, and hs-CRP levels. A positive association was observed between ASM/weight and eGDR (beta: 1.4*10⁻³, SE:4.7*10⁻⁴, p=0.004) adjusting for age, body fat, and hs-CRP levels. **Conclusion:** Postmenopausal sarcopenic obese women exhibited a high LAP and a low eGDR, indicating increased cardiometabolic risk and decreased insulin sensitivity, respectively.

BIOLOGY OF AGING

P256- OLDER ADULTS WITH LEG EXTENSOR WEAKNESS EXHIBIT INCREASED VOLUNTARY INACTIVATION AND CORTICOSPINAL HYPOEXCITABILITY. Leatha A. Clark^{1,4,5}, Todd M. Manini², Nathan P. Wages^{1,5}, Janet E. Simon^{1,3}, David W. Russ^{1,3}, Brian C. Clark^{1,4,5,6} ((1) *Ohio Musculoskeletal and Neurological Institute (OMNI), Ohio University, Athens, Ohio*; (2) *Department of Aging and Geriatric Research, University of Florida, Gainesville, Florida, USA*; (3) *School of Rehabilitation and Communication Sciences, Ohio University, Athens, OH, USA*; (4) *Department of Family Medicine at Ohio University, Athens, OH, USA*; (5) *Department of Biomedical Sciences at Ohio University, Athens, OH, USA*; (6) *Department of Geriatric Medicine at Ohio University, Athens, OH, USA*)

Background: Muscle weakness strongly contributes to mobility limitations and physical disability. The role of neural mechanisms contributing to age-related weakness have not been fully delineated to sufficiently target interventions that enhance strength and physical function in older adults. **Objectives:** We sought to compare differences in voluntary inactivation and measures of motor corticospinal excitability in older adults with clinically meaningful muscle weakness compared to young adults and stronger adults without muscle weakness. **Methods:** Maximal voluntary isokinetic and isometric leg extensor strength, electrical stimulation of the leg extensors, and transcranial magnetic stimulation (TMS) of the motor cortex were performed in older adults and young adults. Outcome measures of leg extensor strength relative to body weight, voluntary inactivation (VIA), motor evoked

potential (MEP) amplitude and silent period (SP) duration during isometric leg extension contractions at 5%, 20%, and 40% of maximum voluntary contraction (MVC) were obtained. Older adults were classified into three weakness groups based on previously established isokinetic leg strength/body weight cut points (severely weak, moderately weak, or not weak). Group differences were examined after controlling for sex. **Results:** The older adults had 63% lower isokinetic strength/body weight when compared to the young adults. The severely weak older adults were 33% and 84% weaker than the moderately weak and older adults who were not weak, respectively. Severely weak older adults exhibited higher levels of leg extensor VIA than older adults who were not weak ($14.2 \pm 1.7\%$ vs. $6.1 \pm 1.8\%$). Severely weak older adults exhibited 24% longer SP's compared to the older adults who were not weak, but this difference was not statistically significant ($p=0.06$). The severely weak older adults' MEP's were approximately half the amplitude of the older adults who were not weak. Regression analyses demonstrated that MEP amplitude and SP duration — indices of hypoexcitability — were associated with relative strength. **Conclusion:** Weak older adults have significant deficits in their nervous systems' ability to fully activate their leg extensor muscles. Additionally, motor corticospinal hypoexcitability is associated with age-related weakness, suggesting that interventions targeting the nervous system could be used to enhance muscle strength and prevent future health risks in older adults with muscle weakness.

P257- AGE-RELATED REDUCTIONS IN THE ABILITY OF THE CNS TO RAPIDLY ACTIVATE MUSCLES IS A KEY CONTRIBUTOR TO MOBILITY LIMITATIONS.

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Background: One putative mechanism explaining mobility limitations (MLs) in older adults (OAs) is a reduction in the central nervous system's (CNS) ability to rapidly drive muscle force/torque production. Rapid movements can be mathematically expressed as the time derivative of force/torque, also termed 'yank' (Y). Muscles are ultimately responsible for generating Y, but CNS input (NI) to the muscles clearly influences Y. The time derivative of the voluntary electromyogram during maximal efforts is associated with gait speed (GS) and chair rise time (CRT). However, since the electromyogram is influenced by non-physiological factors (e.g., subcutaneous adipose tissue acting as a low pass filter), it is difficult to fully ascribe this finding to CNS deficits. Theoretically, normalizing Y to the time derivative of

electrically evoked force/torque controls for musculoskeletal factors contributing to Y (YMSK), which yields a value representing the CNS's ability to rapidly produce force/torque ($YNI=Y/YMSK$). **Objectives:** To better understand the role of the CNS in MLs in OAs we 1) compared leg extensor YNI between young and OAs, and 2) examined the association between leg extensor YNI and measures of mobility. **Methods:** Twenty-one young and fifty-nine OAs (21.95 ± 1.8 and 75.07 ± 6.8 yrs) were instructed to "kick out as fast and hard as possible" against a fixed lever arm attached to a torque motor, and we quantified Y between onset and 100-msec. Next, we quantified YMSK from a supramaximal electrically evoked torque-time recording (potentiated 100-Hz doublet) and calculated YNI as described. On a separate visit six-minute walk (6MW) GS, stair climb power (SCP), and 5x CRT were measured. **Results:** OAs had higher YNI vs. young adults reflecting a 22% reduction in central neural activation during rapid torque development (0.503 ± 0.141 vs. 0.393 ± 0.148 ; $p<0.001$). Significant associations were observed between YNI and 6MWGS ($r=0.30$), SCP ($r=0.43$), and 5x CRT ($r=-0.48$). **Conclusion:** OAs have a slower rate of volitional neural activation during rapid leg extensor torque production relative to young adults. In addition, YNI explained ~10-25% of the variability in measures of mobility, thereby supporting the notion that age-related reductions in the ability of the CNS to rapidly activate muscles contribute to MLs.

P258- THE NEURODEGENERATIVE DISEASE DOMINANT OPTIC ATROPHY AND OXIDATIVE METABOLISM: A COMPLEX CROSSTALK ANALYSED WITH MATHEMATICAL MODELING.

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Background: OPA1 mutations cause Dominant Optic Atrophy (DOA), an incurable retinopathy with variable severity and which mechanisms are still unknown. More than 20% of patients will endure a DOA plus syndrome with ataxia, deafness or parkinsonism. The hypothesis of an Oxidative stress has been proposed to explain the variability of these symptoms. **Objectives:** That's why our goal is to improve understanding of the physiopathological mechanisms involved in this disease by developing mathematical models of the production of Reactive Oxygen Species (ROS) by the mitochondrial respiratory chain. **Methods:** We monitored the levels of mitochondrial respiration, Reactive Oxygen Species (ROS), anti-oxidant defenses and cell death by biochemical and in situ approaches using in vitro and in vivo models of OPA1-related disorders and model the complex I functioning with a detailed stochastic

model. **Results:** We evidenced oxidative stress in a mouse model of the pathology at different ages (4, 10 and 15 months) and aimed to identify the consequences of OPA1 inactivation on redox homeostasis. Increased ROS levels were observed in cortices of the murine model OPA1+/- as well as in OPA1 down-regulated cortical neurons. This increase is associated to a decline in mitochondrial respiration and an increase of antioxidant enzyme levels. Upon exogenous oxidative stress OPA1-depleted neurons did not further up-regulated antioxidant defenses. Finally, low levels of antioxidant enzymes were observed in fibroblasts from patients supporting their role as modifier factors. Moreover, The simulations obtained with our mathematical model of complex I are able to reproduce biological experiments of quantification of ROS production by Complex I. **Conclusion:** Our study shows: (i) the pro-oxidative state induced by OPA1 loss can be considered as a pathological mechanism (ii) differences in antioxidant defenses can contribute to the variability in expressivity and (iii) antioxidant defenses can be used as prognostic tools to gauge the severity and the evolution of the disease. (iv) Furthermore, our mathematical model model of ROS production by complex I will help to understand the dysfunctions of oxidative metabolism in OPA1 gene related disorders. We will present the last results of our algorithm and wet laboratories experiments.

P259- IMPACT OF FRAILTY ON CHEMOTHERAPY DELIVERY FOR ADVANCED OVARIAN CANCER. Amanika Kumar, Deepa M Narasimhulu, Michaela E. McGree, Amy L. Weaver, Aminah Jatoi, Nathan K LeBrasseur (*Mayo Clinic, Rochester, MN, USA*)

Background: Patients with advanced ovarian cancer (EOC) are often frail and require multi-agent chemotherapy. **Objective:** To evaluate the relationship between frailty and adjuvant chemotherapy tolerance and toxicity among women with advanced epithelial ovarian cancer. **Methods:** Women who underwent primary debulking surgery for stage IIIC or IV EOC and received adjuvant chemotherapy at the same institution were identified. A frailty deficit index (FI) was derived from 30 items representing comorbidities and activities of daily living. Frailty was defined as a FI ≥ 0.15 . If data were unavailable for frailty index calculation, patients were excluded. Relative dose intensity (RDI) for carboplatin and paclitaxel was calculated as the percentage of the standard dose that was actually administered and compared between frail and non-frail using the Wilcoxon rank sum test. **Results:** Of the 169 women who met inclusion criteria, 17.2% (29/169) were frail. Frail women were older (67.9 vs 62.3 years, $p=0.01$), had a higher BMI (29.6 vs 25.7 kg/m², $p=0.003$), and were more likely to have American society of Anesthesiologists (ASA) score ≥ 3 (65.5 vs 35.0%, $p=0.002$) compared to non-frail women. Frail patients were less likely to complete 6 cycles of adjuvant chemotherapy, (76% versus 94%, $p<0.008$). Despite the decrease in total cycles of chemotherapy, we did not observe significant differences in dose delays (34.5 vs. 42.1%), dose reductions (65.5 vs 68.6%), and severe neutropenia (44.8

vs. 39.3%) between frail and non-frail women. We analyzed a subset of 96 patients (19 frail and 77 non-frail) women received both intravenous carboplatin and paclitaxel. We observed that frail women were less likely to have a carboplatin RDI of 85% or higher (15.8% vs. 66.2%, $p<0.001$) and less likely to have a paclitaxel RDI of 85% or higher (57.9% vs. 80.5%, $p=0.07$). **Conclusion:** Frail women with advanced EOC undergoing adjuvant chemotherapy receive reduced RDI and are less likely to complete 6 cycles of chemotherapy despite no increase in dose reduction, delays, and neutropenia. Physician bias and patient choice may influence chemotherapy intensity decisions. Further studies are needed to explore the association between frailty, chemotherapy, and survival.

P260- CORRELATION BETWEEN GAIT SPEED AND LPS-STIMULATED CYTOKINE PRODUCTION IN OLDER ADULTS UNDERGOING PROCEDURES: A PILOT STUDY. Thomas Laskow¹, Huanle Yang¹, Brian Buta², Frederick Sieber¹, Julius Oni¹, Mara McAdams-DeMarco², Deidra Crews¹, Ravi Varadhan², Karen Bandeen-Roche², Jeremy Walston¹ ((1) *Johns Hopkins School of Medicine, Baltimore, USA*; (2) *Johns Hopkins Bloomberg School of Public Health, Baltimore, USA*)

Background: Gait speed is a core component of physical frailty (PF) and, as a single measure, is correlated with important health outcomes, including mortality. Immune dysregulation has been previously associated with PF – including increased IL-6 production in peripheral blood mononuclear cell (PBMC) lipopolysaccharide (LPS) stimulation assays. It is not known whether gait speed is associated with LPS-stimulated cytokine production. **Objectives:** This pilot study evaluated whether gait speed is correlated with dysregulated immune response in two populations of older adults undergoing procedures – knee osteoarthritis (OA) scheduled for knee replacement, and chronic kidney disease (CKD) approaching hemodialysis initiation. **Methods:** 10 older adults with CKD and 11 older adults with knee OA underwent preoperative evaluation including gait speed (usual pace, 4-meter walk, best of two trials) and immune stimulation testing (in vitro, thawed PBMCs stimulated with LPS at doses 0, 0.1, and 10 ug/mL, with IL-6 quantified by ELISA at 2, 18, 24, and 48 hours; reported as area under the curve (AUC)). Correlation coefficient and p-value were calculated. **Results:** For CKD, the IL-6 AUC of LPS stimulated PBMCs was negatively associated with gait speed (LPS 0.1 ug/ml $r = -0.286$, $p=0.423$; LPS 10ug/ml $r = -0.515$, $p=0.128$). For OA, the correlation between IL6 AUC and gait speed was positively correlated for LPS dose 0.1 ug/ml (LPS 0.1 ug/ml $r = 0.228$, $p=0.501$; LPS 10ug/ml $r = 0.062$, $p=0.857$). None of these associations were statistically significant. Similar results were obtained when age was included as a covariate. **Conclusion:** In people with CKD, increased cytokine production was correlated with decreased gait speed. In people with knee OA, results do not support this hypothesis. Further studies with larger sample size are warranted. For participants with knee OA, future studies should account for severity of knee pain at time of gait

speed assessment.

