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# ICFSR 2014

## International Conference on Frailty and Sarcopenia Research

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## SYMPOSIA

**FRAILTY IN MEXICAN POPULATION FROM HOSPITAL TO COMMUNITY.** M. Pérez-Zepeda, S. Sánchez-Garcia, C. Garcia-Peña, R. Castrejon-Pérez *(Mexico City, Mexico)*

Research in aging on developing countries is a priority in order to generate new knowledge that could support in a cost-efficient way attention of this growing group of age. In particular, frailty and its components has gained attention in the last years due to the potential interventions that could impact in both the individual and health system levels. The aim of this symposium is to show how research is shaping different angles of the current knowledge of older adults in a developing country with an accelerated aging process. The first speaker (chair) would present an overview of how the topic has been approached in Mexico and the contrast of the results on research with other countries. With a critical view there would be also an exposition of the real impact of research in the current health of older adults in Mexico and the opportunities and new lines of research that are currently in development. The rest of the speakers would present results of new research developed in the frailty topic. The first speaker will present how a physical performance test such as handgrip strength is sensible to change in an emergency room setting. A valuable tool that merits further research to transform it into usual practice among clinicians. The second speaker will present results about how cognition and affection is associated with frailty and disability in a group of community-dwelling Mexican older adults. Finally, results of how oral health is in close relationship to frailty and its potential implications will be discussed.

***Presentation #1:*** *Older Patient admitted in the Emergency Department: Transitions of Hand grip strength,* C. García-Peña (Mexico City, Mexico)

This first presentation would present results of modifications in handgrip strength (HS) from admission to discharge of an ER of older adults. 65-year or older subjects admitted to the ER in two General Hospitals, were included. Variables included sociodemographic, health services, pressure ulcers risk, depression, cognition, quality of life, functionality, comorbidty, medication, nutrition, HS, physical activity, gait speed. 372 participants were included and HS was measured at admission and discharge in 223 patients. 53.4% (n=119) were female, mean age was 76 years (SD=7.73). Mean HS at baseline was 10.5 (SD=9.20) and at discharge 7.0 (SD=10.12). Funding: This project is supported by grants from the Mexican Institute of Social Security.

***Presentation #2:*** *Depression, Cognitive Impairment, Frailty And Their Effect On Disability In Older Adults, S.* Sánchez-García (Mexico City, Mexico)

This presentation would show results of 1,933 community-dwelling older adults from Mexico City. With information on socio-demographics, disability, MCI, depression, comorbidity and frailty. The association in subjects who presented depressive symptoms and mild cognitive impairment (MCI) with frailty was OR=17.0. Those only with depression had OR=12.8 and only MCI had OR=2.4. Subjects with depressive symptoms and MCI with frailty have an association of OR=9.3 and OR=12.6 for ADL and IADL limitations, respectively. Depressive symptoms and frailty had OR=12.9 and OR=10.0; MCI and frailty of OR= 4.5 and OR=6.3. Frailty had and of OR=3.9 and 6.5 for ADL and IADL limitations. Funding: The present study was supported by grants from SSA/IMSS/ISSSTECONACYT (México) Salud-2007-01-69842 and the Fund for the Promotion of Health Research, Mexican Institute of Social Security, FIS/IMSS/PROT/G09/772.

***Presentation #3:*** *Oral health and frailty*, R.C. Castrejón-Pérez (Mexico City, Mexico)

Finally, as a result of cross-sectional studies and using the frailty phenotype, there were observations that community-dwelling women using dentures and reporting difficulty chewing/swallowing, and self-rated bad oral health, and those who did not use dental services and those who need dental prostheses have higher probability to be frail. In a cohort study we found that each tooth in mouth reduces the risk of developing frailty (three-year follow-up). The information available allows proposing some possible pathways to explain these associations, including between chronic conditions and oral health problems, and its potential to predict frailty. Funding: This study was funded by the National Council for Science and Technology of Mexico (CONACyT) (SALUD-2006-C01- 45075).

**REDUCING THE IMPACT OF FRAILTY IN THE HEALTH AND SOCIAL SERVICES: SOME EXPERIENCES FROM THE EUROPEAN INNOVATION PARTNERSHIP ON ACTIVE AND HEALTHY AGEING.** J. Pinto Antunes[1], A. Hendry[2], H.W. Jager[3], B. Bolibar[4] *(1. Bruxells, Belgium; 2. NHS, Scotland; 3. Hanze, The Netherlands, 4. Barcelona, Spain)*

One of the biggest challenges in European society is how to adjust to an ageing society whilst achieving sustainability. European health and care systems are in urgent need of restructuring to match the future needs of ageing societies: for example, with a greater focus on chronic diseases, offering longer term healthcare services, and more palliative care. Ageing has a significant impact, but should not be perceived solely as a burden. Looking at ageing as an opportunity requires a positive approach to it. This is why healthy and active ageing is a key component of the Commission's Europe 2020 Strategy. The European Innovation Partnership on Active and Health Ageing (EIP) offers a unique multi-stakeholder platform to develop critical mass for action in areas key to active and healthy ageing, to deliver high quality and sustainable care to older people and help EU industry to remain competitive. Over 500 commitments are contributing to the Partnership. After two years the work process and outcomes of the EIP are helping to identify and develop new approaches for supporting the necessary changes in this direction. The symposium will present the approach and preliminary results on 3 topics related to prevention of frailty undertaken by the Partnership members. No conflict of interests.

**FRAILTY RESEARCH: EVIDENCE FROM JAPAN.** H. Arai[1], M. Kuzuya[2], S. Satake[1] *(1. Kyoto, Japan; 2. Nagoya, Japan)*

Rapidly growing aging populations are a global public health concern. In 2013, 25% of adults in Japan are older than 65 years, the highest percentage in the world. Along with population aging, the rapid increase in the number of frail older adults is a major health care challenge. In recent years, the term 'frailty' has been repeatedly discussed in the research literature, and several different definitions have been proposed. A number of concepts have been raised that dealt with maintaining health or preventing frailty. However, there is insufficient evidence to accept a single definition of frailty, and no single definition is currently considered to be a gold standard. Thus, valid and low-cost frailty assessment tools are needed for both research and clinical purposes. Therefore, in the year of 2006, the Japanese government implemented a frailty index named the Kihon Checklist that identifies vulnerable older adults who are at high risk of becoming dependent. This checklist consists of seven domains: lifestyle, physical strength, nutrition, eating, socialization, memory and mood. In the last 7 years we have been accumulating substantial amounts of evidence from this checklist. The main purpose of this symposium is to call international audience and share them with the research data from Japan. Prof. Masafumi Kuzuya will focus on the role of nutrition in frailty (Nutritional Assessment for Frailty). Prof. Hidenori Arai will report the results of the Kihon Checklist (Frailty Checklist in Japan; Does it work?). Prof. Shosuke Satake will report their approach to physical frailty (Implication of Frailty Screening in Japan). This symposium will summarize the main findings of major study groups in Japan, and may promote the discussion of further research in other countries.

**TROUBLE AT THE JUNCTION: FACTORS CAUSING INSTABILITY OF THE AGING NEUROMUSCULAR JUNCTION.** R.T. Hepple *(McGill University, Canada)*

• The role of synaptic molecules in motor neuron and muscle diseases, G. Valdez *(Virginia Tech Carilion Research Institute, USA);* • Alterations in myocyte signaling networks regulating post-synaptic components of the neuromuscular junction with aging, R. Hepple *(McGill University, Canada)*; • Decoding of the functional state of the neuromuscular junction by glial cells in normal and pathological aging, R. Robitaille *(McGill University, Canada)*

The neuromuscular junction (NMJ) is a remarkable structure that transmits the electrochemical signals of alpha motor neurons to the muscle fibers they innervate to permit contraction of muscle fibers. With aging this communication can become compromised owing to instability in the NMJ structures and is characterized in part by dispersal of the post--synaptic acetylcholine receptor cluster from its typical pretzel-like configuration into fragmented islands. Ultimately, this fragmentation of the acetylcholine receptor cluster may sufficiently impair targeting of the terminal axon of the alpha motoneuron to precipitate a spontaneous denervation event. Fortunately, for most of adult life denervation is shortly followed by axonal sprouting of adjacent motor axons, guided in part by perisynaptic Schwann (glial) cells, and innervation is re-established. The net result of these events is that aging of muscle is characterized by repeating cycles of denervation and reinnervation, resulting in profound motor unit remodeling in very advanced age, a

phenomenon reflected in progressive fiber type grouping along the aging continuum. The functional implications of this motor unit remodeling manifest themselves in less precise force distribution across the muscle belly during activation since muscle fibers belonging to a given motor unit are more likely to be adjacent to one another following a denervation-reinnervation event, which in turn likely contributes to the increased risk of falls and impaired motor coordination seen with aging. Furthermore, failed reinnervation of denervated myofibers results in accumulation of severely atrophied denervated myocytes and directly contributes to an acceleration of sarcopenia and muscle strength decline in very advanced age. Despite awareness of instability in the aging NMJ for several decades, our understanding of the factors causing this instability are only now beginning to be revealed. Furthermore, the mechanisms responsible for successful reinnervation have also only recently been more clearly elaborated. Given the aforementioned functional impairments that result from NMJ instability in aging muscle, understanding of the mechanisms causing NMJ instability and those which permit successful reinnervation are fundamental to advancing to more effective treatments for sarcopenia. To this end, this symposium brings together three experts in the area to provide an integrative view of the factors which can cause instability of the aging NMJ by considering both pre-synaptic and post-synaptic sides of the junction, while also providing key insights into the mechanisms necessary to permit successful reinnervation. Dr. Greg Valdez (Virgina Tech Carilion Research Institute, USA) will present on the synaptic molecules which contribute to the pathophysiology of motor neuron and muscle diseases and how this can inform our understanding of what may occur with aging, Dr. Russ Hepple (McGill University, CANADA) will present on age-related changes in myocyte signaling networks regulating components of the post-synaptic NMJ, and Dr. Richard Robitaille (University of Montreal, CANADA) will present on the function of perisynaptic glial cells at the NMJ and how their function deteriorates with aging.

**BEYOND EPIDEMIOLOGICAL RISK ASSESSMENT: FRAILTY SYNDROME IDENTIFICATION AS THE KEY FOR CLINICAL MANAGEMENT, BIOLOGICAL DISCOVERY, AND INTERVENTION DEVELOPMENT.** J.D. Walston, R. Varadhan, Q.L. Xue *(Baltimore, USA)*

Overview: Multiple frailty instruments have been developed over the past several years that have mostly been utilized for risk assessment in population studies of community dwelling older adults. These frailty definitions vary widely from a syndromic phenotype with biologic underpinnings to a summary index of medical conditions and functional impairments. Most of these tools are able to detect older adults who are at high risk of developing disability, chronic illness, falls, hospitalization, and mortality. The utility of these tools is therefore highly variable, and their use should be carefully considered depending on the purpose of the planned research. In addition, most of these tools have not been utilized to study the biology that underlies frailty, and have not or cannot be used to study targeted interventions because of the component measurements incorporated into the frailty definition. In this symposium, we will first review a number of tools that are utilized for frailty research and discuss their actual and appropriate uses, describe the refinement of a commonly utilized frailty phenotype and potential ways to simplify this tool for clinical practice, and finally, provide an update on the biological discoveries that have been made related to frailty and the potential for intervention development that has come from these novel findings. At the end of this symposium, the participants should have a working understanding of the range of frailty measurement tools, an understanding of approaches that might allow for simplification and broader use of frailty phenotypes, knowledge of the dysregulated physiological systems and aging biology pathways that impact frailty, and potential targeted prevention and intervention strategies. Funding: The present symposium is supported by the Johns Hopkins Older Americans Independence Center, P30-AG021334, National Institute on Aging, National Institutes of Health.

***Presentation #1:*** *Overview of the various frailty instruments and their applications*, R. Varadhan (Baltimore, USA)

The concept of frailty captures the notion of heightened vulnerability to adverse outcomes in older adults. Although numerous instruments have been developed to identify frailty, there is no consensus on best measures. The instruments range from single-component tools to those with 70+ components. The domains measured in these instruments include physical, cognitive, psychological, medical, social, and nutrition. Given the bewildering proliferation of instruments and their diversity, it is critical to consider the purposes for using a frailty instrument. We review the various instruments and discuss their appropriate use with regards to risk assessment, biological study, clinical management, and intervention development.

***Presentation #2:*** *Frailty phenotype refinement: Can simplification be achieved without loss of syndrome measurement validity?* Q.L. Xue (Baltimore, USA)

This study aims to simplify the CHS frailty phenotype while retaining its internal validity regarding frailty syndrome identification and accuracy of risk prediction for adverse aging outcomes. Latent class analyses found classifications based on 3 or 4 of the original 5 frailty criteria to be similar in their specificity and negative predicted value for an underlying syndromal construct of frailty, and distinguished by their sensitivity and positive predicted value. Many of the 3-criteria definitions are better predictors of disability and mortality than the standard 3-out-of-5 definition. We conclude that the optimal frailty measure depends on the purpose of its application.

***Presentation #3:*** *Recent advances in understanding the biology of frailty and the implications for selection of intervention targets*, J.D. Walston (Baltimore, USA)

Biological discovery related to frailty has accelerated in the past few years through the development of a validated phenotype and through its application in population studies and animal model approaches. These studies have helped to highlight chronic inflammatory pathway activation, altered sympathetic nervous system and angiotensin system activity, and neuroendocrine change as key physiological drivers of frailty. In addition, altered mitochondrial function appears to influence these and other frailty-related changes. Although interventions have yet to be developed that target frailty, greater biological understanding will allow for a more targeted approach to preventing and treating frailty.

**INNOVATIVE MEDICINES INITIATIVE PROJECT ON PHYSICAL FRAILTY AND SARCOPENIA (PF&S).** S. Del Signore, P. Bordes, P. Guillet *(Chilly-Mazarin, France)*

Background : The existence of regulatory gaps hampering innovative development of geriatric medicines has been acknowledged in the frame of the Active & Healthy Aging pilot project launched by the European Commission in 2011. Frailty is a geriatric physiopathologic condition of decreased homeostatic reserve resulting from cumulative declines across multiple physiologic systems. Sarcopenia, the loss of muscular mass and muscular strength, is a key component of Frailty. Physical Frailty and Sarcopenia (PF&S) constitutes a major risk factor for mobility disability, falls, hospitalisation and death. PF&S in older people represents an unmet medical need. Project Objectives: 1) Development of an operational definition of at-risk subpopulations with undisputable therapeutic need and of a related therapeutic indication; 2) Qualification of biomarkers of muscle anabolism and catabolism in at-risk sub-populations and their correlation with major outcomes; 3) Implementation of innovative clinical development methodologies for testing integrated interventions for the prevention of physical frailty and mobility disability; 4) Achievement of Scientific and Regulatory Consensus of these elements. Symposium outline: The selected Academic consortium (4Q2013) and EFPIA Industrial Partners will discuss key innovative methodology aspects of the project and their implementation planning. • Sanofi representative will present the project conception and regulatory basis; • Academic Experts will present the Clinical Trial Outline; • ICT Experts will present involved technologies as applicable. Conclusion: This is the first non-competitive interventional European clinical project in frail sarcopenic older patients, paving the way for future innovative clinical research with investigational drugs/biologics in this novel indication. Funding: The present project is supported by the IMI JU (Innovative Medicine Initiative Joint Undertaking by the European Federation of Pharmaceutical Industry and Associations, and the European Commission).

**STRATEGIES TO AUGMENT MUSCLE MASS IN ELDERLY; THE ROLE OF EXERCISE, NUTRITION, AND MUSCLE STEM CELLS.** C.P.G.M. De Groot[1], L.J.C. Van Loon[1,2], L.B. Verdijk[1,2], T. Snijders[2], M. Tieland[1] *(1. Wageningen, The Netherlands; 2. Maastricht, The Netherlands)*

Sarcopenia is characterized by a progressive loss of skeletal muscle mass, strength, and physical performance. Whereas the cause of sarcopenia is multi-factorial and includes a sedentary lifestyle and inadequate protein intake, actual loss of muscle tissue is ultimately attributed to an imbalance between muscle protein synthesis and breakdown rates. It has been reported that the responsiveness of the muscle protein synthetic machinery to the anabolic stimuli of physical activity and food (protein) intake may be attenuated in the elderly. To overcome this so-called “anabolic resistance”, current research focuses on both acute and long-term nutritional and exercise interventions to maximally stimulate post-prandial muscle protein synthesis rates, and ultimately counteract the loss of muscle mass and function in the elderly. Apart from inadequate nutrition and physical inactivity, a reduction in the number and/or function of skeletal muscle stem cells (or satellite cells) has been suggested to contribute to the development of sarcopenia. Furthermore, the ability to properly activate, proliferate and differentiate satellite cells and, as such, incorporate newly formed myonuclei, likely plays a key role in determining the potential for skeletal muscle fiber hypertrophy following prolonged exercise training. In the present symposium, we will give young scientists in the field the opportunity to present an overview of some of the recent findings from various acute and long-term studies in humans. First, the acute effects of different nutritional strategies and the impact of exercise on muscle protein synthesis will be addressed. Secondly, changes in satellite cell content and function will be discussed in relation to both muscle atrophy and muscle hypertrophy in the elderly. Finally, the benefits of more prolonged exercise and nutritional interventions for muscle mass and function in the elderly will be presented.

***Presentation #1:*** *Strategies to improve muscle protein synthesis in the elderly*, L. Verdijk (Wageningen, Maastricht, The Netherlands)

Loss of muscle mass with aging is attributed to a disruption in the regulation of skeletal muscle protein turnover. In this presentation, we will highlight some of our recent findings on the factors that affect post-prandial muscle protein synthesis rates in elderly. From these data, it appears that not only the amount of protein, but also the protein source, the amino acid composition of the protein (particularly leucine content), and even the timing of protein intake may be important factors in determining muscle protein synthesis rates throughout the day and, as such, play a key role in regulating muscle maintenance.

***Presentation #2:*** *The role of satellite cells in skeletal muscle atrophy and hypertrophy in the elderly*, T. Snijders (Maastricht, The Netherlands)

Skeletal muscle stem cells, or satellite cells, are of key importance in muscle fiber maintenance, growth and repair. It has been hypothesized that a decline in the number of satellite cells or in their inability to properly activate, proliferate, and differentiate may contribute to the development of sarcopenia. Over the last 5 years considerable effort has been made to elucidate the underlying mechanisms of satellite cell activation, proliferation and differentiation in response to anabolic stimuli. Here, we will present age-related changes in satellite cell content and function, and address the importance of satellite cell-induced incorporation of new myonuclei to facilitate muscle hypertrophy.

***Presentation #3:*** *Dietary protein supplementation to augment muscle mass and performance in the elderly*, M. Tieland (Maastricht, The Netherlands)

Epidemiological data show that protein intake is especially low at breakfast and lunch in the elderly. These low protein intakes might lead to anabolic resistance and therefore at least 25 g protein per meal is suggested to overcome the anabolic resistance to stimulate muscle mass gain in the elderly. In 2 placebo-controlled trials, we studied the impact of protein supplementation with and without resistance-type exercise training in frail elderly. We will present that solely increasing dietary protein does not increase muscle mass and that resistance-type exercise training alone improves muscle strength and physical performance. The combination of dietary protein supplementation and resistance-type exercise training increased muscle mass in a frail elderly population.

**MUSCLE LOSS/FUNTION WITH TRAUMA, SEPSIS, AND MECHANICAL VENTILATION IN THE ELDERLY: TARGETS AND INTERVENTIONS.** C. Leeuwenburgh, P. Efron, D. Martin *(University of Florida, USA)*

Trauma and severe sepsis/septic shock are associated with the expansion of myeloid derived suppressor cells (MDSCs) which contributes to the persistent inflammation, adaptive immunity suppression, and protein catabolism syndrome (PICS) seen in critically ill patients. The outcome of these PICS patients is particularly poor, and it would appear that the occurrence of this syndrome is magnified in the aged, as they have increased mortality and morbidity, including subsequent infections. These critical ill patients quickly enter a catabolic disease state associated with the appearance of MDSCs and characterized by muscle wasting, mainly reflecting increased breakdown of myofibrillar proteins such as actin and myosin. The loss in muscle mass and function is specifically accelerated in elderly patients in critical care units and hospital settings. Imbalances between decreased muscle protein synthesis and increased muscle protein degradation affect myosin content and there is a general reduction in muscle fiber cross sectional area and muscle function. Continuous loss of muscle protein and function has significant long term functional outcomes. Short term muscle atrophy delays ambulation whereas new evidence suggests long term consequences of the critically ill on functional and cognitive parameters post-septic shock. In addition, increased pulmonary complications have been documented since patients often require prolonged ventilator support and this is strongly associated with atrophy of the diaphragm muscle. The aims of the present symposium are to discuss mechanisms and potential targets for intervention strategies to attenuate PICS.

***Presentation #1:*** *Overview: Biological mechanisms and functional consequences of trauma and severe sepsis/septic shock,* C. Leeuwenburgh (Gainesville, USA)

With improvements in the ICU care, the most prevalent end result of chronic critical illness in surgical patients who survive sepsis is late death or full functional dependence one year after sepsis. These critical ill patients quickly enter a catabolic disease state characterized by muscle wasting. Many mechanisms are involved explaining atrophy in the critical ill, such as persistent inflammation combined with immunosuppression, reactive oxygen species, calcium deregulation, proteolysis and apoptosis induction. Additionally, recent evidence suggests that mitochondria are involved in the upstream pathophysiology of sepsis and trauma, and that subsequent complications are associated with a lack of full recovery of these organelles. Knowledge of these underlying biological causes is imperative to allow for scientific testing of interventions able to attenuate the decline in protein loss, cell loss and energy production.

***Presentation #2:*** *Dysfunctional innate immune response in animals and humans following trauma and sepsis*, P. Efron (Gainesville, USA, USA)

Trauma and sepsis are associated with increased morbidity and mortality in the elderly. Through mechanisms such as 'inflamm-aging,' 'immunosenence,' loss of renal function, and protein muscle loss, the aged are primed for the persistent inflammation immunosuppression catabolism syndrome after severe injury or infection. Data from animal models in our laboratories would indicate that the elderly have a dysfunctional innate immune response at multiple levels (genomic, phenotypic and functional) as well as an increase in myeloid derived suppressor cells and increased muscle wasting. Initial translational human data from our laboratories confirms these phenomena and may provide mechanisms through which outcomes in the elderly may be improved.

***Presentation #3:*** *Ventilator-induced diaphragm dysfunction in humans: implications for weaning and possible treatments,* D. Martin (Gainesville, USA)

Failure to wean patients from mechanical ventilation (MV) is a growing clinical problem. Most patients supported by MV are easily weaned, but many patients experience failure to wean (FTW). While FTW is a multifaceted clinical problem, most of these patients develop ventilator-induced diaphragm dysfunction (VIDD). VIDD includes diaphragm atrophy, inflammation, mitochondrial dysfunction, oxidative stress and decreased diaphragm force production. The goals of this presentation are to: 1) review evidence on the use of mechanical ventilation and VIDD, 2) implications of VIDD for weaning and 3) therapeutic strategies to treat VIDD and improve weaning outcomes. Funding: The present research is supported by grants from the National Institute of Health. DM is funded by Eli Lilly, Inc and has a USA patent relevant to inspiratory muscle strength training.