P261- IMPAIRED METABOLIC FLEXIBILITY IN SARCOPENIC MEN AND WOMEN. Vikkie A. Mustad¹, Suzette L. Pereira¹, Jose-Maria Lopez², Ricardo Rueda², Zachary M. Gillen³, Marni E. Shoemaker³, Joel T. Cramer³ ((1) *Abbott Nutrition, Columbus, OH, USA*; (2) *Abbott Nutrition, Granada, Spain*; (3) *University of Nebraska-Lincoln, Lincoln, NE, USA*)

Background: Skeletal muscle drives fuel utilization, and carbohydrate (CHO) is a major fuel source. Metabolic flexibility describes the ability to balance CHO and fat oxidation efficiently in response to changes in metabolic demands or conditions. Despite its role in long-term metabolic health, little is known about CHO oxidation or metabolic flexibility in sarcopenic older adults. **Objectives:** To examine resting metabolism and metabolic flexibility from a fasted to fed state after a CHO-rich meal in sarcopenic versus non-sarcopenic older adults. **Methods:** Twenty-two men and women (age \pm SD=77 \pm 9 y) were enrolled into this pilot study with either normal (non-sarcopenic, n=11) or low (sarcopenic, n=11) handgrip strength, gait speed and relative skeletal muscle index. Resting metabolism was assessed in a fasted state at baseline, and metabolic flexibility was assessed after (180 min, post-prandial) consuming a meal containing 9 g of fat, 6 g of protein, and 51 g of a rapidly-digestible CHO. Respiratory quotient (RQ), CHO, and fat oxidation were measured with open-circuit spirometry, indirect calorimetry. Fat and fat-free mass were measured with dual x-ray absorptiometry. Blood glucose was assessed from venous samples using glucose oxidase methodology. **Results:** RQ was 5-9% higher (p=0.02-0.04) in sarcopenic participants throughout the experiment. After adjusting for fat-free mass, fat oxidation was 18% lower (p=0.02), while CHO oxidation was 18% higher (p=0.04) at baseline for sarcopenic men and women. Sarcopenic participants also exhibited delayed and limited (p<0.05) post-prandial increases in CHO oxidation, despite greater (p<0.05) increases in blood glucose. **Conclusion:** Sarcopenic individuals are more reliant on CHO and less reliant on fat oxidation than non-sarcopenic adults, which is generally consistent with poorer metabolic health. When compared to non-sarcopenic adults, sarcopenia delayed and truncated CHO utilization after a meal, indicating impaired metabolic flexibility in this population. Impaired metabolic flexibility could be a mechanism underlying the losses of strength and physical function accompanying sarcopenia.

BIOLOGY OF FRAILITY

P262- AN UNEXPECTED ROLE FOR INKT CELLS IN SKELETAL MUSCLE HOMEOSTASIS. Anton De Spiegeleer^{1,2,3}, Hasan Kahya^{1,2}, Nele Van Den Noortgate², Evelien Wynendaele³, Tine Decruy¹, Srinath Govindarajan¹, Dirk Elewaut¹ ((1) *Unit for Molecular Immunology and Inflammation, VIB-Center for Inflammation Research, Ghent, Belgium*; (2) *Department of Geriatrics, Faculty of Medicine and Health Sciences, Ghent University Hospital, Ghent, Belgium*; (3) *Drug Quality and Registration (DruQuaR) group, Faculty of Pharmaceutical Sciences, Ghent University, Ghent, Belgium*)

Background: Acute and chronic muscle wasting represent an important unmet clinical health problem. Most pathophysiological studies suggest an effect of the immune system, primarily through catabolic cytokine productions such as IL-6. Also endoplasmic reticulum (ER) stress is considered to be an important pathway favouring muscle wasting. ER stress in turn plays an important role in innate-like T cells, particularly invariant natural killer T cells (iNKT cells), by controlling their cytokine production [Govindarajan et al., *Nat. Commun.* 2018]. As such we reasoned that iNKT cells may play a pivotal role in muscle homeostasis through their excessive cytokine production. Previous studies have already highlighted the importance of these cells in a wide range of diseases such as cancer and metabolic disorders such as obesity. **Objectives:** The aim of this study was to investigate the in vivo role of iNKT cells in muscle homeostasis. **Methods:** We compared wild-type (WT) versus iNKT cell depleted mice (J α 18 KO) for clinical, histological and gene expression differences in lower limb skeletal muscle. **Results:** Interestingly, we found that iNKT cell depleted mice (J α 18 KO) had a lower relative muscle weight, i.e. a muscle wasting phenotype, compared to WT mice. This clinical muscle wasting was associated with a decrease in oxidative enzymatic activity (succinate dehydrogenase histology). Moreover J α 18 KO mice showed a decreased transcription of genes involved in skeletal muscle growth and differentiation (follistatin and myogenin), sarcomere assembly (myosin-3) and neuromuscular junction function (neuronal acetylcholine receptor subunit alpha-1). **Conclusion:** Taken together, our results suggest a role for iNKT cells in muscle wasting diseases and put innate-like T cells at the centre stage of immune cells controlling skeletal muscle biology.

P263- EXPLORING THE POTENTIAL RELATION BETWEEN IMMUNE BIOMARKERS AND FRAILTY SYNDROME IN OLDER ADULTS - PRELIMINARY RESULTS FROM THE BIOFRAIL STUDY. Armanda Teixeira-Gomes^{1,2}, Solange Costa^{1,2}, Bruna Lage^{1,2}, Dietmar Fuchs³, Vanessa Valdiglesias^{1,4}, Blanca Laffon⁴, João Paulo Teixeira^{1,2} ((1) EPIUnit – Instituto de Saúde Pública da Universidade do Porto, Porto, Portugal; (2) Environmental Health Department, National Institute of Health, Porto, Portugal; (3) Division of Biological Chemistry and Medical Biochemistry, Biocenter, Innsbruck Medical University, Innsbruck, Austria; (4) DICOMOSA Group, Area of Psychobiology, Department of Psychology, University of A Coruña, A Coruña, Spain)

Background: Frailty is a multidimensional geriatric syndrome characterised by increased vulnerability and functional decline that may be reversed if addressed early. It has been identified to be the most common condition leading to disability, institutionalisation and death in older adults. Despite its known biological basis, no particular biological trait has been consistently associated with frailty syndrome so far. **Objectives:** On this basis, the main objective of the present work was to evaluate the possible association between immunological biomarkers and the frailty status in a group of community dwellers. **Methods:** A group of older adults (≥ 65 years old) was engaged in this study. Frailty status was assessed via Fried's frailty model. The levels of several immune activation molecules – neopterin, tryptophan, kynurenine – were analysed. **Results:** The classification of the study population was 47.5% robust, 49.2% pre-frail and 3.3% frail. No significant differences were found between robust and pre-frail groups regarding serum concentrations of neopterin. Although, the kynurenine/tryptophan ratio was significantly higher in pre-frail individuals as compared with robust subjects. **Conclusion:** The preliminary data obtained suggest the activation of immunobiochemical pathways and are in agreement with previous studies that report alterations of the immune response in frail older adults. Nevertheless, further investigation is encouraged and required to consistently demonstrate these findings. In future studies physical activity, nutritional, psychological, sociological and clinical features should also be considered when evaluating changes in immune biomarkers and frailty. The work developed by Armanda Teixeira-Gomes and Solange Costa is supported by FCT under the grants SFRH/BD/121802/2016 and SFRH/BPD/100948/2014, respectively. Vanessa Valdiglesias was supported by Beatriz Galindo Research Fellowship BEAGAL18/00142.

P264- HEMOGLOBIN CONCENTRATION: A PATHWAY TO FRAILTY. Zara Steinmeyer, Laurent Balardy, Sandrine Sourdet (*Gérontopôle, Department of Internal Medicine and Geriatrics, Toulouse University Hospital, La Cité de la Santé, Hôpital La Grave, Toulouse, France*)

Background: Frailty and hemoglobin count, above what would be considered clinical anemia, are two common findings in older patients and lead to an increased risk of negative health outcomes. **Objectives:** Evaluate whether hemoglobin concentration is an independent predictor of frailty and investigate possible causal pathways in particular the relationship between inflammation and nutrition with hemoglobin concentration. **Methods:** 1829 community-dwelling participants aged 65 years or older who visited the Toulouse frailty clinic between 2011 and 2016 were included in this analysis. Patients underwent a comprehensive geriatric assessment and had a blood sample. A series of multivariate logistic regression models were performed after minimizing potential influence from age, gender, kidney function, inflammation, cognition, nutritional status and certain socio-economic factors. **Results:** Hemoglobin count and frailty are significantly associated after minimizing potential influence from other covariates ($p < 0.005$). An increase in one point of hemoglobin concentration is associated with a 14% risk decrease of being frail ($OR = 0.79$, $95\%IC = 0.71-0.89$). There were no evidences of significant impact of inflammation and nutritional status in the relationship between hemoglobin concentration and frailty status ($p > 0.005$). **Conclusion:** Hemoglobin concentration is strongly associated with frailty in older adults. These results can have potentially important implications for prevention policies targeting frailty, by identifying potential patients with high risk of adverse outcomes and functional outcomes.

P265- THE ROLE OF MONOCYTE INFLAMMATORY ACTIVITY IN FRAILTY AND AGING - A LONGITUDINAL A STUDY OF ELDERLY MEDICAL PATIENTS AND AGE-MATCHED CONTROLS. Juliette Tavenier¹, Line Jee Hartmann Rasmussen¹, Jan Nehlin¹, Morten Baltzer Houlind¹, Aino Leegaard Andersen¹, Ove Andersen¹, Janne Petersen^{1,2}, Anne Langkilde¹ ((1) Clinical Research Centre, Copenhagen University Hospital Hvidovre, Hvidovre, Denmark; (2) Center for Clinical Research and Prevention, Copenhagen University hospital, Frederiksberg, Denmark and Section of Biostatistics, Department of Public Health, University of Copenhagen, Denmark)

Background: Chronic inflammation is thought to be involved in the development of frailty. We hypothesized that increased monocyte inflammatory activity plays a role in chronic inflammation and thereby in frailty. **Objectives:** To study the potential role of chronic monocyte inflammatory activity in frailty. **Methods:** Two groups of elderly adults (≥ 65 years) were included: 52 patients with a recent admission to the emergency department (ED) and 52 age- and

sex-matched controls, without recent ED admission. Data was collected at baseline and after 1 year. Participants were considered frail if they had 2 or more of the following: hand grip strength ≤ 26 kg for men or ≤ 16 kg for women, gait speed ≤ 0.76 m/s, unintentional weight loss of >1 kg within the last 3 months. Frailty was also assessed using the frailty index (FI)-OutRef. We measured cognitive function (Mini Mental State Examination - MMSE) and chronic inflammation (soluble urokinase plasminogen activator receptor - suPAR). Monocyte inflammatory activity was assessed by NF- κ B phosphorylation (pNF- κ B) using flow cytometry. **Results:** Participants had a mean age of 76.6 years (range: 65.8-92.2) and 48% were women. Preliminary results show that at baseline, the patient group had a greater proportion of frail individuals compared to the control group (21 vs. 1, $p < 0.0001$). FI-OutRef was on average 1.5 points higher ($p < 0.0001$) and suPAR levels 35% higher ($p < 0.0001$) in the patient group, however, there was no difference in MMSE score between the groups ($p = 0.17$). At 1 year, although the proportion of frail individuals decreased in the patient group, it was still greater than in the control group (9 vs. 3, $p = 0.04$). FI-OutRef remained elevated in the patient group ($p = 0.004$), but there was no difference in suPAR levels ($p = 0.70$). pNF- κ B was positively associated with age in the control group ($p = 0.002$), but not in the patient group ($p = 0.45$). pNF- κ B was 53% higher in the patient group compared to the control group ($p < 0.0001$), and this was unchanged when adjusting for frailty, suPAR, and MMSE. **Conclusion:** The patient group was more frail and had elevated monocyte inflammatory activity compared to the control group. However, none of the frailty measures were confounders for the difference in monocyte inflammatory activity between groups.

HEALTH AGING

P266- THE ASSOCIATIONS BETWEEN PHYSICAL ABILITIES, COGNITIVE FUNCTIONS AND BODY WEIGHT (FOR EXAMPLE LONG-LIVING SUBJECTS). N Prokopenko (*State Institute of Gerontology of National Academy of Medical Sciences, Kiev, Ukraine*)

Background: Aging is most often accompanied by a loss of body weight: a decrease of fat deposits and muscle body weight. Body mass index (BMI) in adults is considered normal if it is in the range of 18.5 to 24.9 kg / m² (according to the WHO classification). BMI is widely used in the diagnosis of obesity. The association of BMI and cardiovascular and cerebrovascular diseases is known. **Objectives:** The purpose of research is to identify the relationship of BMI with physical abilities and cognitive functions in long-livers. **Methods:** 75 long-living subjects aged 93.7 ± 2.8 years were examined. In long-livers, height, body weight were measured, calculated BMI. The level and direction of cognitive disturbances was determined by the MMSE test (mini mental state examination). Physical abilities were determined by the questionnaire and physical tests (tests the muscular strength in forearms and of the hands, chair stand test). **Results:** BMI in long-livers had a normal distribution. The median BMI was 24.7 kg / m², the

minimum value was 11.4 kg / m², and the maximum value was 42.4 kg / m². 37.9% of long-livers had a BMI ranging from 18.5 to 24.9 kg / m². 34.8% of long-livers have lost weight during the past year, including 37.5% by 10 kg or more. 84.1% of long-livers could stand up of the chair. However, only 39.4% of long-livers were able to complete the test correctly. Amongst them, 42.3% had a normal BMI. Indicators of muscular strength in forearms and of the hand in long-livers who completed the chair stand test were significantly higher compared to long-livers who did not completed the chair stand test ($r = 0.31$, $p < 0.01$). BMI had a positive correlation with the ability of a long-lived to wash without anyone's help ($r = 0.24$, $p < 0.05$), go up and down the stairs ($r = 0.30$, $p < 0.05$), do light housework ($r = 0.44$, $p < 0.001$). MMSE indicators also positively correlated with BMI ($r = 0.54$, $p < 0.001$). The average MMSE 27.8 ± 1.5 was observed with average BMI 26.1 ± 2.7 . **Conclusion:** Against the background of a decrease in the BMI indicator in long-livers, a decrease in physical abilities and cognitive functions is observed. However, there is a problem in determining the boundaries of the ratio of height and body weight for elderly people. In all likelihood, there are not linear, but more complex dependencies between BMI and functional abilities of long-livers.

P267- A PATH MODEL OF FACTORS ASSOCIATED WITH DEPRESSIVE SYMPTOM AMONG OLDER PEOPLE LIVING IN RURAL AREAS. Suparb Aree-Ue¹, Inthira Roopsawang¹, Jansudaphan Boontham², Surinrat Baurangtheinthong², Yuwadee Phiboonleetrakun² ((1) *Ramathibodi School of Nursing, Faculty of Medicine Ramathibodi Hospital, Mahidol University, BKK, Thailand*; (2) *Faculty of Graduate Studies, Mahidol University, BKK, Thailand*)

Background: Depressive symptom results in increasing poor outcomes and care dependency in older adults. The prevalence of depressive symptoms is common with its associated multiple factors. However, this conundrum problem is underestimated, particularly in older people living in rural areas. To promote healthy aging, understanding of the conundrum problem is essential in strengthening care quality and enhancing the quality of life in this population. **Objectives:** To determine the relationships of the number of medication use, pain, frailty, and locomotive syndrome and their effects on depressive symptoms among community-dwelling Thai older adults. **Methods:** A cross-sectional study was employed. The sample consisted of 310 community-dwelling Thai older adults who met the inclusion criteria. Data were assessed by using demographics questionnaire, Thai version 25-question Geriatric Locomotive Function Scale: GLFS-25; Numeric Rating Scale; the Reported Edmonton Frailty Scale: REFS-Thai version; and the 15-item Geriatric Depression Scale, TGDS-15. A path analysis was employed to determine the pathways linking the number of medication use, pain, locomotive syndrome, frailty to influence depressive symptoms. **Results:** There were significant positive direct paths from pain ($\beta = 2.78$, $p < .001$) to locomotive syndrome and from locomotive syndrome to the

number of medication use ($\beta = -.03$, $p < .01$). An inversely, the locomotive syndrome was a negative significant direct to depressive symptoms ($\beta = -.06$, $p < .01$). Pain had an indirect effect on depressive symptoms ($\beta = -.17$, $p < .01$). Additionally, the model explained 30.8% of the variability in depressive symptoms. **Conclusion:** The locomotive syndrome is a major factor influencing depressive symptoms. The complex relationship among pain, number of medication use, locomotive syndrome, and depressive symptoms should be taken into account for designing an appropriate intervention to reduce depressive symptoms among community-dwelling Thai older adults.

P268- PATIENTS' EXPECTATIONS TO FUNCTIONAL ABILITIES, FUNCTIONAL ABILITIES, AND SATISFACTION TO FUNCTIONAL ABILITIES AMONG OLDER ADULTS UNDERGOING TOTAL KNEE ARTHROPLASTY: A CORRELATIONAL STUDY. Suttiwan Chawengkiattikul¹, Suparb Aree-Ue², Phichpraorn Youngcharoen², Viroj Kawinwonggowit³ ((1) Perioperative Nursing Division, Nursing Department, Faculty of Medicine Ramathibodi Hospital, Mahidol University, BKK, Thailand; (2) Ramathibodi School of Nursing, Faculty of Medicine Ramathibodi Hospital, Mahidol University, BKK, Thailand; (3) Department of Orthopedics, Faculty of Medicine Ramathibodi Hospital, Mahidol University, BKK, Thailand)

Background: Total knee arthroplasty (TKA) is a clinical curative treatment for severe knee osteoarthritis. However, the outcomes are differences in each patient's perception. Preoperative patients' expectations to functional abilities are one of important factors influencing on postoperative outcomes and satisfaction. **Objectives:** To investigate the association among preoperative patients' expectations, postoperative functional abilities, and satisfaction to functional abilities among older adults undergoing TKA at 6-week after surgery. **Methods:** Participants were 97 older adults who were diagnosed with knee osteoarthritis and required to receive TKA at a university hospital in Bangkok, Thailand. The sample was purposely selected based on the following criteria: were aged 60 years or over, received TKA for the first time, and had no cognitive impairment. The data were collected at preoperative and postoperative TKA by using the demographic data questionnaire, the Hospital for Special Surgery Knee Replacement Expectations Survey, and the Knee and Osteoarthritis Outcome Score in the part of function in daily living (KOOS ADL) Thai version. The data analysis was performed by using descriptive statistics, paired t-test, and Pearson product moment correlation coefficient. **Results:** Before surgery, patients' expectations to postoperative functional abilities had a high level with the total mean score of 70.21 (SD = 13.86), and the item of improving ability to walk in a short distance was rated as the highest expectation. At 6-week after surgery, the overall functional ability had a significant improvement ($t = -9.229$, $p = .000$). Satisfaction to functional ability also had a high level (Mean \pm SD = 71.15 \pm 14.73), and the improving ability to walk in a short distance item

had the highest. Patients' expectations to functional abilities had a significantly low positive correlation to postoperative functional ability and satisfaction ($r = .273$, $p < .05$; $r = .292$, $p < .01$, respectively). Moreover, there was a significant moderate positive correlation between functional abilities and satisfaction to functional abilities ($r = .603$, $p < .01$). **Conclusion:** A better understanding of expectations may be beneficial in gaining knowledge, paving expectations on possible outcomes, and developing trust resulting in enhancing quality of care for Thai older adults undergoing TKA.

OSTEOPOROSIS & SARCOPENIA

P269- THE IMPACT OF VARIATION IN THE DEVICE USED TO MEASURE GRIP STRENGTH ON THE IDENTIFICATION OF LOW MUSCLE STRENGTH: FINDINGS FROM A RANDOMISED REPEATED MEASUREMENTS CROSS-OVER TRIAL. Rachel Cooper¹, Carli Lessof², Andrew Wong³, Rebecca Hardy⁴ ((1) Musculoskeletal Science and Sports Medicine Research Centre, Department of Sport and Exercise Sciences, Manchester Metropolitan University, Manchester, UK; (2) National Centre for Research Methods, University of Southampton, Southampton, UK; (3) MRC Unit for Lifelong Health and Ageing at UCL, London, UK; (4) Cohort and Longitudinal Studies Enhancement Resources (CLOSER), UCL Institute of Education, London, UK)

Background: Identifying low muscle strength is a key step in many operational definitions of sarcopenia including the one recently proposed by the European Working Group on Sarcopenia in Older People-2 (EWGSOP2). Grip strength is widely used to identify people with low muscle strength. However, it is unclear what impact variation in the type of hand-held dynamometer used to measure grip strength has on the prevalence of low muscle strength. **Objectives:** We aimed to assess the impact of estimated differences of between 4 and 5kg in the measurement of grip strength when using different types of hand-held dynamometer on the case-finding of low muscle strength. **Methods:** Study participants were 118 men and women aged 45-74 from a randomised, repeated measurements cross-over trial. Maximum grip strength was assessed using four hand-held dynamometers (Jamar Hydraulic; Jamar Plus+ Digital; Nottingham Electronic; Smedley) in a randomly allocated order. EWGSOP2 recommended cut-points (<27kg men; <16kg women) were applied to estimate prevalence of low muscle strength for each device. Agreement between devices was assessed using kappa statistics. **Results:** Prevalence of low muscle strength varied by dynamometer type ranging between 3% and 22% for men and, 3% and 15% for women. Of the 13 men identified as having low muscle strength by at least one of the four dynamometers, only 8% were identified by all four and 54% by just one. Of the 15 women classified as having low muscle strength by at least one of the four dynamometers, only 7% were identified by all four and 67% by only one. When comparing pairs of devices, kappa statistics ranged from 0.13 to 0.55 suggesting poor to

moderate agreement. **Conclusion:** Case-finding of low muscle strength is influenced by the type of hand-held dynamometer used. It is important to identify the sources of variation in the measurement of grip strength and consider the implications of these for sarcopenia. Further research is required to understand how best to standardise the assessment of each of the different components of commonly used operational definitions of sarcopenia and take account of sources of variation in these measures where standardisation cannot be achieved.