**CELLULAR, STRUCTURAL AND FUNCTIONAL MARKERS OF SARCOPENIA.** M. Aubertin-Leheudre[1], M.V. Narici[2], G. Gouspillou[1] *(1. Montréal, Canada; 2. Derby, United Kingdom)*

Skeletal muscle aging is commonly seen as a process involving a progressive loss of muscle mass (sarcopenia), leading to the loss of muscle strength (dynapenia) and in turn functional performance. Since sarcopenia predisposes to physical frailty, which is strongly correlated with increased risk of falls, hospitalisation, institutionalisation and mortality, early detection of sarcopenia is a pressing clinical need. Several factors (e.g. mitochondrial function at cells level as well as muscle quality, muscle architecture, intra muscular adipose tissue at clinical level etc.) could be involved in this aging-related deterioration of skeletal muscle. Hence the aims of the present symposium are to present new cellular (mitochondrial function), structural (muscle architecture, intramuscular fat infiltration), and functional (mucle quality) markers for the early detection of sarcopenia. More specifically this symposium will demonstrate that: 1) mitochondrial dysfunction and apoptosis are increased in old human muscle and discuss the potential implications of impaired mitophagy, 2) changes in muscle architecture precede changes in muscle cross sectional area and volume and are related to alterations in mechanotransduction pathways 3) the loss of muscle quality (force/unit area) is an early and universal feature of sarcopenia and disuse-atrophy and that the importance of this marker could be mediated by age, obesity and leisure-time physical activity .

## ORAL COMMUNICATIONS

**THE EFFECTS OF VITAMIN D ON SKELETAL MUSCLE STRENGTH, MUSCLE MASS AND MUSCLE POWER: A META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS.** C. Beaudart, F. Buckinx, V. Rabenda, E. Cavalier, J. Petermans, J.-Y. Reginster, O. Bruyère *(Liège, Belgium )*

Background: There is growing evidence that vitamin D plays a role on several tissues including skeletal muscle. Previous studies have suggested that vitamin D deficiency is associated with low muscular function and especially, with low muscle strength and muscle mass. The objective of this meta-analysis is to summarize the effects of vitamin D supplementation on muscle function. Methods: A systematic research of randomized controlled trials (RCTs) assessing the effect of vitamin D supplementation on muscle function and performed between 1966 and June 2013 has been conducted (Medline, Cochrane Database of Systematics Reviews, Cochrane Central Register of Controlled Trials, manual review of the literature and congressional abstracts). All forms and doses of vitamin D supplementation, with or without calcium supplementation, compared with placebo or control were included. The quality of the RCTs was evaluated using the Jadad criteria. Results: Out of the 215 potentially relevant articles, 21 RCTs involving 4916 individuals (mean age: 60.8 years) met the inclusion criteria. Studies showed a median quality score of 5/5 points. Results revealed a significant positive effect of vitamin D supplementation on global muscle strength with a standardized mean difference (SMD) of 0.107 (95%CI= 0.012-0.201; p=0.028) (RCT=20). A moderate effect of vitamin D supplementation on muscle mass was found with a SMD of 0.265 (95%CI= 0.032-0.498; p-value=0.026) (RCT=4). No effect was found on muscle power (SMD 0.015; p=0.914) (RCT=3). Moreover, effects are significantly more important with people presenting a baseline 25(OH)D concentration lower than 35nmol/L compared to others (p=0.03) and with people aged 65 years or younger compared to older (p=0.04). Conclusions: Vitamin D supplementation has a small to moderate positive impact on muscle function, including muscle strength and muscle mass. Evidence supports the use of vitamin D supplementation to improve muscle function but additional studies are needed to define optimal treatment modalities. Funding: None

**DYNAPENIA IS ASSOCIATED WITH GAIT VARIABILITY IN COMMUNITY-DWELLING OLDER ADULTS.** M. Montero-Odasso, A. Islam, I. Anton-Rodrigo, K. Gopaul, M. Speechley *(London, Ontario, Canada)*

The loss of muscle mass, sarcopenia, in older adults is an important marker of frailty due to the association with mobility decline, falls, fractures, and mortality. However, dynapenia, the loss of muscle strength, has been shown to manifest earlier than sarcopenia and is more consistently associated with disability and mortality. It is unknown whether dynapenia is associated with early gait disturbances, specifically gait variability. Gait variability is a measure of gait regulation, and high gait variability has been proposed as an early marker of mobility decline and a predictor of falls. Therefore, our aim was to determine if dynapenia in community older adults is associated with poorer gait performance, specifically high gait variability. In 184 community-dwelling older adults (age ≥75) muscle weakness was assessed by measuring the average grip strength in the dominant hand using a handheld dynamometer. Gait variables were assessed under "usual" and "fast" pace conditions using an electronic walkway. Relative risk analysis evaluated

the association of muscle weakness to each of the gait parameters. Older male adults in the lowest quartile of grip strength (<20.67 kg) had slower gait velocity [Mean %CoV (SD)= 82.93 (34.51)] [RR (95%CI)= 1.53(0.58,4.06)], and increased stride time variability [Mean %CoV (SD)= 5.81(1.94)] [RR (95%CI)= 1.71(0.82, 3.57)], then those in the highest quartile of grip strength (≥32.33 kg). Results were similar in female participants. Our findings have interesting clinical implications because muscle strength assessments can be used in the clinic as an early screening tool to detect those with high gait instability, risk of falls, and mobility decline.

**FRAILTY IS ASSOCIATED WITH DEFICITS IN EARLY BLOOD PRESSURE RECOVERY POST STANDING IN OLDER ADULTS.** M.D.L. O'Connell[1], G.M. Savva[2], C. Finucane[1], R. Romero-Ortuno[1], C.W. Fan[1], C. Soraghan[1], H. Cronin[1], R.A. Kenny[1] *(1. Dublin, Ireland; 2. East Anglia, United Kingdom)*

Background :Dysregulated homeostatic responses to stressors may underlie frailty in older adults. Impaired homeostatic responses to standing can lead to falls in blood pressure known as orthostatic hypotension, a leading cause of falls and other adverse outcomes. This study explored the relationships between orthostatic hemodynamics and frailty in older Irish adults. Methods : This was a cross sectional analysis of 4463 participants from The Irish Longitudinal Study on Ageing, a nationally representative cohort study of adults aged 50 and older. Beat-by-beat blood pressure responses during active standing were captured using continuous non-invasive photoplethysmography (Finometer®). Frailty was assessed using the Cardiovascular Health Study criteria, with participants classified as robust, prefrail or frail, according to the presence of 0, 1-2, or ≥3 of the 5 criteria. Multivariate linear regression was used to model differences in blood pressure recovery between groups. Results : 92 (2.1%) participants were frail and 1410 (31.6%) were prefrail. After age and sex adjustment, frailty was associated with reduced blood pressure recovery between 20-50 seconds post stand (P<0.01). At 30 seconds, frail participants had recovered 96.2% (95%CI= 93.7% - 98.7%) of their baseline Systolic Blood Pressure (SBP) compared to 100.7% (95%CI= 100.1% - 101.3%) in robust participants. Similar results were seen for Diastolic Blood Pressure (DBP). Differences between groups had diminished by 60 seconds. Further adjustment for health behaviours, chronic conditions, and medication use reduced, but did not fully attenuate these associations. In fully adjusted models slow gait speed remained related to impaired SBP and DBP recovery (P<0.05). Conclusions : Frailty was associated with impaired early blood pressure recovery post standing. This was partially explained by chronic conditions and medication use. Slow gait speed was independently related to poorer blood pressure recovery. These results suggest orthostatic blood pressure behaviour reflects physiological frailty and may be involved in mobility decline. Funding: The present study is supported by Irish Life, the Department of Health and Children and the Atlantic Philanthropies

**INCREASING PHYISCAL FUNCTION IN OLDER COMMUNITY-DWELLING PERSONS IN THE GENERAL PRACTITIONER SETTING-WITH EXERCISE (NCT01032252).** E. Freiberger[1], J. Salb[1], M. Siegrist[2], B. Geilhof[2], P. Landendoerfer[2], W. Blank[2], C. Hentschke[1] *(1. Nürnberg, Germany; 2. München, Germany)*

Background: Frailty is defined as a geriatric syndrome marked by a decreased? reserve capacity and a vulnerable state leading to an increased risk for adverse health outcomes. Exercise interventions seem very promising to counteract the frailty process. Nowadays the challenge remains to deliver effective intervention to the right target group of older persons. We therefore conducted a multicenter cluster randomized controlled study in the general practitioner [GP] setting to address functional declined older persons with a complex exercise program. Objective: To determine effects of a 16-week complex exercise intervention over 12 months on physical function as secondary outcomes. Methods: Inclusion criteria for community-dwelling older patients through the general practitioners were a positive fall history, decreased muscle strength and balance, limited function and fear of falling. Patients were tested three times over 12 months by their GPs with the Timed-up-and-Go-Test (TUG), Chair Rise Test (CRT), and a modified Romberg Test. Data was analysed using a generalized linear mixed effects poisson model. Results: In total 33 GPs recruited 378 participants (75.4% females). The mean age of the participants was 78.1 years (SD 5.9 years). A significant mean differences of -0.43 seconds was found between the Intervention Group (IG) and the Control Group (CG usual care) (95 % CI: -0.73 to -0.13 p = 0.004) for the TUG. The IG demonstrated a significant improvement in balance with a mean difference of 0.18 sec. change (95% CI: 0.09 to 0.28, p<0.001). No longitudinal significant effects were found for the CRT. Conclusion: A complex intervention enhanced physical function in older community-dwelling persons in the GP setting. The approach to address frail older persons by their GPs seems promising for further dissemination questions of effective interventions. The present study was funded by a grant from the Bavarian State Ministry of the Environment and Public Health (Gesund.Leben.Bayern.) (LP 00110, Pr.Nr. 09-10)

**THE ROLE THE FRAILTY SYNDROME CAN PLAY IN SUPPORTING AND TARGETING RESOURCES IN OUR AGEING POPULATION - HIGH PREVALENCE OF FRAILTY IN A POPULATION ATTENDING THE DAY HOSPITAL.** O. Ntlholang, R.E. Kelly, R. Romero-Ortuno, S. Cosgrave, D. Kelly, M. Crowe, O. Collins, J.J. Barry, L. Cogan, G. Hughes, D. O'Shea *(Dublin, Ireland)*

Background: The frailty syndrome will become (has become) an important focus for supporting and targeting resources to our ageing population. Frail individuals are at higher risk of adverse outcomes and need priority access to Comprehensive Geriatric Assessment (CGA). In the community, the prevalence of frailty is 4-7%. Our aim was to establish the prevalence and correlates of frailty in new referrals to our geriatric Day Hospital (DH). Methodology: Data was prospectively collected between August 2012–April 2013. Levels of frailty were measured with the SHARE Frailty Instrument for Primary Care (SHARE-FI, http://www.biomedcentral.com/1471-2318/10/57). Frailty correlates included demographics, physical performance scores, falls history, and need for higher level CGA services. Results: Of the 257 patients assessed (90 men, 167 women), 81 (31.5%) were frail, 66 (25.7%) pre-frail and 110 (42.8%) non-frail. Mean age was 84.3 years for the frail, 83.2 for the pre-frail and 82.2 for the non-frail (P=0.021 frail vs. non-frail). Mean Berg Balance Score (BBS) was 43.1 for the frail, 47.1 for the pre-frail and 50.7 for the non-frail (P<0.01 frail vs. others). Mean Timed Up and Go (TUG) test was 33.9 seconds for the frail, 19.5 for the pre-frail and 14.5 for the non-frail (P<0.01 frail vs. others). Forty-one percent of the frail reported two or more falls in the preceding year, compared to 38% of the pre-frail and 21% of the non-frail. Of the 27 patients who were referred to a higher level CGA service, 16(59.3%) were frail, 4(14.8%) pre-frail and 7(25.9%) non-frail. Conclusions: The prevalence of frailty in our DH (31.5%) was higher than in the community (4-7%). Frail patients had worse physical performance scores, more history of falls and were in greater need for higher level CGA services. The use of SHARE-FI in primary care may aid the efficient targeting of CGA resources to our ageing population.

**COGNITIVE FRAILTY: RESULTS FROM THE FRAILTY DAY HOSPITAL AT TOULOUSE.** G. Abellan van Kan, M. Lilamand, M. Cesari, S. Guyonnet, B. Vellas *(Toulouse, France)*

Background. Recent data show that an association exists in between physical frailty (assessed by fried criteria) and cognitive impairment. This clinical syndrome named cognitive frailty is subject of intense research. Methods. Data are from our clinical activity at the Frailty Day hospital. Results. For the purpose of the abstract, data from 2012 are presented. At the congress, analysis on the 2 year activity (2012-2013) will be presented. The patients were aged (83 years), mainly women, autonomous for ADL and IADL, community dwelling, 64% were considered frail and 31% pre-frail. Regarding cognitive dysfunction (see table), frail older adults suffer from cognitive impairment in a higher degree that pre-frail patients. Conclusions. Our findings demonstrate that physical frailty is associated with cognitive dysfunction. Although data show that cognitive frailty is an identifiable entity, more research is needed on the topic to establish the physiopathological pathways leading to the dysfunction.