P270- QUALITY OF LIFE IN CHILEAN OLDER PEOPLE WITH SARCOPENIA. L Lera, B Angel, R Saguez, C Marquez, MO Moya, C Albala (*INTA University of Chile*)

Background: Sarcopenia is characterized by a progressive loss of skeletal muscle mass and strength associated with mortality and severe adverse events on health. For a healthy aging, the Quality of Life (QoL) is essential and it is associated to autonomy of persons, social relations, and socioeconomic factors. **Objectives:** To compare the QoL of Chilean older people with sarcopenia living in Santiago de Chile, according to an adapted version of the European Working Group on Sarcopenia. **Methods:** 562 community-dwelling older people (mean \pm SD: 69.8 \pm 6.2 years; 72.1% females) were interviewed, registering self-reported chronic diseases and the questions of Short-Form-12 Health Survey (SF-12). Anthropometry, dynamometry and physical performance were measured. QoL was measured using SF-12, validated in Chilean older adults. Norm-based score of 8 subscales and two summaries components -Mental and Physical (MCS and PCS; respectively)- were calculated using the Chilean-Specific-scoring for older people. Low score was defined as having a score \leq 25th percentile of MCS and PCS. Logistic regressions were estimated. **Results:** Sarcopenia was identified in 20.5% of the sample (20.5% women; 20.4% men; $p=0.966$). The average score of the 8 subscales were significantly higher in non-sarcopenic adults than sarcopenic. The average of MCS and PCS were also significantly higher in non-sarcopenic adults than sarcopenic (MCS: 48.2 vs 46.1; $p=0.006$; respectively; PCS: 47.2 vs 44.8; $p<0.0001$; respectively), and were significantly higher in men than women non-sarcopenic (MCS: 49.7 vs 47.7; $p=0.006$; respectively; PCS: 47.7 vs 47.1, $p=0.0287$; respectively). There were non-significant differences in sarcopenic adults by sex. Logistic regressions demonstrated an association between sarcopenia and low MCS and PCS (OR = 3.27; 95%CI: 1.77 - 6.04; OR = 2.70; 95%CI: 1.48 - 4.93; respectively), adjusted by age, sex, multimorbidity, body mass index and lean/fat mass ratio. **Conclusion:** Sarcopenia was associated with a worse quality of life, which shows the impact of this pathology and the importance of developing programs for its prevention, delay or reversal. Funded by FONDEF15I10053

P271- MUNICH SARCOPENIA REGISTRY (IDSAR): FIRST RESULTS. Uta Ferrari^{1,3}, Marina Schraml¹, Ralf Schmidmaier^{1,3}, Navina Röcker^{1,3}, Sigrid Adler-Reichel^{1,3}, Christian Lottspeich^{1,3}, Martin Bidlingmaier^{1,3}, Benedikt Schoser^{1,3}, Sabine Krause^{1,3}, Martin Reincke^{1,3}, Michael Drey^{1,3} ((1) *Department of Medicine IV, University Hospital, LMU Munich, Germany*; (2) *Friedrich Baur Institute at the Department of Neurology, University Hospital, LMU Munich, Germany*; (3) *Preventive geriatrics study group, Germany*)

Background: Since 2018 sarcopenia can be coded as disease in Germany (ICD-GM 62.50). In the same year we established the first sarcopenia registry linked with a biobank to identify modifiable, crucial risk factors for sarcopenia and its adverse outcomes. **Objectives:** Objectives of the registry are (i) how to optimize and standardize the diagnosis over in- and outpatient settings for musculoskeletal health, (ii) identification of clinical and molecular modifiable risk factors (iii) improvement of interdisciplinary treatment and prevention of sarcopenia as a new ICD-code-based geriatric syndrome Here we present the design as a practical approach for diagnosis in out- and inpatient care and a first descriptive analysis of influencing factors and comparison between in- and outpatients data. **Methods:** Patients older than 70 years of age from outpatient clinic and acute geriatric ward at Munich University Hospital were consecutively screened by the SARC-F questionnaire. Patients with high risk (SARC-F score \geq 4) were further assessed for sarcopenia in line with the European Consensus definition 2 (EWGSOP2). Among further factors assessed in the registry, we retrieved presence of further comorbidities, daily medication, nutritional status, SPPB, frailty, and quality of life. **Results:** At time of analysis, 282 patients have been screened and within the first 50 patients with high risk (82% women) 16% had sarcopenia. Patients screened positive for sarcopenia have lower quality of life, even in a subclinical condition (mean EuroQoL (EQ5D-VAS) = 47.4 \pm 16.5). Lower BMI (22.1 \pm 2.8, $p=0.010$) and sex ($p=0.029$) were statistically significant different for sarcopenia status, but not age (mean 78.5 \pm 5.2 years, $p=0.326$) or number of medication ($p=0.691$) and comorbidities ($p=0.691$). But the latter two were the most significant factors for inpatient status (both $p<0.001$). **Conclusion:** The results underline the need for an early screening for sarcopenia in all patients older than 70 years of age, suggested by hand grip strength in inpatients and SARC-F for outpatients. Sex differences and further laboratory factors are necessary to add in sarcopenia diagnosis for precision medicine approaches.

P272- ADAPTION AND VALIDATION OF THE GERMAN VERSION OF THE SCREENING QUESTIONNAIRE FOR SARCOPENIA: SARC-F.

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Background: The SARC-F is a 5-question screening tool for sarcopenia. We present results for reliability and validity of the German version of the SARC-F. **Objectives:** Translation, adaptation and validation of the German version of the SARC-F for community-dwelling older adults in Germany. **Methods:** Design: Cross-sectional. Setting and Participants: 117 community-dwelling outpatients with a mean age of 79.1 ± 5.2 years were included in the study, 94 (80.4%) of them were female. 63 (53.8%) had a positive SARC-F score of ≥ 4 points. According to the definition for sarcopenia from the European Working Group on Sarcopenia in Older People (EWGSOP2), eight patients (6.8%) were identified as sarcopenic and 57 (48.7%) as probable sarcopenic. **Methods:** Translation and cultural adaption was composed of seven different steps that were in general based on the guidelines put forward by the World Health Organization. Validation include test-retest and the inter-rater reliability (intra-class correlation coefficient) as well as internal consistency (Cronbach's alpha). Further, Sensitivity, specificity, positive predictive value, and negative predictive value of the SARC-F were calculated. Receiver operating characteristics (ROC) analysis was performed to calculate the area under the curve. **Results:** The translated and culturally adopted version of the SARC-F for the German language has shown excellent inter-rater reliability and good test-retest reliability. The internal consistency is acceptable. Sensitivity (63%) and specificity (47%) for sarcopenia is low. For detecting patients with probable sarcopenia, the SARC-F in the German version has shown 75% sensitivity and 67% specificity. **Conclusion:** Due to a low sensitivity for detecting sarcopenia but an acceptable sensitivity for identifying probable sarcopenia, the German version of the SARC-F is a suitable tool for case finding of probable sarcopenia.

P273- UNDERSTANDING ACUTE SARCOPENIA: PROTOCOL FOR A COHORT STUDY TO CHARACTERISE ACUTE CHANGES IN MUSCLE QUANTITY AND PHYSICAL FUNCTION IN HOSPITALISED OLDER ADULTS.

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Background: Skeletal muscle is a vital component of the locomotor system necessary for physical function. However, there is increasing evidence that skeletal muscle acts as a secretory organ in itself, communicating with other organ systems. Acute sarcopenia is an emerging condition affecting adults following hospitalisation, which should be considered akin to organ insufficiency elsewhere. However, acute sarcopenia remains poorly characterised to date. **Objectives:** • To characterise changes in muscle quantity, strength, physical performance, and patient-reported physical function in hospitalised older adults at one week and three months. • To determine what biological and clinical factors are predictive of changes to enable further research towards targeted interventions. **Methods:** Planned recruitment will include hospitalised patients aged 70 years and older; 56 elective colorectal surgery patients, 56 emergency surgery patients, and 56 general medical patients with acute bacterial infections. Patients will be recruited to the elective cohort in pre-operative assessment clinic with repeat measures within 48 hours of surgery, at one week, and at three months. Emergency surgery patients will be recruited pre- or post-operatively with repeat measures at one week, and at three months. Medical patients will be recruited within 48 hours of admission, with repeat measures at one week, and at three months. Muscle quantity will be measured by bilateral anterior thigh thickness using ultrasound and bioelectrical impedance. Muscle function will be measured by handgrip strength and short physical performance battery. Serum and plasma samples will be obtained prior to admission in the elective cohort, within 48 hours of surgery in both surgical cohorts, and within 48 hours of admission in the medical cohort. **Results:** Recruitment commenced in May 2019 and is ongoing. As of October 2019, recruitment to date includes 16 elective colorectal surgery patients, 11 emergency surgery patients, and 19 general medical patients. **Conclusion:** Recruitment to date demonstrates feasibility in conducting research on acute sarcopenia in complex populations of

hospitalised older adults. We consider acute sarcopenia to be the last remaining acute organ insufficiency, with potentially devastating impact on function. Characterising this condition will enable development of targeted interventions to ameliorate these changes.

P274- C2C12 MYOBLAST GENE KNOCKOUT TO VALIDATE THE FINDINGS OF GENOME-WIDE ASSOCIATION STUDY OF MUSCLE TRAITS. Bili Gasman, Gideon Baum, David Karasik (*Azrieli faculty of medicine, Bar Ilan university, Safed, Israel*)

Background: Sarcopenia is common in old age and is associated with various diseases. As human life expectancy is projected to increase, this will pose a challenge for the global healthcare industry. Since sarcopenia is highly heritable, study of its genetic underpinning can help its etiology. In the past decade genome wide association studies (GWAS) have allowed the identification of new genetic markers for various conditions. Identification of new genetic markers through GWAS requires functional validation using cellular models in order to both prioritize and validate the potential loci/genes. **Objectives:** Demonstrate that a locus identified in GWAS may affect muscle health, which is approximated by lean mass and hand grip strength. **Methods:** GWAS results are screened using a two-step scoring system which utilizes publicly available databases such as Genecards, Ensembl and COXPRESdb to assess the relevance of a certain locus. Relevant genes are then knocked out using CRISPR-Cas9 in C2C12 mouse myotube cells which are induced to differentiate. After cell harvest RT-qPCR and western blot are performed to assess mRNA and protein expression, respectively. Knocked out cells are also examined against wild type cells for morphological phenotype. **Results:** SLC8A1 is a promising candidate based on: (a) muscle GWAS results, (b) the expression of the gene in smooth and striated muscle tissue, (c) the lack of co-expression with other genes that have an effect on muscle; (d) mouse phenotypes associated with a mutation in the mouse ortholog Slc8a1, (e) cell epigenetic data and (f) the topologically associated domain (TAD) at chr. 2:40,097,270-40,611,053. RT-qPCR of wild type C2C12 cells showed a fast increase in the expression of SLC8A1's mRNA which remains constant during the entire differentiation process. **Conclusion:** Preliminary results indicate that SLC8A1 might be a promising candidate to investigate for involvement in muscle health. There is a fast and stable increase of the gene's expression during myotube formation. Positive results may suggest that SLC8A1 is of importance to muscle health. To further assess SLC8A1 role, Wild type cells will be compared to knocked-out cells. This might lead to a new genetic marker for muscle health, thus extending personalized medicine in the field of sarcopenia and muscle health.

P275- FACTOR ANALYSIS TO DETERMINE RELATIVE CONTRIBUTIONS OF STRENGTH, PHYSICAL PERFORMANCE, BODY COMPOSITION AND MUSCLE MASS TO DISABILITY AND MOBILITY DISABILITY OUTCOMES IN OLDER MEN.

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Background: Muscle mass, strength and physical performance are independent risk factors for disability and mobility disability in older adults. It is not known how measures of body composition (muscle, lean and fat mass), strength and physical performance are interrelated or how empirical groupings of these measures relate to disability and mobility disability. **Objectives:** To determine the relationship between measures of body composition, strength and physical performance in older men and to examine how empirical groupings of these measures relate to adverse mobility and disability outcomes. **Methods:** Muscle mass was assessed by D3-creatine dilution (D3Cr muscle mass) in 1345 men (84.1 + 4.1 years) enrolled in the Osteoporotic Fractures in Men (MrOS) study. Participants completed anthropomorphic measures, walk speed (6m), grip strength (kg), chair stands (s), and dual x-ray absorptiometry (DXA) appendicular lean mass (ALM) (adjusted for weight, body mass index or height²) and body fat percentage. Factor analysis was conducted to reduce variables into smaller components. Men self-reported limitations in mobility (walking 2-3 blocks, climbing 10 steps, or carrying 10 pounds); activities of daily living (ADLs); and instrumental ADLs at initial and follow-up visits. Negative binomial models adjusted for participant characteristics were used to determine the relative risk of factors with mobility and disability outcomes. **Results:** Factor analysis reduced 10 variables into four factors: Factor 1, body composition, with strong loading by ALM, body fat percentage, weight and muscle mass; Factor 2, body size and lean mass, with strong loading by height, weight and ALM; Factor 3, muscle mass, strength and performance, with strong loading by walk speed, chair stands, grip strength, and muscle mass; and Factor 4, lean mass and weight, with strong loading by ALM and weight. Only Factor 3 was associated with prevalent disability and

mobility disability, and incident mobility disability over 2.2 + 0.3 years. Factor 1 was associated with incident and prevalent mobility disability only, and Factor 2 was associated with only prevalent mobility disability. **Conclusion:** Muscle mass by D3Cr co-segregated with strength and physical performance measures, and together was associated with mobility and disability outcomes in older men. Body composition measures (including DXA ALM) did not co-segregate with strength and physical performance measures and together was associated with only mobility disability.