**THE FRAILTY INSTRUMENT FOR PRIMARY CARE OF THE SURVEY OF HEALTH, AGEING AND RETIREMENT IN EUROPE (SHARE-FI): VALIDATION, REVIEWS AND CLINICAL USE.** R. Romero-Ortuno *(Dublin, Ireland)*

Background: frailty screening may help primary care practitioners to identify at-risk patients who need priority access to comprehensive geriatric assessment (CGA). The original frailty phenotype by Fried et al. is easy to administer in primary care, but its calculation requires post-hoc analyses on a reference sample. The Frailty Instrument for primary care of the Survey of Health, Ageing and Retirement in Europe (SHARE-FI) is an adapted phenotypic tool that is able to provide immediate frailty information on a patient relative to a large representative sample of more than 28,000 community-dwelling Europeans aged 50 or more. The aim of this study was to summarise the validation, reviews and clinical use of this instrument. Methods: literature review of publications on SHARE-FI between 2010 and 2013. Results: validation studies using SHARE have shown that SHARE-FI predicts mortality beyond age, comorbidities, disability, self-rated health, education and depression (Eur Geriatr Med 2011;2(6):323-6) and also predicts incident disability (Qual Prim Care 2011;19(5):301-9). In SHARE, it has also been shown that SHARE-FI predicts mortality similarly to other adapted frailty scales (J Am Geriatr Soc 2013;61(9):1537-51). A systematic review of frailty screening tools in primary care highlighted two tools (including SHARE-FI) as potentially suitable among 10 considered (Geriatr Gerontol Int;12(2):189-97), and the Oxford Centre for Monitoring and Diagnosis in Primary Care recommended SHARE-FI (with other 7 tools) among 11 considered (http://madox.org/horizon-scanning-reports/20120026/screening-instruments-for-frailty-in-primary-care). SHARE-FI has been clinically used in the Emergency Department (http://www.uakron.edu/dotAsset/8b117eba-ec49-4e57-9495-fe41fcfbd995.pdf), in a geriatric day hospital (Ntlholang et al., J Frailty Aging;2013;in press) and in an inpatient population (Dorner et al., J Nutr Health Aging;2013;in press), and in all three settings it has shown good discrimination abilities. The above and additional studies are listed on: https://sites.google.com/a/tcd.ie/share-frailty-instrument-calculators/related-publications. Conclusions: SHARE-FI is a promising tool for the screening of frailty in primary care. Further validation in clinical trials will be pursued. Funding: none.

**THE ASSESSMENT OF FRAILTY IN A COMMUNITY DWELLING OLDER POPULATION:THE BRITISH FRAILTY INDEX.** S. Kamaruzzaman[1], G.B. Ploubidis[2], A. Fletcher[2], S. Ebrahim[2] *(1. Kuala Lumpur, Malaysia; 2. London, United Kingdom)*

Background :The frailty concept was explored which aimed at refining its measurement by generating a new measure– the British Frailty Index (FI). Developed and validated in a cohort of community-dwelling older women, the British Women's Heart and Health Study (BWHHS), in 23 towns in Britain, findings were replicated in another large Medical Research Council (MRC) Assessment of Older People study. Methods: Systematic literature review examined the evolution of the concept and definitions of frailty. A meta-analysis on prognostic values of current frailty measures confirmed

extensive heterogeneity in prediction of all-cause mortality adjusted for age, sex, type of measure and duration of follow up. Adhering to the concept of frailty as a latent vulnerability in older people, a 'General Specific' frailty model was derived from factor analysis in the BWHHS population and replicated in the MRC cohort. Construct, external criterion and predictive validity of the British FI were assessed and its performance compared to another widely used index – the Canadian Frailty Index – with single indicators of frailty. Results: Frailty was explained by seven factors; physical ability, cardiovascular,respiratory disease and symptoms, visual impairments, comorbidities, psychological problems and physiological measures. Associations with frailty included increased age, female sex, smoking, living alone, not living in own home, poor social contact and low socioeconomic position. Frailty was an independent predictor of all-cause mortality in both cohorts and predicted hospitalization and institutionalization in the MRC study, performing better than the Canadian Index. Conclusions: This study provides better understanding of multi-dimensional domains of frailty and its concept as a latent vulnerability in older people. In providing a more reliable method of measurement this measure demonstrates validity particularly in relation to adverse outcomes with opportunities and modifiable strategies for prevention and health promotion at population level, and improved detection, treatment and intervention of frailty at a clinical level. Funding: This study was funded as a PhD grant from the Ministry of Higher Education Malaysia and has no conflicts of interest.

**ASSOCIATION OF SARCOPENIA WITH SHORT AND LONG TERM MORTALITY IN OLDER ADULTS ADMITTED IN ACUTE CARE WARDS: RESULTS FROM THE CRIME STUDY.** D.L Vetrano[1], G. Onder[1], S. Volpato[2], A. Corsonello[3], R. Bernabei[1], F. Landi[1] *(1. Rome, Italy; 2. Ferrara, Italy; 3. Cosenza, Italy)*

Background: Impact of sarcopenia on mortality was rarely evaluated in acute care settings. Aim of the present study was to investigate the association between sarcopenia and mortality during hospital stay and during one-year follow-up in older individuals admitted to acute care wards. Methods: This is a multicentre observational study involving individuals aged ≥ 65 years. Sarcopenia was assessed according to the algorithm proposed by the European Working Group on Sarcopenia in Older People (EWGSOP). Data on mortality during hospital stay and during one-year follow-up were collected. Results: Within the 770 participants (mean age 81±7 years, 56% women) sarcopenia was present in 214 (28%) of them; 22 participants died during hospital stay and 113 during follow-up. Participants with sarcopenia had a significantly higher in-hospital (6% vs. 2%; p=0.007) and 1-year mortality (26% vs. 14%; p<0.001) as compared with others. After adjusting for potential confounders, sarcopenia resulted significantly associated with in-hospital (HR 3.38; 95% C.I. 1.37–8.37) and 1-year mortality (HR 1.64; 95% C.I. 1.10–2.51). Such association remained significant even after excluding those with preserved physical performance and normal skeletal muscle index from the non sarcopenic group (HR 1.80; 95% C.I. 1.21–2.73 for 1-year mortality). Conclusions: Sarcopenia is a prevalent condition among older adults admitted to acute care wards and it is associated with increased short and long-term mortality in hospitalized older adults.

**THE PREDICTION OF ADL AND IADL DISABILITY USING SIX PHYSICAL INDICATORS OF FRAILTY.** R.J.J. Gobbens[1], M.A.L.M. van Assen[2] *(1. Rotterdam, The Netherlands; 2. Tilburg, The Netherlands)*

Background. Frailty is a predictor of disability. A proper understanding of the contribution of individual indicators of frailty in the prediction of disability is a requisite for preventive interventions. The aim of this study was to determine the predictive power of the individual physical frailty indicators gait speed, physical activity, hand grip strength, Body Mass Index (BMI), fatigue, and balance, for ADL and IADL disability. Methods. The sample consisted of 505 community-dwelling persons (≥ 75 years, response rate 35.1%). Respondents first participated between November 2007 and June 2008, and a subset of all respondents participated again one year later (N=264, 52.3% response rate). At both occasions disability, socio-demographic characteristics, lifestyle, and chronic diseases were assessed. ADL and IADL disability were assessed by the Groningen Activity Restriction Scale. BMI was assessed by self-report, and the other physical frailty indicators were assessed with the Timed Up & Go (TUG) test (gait speed), the LASA Physical Activity Questionnaire (physical activity), a hand grip strength test, the Shortened Fatigue Questionnaire (fatigue), and the Four-test balance scale. Results. All six physical frailty indicators were associated with ADL and IADL disability. After controlling for previous disability, socio-demographic characteristics, lifestyle, and chronic diseases, only gait speed and fatigue were predictive for both ADL and IADL disability. All the predictors together explained a large part of the variance of ADL and IADL disability, assessed one year later. Conclusions. Older people with a slower gait speed and fatigue have a higher risk of future ADL and IADL disability. Hence these physical frailty indicators should be included in frailty assessment when predicting future disability. This study received no specific grant from any funding agency.

**FRAILTY MEASURES ARE USEFULL IN IDENTIFYING INDEPENDANT SENIORS AT RISK OF FUNCTIONAL DECLINE EVALUATED IN EMERGENCY DEPARTMENTS AFTER A MINOR TRAUMA.** M.-J. Sirois, M. Pelletier, M. Émond *(Québec, Canada)*

Background: 70% of Canadian independent seniors consulting Emergency Departments (EDs) for minor injuries are discharged home within 48 hours. However, a cumulative incidence of 15% of functional decline has been reported up to six months post-injury in this population. An undetected pre-frail status could explain this decline. Objectives: To describe the frailty status of independent seniors consulting EDs for minor injuries and compare the capacity of two frailty measures to predict functional decline in this population. Methods: A prospective cohort study was conducted in six Canadian EDs. 1072 seniors were evaluated at the ED visit, three and six months post-visit. The « Study of Osteoporotic Fracture » (SOF) and « Canadian Health Study of Aging » (CHSA) frailty measures were used. Functional decline was define as a loss ≥ 2/28 points on the « Older American Resources Scale » functional scale. Areas under the ROC curves were used to compare the predictive capacity of the frailty measures. Results: According to the « SOF » 12% of seniors were frail, 33% pre-frail and 55% robust. According to the CHSA 10% were frail, 38% pre-frail and 52% robust. There were 15% decliners at 3 and 6 months. Adjusted proportions of decliners were 1% in robust seniors, 14% in pre-frail and 21% in frail individuals according to the SOF. Respective proportions according to CHSA were 5%, 11% and 21%. The «SOF» and «CHSA» ROC curves were 0.787 and 0.653. Conclusion: As a whole, 15% of still independent seniors show functional decline up to 6 months post-injury. As measured by the SOF or CHSA, pre-frail and frail individuals are at increased risk of decline. Both measures are easily performed in EDs. The SOF has a better predictive capacity and could be included in routine assessment of injured seniors in the EDs.

**FREQUENCY OF SARCOPENIA IN ELDERLY ASSISTED AT PRIMARY HEALTHCARE SYSTEM.** C.H.A. Schwanke, V.E. Closs, L.S. Rosemberg, M.G.V. Gottlieb, B.G. Ettrich, I. Gomes *(Porto Alegre, Brazil)*

Background: in Brazil, the increase in population over 60 years follows the global trend and this shift in age structure has impact on health conditions. Sarcopenia is believed to be a part of the ageing process and refers to the loss of skeletal muscle mass and strength and it can lead to disability and chronic complications. In this context, is important to identify subjects with sarcopenia. The aim of this study was to determine the frequency of sarcopenia in elderly assisted at primary healthcare. Methods: we developed a cross-sectional study with a random sample of 567 individuals aged 60 years or more from Family Health Strategy of Porto Alegre-Brazil. They were assessed by an interdisciplinary team. Sarcopenia was assessed through the EWGSOP European consensus algorithm whose components were the anthropometric measurements of calf circumference (CC), grip strength (GS), and normal gait speed (NGS). The descriptive analysis of the data was performed by SPSS 17. The research was approved by the PUCRS´S Ethical Research Committee. Results: the average age was 68.5±7.1 years old (60-103 years). The majority of the sample was female (63.6%). At the first level of the algorithm, 175 (30.9%) elderly were identified with proper NGS, and 392 (69.1%) with NGS decreased. At the second level, 24 individuals with propor NGS showed low GS, and 151 individuals showed normal GS. These 24 individuals were added to 392 individuals which presented risk of sarcopenia according to the NGS in the first level. At the third level of the algorithm, 393 individuals showed proper muscle mass, and 23 individuals showed low muscle mass. Finally, 23 (4.1%) elderly were diagnosed with sarcopenia and 393 (95.9%) were considered no sarcopenic. Conclusion: The frequency of sarcopenia among elderly from primary healthcare system was 4.1%. Funding: The present study was supported by FAPERGS. VEC, LSR, and MGVG received scholarship from CAPES.

**DEVELOPMENT OF A GUIDANCE-TOOL TO FACILITATE GENERAL PRACTITIONERS' ADVICES ON PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOURS.** P. De Souto Barreto *(Toulouse, France)*

Background: General practitioners (GP) are well-positioned to promote healthy lifestyles among their patients. However, the effectiveness of GP advices about physical activity (PA) on patients' lifestyle is not yet established. Moreover, the effectiveness of GPs' advices about sedentary behaviors on the total time patients spend doing activities while in sitting or laying positions is completely unknown. Although limited evidence suggests that advices on an active lifestyle provided by GPs should be given in a structured format and should be short in time, the feasibility and usefulness of a pragmatic guidance-tool that would guide GPs' counseling on PA and sedentary behavior is not well-known. The objective of this work is to propose the development of a use-friendly guidance-tool on PA and sedentary behaviors to be implemented in GPs' routine clinical consultations. Methods: The guidance-tool on PA and sedentary behavior was developed to be implemented into the real world of the general practice setting. It is composed of 4 questions on leisure-time PA, one question on subjects' readiness to do leisure-time PA, one question on PA for transportation, and one question on sedentary time. From these questions, three recommendations are proposed: one regarding leisure-time PA, one on PA for transportation, and one for establishing regular breaks on sedentary time. Conclusions: Currently, GPs do not provide advices on PA systematically and rarely provide advices on sedentary behaviors to their patients. Once the PA guidance-tool proposed herein has proven its acceptability by and usefulness for GPs to improve the quality of their advices on PA and sedentary behaviours, it may constitute the basis to a better preventive practice in terms of active lifestyle in the general practice setting. Funding: none

**EXPLAINING EDUCATIONAL DIFFERENCES IN FRAILTY AMONG OLDER ADULTS: RESULTS FROM A 13-YEAR LONGITUDINAL STUDY.** E.O. Hoogendijk, H.P.J. van Hout, M.W. Heymans, H.E. van der Horst, D.H.M. Frijters, M.I. Broese van Groenou, D.J.H. Deeg, M. Huisman *(Amsterdam, The Netherlands)*

Background: The aim of this study was to examine the longitudinal association between educational level and frailty in older adults, and to investigate the role of material, biomedical, behavioral and psychosocial factors in explaining this association. Methods.

Data of five observations collected between 1995 and 2008 were used from the Longitudinal Aging Study Amsterdam (LASA). The study sample consisted of 1204 men and women aged 65 and above at baseline. Frailty was assessed using Fried`s frailty criteria. A relative index of inequality (RII) was calculated for level of education. Longitudinal logistic regression analyses based on multilevel modeling were performed. Results. The longitudinal logistic regression analyses adjusted for age and sex revealed that older adults with a low educational level had higher odds of being frail compared to those with a high educational level (RII 2.94, 95% CI: 1.84 - 4.70). Although the overall frailty rate of the participants increased during 13 years of follow-up, the educational gradient in frailty remained stable over time. Material, biomedical, behavioral and psychosocial factors explained 73% of the educational differences in frailty. Income, self-efficacy, depressive symptoms, cognitive impairment and number of chronic diseases had the largest individual contribution in reducing the effect of educational level on frailty. Conclusion. Educational differences in frailty among older adults persisted over a period of 13 years and were for a large part explained by material, biomedical, behavioral and psychosocial factors. These results are a starting point for interventions aimed at reducing educational differences in frailty among older adults. Funding: The Longitudinal Aging Study Amsterdam is largely supported by a grant from the Netherlands Ministry of Health Welfare and Sports, Directorate of Long-Term Care.

**PREVALENCE OF PHYSICAL, MENTAL AND SOCIAL FRAILTY IN OLDER ADULTS: FINDINGS FROM THE GERMAN HEALTH INTERVIEW AND EXAMINATION SURVEY (DEGS1).** J. Fuchs, C. Scheidt-Nave, M.A. Busch, A.K. Buttery *(Berlin, Germany)*

Background: Examining relationships between physical frailty, cognition and psychosocial factors may help characterise emerging concepts in frailty. We aimed to examine the prevalence and explore the overlap of physical, mental and social frailty in a nationwide population-based study. Methods: Data on 1,853 community-dwelling people aged 65 to 79 years participating in the "German Health Interview and Examination Survey for Adults"(DEGS1) were analysed. DEGS1 comprised interviews, examinations and tests. Physical frailty was defined as exhaustion (SF-36 item), low grip strength (men<30kg, women<20kg, or unable to perform), slowness (Timed Up and Go test>20 seconds or unable to perform) and low physical activity (no sports or exertion). Mental frailty was defined by cognitive impairment (digit symbol substaitution test <mean-1.5SD) and depressive symptoms (Patient Health Questionnaire (PHQ-9)≥10). Social frailty was defined by low social support (Oslo-3 item Social Support Scale<8 points) and self-reported lack of support. Subjective health status was measured using the Minimum European Health Module item. Results: More women (53.9% versus 46.1% men; mean age 71.5 and 71.0 years respectively) were included. Physical frailty was the most frequent frailty phenotype (women: 34.4%, 95%CI 30.5-38.6; men: 31.5%, 95%CI 27.6-35.8) followed by social frailty (women: 21.5%, 95%CI 18.2-25.3; men: 18.1%, 95%CI 14.7-22.2) and mental frailty (women: 11.9%, 95%CI 9.1-15.3; men: 10.2%, 95%CI 7.7-13.5). Overlap between frailty domains was similar in both sexes. For example, combined physical, mental and social frailty was present in 4.4% of women (95%CI 2.8-6.8) and 1.5% of men (95%CI 0.7-3.1). Persons with mental frailty were more likely to report poor health status (women: 73.7%, 95%CI 59.3-84.6; men: 67.4%, 95%CI 50.7-80.6) than those with social frailty (women: 68.4%, 95%CI 60.3-75.6; men: 56.6%; 95%CI 45.3-67.2) or physical frailty (women: 57.5%, 95%CI 49.2-65.4; men: 58.2% 95%CI 50.0-66.6). Conclusions: While physical frailty is the most prevalent frailty phenotype in older German adults, mental and social frailty are more strongly associated with poor health status. Population-based studies are valuable for examining relationships between frailty domains. The present study is funded by the Federal Ministry of Health.

**HEIGHT ADJUSTED APPENDICULAR SKELETAL MUSCLE (ASM) IS MORE PREDICTABLE OF OSTEOPOROSIS IN KOREAN ELDERLY.** S.Y. Kim, C.W. Won, B.S. Kim, H.R. Choi *(Seoul, Korea)*

Background: It is not yet clear whether height- or weight-adjusted appendicular skeletal muscle is a better marker of sarcopenia. The purpose of this study is to determine which index is better able to provide adequate markers of sarcopenia and predict osteoporosis in an elderly Korean population. Methods: This study is based on data from the 2008–2010 Korean National Health and Nutrition Examination Survey and included 1308 males and 1171 females, all of whom were over 65 years old. Bone mineral density and appendicular skeletal muscle was measured by DXA and appendicular skeletal muscle was adjusted by height and weight as markers of sarcopenia. Results: For males and females, bone mineral density was positively correlated with low muscle mass when ASM/Ht2 was used as a marker for sarcopenia. When ASM/Wt was used as a marker for sarcopenia, low muscle mass and bone mineral density were negatively correlated. However, this correlation was positive after adjusting for age and body fat. A ROC curve showed that ASM/Ht2 was the best marker of osteoporosis, with a cut-off value of 6.85 kg/m2 for males and 5.96kg/m2 for females. When these cut-off values were used to determine sarcopenia, the risk of osteoporosis increased 4.14 times in males and 1.88 times in females. Conclusion: In elderly Korean people, sarcopenia was positively correlated with bone mineral density when ASM/Ht2 was used as a marker for sarcopenia. The risk of osteoporosis increased when sarcopenia was diagnosed with a cut-off value of 6.85kg/m2 in males and 5.96kg/m2 in females. Key words: sarcopenia, osteoporosis, geriatrics

**THE ASSOCIATION OF GRIP STRENGTH AND RELATED INDICES WITH ADL INDEPENDENCE IN THE ELDERLY, STUDIED BY A NEWLY-DEVELOPED GRIP STRENGTH MEASURING DEVICE.** Y. Matsui, R. Fujita, A. Harada, T. Sakurai, T. Nemoto, N. Noda, K. Toba *(Obu, Japan)*

Background: We have developed a new grip-strength measuring device, which considers the time axis, for evaluating muscle contraction in detail. The aim of this study is to investigate the association of grip strength, together with related indices, and independence of ADL in the elderly, using data from our newly-developed device. Subjects and Methods: Patients who visited the clinic for memory disorders at our institute (142 men and 205 women, averaging 74.8±8.8 years). Their strength during gripping performances was described in graphic form, and the following indices were calculated: Maximum strength (MS), Response time (RT), Time to MS, Time to reach turning point (TP), Strength at TP, Inclination from start to TP, Time from TP to reach MS, Inclination from TP to MS, and Ratio of strength (TP/MS). Barthel Index (BI), scores of total and each subclass were used for evaluating independence in ADL. MS was compared among groups depending on BI scores by ANOVA. Correlations, using Pearson's coefficient, were analyzed between indices and BI scores by sex, side, and age groups. Results: MS were significantly higher in the independent groups, examined by BI total and subclass score. Not only MS, but RT, Strength at TP, and Inclination from start to TP, were significantly related with BI total and most subclasses in both hands of either sex. Time to reach TP was particularly correlated in men, while TP / MS in women. Correlation of indices varied by sex, side, and age groups, but 70's in men and 70's and 80's in women were especially correlated. Conclusion: MS was confirmed to be useful, but some of the newly defined indices, like RT, strength at TP, and elements regarding before and after TP until reaching MS, also proved useful. Funding: This work was supported by The Research Funding for Longevity Sciences (23-24) from the National Center for Geriatrics and Gerontology (NCGG), Japan

**MOTONEURON LOSS IS ASSOCIATED WITH SARCOPENIA.** M. Drey[1], B. Krieger[1], C.C. Sieber[1], J.M. Bauer[1,2], G. Schuster[3], S. Zollinger[3], S. Hettwer[4], T. Bertsch[1] *(1. Nuremberg, Germany; 2. Oldenburg, Germany; 3. Rapperswil, Switzerland; 4. Schlieren, Switzerland)*

Background: Sarcopenia, age-related muscle wasting, is associated with increased morbidity and mortality in the affected individuals. The pathogenesis of sarcopenia is not yet fully understood. A multifactorial concept is currently favoured. Reduced number of motoneurons, which is being mooted as a potential mechanism of muscle mass loss, is explored in the present study. Methods: 75 sarcopenic and 74 non-sarcopenic community-dwelling elderly individuals underwent a measurement of the Motor Unit Number Index (MUNIX) using the hypothenar muscle. MUNIX is an electromyographical method for assessing the number and size (Motor Unit Size Index - MUSIX) of Motor Units (MUs) using the Compound Muscle Action Potential (CMAP) and the Surface electromyographic Interference Pattern (SIP). Results: 16% of all of the investigated participants had pathological MUNIX and MUSIX values. This group had significantly less muscle mass than the other participants (18.3 kg versus 22.1 kg, p=0.009). Participants with pathological MUNIX and MUSIX values are three times more likely to develop sarcopenia (OR: 3.07, 95% confidence interval: 1.12-8.44, p=0.030). The loss of motoneurons is partially compensated by neural sprouting, reflected by an enlargement of the remaining motor units. Conclusions: In the present study, it was demonstrated for the first time, using the MUNIX technique, that a reduced number of motoneurons in the spinal cord is accompanied by low muscle mass in community-dwelling elderly. It was possible to identify a low number of motor units as a risk factor for the development of sarcopenia. Funding: The project „DISARCO" was carried out within the framework of the Eurostars Programme. The German partners were funded by the Federal Ministry of Education and Research (BMBF) in Germany.