P276- GLUTAMINE USE IN PELVIC SARCOPENIA: A PROSPECTIVE, RANDOMIZED, PLACEBO CONTROLLED STUDY. G. Bahat¹, B. Ilhan¹, N. Capan², C. Kilic¹, C. Yasa³, F. Gungor³, O.P. Ozkan⁴, A. Karan², M.A. Karan¹ ((1) *Istanbul University, Istanbul Medical School, Department of Internal Medicine, Division of Geriatrics, Istanbul, Turkey;* (2) *Istanbul University, Istanbul Medical School, Department of Physical Medicine and Rehabilitation, Turkey;* (3) *Istanbul University, Istanbul Medical School, Department of Urogynecology, Turkey;* (4) *Istanbul Arel University, Nutrition and Dietetics, Turkey*)

Background: Urinary incontinence(UI) is a prevalent and costly condition that affects ~40% of older community-dwelling women. One of the contributors of UI is decreased pelvic muscle strength. **Objectives:** To determine the effect of additional oral glutamine supplementation to Kegel-exercise on pelvic floor strength and clinical parameters of UI in females. **Methods:** It is a randomized, double-blind study. Females with UI were included. Digital test and a vaginal manometer were used for measuring the strength of the pelvic floor muscles. 24 hours pad weight test was examined. Participants were randomized into 2 groups as oral Glutamine 30 gr/day and placebo. It was asked to use the supplementation and Kegel-exercises to all participants for 3 months. Basic and 3th month measurements were compared by Paired sample T-test and Wilcoxon tests in each group. The progression between measurements at basic and 3th months was compared between the groups by using Mann-Whitney-U test. (Clinical Trials protocol ID: 2014/1203). **Results:** There were 11 patients in the glutamine arm and 18 patients in the placebo arm. Mean age was 58.2±6.6 years. Mean body mass index was 32.9±4.8kg/m². There was no age difference between the groups [glutamine 59±3.8, placebo 57.8±7.9 years, p>0.05]. In glutamine arm, vaginal muscle strength assessed by digital test was higher at the end of 3 months [2.9±0.7 ve 4±0.9; 0-3 months respectively, p=0.014]; perinometer measurements were not statistically different [27.4±8.3 ve 31.2±8.9; 0-3 months respectively, p>0.05]; 24 hour pad weight was not different [p>0.05]. In placebo arm, there was statistically significant progress in vaginal muscle strength assessed by both digital test and perinometer, and 24 hour pad weight (p values: 0.005, 0.011, 0.002, respectively). When we compare the progression scores between the groups; there was no statistically significant difference [p>0.05]. **Conclusion:** Our study suggests that glutamine supplementation does not provide

additional benefit in the treatment of pelvic muscle sarcopenia in patients without protein-energy malnutrition.

P277- DEVELOPMENT AND VALIDATION OF A PROGNOSTIC SCREENING-TOOL TO PREDICT THE RISK OF PRE-SARCOPENIA IN MIDDLE-AGED ADULTS. Lara Vlietstra^{1,2}, Debra L. Waters^{1,2}, Kim Meredith-Jones¹ ((1) *Department of Medicine, University of Otago, Dunedin, New Zealand;* (2) *School of Physiotherapy University of Otago, Dunedin, New Zealand*)

Background: It is important to identify if middle-aged people are at risk for sarcopenia. A screening-tool identifying predictors of pre-sarcopenia early in the lifespan may inform prevention focused interventions. **Objectives:** Develop and validate a practical screening-tool to identify middle-aged adults at risk for pre-sarcopenia using data from the Dunedin Multidisciplinary Health and Development Study (DMHDS). **Methods:** The DMHDS is an ongoing longitudinal birth cohort study from the greater Dunedin (NZ) metropolitan area. The primary outcome of the screening-tool was low appendicular lean muscle index (ALMI) in middle-aged adults, at age 45. Low ALMI was classified using Prado's age-specific median cut-scores. The models were developed in 80% (n=720) of the cohort and cross-validated in the remaining 20% (n=179). Possible predictors at age 38, were examined for associations with low ALMI, using univariate logistic regression. Significant predictors were selected in a multivariate logistic regression to derive sex-specific prediction models. Each individual in the cohort was allocated a risk-score and classified as low, medium and high risk, based on the quartile risk score. Overall performance of the final models was estimated with Nagelkerke R² score, discrimination of the models with the area under the ROC curve and calibration of the final models with Hosmer-Lemeshow tests. **Results:** 49% of the development set and 51% of the validation set were female. The final models for both sexes included body mass index (B=-0.704, p=0.000; B=-0.746, p=0.000), VO₂max (B=-0.137, p=0.000, B=-0.187, p=0.004) and grip strength (B=-0.067, p=0.000, B=-0.118, p=0.001). The final model for females also included creatinine (B=-0.187, p=0.016). Nagelkerke's R² showed that 56.7% and 67.6%, of the variance in low ALMI, is explained by the variables in the screening-tool for males and females, respectively. The area under the ROC curve demonstrated good discrimination (0.827). Sensitivity in the lowest quartile was 93.8%, specificity in the highest quartile was 97.8%. The Hosmer-Lemeshow p-values were respectively 0.539 and 0.617, showing goodness of fit. **Conclusion:** This screening-tool was able to predict the sex-specific risk of pre-sarcopenia in a large birth cohort of early middle-aged adults. Clinical utility and application of this screening-tool require further investigation.

P278- LOSS OF ESTRADIOL IS ASSOCIATED WITH DECREASED MUSCLE MASS: A FOLLOW-UP STUDY OVER MENOPAUSAL TRANSITION. Hanna-Kaarina Juppi¹, Sarianna Sipilä¹, Neil Cronin², Pauliina Aukee³, Vuokko Kovanen¹, Tuija Tammelin⁴, Sira Karvinen¹, Eija Laakkonen¹ ((1) Gerontology Research Center, Faculty of Sport and Health Sciences, University of Jyväskylä, Jyväskylä, Finland; (2) Faculty of Sport and Health Sciences, University of Jyväskylä, Jyväskylä, Finland; (3) Department of Obstetrics and Gynecology, Department of Pelvic Floor Research and Therapy Unit, Central Finland Central Hospital, Jyväskylä, Finland; (4) LIKES Research Centre for Physical Activity and Health)

Background: Aging-associated changes in body composition include a decrease in skeletal muscle mass, which may predispose women to physical limitations and disabilities. In women, these changes may already be accelerated during menopause, when ovarian estradiol (E2) production ceases. E2, the main female sex hormone, is known to have beneficial effects on female skeletal muscle mass. **Objectives:** The aim of this study was to investigate the effects of menopausal transition on lean body mass, lower limb muscle mass, muscle area and muscle fiber cross-sectional area in middle-aged women. **Methods:** Middle-aged women (n=199) were followed from perimenopause to postmenopause. Menopausal state was defined based on repeated follicle-stimulating hormone (FSH) measurements and menstrual bleeding diaries. Serum hormone levels (E2 and FSH; Immulite2000), lean body mass (LBM), right leg lean mass (DXA, n=190), and thigh muscle cross-sectional area (computed tomography (CT), n=37) were measured in peri- and postmenopause. Muscle biopsies for immunohistochemistry were obtained from 7 participants at peri- and postmenopausal phases, and muscle fiber cross-sectional areas were measured. The level of physical activity (PA) from the previous 12 months was assessed with a questionnaire (MET-hours/day, n=183). Statistical differences were analyzed with paired t-test and Wilcoxon Signed Rank test. GEE-modeling was used to analyze the effects of covariates during follow-up. **Results:** The average follow-up time was 1.2 years (range 0.4–3.6 years) and there was a significant difference in E2 and FSH levels during the transition (p<0.001 for both). LBM decreased 0.5% (p=0.027) and leg lean mass 1.2% (p=0.003) during the menopausal transition. No changes were found in the cross-sectional area of thigh muscles or muscle fibers. The level of PA declined during the transition (p=0.037). When individual menopausal transition time and PA were controlled, only systemic E2 levels were positively associated with LBM (B=0.675, p=0.031). **Conclusion:** Despite the relatively short follow-up time, significant declines were observed in LBM and leg lean mass during the menopausal transition. The decrease in LBM was associated with lower systemic E2 level. Therefore, it seems that although PA might slow the decrease in muscle mass, estradiol loss is one key factor in whole body muscle loss during menopausal transition.

P279- IMPACT OF SARCOPENIA TO DISABILITY INCIDENCE IN THE JAPANESE OLDER ADULTS. Hiroyuki Shimada¹, Takehiko Doi¹, Sangyoon Lee¹, Kota Tsutsumimoto¹, Seongryu Bae¹, Sho Nakakubo¹, Keitaro Makino¹, Hidenori Arai² ((1) Department of Preventive Gerontology, Center for Gerontology and Social Science, National Center for Geriatrics and Gerontology, Aichi, Japan; (2) National Center for Geriatrics and Gerontology, Aichi, Japan)

Background: In 2018, the European Working Group on Sarcopenia in Older People met again (EWGSOP2) to update the original definition of sarcopenia. EWGSOP2 uses detection of low muscle quantity and quality to confirm the sarcopenia diagnosis, and identifies poor physical performance as indicative of severe sarcopenia. However, it is not clear that the relationships between the revised definition of the sarcopenia and disability incidence in Japanese older adults. **Objectives:** To examine the associations between sarcopenia for EWGSOP2 criteria and disability incidence among community-dwelling older Japanese individuals. **Methods:** A total of 4561 older adults participated in the study (2301 women; average age, 71.9 ± 5.4 years) form a Japanese national cohort study called the NCGG-SGS. Skeletal muscle mass was assessed using a bio-impedance analysis device and handgrip strength and walking speed were measured as physical performance. We used the cut-points of the Asian Working Group for Sarcopenia to determine the low muscle mass and low physical performances. The participants were divided into non-sarcopenia, sarcopenia, and severe sarcopenia groups. The incidence of disability was determined using data collected by the Japanese long-term care insurance system over 49 months. **Results:** The prevalence rates of sarcopenia and severe sarcopenia were 2.6% and 1.4%, respectively. The participants with sarcopenia, included sarcopenia and severe sarcopenia, showed higher risk of disability incidence than those with non-sarcopenia (hazard ratio [HR]: 1.78, 95% confidence interval [95% CI]: 1.27–2.49). In analysis between non-sarcopenia and sarcopenia or severe sarcopenia, although the association between disability incidence and severe sarcopenia remained significant (HR: 2.00, 95% CI: 1.32–3.02), there was no significant association in sarcopenia (HR: 1.54, 95% CI: 0.97–2.46). **Conclusion:** Severe sarcopenia combined low muscle mass and low physical performance could have a higher risk of disability than healthy older adults or older adults with low muscle mass alone. Further studies are needed to determine whether sarcopenia without poor physical performance is associated with disability incidence.