**IDENTIFYING TYPES OF RECREATIONAL PHYSICAL ACTIVITY ASSOCIATED WITH MUSCLE QUALITY IN OLDER ADULTS.** S. Barbat-Artigas, C.H. Pion, Y. Feiter-Murphy, M. Aubertin-Leheudre *(Montréal, Canada)*

Background: Several studies conducted in a research-related environment have shown that physical activity, especially resistance training, has positive effects on muscle quality (MQ) in older adults. However, it is reasonable to question whether recreational physical activity (RPA) may lead to similar results, particularly in aging populations. Consequently, the aim of the present study was to investigate the relationship between RPA and MQ in men and women aged 50 years and over. Methods: Data are from 312 individuals (97 men and 215 women) aged 50 years and older. Body composition (dual energy X-ray absorptiometry) and knee extension strength of the right leg (KES; 1 repetition maximum) were assessed. Muscle quality (MQ: KES/right leg lean mass) was calculated. Recreational physical activities have been identified using structured interview (Participants were asked to specify the practice time (in minutes/week) for each activity in which they were currently engaged and for how long these physical activities have been practiced (in months)). Results: Among leisure-related physical activity characteristics, the duration of the period during which participants practiced resistance activities was the only predictor of MQ (standardized $\beta = 0.128$; $p = 0.018$) and explained an additional 1.6% of the variance in MQ, after controlling for age and gender. Furthermore, the weekly amount of practice of aerobic activities significantly interacted with age (standardized $\beta = -0.313$; $p < 0.001$) to predict MQ. Conclusion: Results show that the duration of the period during which participants practiced recreational resistance exercises play a key role in maintenance of muscle quality, regardless of age. However, beyond 60 years, aerobic activities also seem to be positively associated with muscle quality. These findings suggest

that long term engagement in physical activity is beneficial for muscle health and should be encouraged. Funding: The present study is supported by foundation of the YMCAs of Montreal. MAL is supported by the FRSQ and SBA by CIHR.

**NORM VALUES FOR COMPONENTS INCLUDED IN THE FRIED FRAILTY INDEX.** J.L. Helbostad, T. Egerton, D. Stensvold, O. Sletvold, I. Saltvedt *(Trondheim, Norway)*

Background: The Fried Frailty Index includes 5 components: Weight loss, reduced energy level, slowness, reduced physical activity and weakness. The aim of the study was to describe norm values for components included in the Fried Frailty Index for a general population of older persons, and to assess associations between different outcomes representing the same component of the index. Methods: Cross sectional data from a population based sample of 1500 persons between 70-76 years were included, of which data for the first 306 persons are reported here. Frailty components included weight loss > 2kg the past year, reduced energy by the Fatigue Severity Scale fatigue (FSS, ranging from 1-49), slowness by gait speed, low physical activity by self-reported and monitored activity (Actigraph), and weakness by grip strength, leg press strength and sit-to-stand time. Results: 53.5% were women, mean age was 71.5±1.4 years, mean number of medications 2.1±1.8, and 29% reported a fall previous year. 19% had weight loss >2 kg previous year, mean SFF score was 13±9, preferred gait speed was 1.28±0.2 m/s. 76% were physically active more than 30 minutes per day, and mean daily time in moderate to vigorous activity was 38.9±21.7 minutes. Mean sit-to stand time was 3.0±0.6 seconds, mean isometric leg press force 90.4 ± 35.0 kg and mean grip strength 34.5±10.9 kg. Correlation between muscle strength outcomes varied between r=0.26 and 0.46, and physical activity outcomes between r= 0.20 and 0.27. Conclusions: The data set may represent norm values for components included in the Fried Frailty Index. This is important for deciding upon cut-off values for frailty. The association between different outcomes for the same component of the index was low to moderate, indicating that choice of outcomes matters. Data for the whole sample, using different cut-off values for frailty will be presented at the conference. The present study is supported by the K.G. Jebsen Center for Exercise in Medicine and by the Health Authorities of Mid-Norway

**FRAILTY AMONG COMMUNITY-DWELLING OLDER PEOPLE IN THE BEIJING LONGITUDINAL STUDY ON AGING II.** Z. Zheng, S.C. Guan, J.H. Ma, J. Zhang, H. Ding, Y.Z. Jiang, P. Chan *(Beijing, China)*

Background: Identification of frailty is important for better care in elderly. However, there is limited information on frailty in the Chinese elderly and in longitudinal community cohort. Methods: This is a secondary analysis for Beijing Longitudinal Study of Aging II (BLSA II) project which was launched in 2009. A multi-stage cluster random sampling method was used to select a representative community cohort of Beijing residents old than 55. Frailty Index (FI) score was calculated using Rockwood's accumulation of deficits method. We selected 34 health deficits, including chronic diseases, functional scores, age-associated disability conditions and lab tests. FI ≥ 0.25 was used as the cut-off criteria for frailty. Univariate and multivariate logistic regression with backward elimination were applied to calculate unadjusted and adjusted odds ratios (ORs). Results: There were 10,039 participants at baseline. The overall prevalence of frailty was 12.7% and increased notably with age (<65 year, 4.53%; 65-75 year, 11.2%; 75-85 year, 21.3%; and >85 year, 26%; p for trend <0.0001). Males were less likely being frail than females (10.5% vs. 14%, P <0.0001). Among 7,168 (71.7%) participants finished one-year follow-up, 124 had died, 443 had hospital admissions, 482 fell at least once, 37 had ADL disability and 1,024 had any adverse episodes. Unadjusted ORs of frailty for death, hospitalization, fall, disability were 2.36, 2.11, 1.96, 4.89, respectively and 2.13 for any events (all Ps<0.0001). After controlling for gender, age, living area, polypharmacy and hypertension, frailty at baseline remained significantly related with any adverse events in one year follow-up (adjusted OR=1.5; 95%CI: 1.25, 1.79; p<0.0001). Conclusions: The prevalence of frailty in Chinese was similar to that seen in other international studies. Frailty status is a significant and independent predictor of geriatric adverse outcomes within one year. This study is supported by grants from National Department Public Benefit Research Foundation by Ministry of Health P. R. China (No. 201002011), Beijing Municipal Commission of Science and Technology (D07050701130701), Ministry of Science and Technology of China (2012AA02A514, 2011CB504101)

**SARCOPENIA AND DIABETES – DATA FROM THE BERLIN AGING STUDY II (BASE-II).** N. Buchmann, J. Nikolov, I. Demuth, E. Steinhagen-Thiessen, R. Eckardt, K. Norman *(Berlin, Germany)*

Background: Earlier studies suggested that type 2 Diabetes (T2DM) is related to sarcopenia. Several studies showed loss of muscle mass, loss of muscle strength or impaired physical function in subjects with T2DM. Further metabolic consequences of muscle mass loss like increasement of basal metabolism and body fat levels can lead to insulin resistance or T2DM. One of the aims within the Berlin Aging Study II was to describe correlations of sarcopenia with insulin resistance and T2DM. Methods: A total of 912 subjects were analyzed (women=57.6%; 60-84 years old). T2DM was assessed according to the ESC-guidelines. Glucose tolerance test was performed in subjects with no self-reported T2DM. DEXA was used to assess skeletal muscle mass and sarcopenia was defined as an appendicular skeletal muscle mass index two standard deviations below that of a young reference group. Results: The prevalence of T2DM was 13%, Sarcopenia was identified in 26.6% of the participants. SMI-levels were significantly higher in subjects with T2DM (p<0,001), independent from BMI-groups, medication or gender. HOMA-IR levels as marker for insulin resistance were significantly lower in subjects with sarcopenia (p<0,001). There were low to average correlations between SMI with fasting glucose, HbA1c, HOMA-IR and BMI. Odd`s Ratio showed relative risk of 1.668 (95% CI: 1.056-2.636) for non-diabetic subjects to have sarcopenia. Conclusion: Prevalence of T2DM and sarcopenia was high in subjects of the Berlin Aging Study II. Participants with prevalent T2DM had low risk to have sarcopenia. However subjects with prevalent T2DM or insulin resistance could be at increased risk for development of sarcopenia. This study was produced as part of a project which was supported by the German Federal Ministry of Education and Research under grant number 16SV5536K. Responsibility for the contents of this publication lies with the author[s].

**DOES SOCIAL VULNERABILITY AFFECT PHYSICAL FRAILTY? ANALYSIS IN 2,350 ELDERLY PEOPLE.** M. Herr[1], J.M. Robine[2], J.J. Arvieu[3], J. Ankri[1] *(1. Paris, France; 2. Montpellier, France)*

Background: Because social factors may affect resilience to stressors, social vulnerability has been mentioned as a component of frailty in previous studies. This study aimed to examine the association between social vulnerability and frailty markers and to assess whether social vulnerability could improve the predictive power of frailty with regard to 2-year survival in French elders. Methods: This is a population study of 2,350 people aged 70 and over who were interviewed at home by a trained nurse between 2008 and 2010. Data collected dealt with 6 frailty domains (strength, energy, physical activity, mood, nutritive and cognitive functioning), functional abilities and a number of social factors (mainly social network and financial resources). Statistical analysis used polytomous and logistic regression models adjusted for age, sex, former job and co-morbidities. Results: Among the study sample (mean age 83.2+/-7.4, women 59.3%), 605 participants (25.9%) had no frailty marker or functional limitation, 857 (36.7%) had at least one frailty marker without IADL/ADL disability, 522 (22.4%) had IADL disability without ADL disability and 351 (15.0%) had ADL disability. The lack of financial resources increased the risk of being frail (OR 1.81 [1.23-2.66]), IADL disabled (OR 3.02 [1.97-4.63]) and ADL disabled (OR 4.02 [2.51-6.46]). Social isolation was related to frailty (OR 1.59 [1.21-2.10]) and it increased the risk of dying within two years (OR 1.45 [1.07-1.96]). Nevertheless, the addition of social isolation to frailty and disability variables did not improve the predictive power of the model with regard to 2-year survival (area under ROC curve: 0.789 versus 0.787). Conclusions: This study shows that frail elders are more likely to be socially isolated and financially limited compared to their non-frail counterparts. Nevertheless, from a prognostic standpoint, social factors do not improve the prediction of 2-year mortality compared to physical frailty components.

**FRAILTY AND OSTEOARTRITIS IN ELDERLY ACROSS SIX EUROPEAN COUNTRIES: RESULTS FROM THE EUROPEAN PROJECT ON OSTEOARTRITIS (EPOSA).** M.V. Castell[1,2], S. van der Pas[1], A. Otero[1,2], S. Maggi[1,3,5], E.M. Dennison[1,4], T. Nikolaus[1,5], N.L. Pedersen[1,6], D.J.H. Deeg *(1. Amsterdam, The Netherlands; 2. Madrid, Spain; 3. Padova, Italy; 4. Southampton, United Kingdom; 5. Ulm, Germany; 6. Stockholm, Sweden)*

Background: Little is known about the association between osteoarthritis and frailty in the elderly population.The aim of this study is to calculate the prevalence of frailty and its relationship to clinical osteoarthritis among older populations across countries participating in the EPOSA Project. Methods: The European Project on Osteoarthritis (EPOSA) involves population-based cohorts performed in six different countries. A total of 2445 individuals of 65 years and older were included for this study. Frailty was categorized according to Fried criteria. Clinical Osteoarthritis was assessed based on a clinical exam of the hand, knee and hip using the clinical classification criteria developed by the ACR. Demographic and Health variables were collected. Statistical methods. Results were weighted according to European standard population. Frailty and OA prevalence were calculated for the overall sample and by country. Multiple logistic regression assessed the relationships between frailty and osteoarthritis. Results: The overall prevalence of frailty was 8,6% (Germany 2,6%, Sweden 2,7%, Netherlands 8,6% ,Italy 12,5%, Spain 12,6% , and UK 13,8%). For ages ≥75 years the overall frailty and pre-frailty prevalence was 15,7% and 55,7%, respectively (Germany 5,2% and 61,2%; Sweden 8,4% and 43,0%; Netherlands 15,0% and 52,4%; Italy 21,6% and 55,7; Spain 21,2% and 64,9%; UK 18,3% and 53,3%). Age, gender (women), obesity, comorbidity , cognitive impairment, depression and country are associated with frailty. Clinical osteoarthritis was associated with frailty: OR=2,14 (IC95% 1,52-3,00) after adjustment for potential co-variates. Conclusions: There are important differences in the prevalence of frailty across European countries. Older people with osteoarthritis were two times more likely to have frailty. Appropriate management of osteoarthritis is an important measure for prevention of frailty in the older population. Funding: The present study was funded by a non-commercial private funder. The funder had no role in the design, execution, analysis or interpretation of the data, or writing of the study. Funding: The present study was funded by a non-commercial private funder. The funder had no role in the design, execution, analysis or interpretation of the data, or writing of the study.