P280- DEVELOPMENT OF A ROBUST RESCUE ASSAY FOR MUSCLE WASTING USING HUMAN PRIMARY MYOBLASTS FROM YOUNG AND ELDERLY DONORS. Joanne Young, Eve Duchemin-Pelletier, Mélanie Flaender, Oana Lorintiu, Erwann Ventre, Pauline Poydenot (CYTOO, Grenoble)

Background: Currently, there are no registered drug treatments for the loss of skeletal muscle mass, strength and function that occurs during sarcopenia and cachexia. Moreover, they are only limited relevant pharmacological screening options available. **Objectives:** To improve in vitro pharmacological screening options, we developed a model of muscle wasting using donor primary muscle cells and our MyoScreen™ platform that generates standardized myotubes for high-throughput phenotypic screening (Young et al., *SLAS Discov.* 2018 23(8):790-806). **Methods:** Myoblasts from four donors aged 4, 20, 37 and 68 years were compared in terms of proliferation, differentiation, size of formed myotubes and AChR cluster formation using imaging and high content analysis. We then established an assay for muscle wasting: in each of the four donors various molecular pathways implicated in the pathogenesis of sarcopenia were activated using TNF α , TGF β or dexamethasone. **Results:** Myotubes formed from elderly patient's myoblasts displayed a reduced capacity to proliferate and differentiate, thinner myotubes and fewer acetylcholine receptor clusters. Therefore, myotubes cultured using the MyoScreen system continue to reflect age-related properties of donor muscle. Interestingly, we also found that myotube sensitivity to atrophy stimulation increased with increasing age. Myotubes were then co-incubated with growth/repair factor IGF-1 or HDAC inhibitor, trichostatin A (TSA). Both agents attenuated TNF α -induced myotube atrophy and differentiation inhibition in a dose-dependent manner. The extent of fusion index and myotube size increase was highest in myotubes from elderly subjects while myotubes from young subjects were more resistant to the protective effects of IGF-1 and TSA. **Conclusion:** MyoScreen can be exploited to quantify age-dependent modifications in skeletal muscle fibers in vitro and identify candidate compounds that counteract the muscle wasting phenotype.

P281- REPRODUCIBLE QUANTIFICATION OF INTERMUSCULAR ADIPOSE TISSUE OF THE THIGH. Andreas Friedberger¹, Alexandra Grimm¹, Wolfgang Kemmler¹, 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 skeletal muscle mass, which is infiltrated by adipose tissue. Dual energy x-ray absorptiometry can only differentiate overall lean and fat mass. A local muscle analysis requires 3D imaging like magnetic resonance imaging (MRI). Usually, T1 weighted images are used for a visual grading of the amount of

intermuscular adipose tissue (IMAT). However, a quantitative analysis requires segmentation of the fascia lata (FL, deep fascia of the thigh). **Objectives:** Our aim was to develop a highly reproducible 3D segmentation method in order to quantify IMAT and the fat fraction of the thigh muscles using a combination of T1 weighted turbo spin echo (T1wTSE) and corresponding 6pt Turbo Spin Echo (TSE) Dixon Fat Fraction (FF) images. **Methods:** MRI Scans were acquired on a 3T scanner (MAGNETOM Skyrafit Siemens) at the mid-thigh (length 10 cm, 34 slices, voxel size T1w 0.5x0.5x3.0 mm³, Dixon 0.8x0.8x3.0 mm³). Since the FL is difficult to detect in the FF images, the T1wTSE images were used for segmentation. This process involved several steps, starting with a fuzzy c-mean clustering followed by several filtering steps to enhance 3D surface like structures representing the FL. Finally, a level set algorithm was applied to obtain a closed 3D surface. If necessary, results were corrected manually. Segmented masks were transferred from the T1w to the FF images by rigid registration. IMAT was then segmented using a threshold determined from the histogram of the FF values within the intra-fascia region. 15 sarcopenic (80 \pm 5 y) and 5 healthy (28 \pm 4 y) male subjects were analyzed by three operators once (inter-operator reproducibility) and three times by one operator (intra-operator reproducibility). **Results:** Inter- and intra-operator variability results of IMAT are shown in the table as mean / root mean square of the standard deviation (RMS-SD) in units of the measured variable / coefficient of variation (RMS-CV) in %. Overall precision was excellent with errors below 0.5 %. **Conclusion:** A semi-automatic 3D segmentation for the fascia of the thigh was developed. The operator impact on IMAT was almost negligible.

P282- CALF CIRCUMFERENCE CUTOFF POINT TO DIFFERENTIATE BETWEEN COMMUNITY-DWELLING OLDER ADULTS FROM NORTHEASTERN BRAZIL WITH AND WITHOUT SARCOPENIA: RESULTS FROM PRO-EVA STUDY. Álvaro Campos Cavalcanti Maciel¹, Rafaella Silva dos Santos¹, Sabrina Gabrielle Gomes Fernandes¹, Mariana Carmem Apolinário Vieira¹, Luiz Eduardo de Lima Andrade¹, Ricardo Oliveira Guerra¹, Edgar Ramos Vieira², Maria do Socorro Medeiros de Moraes³ ((1) *Department of Physical Therapy, Federal University of Rio Grande do Norte, Natal, RN, Brazil*; (2) *Department of Physical Therapy, Florida International University, Miami, FL, USA*; (3) *Graduate Program in Health Sciences, Federal University of Rio Grande do Norte, Natal, RN, Brazil*)

Background: Sarcopenia a muscle disease that causes muscle mass loss and weakness. The calf circumference is a good screening test for sarcopenia in older adults in primary care. The most commonly used cutoff point is 31 cm, but it is derived from North American studies and it may not be adequate for screening different populations that have lower height, weight and BMI. **Objectives:** The objective of this study was to determine the ideal cutoff point for calf circumference for sarcopenia in community-

dwelling older people in Northeastern Brazil. **Methods:** This was a cross-sectional study of 538 community-dwelling older people with a mean age of 70±7 years (63% women). Data on sociodemographics, anthropometrics, grip strength, gait speed, and skeletal muscle mass (bioimpedance) were collected. Sarcopenia was assessed based on the diagnostic criteria suggested by European Working Group on Sarcopenia in Older People 2 (EWGSOP2). The area under the ROC curve (AUC) was calculated for different calf circumferences to identify the best cutoff point to determine sarcopenia among the participants. **Results:** The prevalence of sarcopenia was 15%. The most appropriate calf circumference cutoff point was 30 cm, with an AUC of 0.68, 79% sensitivity and 45% specificity. **Conclusion:** It was found that the most appropriate calf circumference cutoff point to diagnose sarcopenia in older Northeastern Brazilians was 30 cm. This is a more accurate cutoff point and will reduce the number of false positives and optimize health services in Brazil.

P283- SCREENING OF OSTEOSARCOPENIC OLDER WOMEN THROUGH INFRARED SPECTROSCOPY.

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Background: Osteosarcopenia is a new geriatric syndrome defined as the presence of both sarcopenia and osteopenia or osteoporosis. This musculoskeletal disorder is related to higher prevalence of disabilities, falls and fractures and higher risk of mortality among community-dwelling older adults. Therefore, the early diagnosis of this condition must be considered in order to reduce costs and negative impact on function. **Objectives:** To explore the use of the infrared spectroscopy as a potential screening tool for osteosarcopenic older women (>=65 years old). **Methods:** Sarcopenia was identified by observing the presence of both reduction of muscle strength (grip strength) and mass (appendicular skeletal muscle mass) as suggested by the revised algorithm of the European Working Group on Sarcopenia in Older People (2019). Reduction on bone mineral density was identified through bone densitometry and a t-score of <-1,0 was adopted to classify the older women as osteopenic/osteoporotic. Infrared spectroscopy through Attenuated Total Reflection-Fourier Transform Infrared Spectroscopy (ATR-FTIR) was used to collect the sample information and to perform a multivariate analysis model. Vibrational spectrum was obtained from serum. Six samples of each group (osteosarcopenic and non-osteosarcopenic) were used to test the model and thirteen osteosarcopenic samples and fifteen non-osteosarcopenic samples were used for training. **Results:** The most suitable model was the GA-SVM with an accuracy of 91.7%, 100% of sensibility and 83.3% of specificity

to differ osteopenic to non-osteopenic women. The more important selected variables found in the model were at the spectral regions: ~900 cm⁻¹ for carbs, ~1000 to 1150 cm⁻¹ for nuclei acids and ~1500 to 1650 cm⁻¹ for proteins. **Conclusion:** Infrared spectroscopy may be a promisor future method to early and easily diagnosis osteosarcopenia and prevent the harms this health condition may cause to the elderly population and minimizing costs to treat them.

P284- SARCOPENIA IN OLDER ADULTS UNDERGOING CARDIAC SURGERY.

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Background: Sarcopenia is one of the biological hallmarks of frailty that has been associated with adverse events in older adults undergoing cardiac surgery. Dual x-ray absorptiometry (DXA) is a recommended modality to measure muscle mass, however, DXA may be less accurate in acute cardiac patients due to the confounding effects of peripheral edema and fluid shifts. **Objectives:** The study aims to determine if sarcopenia as measured by a combination of DXA and timed chair rises is associated with mortality in older adults referred for cardiac surgery. **Methods:** A convenience sample of hospitalized older adults being evaluated for cardiac surgery was prospectively enrolled at the Jewish General Hospital. After a questionnaire and physical performance battery, patients underwent a DXA scan (GE Lunar) to measure their appendicular muscle mass (AMM). Patients were categorized as sarcopenic based on the European Working Group guidelines if they had low AMM defined as <7 kg/m² in men or <6 kg/m² in women and low muscle strength defined as 5 chair rises >15 seconds. Multivariable logistic regression was used to test the age- and sex-adjusted association between sarcopenia and all-cause mortality. **Results:** The cohort consisted of 146 patients with a mean age of 70.1 ± 10.3 years and 22% females. The interventions were isolated coronary bypass in 60%, valve surgery in 30%, and decision not to proceed with surgery in 10%. The mean AMM was 24.1 ± 5.2 kg in men and 21.1 ± 5.2 kg in women. The prevalence of sarcopenia was 15% (N=22), similar in men and women. Sarcopenia was not associated with 1-year mortality (OR 0.87, 95% CI 0.21-3.57) and, in a separate model, neither was low AMM (OR 1.00, 95% CI 0.28-3.61). Slow chair rise time was associated with higher 1-year mortality (OR 6.10, 95% CI 1.21-30.89). When patients with heart failure and reduced ejection fraction were excluded, sarcopenia appeared to be more prognostic (OR 1.96, 95% CI 0.39-9.82) although it did not reach statistical significance. **Conclusion:** Lower-extremity muscle strength, but not DXA-based measures of muscle mass or sarcopenia, is predictive of survival in hospitalized older adults referred for cardiac surgery.

P285- CAN THE FIVE-TIMES SIT-TO-STAND TEST BE USED TO ASSESS BOTH MUSCLE STRENGTH AND PHYSICAL PERFORMANCE WHEN DETECTING SARCOPENIA? Brajesh Kumar Shukla¹, Sandeep Yadav¹, Vivek Vijay¹, Arvind Mathur², David Hewson³ ((1) *Indian Institute of Technology Jodhpur, India*; (2) *Asian Centre for Medical Education, Research, and Innovation, Jodhpur, India*; (3) *Institute for Health Research, University of Bedfordshire, Luton, UK*)

Background: The modified European Working Group on Sarcopenia in Older People (EWGSOP-2) algorithm to identify older people with sarcopenia contains three steps after initial clinical suspicion. The chair stand test, also known as the five-times sit-to-stand test (5STS), is one of two tests that can be used to assess muscle strength. The 5STS is also a component of the Short Physical Performance Battery (SPPB), which is used as a measure of severity in the EWGSOP-2 algorithm. **Objectives:** The objective of this study was to determine whether the 5STS could be used to assess both muscle strength and physical performance in the EWGSOP-2 algorithm to detect sarcopenia. **Methods:** One hundred and ten older people aged 70.2 ± 5.4 years participated in the study. All participants were evaluated using the SPPB score, as well as the Timed-Up-and-Go (TUG). The EWGSOP-2 algorithm specifies cut-off points of ≤ 8 points on the SPPB, ≤ 0.8 m/s for gait speed, and ≥ 20 s for the TUG. Each participant was classified for TUG and gait speed using the EWGSOP-2 cut-offs, with stepwise discriminant function analysis used to predict the classification of 90 participants. The remaining 20 participants were used for cross-validation. Prediction of SPPB classification used the 5STS score in combination with predicted balance and SPPB gait scores from stepwise linear regression. The total SPPB score obtained using this method was used to predict SPPB classification for the EWGSOP-2 cut-off for SPPB. **Results:** The 5STS scores were able to predict TUG and gait speed classification with 89% and 79% accuracy, respectively for the learning set of 90 participants. The predicted SPPB score had a classification accuracy of 95%, with 100% sensitivity and 93% specificity. When the remaining 20 participants were evaluated, the SPPB classification was correctly predicted for 19 participants (95%), with 100% sensitivity and 92% specificity. **Conclusion:** The 5STS can be used to accurately predict SPPB classification in the EWGSOP-2 algorithm to detect sarcopenia, meaning that the 5STS test could be used as a standalone test in an initial screening for sarcopenia.