**PREVALENCE OF SARCOPENIA ASSESSED BY EWGSOP CRITERIA IN A COHORT OF ACUTE HIP FRACTURE PATIENTS.** J.I. González-Montalvo, T. Alarcón, P. Gotor, R. Queipo, A. Otero, R. Velasco, D. Ariza, A. Pardo *(Madrid, Spain)*

Background: Data are lacking about the prevalence of sarcopenia in hospitalized patients. EWGSOP citeria provide an operational definition of sarcopenia that can be included in the mainstream of geriatric assessment, but their applicability and usefulness in clinical settings must yet be demonstrated. Methods: EWGSOP criteria of sarcopenia (low muscle mass and low muscle strength) were applied in a cohort (FONDA Cohort) of acute

hip fracture (HF) patients consecutively admitted to the orthogeriatric unit at a university hospital in Madrid. Patients were assessed in the pre-surgical period, allways within 72h from admission. Reduced muscle mass was determined as having a muscle mass index (MMI) 2 SD below the mean obtained from a young Spanish validated sample measured by bioimpedance analysis. Low muscle strength was determined by the inCHIANTI handgrip-strength cut-offs (<30 Kg for men, <20 Kg for women) using a Jamar® dinamomether. Demographic and clinical characteristics were collected. Results: Two hundred and sixty seven patients were included. Mean age was 85.9 (±6.7) years, and 232 (80%) were women. Fifty five patients (21%) lived in nursing homes. Forty patients (14.9%) had low MMI (9.4% of men, 16.3% of women). Two hundred and twenty nine (90.2%) had low handgrip strenght (84.6% of men, 91.6% of women). Sarcopenia was present in 38 (14.2%) of patients (9.4% of men, 15.4% of women). Related to place of residence, 13.3% of patients admitted from the community and 18.2% of patients from nursing home had sarcopenia. Conclusions: Among HF patients sarcopenia is more frequent in women and in patients admitted from nursing homes. Compared with results from other studies data from the FONDA study show that sarcopenia is more frequent in acute HF patients than in healthy community elders, and even a bit more frequent than in other samples of hospitalized acutelly ill older patients. Funding: The present study is supported in part by a grant from the Instituto de Investigación Biomédica (IdiPAZ), Hospital Universitario La Paz, Madrid, Spain (FONDA Cohort Study, PI-1334 Project) and by a grant from Nestlé Health Science, Barcelona, Spain).

**REGN1033, A FULLY HUMAN ANTI-MYOSTATIN ANTIBODY, ENHANCES RODENT MUSCLE FUNCTION.** L. Miloscio, R. Salzler, C. Abrahams, J. Gromada, N. Papadopoulos, A. Murphy, T. Stitt, E. Latres *(New York, USA)*

Background: Inactivation of myostatin (GDF8), a negative regulator of skeletal muscle growth, provides a strategy for the treatment of muscle atrophy associated with weakness, frailty and certain catabolic conditions. REGN1033 is a specific myostatin antagonist currently in clinical development. Methods: REGN1033 was tested in unperturbed mice, multiple models of atrophy, and a skin wound healing model with weekly or bi-weekly injections ranging from 2.5-30 mg/kg. Muscle mass, force, and endurance exercise were assessed in mice treated for 21-28 days. Muscle mass was analyzed after 14 days of immobilization or dexamethasone treatment, and after recovery from 7 days of hindlimb suspension (HLS). Skin wound size was measured over 14 days in response to REGN1033 or soluble decoy receptor-body ActRIIB-Fc. Ligand specificity was determined by affinity pull-downs from ActRIIB-Fc injected mice, and tested in human myoblasts. Results: REGN1033 increased fiber size, muscle mass, and force production in young mice by approximately 20%, and improved physical performance outcomes in combination with treadmill exercise in two-year-old mice. REGN1033 prevented the loss of muscle mass induced by immobilization or dexamethasone treatment by 80%, and increased the gain of muscle mass after recovery from 7d HLS by 15% compared to isotype controls. ActRIIB-Fc blocked several TGFβ family members, some of which have been implicated in wound healing. Treatment with ActRIIB-Fc, but not REGN1033 impaired wound healing. Conclusions: Specific myostatin antagonism with REGN1033 enhanced muscle mass and function and had beneficial effects in multiple models of atrophy without the adverse effects associated with broadly inhibiting TGFβ ligands. Funding: Provided by Regeneron Pharmaceuticals, Inc., Tarrytown, NY

**PHYSICAL FUNCTION MEASUREMENTS TO PREDICT HOSPITAL OUTCOME IN OLDER IN-PATIENTS: RESULTS FROM THE CRIME STUDY.** S.L. De Buyser[1], M. Petrovic[1], Y.E. Taes[1], D.L. Vetrano[2], G. Onder[2] *(1. Ghent, Belgium; 2. Rome, Italy)*

Background: Physical function measurements can predict health outcomes, such as mortality, in community-dwelling older persons. Few studies have examined the predictive value of physical performance measurements in acute hospital setting. In this study, we identified hospital outcome predictors in older in-patients by using a multi-component approach including physical performance measurements. Methods: Data are from the CRiteria to assess appropriate Medication use among Elderly complex patients (CRIME) project. This was a multicentre, observational study of 1123 older patients, consecutively admitted to geriatric and internal medicine acute care wards of seven Italian hospitals. Data on demographics, anthropometrics, social factors, cognitive status (Mini Mental State Examination), psychological status (15 items Geriatric Depression Scale), medical diagnoses, geriatric conditions, and physical function (walking speed, grip strength, ADL) were recorded. Hospital outcomes were length of stay, in-hospital mortality, and institutionalization. Results: Mean age of participants was 81 years, 56% were women. Median LoS was 10 (7-14) days, 41 patients died during hospital stay and 37 were newly institutionalized. Number of drugs before admission, metastasized cancer, renal failure or dialysis, infection, falls at home during the last year, pain, and walking speed were independent predictors of LoS. Inability to perform grip strength and total ADL dependency were independent predictors of in-hospital mortality. Malnutrition and total ADL dependency were independent predictors of institutionalization. Conclusions: Our findings demonstrate that the assessment of physical function is important to identify patients at risk of poor hospital outcome. Funding: The present study is supported by a grant of the Italian Ministry of Labour, Health and Social Policy (Bando Giovani Ricercatori 2007, convenzione no. 4).

**STROKE INDUCED SARCOPENIA: MUSCLE WASTING AND DISABILITY AFTER STROKE.** W. Doehner *(Berlin, Germany)*

Stroke is the second leading cause of death and the leading cause of disability in Western countries. More than 60% of patients remain disabled, 50% of patients suffer from hemiparesis and 30% remain unable to walk without assistance. The skeletal muscle is the main effector organ accountable for disability in stroke. This disability is primarily attributed to the brain lesion; however less attention is paid to structural, metabolic and functional alterations of muscle tissue after stroke. Hemiparetic stroke leads to various muscle abnormalities: A combination of denervation, disuse, inflammation, remodelling and spasticity account for a complex pattern of muscle tissue phenotype change and atrophy. The molecular mechanisms of muscle degradation after stroke are only incompletely understood. Reinnervation, fibre–type shift, disuse atrophy, and local inflammatory activation are only some of the key features yet to be explained. Only limited data is available today on clinical muscle changes after stroke rests from few studies in a mere 500 patients. Despite its importance for optimum post stroke recovery, stroke-related sarcopenia is not considered in current guidelines for stroke therapy or rehabilitation and measurement tools to address sarcopenia are infrequently used. This lack of robust evidence on muscle pathology after stroke and on treatment strategies needs to be addressed in an interdisciplinary integrated approach. There is a significant need for this topic to be addressed: - There is a very relevant proportion of patients in this field; - stroke rehab is a considerable proportion in the health sector; - muscle tissue in stroke is currently not at all addressed in clinical guidelines and is not recognized by clinicians as a relevant issue; - research on stroke related muscle changes (local and global muscle during rehab) is only beginning but novel data is emerging; - there is a paucity of scientific insight into muscle changes after stroke. This presentation provides an overview on current pathophysiologic insights and on clinical relevance of sarcopenia in stroke patients and on measurement tools to address the problem in the a clinical setting.

**PREVALENCE OF SARCOPENIA IN GERIATRIC OUTPATIENTS AND IN NURSING HOMES USING THE EWGSOP DEFINITION: FINDINGS FROM THE ELLI STUDY.** A.J. Cruz-Jentoft, J.A. Serra-Rexach, on behalf of the Observatorio de la Sarcopenia de la SEGG *(Madrid, Spain)*

Background: There are still few systematic studies on the prevalence of sarcopenia in different geriatric care settings. The aim of this study was to describe the prevalence of sarcopenia in subjects over 70 years living in nursing homes and in those who attend geriatric outpatient clinics using the European Working Group on Sarcopenia in Older People (EWGSOP) consensus definition. Methods: In this multicentre study we applied the EWSOP definition to 298 patients cared for in five outpatient geriatric clinics, and 276 individuals living in five nursing homes. Muscle mass was measured with bioelectrical impedance analysis (BIA), using cut-off points defined for the Spanish population; muscle strength was measured by handgrip strength; and physical performance by the 4 m walking speed. Results: The mean age of participants was 82.7 years in outpatients and 86.6 in nursing home subjects. The prevalence of sarcopenia was 12.7% in male and 22.9% in female outpatients; the prevalence of severe sarcopenia in outpatients was 5.5% in males and 16.0% in female. The prevalence of sarcopenia in nursing home patients was 15.1% in males and 46.3% in females, with a prevalence of severe sarcopenia of 11.6% and 42.1% in males and females. Conclusions: This is the first study to describe the prevalence of sarcopenia in outpatients attending a geriatric clinic and one of the very few to explore the prevalence in nursing homes using the EWGSOP consensus definition in a very old populations. Funding: The present study is supported by an unrestricted education grant from Abbott Nutrition to the Spanish Society of Geriatrics and Gerontology.

**EXPEDITED RECOVERY OF CASTING-INDUCED THIGH MUSCLE ATROPHY WITH BIMAGRUMAB, A HUMAN MONOCLONAL ANTI-ACTIVIN RECEPTOR II ANTIBODY.** D.S. Rooks[1], S. Rasmussen[2], M. Bartlett[1], E. Brandt[2], D. Laurent[1], O. Petricoul[1], J. Praestgaard[1], R. Roubenoff[1] *(Cambridge, USA; 2. Lincoln, USA)*

Background. The acute loss of skeletal muscle mass is a common consequence of conditions of disuse, contributes to the subsequent loss of strength and compromised functional capacity, and patients do not always recover fully even with rehabilitation. Accelerating the recovery of skeletal muscle mass and function from disuse atrophy is a current unmet medical need. Methods. A randomized, double-blind, placebo-controlled trial assessed the effect of bimagrumab-an activin receptor II antagonist monoclonal antibody -on the rate of recovery of skeletal muscle in healthy men after 2 weeks in a unilateral fixed joint cast. Subjects received 1 dose of bimagrumab 30 mg/kg IV at cast removal. Thigh muscle volume (TMV), total lean body mass, muscle strength, pharmacokinetics, and safety were assessed throughout the 12-week study. Results. All 24 men (mean age 24 years) completed the study. Adverse events were mostly mild with transient muscle symptoms and acne the most common. Casting precipitated an average TMV loss of 4.7%. Compared with precast baseline, subjects receiving bimagrumab recovered TMV in the casted leg to within -1% in 2 weeks, and had net gains of +1.3% and +5.1% at 4 and 12 weeks, respectively, while TMV changes in subjects receiving placebo were -4.2%, -1.6%, and -0.1% (difference between treatments, $p<0.01$). Similar responses in TMV were observed in the uncasted leg with bimagrumab (+4.9%, +5.8%, and +6.8%) and placebo (+1.1%, +2.0, and +0.9%) at weeks 2, 4, and 12, respectively. Lean body mass showed a similarly positive response to bimagrumab. Differences in the recovery of strength were not statistically significant. Conclusions. A single 30 mg/kg IV dose of bimagrumab was well tolerated and accelerated recovery of TMV in the casted limb to

precast levels within 4 weeks of cast removal compared with 12 weeks for placebo. Funding: The present study was supported by the Novartis Institutes of BioMedical Research.