P286- DYNAPENIA AND SARCOPENIA IN COSTA RICAN OBESE ELDERLY. Isabel Barrientos-Calvo (*Nutritional Support Department and Geriatric Department, Geriatric National Hospital, San José, Costa Rica*)

Background: Obesity is a disease characterized by increased adiposity with negative impact on patient health. Aging process is associated with a progressive loss in muscle function, that may lead to functional decline and frailty. There are only few studies that have compared the prevalence of sarcopenia and dynapenia in obesity. **Objectives:** The aims of this study were to determine the prevalence of sarcopenic and dynapenic obesity in elderly using the European Working Group on Sarcopenia in Older People 2 criteria. **Methods:** We conducted a cross-sectional study that included elderly patients with obesity from the Obesity Clinic since January 2018 to June 2018. Sarcopenia was defined according to the European Working Group on Sarcopenia in Older People 2 (EWGSOP2) criteria, and obesity with body mass index (BMI) > 28 kg/m². Handgrip strength was assessed using a hydraulic dynamometer (Jamar). Bioimpedance analysis (BIA) was performed. **Results:** We evaluated 130 persons, but only 90 had BIA data (70%). A total of 90 older (72.9 ± 6 years), 88% were women. Mean body mass index, waist circumference, weight and calf circumference were 37.1 ± 5.1 kg/m², 119.4 ± 11.6 cm, 89.2 ± 15.5 kg and 39.4 ± 4.2 cm respectively. All patients had elevated body fat (mean 51%) and 100% had abdominal obesity. Patients showed higher frequency of hypertension (91%), diabetes (60%), dyslipidemia (56%). Sedentary was present in 80% and falls in 5%. Mean handgrip strength and muscle mass for men and women were 26.18 ± 8.3 kg; 17.29 ± 6.3 kg and 29.7 ± 4.5 kg; 22.5 ± 5.5 kg respectively. There were 3 (3.3%) individuals fulfilling criteria for sarcopenic obesity, all women. But, dynapenic obesity was present in 4.4% men and 38% women. **Conclusion:** Although the loss of muscle mass is associated with the decline in strength during aging, the decline in strength is more prevalent than the loss in muscle mass in our obese. A large difference in prevalence of the two conditions was observed, sarcopenia obesity 3.3% and dynapenic obesity 42%, respectively.

P287- PREVALENCE OF SARCOPENIA IN COSTA RICAN ELDERLY PEOPLE FROM CRELES STUDY: EWGSOP VS EWGSOP2. Isabel Barrientos-Calvo (*Nutritional Support Department and Geriatric Department, Geriatric National Hospital, San José, Costa Rica*)

Background: Sarcopenia is a geriatric syndrome characterized by progressive and generalized loss of skeletal muscle mass, strength, and function. Several operative definitions for sarcopenia have been proposed over the past two decades. **Objectives:** The aim of this study was to determine the prevalence of sarcopenia in Costa Rican Longevity and Health Aging Study (CRELES) using the EWGSOP and EWGSOP2 criteria. **Methods:** To carry out the analysis, all the available cases of the CRELES study database in 2005 which belong to the cohort that follows in the period 2005-2009 were

used. We analyzed 2142 community-dwelling older adults. Low muscle mass was assessed using calf circumference <31 cm and low strength if <30 kg in men or <20 kg in women (EWGSOP) vs <27 kg in men or <16 kg in women (EWGSOP2). **Results:** According to the EWGSOP 17.8% of the participants had sarcopenia, while according to the EWGSOP2 sarcopenia was present in 9,7% of participants. There was an increasing trend of sarcopenia by age group, it was more prevalent in women. Mean handgrip strength was 21,95 kg in men and 13,65 kg in women with sarcopenia. Mean calf circumference was 28,4 cm. Sarcopenia was positively associated with age (OR=1.10; CI:1.06-1.15), incomplete primary education (OR 4,264; IC 1,547-11,753), perceived as unhealthy (OR 1,691; IC 1,133-2,525), antecedent of ischemic vascular event (OR 3,221; IC 1,566-6,628), arthritis (OR 1,648; IC 1,044-2,601), and falls (OR 1,676; IC 1,143-2,458). **Conclusion:** The overall prevalence sarcopenia were significantly lower in EWGSOP2. Prevalence of sarcopenia varies widely depending on the grip strength cut-off points applied.

P288- PREVALENCE OF SARCOPENIA IN CENTENARIANS FROM NICOYA, COSTA RICA: ANALYSIS FROM A GROUP OF PATIENTS FROM A BLUE ZONE. Isabel Barrientos-Calvo¹, Susana Estrada-Montero² ((1) *Nutritional Support Department and Geriatric Department, Geriatric National Hospital, San José, Costa Rica*; (2) *Geriatric Department, Geriatric National Hospital, San José, Costa Rica*)

Background: The “Blue Zone” are limited areas with a high prevalence of centenarians, with rather homogeneous characteristics, life styles and environment.” This Blue Zone, located in the Nicoya Peninsula, is in the province of Guanacaste. Even though Costa Rica has this Blue Zone, there are no studies that characterize the prevalence sarcopenia in the centenarians of the region. **Objectives:** The aim of this study was to determine the prevalence of sarcopenia on centenarians from Nicoya, Costa Rica, using the EWGSOP2 criteria. **Methods:** This is a cross-sectional study using a population base of 43 community-dwelling centenarians from Guanacaste. Anthropometric measures, weight, height and strength were assessed. To assess the nutritional state, the Mini Nutritional Assessment (MNA) was used and activities of daily living (ADL) scores. Low muscle mass was assessed by calf circumference <31 cm and low strength if <27 kg in men or <16 kg in women. **Results:** The mean age of the patients were 101.93±1.7 years. From this group, 18 (41.9%) were men and 25 (58.1%) were women. Patients showed comorbidities: hypertension (55.5%), diabetes (11.6%), COPD (20.9%), cancer (7%), osteoarthritis (25%) and depression (25%). Mean body mass index, weight, brachial and calf circumference were 20.8±4.3 kg/m², 44.3±10.5 kg, 22.6±3.3 cm and 27.2±4.6 cm. Mean handgrip strength was 9.9±5.3 kg. The mean score for the MNA test was 19.9±4.9 and ADL score 54.65±33.9. With respect to sarcopenia prevalence, a total number of 20 (46.5%) subjects were detected, 8 (18.6%) men and 12 (27.9%) women fulfilled the criteria. According to the nutritional status,

3 patients with sarcopenia had malnourishment, 15 were on nutritional risk and 5 had a good nutritional state. From the sarcopenic centenarians, at least 55% of the subjects had dependency with ADL. **Conclusion:** We had high prevalence sarcopenia in centenarians from the “Blue Zone”. There are few studies in centenarians, but using the EWGSOP2 criteria, it is the first in Latin America.

P289- PREVALENCE OF SARCOPENIA AND ASSOCIATED CHARACTERISTICS IN COMMUNITY-DWELLING OLDER ADULTS WHO ARE AT RISK OF MALNUTRITION IN SINGAPORE. Samuel Teong Huang Chew¹, Siew Ling Tey², Jeffery Oliver³, Zhongyuan Liu², Geraldine Baggs³, Choon How How^{4,5}, Magdalin Cheong⁶, Dieu Thi Thu Huynh², Ngiap Chuan Tan^{5,7} ((1) *Department of Geriatric Medicine, Changi General Hospital, Singapore*; (2) *Abbott Nutrition Research and Development, Asia-Pacific Center, Singapore*; (3) *Abbott Nutrition Research and Development, Columbus, Ohio, USA*; (4) *Care and Health Integration, Changi General Hospital, Singapore*; (5) *SingHealth-Duke NUS Family Medicine Academic Clinical Program, Singapore*; (6) *Department of Dietetic & Food Services, Changi General Hospital, Singapore*; (7) *SingHealth Polyclinics, Singapore*)

Background: Sarcopenia is a geriatric syndrome characterized by low muscle mass and low muscle function and/or reduced physical performance. Malnutrition is a major risk factor for sarcopenia. There is limited data on the prevalence of sarcopenia in community-dwelling older people who are at risk of malnutrition in Singapore. **Objectives:** The objectives were (i) to determine the prevalence of sarcopenia and its components i.e. low handgrip strength, low appendicular skeletal muscle mass index (ASMI) and low gait speed based on the Asian Working Group for Sarcopenia consensus (Chen et al., 2014), (ii) to describe the characteristics and dietary intake of older adults with sarcopenia to those without sarcopenia. **Methods:** A total of 811 community-dwelling older adults (>=65 years) who were at risk of malnutrition (Malnutrition Universal Screening Tool; MUST score >=1) took part in this study. Sarcopenia was diagnosed by low muscle mass (ASMI using bioelectrical impedance analysis) plus low muscle strength (handgrip strength) and/or low physical performance (4-meter usual gait speed). Anthropometric measurements, dietary intake, and Short Physical Performance Battery (SPPB) were also collected. **Results:** Over 90% of participants had a Charlson Comorbidity score of 0. The overall prevalence of sarcopenia was 70%; 81.3% had low ASMI, 81.7% had low handgrip strength and 44.2% had low gait speed. Participants with sarcopenia were significantly older, shorter, and with lower body weight and BMI, mid-upper arm circumference, calf circumference and bone mass compared to those without sarcopenia (all p<0.0001). They also had lower physical functions as measured using handgrip strength and endurance, leg strength, and SPPB score than those without sarcopenia (all p<=0.0021). Additionally, older adults with sarcopenia had lower total energy intake and energy-adjusted protein intake

based on a 24-hour dietary recall, and poorer nutritional status as determined using MUST compared to their non-sarcopenia counterparts (all $p < 0.0063$). **Conclusion:** The high prevalence of sarcopenia in community-dwelling older people who are at risk of malnutrition highlights the importance to devise targeted exercise and nutrition interventions to improve muscle health, physical performance and nutritional status. These interventions are essential to reduce the risk of progression to frailty and disability in this population group.

P290- PREVALENCE AND FACTORS ASSOCIATED TO SARCOPENIA IN VERY OLD COMMUNITY DWELLING PEOPLE WITH HIGH COMORBIDITY.

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Background: The prevalence of sarcopenia varies according to the diagnostic criteria used, however it is an important geriatric syndrome related to a worse functional state in the elderly. Very older adults are often excluded from clinical trials. **Objectives:** The aim of this observational prospective study is to describe the prevalence of sarcopenia in community very older adults with high comorbidity. **Methods:** We included patients who enter the Geriatric day hospital of the Hospital of Navarra, Spain, aged more than 75 y, underwent Bioelectrical impedance analysis (BIA), measurement of hand grip strength (HGS), gait speed (GS), Short Physical Performance Battery (SPPB), Mini-Nutritional Assessment (MNA-SF), Barthel index and Cumulative Illness Rating Scale-Geriatric (CIRS-G). Sarcopenia were defined according to EWGSOP2 (2019). The study beginning in 2017 and it is actually ongoing. We registered variables at baseline, and at the time 6, 12 and 24 months. All-cause mortality were registered. **Results:** We present the preliminary results of baseline value. We included 302 patients (52.3% men, 87.4±4.6 y). Sarcopenia were present in 173 participants, without sex differences. Sarcopenic vs no-sarcopenic patients were older (88.2±4.4 vs 86.2±4.4 y) ($p < 0.001$) and they presented worse nutritional status (BMI 23.3±2.9 vs 28.7±4.7 kg/m²) ($p < 0.001$), MNA-SF 9 (95%CI 8-11) vs 11 (10-13) ($p < 0.001$). Sarcopenic patients presented lower Barthel index (75, 95%CI 60-90 vs 85, 70-95) ($p = 0.022$), but we have no observed differences nor in the SPPB 5, 95%CI 3-7 in sarcopenic, vs 5, 4-8 in no-sarcopenic participants ($p = 0.139$), neither in comorbidity index (CIRS-G 16, 13-20 vs 17, 15-20 respectively) ($p = 0.552$). Sarcopenia is significantly associated with higher mortality (HR 0.623, 95%CI 0.388-0.999) ($p = 0.045$). At the present time the mean follow-up is 15.7±8.6 months. At 6 months in 18 patients (17%) the sarcopenia reverted, and we have observed 20 new sarcopenic cases (22%) (incident sarcopenia). **Conclusion:** Sarcopenia is

highly prevalent in very older adults with high comorbidity. Sarcopenia is associated with malnutrition and with higher mortality.

GEROSCIENCE

P291- POLYGENIC RISK SCORE FOR DISABILITY: ADVANCING GEROSCIENCE. Alexander M. Kulminski, Chansuk Kang, Stanislav A. Kolpakov, Yury Loika, Alireza Nazarian, Anatoliy I. Yashin, Eric Stallard, Irina Culminskaya (*Biodemography of Aging Research Unit, Social Science Research Institute, Duke University, Durham, USA*)

Background: Disability is a multifactorial trait that contributes substantially to decline of health/wellbeing and increases steeply with age after midlife. Progress in genome-wide sequencing has created the potential for discovering genes influencing various health-related traits. The vast majority of such studies focus on the genetic bases of different traits assuming that they have independent mechanisms. As conceptualized by geroscience age/aging are major risk factors of geriatric traits of distinct etiologies. Accordingly, the same mechanisms can predispose not to just one, but to a large fraction of geriatric conditions. **Objectives:** Identify the common genetic architecture of various traits by discovering the genetic architecture of complex multifactorial trait such as disability. **Methods:** Genome-wide association study of disability in a sample of 24,068 subjects from five studies with 12,550 disabled individuals from the Women's Health Initiative (WHI) Genomics and Randomized Trials Network, WHI Memory Study, Cardiovascular Health Study, Framingham Heart Study, and Health and Retirement Study. Disability was defined as having at least one of four basic activities of daily living impairments (bathing, dressing, getting out of bed, and walking). **Results:** We identified 30 promising disability-associated single nucleotide polymorphisms (SNPs) in 19 loci at $p < 10^{-4}$. Four of them attained suggestive level of significance, $p < 10^{-5}$. In contrast, polygenic risk scores (PRS) aggregating effects of minor alleles of independent SNPs that were adversely or beneficially associated with disability showed highly significant associations in meta-analysis, $p = 3.13 \times 10^{-45}$ and $p = 5.60 \times 10^{-23}$, respectively, and were replicated in each study. The analysis of genetic pathways, related diseases, and biological functions supported the connections of genes for the identified SNPs with disabling and age-related conditions primarily through oxidative/nitrosative stress, inflammatory response, and ciliary signaling. We identified musculoskeletal system development, maintenance, and regeneration as important components of gene functions. **Conclusion:** The discovery of adverse and beneficial PRS for a multifactorial trait of distinct etiologies such as late life disability supports the concept of geroscience. The beneficial and adverse gene sets may be differently implicated in the development of musculoskeletal-related disability with the beneficial set characterized, e.g., by regulation of chondrocyte proliferation and bone formation, and the adverse set by inflammation and bone loss.

P292- THE INSPIRE BIO-RESOURCE RESEARCH PLATFORM FOR HEALTH AGING (THE INSPIRE PLATFORM): FOCUS ON THE HUMAN TRANSLATIONAL RESEARCH COHORT.

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Background: The new Geroscience field should not only be focusing on preventing age-related diseases, but should investigate the optimal maintenance of intrinsic capacity (IC): mobility, cognition, psychological, vitality and sensorial (hearing and vision) capacities as defined by the W.H.O. A better understanding about how to measure biological aging is an indispensable step that may lead to the definition of the best putative markers of aging capable of predicting healthspan. **Objectives:** The main objective of Inspire Bio-resource Research Platform for Healthy Aging is to build a comprehensive research platform gathering biological, clinical (including imaging) and digital resources that will be explored to identify robust (set of) markers of aging, age-related diseases and IC evolution. **Methods:** The Inspire Platform will gather clinical data and biospecimens from 1000 subjects in the Occitania Region of different ages (from 30 years or over - no upper limit for age) and functional capacity levels (from robust to frail to disabled) over 10 years (Inspire Human Translational Research Cohort). Data are collected annually. Between two annual visits, IC domains are monitored (with or without the help of a caregiver) each 4-month. Once IC declines are confirmed, participants have a thorough clinical assessment and blood sampling to investigate the response of markers of aging at the time declines are detected. Biospecimens includes blood, urine, saliva, and dental plaque that are collected from all subjects at baseline and then, annually. Nasopharyngeal swabs and cutaneous surface samples are collected from all subjects at 6 time-points (baseline visit and follow-up visits at M24, M48, M72, M96 and M120). Feces, hair bulb and skin biopsy are collected optionally at the baseline visit. **Results:** Recruitment started in October 2019 for a two years period. The identification of markers of aging will take advantage of three complimentary approaches to look for the best markers of aging: without a priori approach (transcriptomics, proteomics, lipidomics); semi a priori approach (metabolism, inflammation, cell cycle, mitochondrial network...); and targeted approach (pre-identified targets). The Inspire platform will also aim to develop an integrative approach to promote novel new technologies for the assessment and monitoring of functional

capacities. *Acknowledgments: The Inspire Platform is supported by grants from the Occitania Region and the European Regional Development Fund (ERDF), and co-funding by the APOC, the CTAD, and the Edenis, Korian, Pfizer, and Pierre Fabre groups. The promotion of this study is supported by the University Hospital Center of Toulouse.

P293- LONG-TERM CALORIC RESTRICTION PREVENTS AGE-RELATED LEARNING IMPAIRMENT VIA SIRT1/AMPK/MTOR SIGNALING PATHWAY IN MICE. Lina Ma, Wen Dong, Baolei Xu, Yun Li, Rong Wang (*Xuanwu Hospital, Capital Medical University, National Clinical Research Center for Geriatric Diseases, Beijing, China*)

Background: Energy balance is usually regulated by silent information regulator 2 related enzyme 1 (SIRT1) and adenosine monophosphate-activated protein kinase (AMPK). Caloric restriction (CR) can postpone the pathological process of aging-related diseases and has a neuroprotective effect on nervous system degenerative diseases, but the mechanism is complex and not yet fully elucidated, although some of the CR effects may be mediated by SIRT1 and AMPK. **Objectives:** To evaluate the beneficial effects of a CR diet on learning and memory ability. **Methods:** Six-week-old male C57/BL mice were fed ad libitum for 1 week before the experiment began. Animals were weight-matched and randomly divided into three different groups: normal control group (NC group, n = 30), high-energy group (HE group, n = 30), and CR group (n = 30). The energy of NC diet, HE diet and CR diet caloric ratio was 1:1.3:0.7. The total experimental duration was 10 months. **Results:** CR improved spatial learning and memory ability and decreased body weight and serum glucose. Nissle staining showed the cell density was significantly decreased in the HE group and increased in the CR group. CR decreased the expression of insulin signal pathway-related proteins such as IGF-1, IR, IRS-1, PI3K, Akt/PKB, and p-CREB. More SIRT1-immunoreactive cells and fewer mTOR- and S6K1-immunoreactive cells were observed in the hippocampal in the CR group than in the NC group. CR decreased hippocampal mTOR and S6K1 protein activation and mRNA expression. The expression of Beclin1, LC3 and Cat B was increased and p62 was decreased in the CR group. The number of GFAP-positive and Iba-1-positive cells in the CR group was significantly reduced compared to the NC group. **Conclusion:** CR may prevent age-related learning and memory impairment via suppression of PI3K/Akt pathway and activation SIRT1/AMPK/ mTOR pathway in brain.

TRANSLATIONAL RESEARCH ON AGING

P294- MOTOR UNIT PROPERTIES DURING BED REST WITH AND WITHOUT ARTIFICIAL GRAVITY EXPOSURE – PRELIMINARY RESULTS FROM THE AGBRESA STUDY. Julia Attias, Andrea Grassi, Alessandra Bosutti, Hans Degens, Bergita Ganse, Michael Drey (*Klinikum der Universität München, München Germany*)

Background: Head-down (6°) bed rest (HDBR) is a well-accepted model to understand the pathophysiology of disuse-induced sarcopenia. Human centrifugation as a measure to counteract muscle wasting during spaceflight is discussed. Previous studies have observed decreases in maximal voluntary contraction force of the knee and hip-extensors of up to 22% following 5 weeks of HDBR. Muscle force is regulated by the recruitment of motor units (MUs) and the modulation of MU firing rate. **Objectives:** The aim of this study was to assess whether long-duration HDBR alters motor unit properties as one cause for disuse induced sarcopenia and whether human centrifugation can attenuate this decrement. **Methods:** Twelve healthy participants (35.9±9.7yr; 174±7cm & 76.8±6.7kg) were confined to 60-days 6° HDBR in the frame of the first campaign of the AGBRESA bedrest study. Eight received 30mins of artificial gravity (AG) daily via human centrifugation whereas four belonged to a control group. Estimations of MU number (MUNIX) and size (MUSIX) in the Abductor Digiti Minimi (ADM) and Tibialis Anterior (TA) muscles were made using the Motor Unit Number Index method from on day 5 preceding bed rest (BDC5) and on days 4 (HDT4) and 59 (HDT59). Mean compound muscle action potential (CMAP), MUNIX and MUSIX as a percent change from BDC5 were compared using repeated-measures ANOVA, where muscle and time were ascribed as within-group factors and intervention a between-group factor. Significance was denoted by p<0.05. **Results:** Both CMAP and MUNIX were unaltered over time in both muscles, irrespective of the intervention. Although MUSIX was also indifferent over time for both muscles, a significant muscle*time interaction was observed, indicating that the changes over time differed between the two muscles. **Conclusion:** The preliminary data from the ongoing study indicate that neurodegeneration due to bedrest might affect muscles differently. There does not seem to be an effect of AG on MU number. Analyses have to be repeated when the study

is completed with a larger number of participants. Additional histological and biochemical data will give further insight in the pathophysiology.

P295- DETECTION OF FRAILTY OF AN ELDERLY PERSON BY MONITORING ACTIVITIES OF DAILY LIVING. Soumaya Msaad¹, Geoffroy Cormier², Guy Carrault¹ ((1) *Univ Rennes, Inserm, LTSI - UMR 1099, F-35000 Rennes, France*; (2) *Neotec vision , Rennes , France*)

Background: Several models have been proposed for elderly frailty detection. There is a consensus on two of them: the Fried model, and the Rockwood model. However, daily monitoring of the elderly is impossible with these models, whereas it is very important to detect any change as soon as possible to prevent dependency, since frailty is reversible only if early detected. **Objectives:** The objective of this study is to propose a non-intrusive and low-cost method that anticipates frailty using depth images. Crucial hypotheses are that regularity of daily activities is important for the elderly and that any prolonged change is considered as an indicator of frailty. **Methods:** The proposed method consists in three steps: 1) Extraction of parameters from depth images: lying and sitting time percentage during the day, walking speed, and number of falls, visits, and exits. 2) Classification of the daily state using logistic regression and the extracted parameters. The daily state is considered as normal if the daily routine is maintained and abnormal if it is broken. 3) Computation of the weekly percentage of maintaining routine based on the classification of the nature of the day. **Results:** Tracking frailty is a difficult task that requires recording data over several months. As real data has not been collected yet, the feasibility of our approach was assessed on simulated data. In the latter, we reproduced variations of the parameters we would have extracted from real images of a patient after investigating his or her daily life. The classification of the days (normal/abnormal) led to an accuracy of 99% (training dataset: 135 days, test dataset: 45 days). A patient is considered frail when the weekly percentage of maintaining routine decreases steadily. **Conclusion:** The preliminary results prove that in addition to being non-intrusive, a depth-imaging based approach can be a promising tool for frailty detection.