**IS AVAILABLE FALL-DETECTION TECHNOLOGY SUITABLE FOR USE IN CLINICAL TRIALS?** S. Patel[1], A. Puiatti[1,2], J. Niemi[1], R. Roubenoff[3], J. Goldhahn[3], P. Bonato[1] *(1. Boston, USA; 2. Bellinzona Switzerland; 3. Cambridge, USA)*

Background: The use of fall-detection technology in clinical trials has the potential for allowing one to define new outcome measures to better quantify the effects of various pharmacotherapies on falls and fall risk. However, commercially-available fall-detection technologies are designed as personal emergency response systems rather than as measurement tools to assess the effects of an intervention. Hence, before adopting a commercially-available fall-detection technology in a clinical trial one has to assess its suitability for such application. Methods: We based our analyses of existing technologies on technical specifications that were determined to be either necessary or desirable for application in clinical trials by a team of experts. Then, we surveyed eleven commercially-available fall-detection systems and compared their characteristics with the above-mentioned technical specifications. Results: None of the eleven systems that we surveyed met all the identified technical specifications. However, three of the systems that we surveyed appeared to be good candidates for adoption in a clinical trial in absence of a system that met all above-mentioned technical specifications. Our analyses also pointed out that making an appropriate choice of the fall-detection algorithm utilized by the system is critical. Recommendations were made based on existing studies with focus on the comparison of existing algorithms for fall detection. Conclusions: Limited development efforts could lead to a fall-detection system that meets all the technical specifications for adoption in clinical trials. The system would utilize an off-the-shelf sensor, a newly-designed base station, and a remote server to handle the massive amount of data that would be collected and later processed by each trial site. Because the system would be designed specifically for use in clinical trials, it could address issues such as the need for implementing a fall detection validation procedure to assure that the fall data generated by the system is reliable. Funding: Novartis Institutes for Biomedical Research

**BIOMARKER-CALIBRATED PROTEIN INTAKE AND PHYSICAL FUNCTION IN THE WOMEN'S HEALTH INITIATIVE.** J.M. Beasley[1], B.C. Wertheim[2], A.Z. LaCroix[3], R.L. Prentice[3], J.M. Shikany[4], C. Eaton[6], Z. Chen[5], C.A. Thomson[5] *(1. Bronx, USA; 2. Tucson, USA; 3. Seattle, USA; 4. Birmingham, USA; 5. Tucson, USA; 6. Pawtucket, USA)*

Introduction: Preserving physical function with aging may be partially met through modification in dietary protein intake. Methods: This study was conducting in the Women's Health Initiative Clinical Trials and Observational Study among women age 50–79 y (n=134,961) with dietary data and ≥ 1 physical function measure. Physical function was assessed by short form RAND-36 at baseline and annually throughout follow-up. In a subset of 5,346 participants, physical performance measures (grip strength, number of chair stands in 15 seconds, and timed 6-meter walk) were assessed at baseline and years 1, 3, and 6. Calibrated estimates of energy and protein intake were derived from regression equations using doubly labeled water and 24-hour urinary nitrogen as reference measures. Associations between protein and each of the physical function measures were assessed using generalized estimating equations. Results: Calibrated protein intake ranged from 6.6 to 22.3% energy, and higher intake at baseline was associated with higher self-reported physical function [quintile (Q) 5 vs. Q1: 85.6 (95% CI, 81.9 to 87.5) vs. 75.4 (73.2 to 78.5), P-trend=0.002] and a slower rate of functional decline over a mean 11.5 y of follow-up [Q5 vs. Q1 annualized change: –0.47 (–0.63 to –0.39) vs. –0.98 (–1.18 to –0.75)), P-trend=0.022]. Higher protein intake was associated with grip strength at baseline [Q5 vs. Q1: 24.7 (24.3 to 25.2) vs. 24.1 (23.6 to 24.5) kg, P-trend=0.036] and showed slower declines in grip strength over time [Q5 vs. Q1 annualized change: –0.45 kg (–0.39 to –0.63) vs. –0.59 kg (–0.50 to –0.66), P-trend=0.028]. Additionally, women with higher protein intake completed more chair stands at baseline [Q5 vs. Q1: 7.11 (6.91 to 7.26) vs. 6.61 (6.46 to 6.76), P-trend=0.002]. Conclusion: Higher calibrated protein intake is associated with greater physical function and performance and slower rates of decline in postmenopausal women. Funding: The WHI program is funded by the National Heart, Lung, and Blood Institute, National Institutes of Health, and U.S. Department of Health and Human Services through contracts N01WH22110, 24152, 32100-2, 32105-6, 32108-9, 32111-13, 32115, 32118-32119, 32122, 42107-26, 42129-32, and 44221. This work was also supported by 4R00AG035002, PO1 CA53996, and 5R01AG025441-03.

**SAFETY AND PHARMACODYNAMIC EFFECTS OF REGN1033/SAR391786, A FULLY HUMAN MONOCLONAL ANTIBODY SPECIFIC TO MYOSTATIN, IN YOUNG AND OLDER HEALTHY VOLUNTEERS.** X. Qian, A. Kostic, H. Ren, P. Belomestnov, P. Tiseo, E. Gasparino, R. Pordy, S. Mellis *(Tarrytown, USA)*

Background: Poor skeletal muscle performance is a critical component in many disease conditions and is associated with functional deficits, mobility impairments, metabolic comorbidities, and loss of independence. Therapies intended to increase muscle mass may lead to improvement of strength and functional performance. REGN1033/SAR391786 is a fully human monoclonal antibody that specifically blocks myostatin, a major negative regulator of skeletal muscle growth. REGN1033 does not bind other activin receptor ligands such as GDF11, BMPs, and Activins. In mouse models, REGN1033 increased muscle mass, force, exercise endurance; and prevented muscle atrophy without causing pathological changes. Methods: Two phase 1 randomized, double-blind, placebo-controlled studies were conducted to evaluate the safety and tolerability, PK, immunogenicity, and pharmacodynamics effects of REGN1033 in healthy volunteers. Lean and fat mass changes were evaluated by DXA. In the single ascending dose study, 76 subjects received a dose of study drug at up to 10 mg/kg IV or 400 mg SC. In the multiple ascending dose study, 60 subjects aged 60 years and older received study drug at 100 to 400 mg SC every 2 or 4 weeks for 12 weeks. Results: There were no SAEs or deaths in either study. TEAEs occurred at a similar frequency in placebo and REGN1033 treated subjects, and most were mild and transient. There were no adverse bleeding findings related to drug treatment and no untoward cardiac findings. Review of vital signs ECG, and safety labs did not reveal significant safety signals. REGN1033 showed significant and sustained target engagement. Statistically significant increases of lean body mass were observed in both single and multiple dose studies. Conclusion: REGN1033/SAR391786 treatment was generally safe and well tolerated in young and older volunteers in two Phase 1 clinical studies and resulted in statistically significant increase in lean body mass. Further clinical studies are warranted. Funding: Sanofi and Regeneron Pharmaceuticals

**DIFFERENCES IN GAIT CYCLE VARIABILITY BETWEEN PERSONS WITH AND WITHOUT HIGH GAIT SPEED AND/OR HIGH GRIP STRENGTH.** B. Bogen, A.H. Ranhoff, M.K. Aaslund, R. Moe-Nilssen *(Bergen, Norway)*

Background: Gait is a cyclic, repetitive movement, and variation between cycles is an area of interest in elderly people. Gait cycle variability is often regarded as a measure of motor control, and has been shown to be predictive of both falls and frailty. In an attempt to further explore how gait cycle variables are related to sarcopenia and frailty, we investigated how grip strength and preferred gait speed is associated with trunk movement variability during gait. Method: Sample: Community-dwelling volunteers between 70-81 years wearing an inertial measurement unit (IMU) fixed to their lower backs. Data was registered for a walking distance of 6.5 meters, under three conditions; no constraints, while performing a simultaneous arithmetic task and across a mat with unevenly spaced, convex irregularities concealed under a layer of artificial grass. The repeatability of the acceleration signal from the IMU was analyzed using an autocorrelation procedure. Participants were then classified according to muscle strength and muscle performance; men with a preferred gait speed of <0.8 meters pr second AND/OR grip strength of <20 kg for women/<30 kg for men were categorized as "low speed and/or strength". Participants with higher gait speed AND/OR grip strength were categorized as "high speed and/or strength". Results: Data for 74 participants (mean age 76, 60% women) were analyzed. 27 persons fell below the predefined cutoff values. For all gait cycle variables, the persons who fell below the cutoff displayed higher variability, but this was statistically significant only for vertical variability during unconstrained walking, for anteroposterior and vertical variability during walking on uneven surface and for vertical variability during dual task walking. Conclusion: In a sample of community-dwelling, ambulatory persons, gait cycle variability is associated with common indicators of frailty and sarcopenia. The present study is funded by The Norwegian Fund for Postgraduate Training in Physiotherapy.

**IMPAIRED DIURNAL CORTISOL LEVELS AMONG PRE-FRAIL ELDERLY.** H. Johar[1], R.T. Emeny[1], M. Bidlingmaier[2], M. Reincke[2], B. Thorand[1], A. Peters[1], M. Heier[1], K.H. Ladwig[1,2] for the MONICA/KORA Investigators *(1. Neuherberg, Germany; 2. Munich, Germany)*

Background: Dysregulation of diurnal cortisol secretion (DCS) occurs with frailty but the dynamic of DCS has not been widely assessed within this context and conflicting evidence of cortisol levels at various time points has been shown. Thus, we sought to examine the associations of DCS with frailty in a population-based study of older adults. Methods: A cross-sectional analysis was conducted using data from the KORA Age study. Associations between salivary cortisol measures at three time points and frailty criteria, assessed according to Fried et al. (2001), were determined. Results: Among 745 study participants between age 65 and 90 years (mean=75.1), 3.36% (n=25) were classified as frail and 35.17% (n=262) as pre-frail. Lower cortisol levels at 30 minutes after awakening (M2) (p=0.019) and increased evening (E) levels (p=0.003) were observed in pre-frail and frail states in a dose response manner. Frailty was strongly associated with smaller ratios of morning to evening levels; first morning rise (M1) to E ratio (p=0.002), M2 to E ratio (p<0.001). Higher evening cortisol levels were associated with a 24% increased risk of a frail or pre-frail state with odds ratio of 1.24 (0.83 - 1.83) and 1.22 (1.03 - 1.44), respectively. In a separate analysis of cortisol levels (LS-means adjusted by age and sex) by the five frailty criteria, low gait speed was significantly associated with the evening cortisol level (p=0.002) and low grip strength was associated with the morning cortisol level (p=0.035) which revealed that low gait speed and grip strength could be the key contributor to frailty states in the study population. Conclusion: Frail subjects present significantly blunted cortisol reactivity as demonstrated by lower morning and higher evening salivary cortisol levels. Funding: The present study is supported by the Helmholtz Zentrum Muenchen, which is funded by the German Federal Ministry of Education and Research and by the State of Bavaria.

**DIET QUALITY IS POSITIVELY ASSOCIATED WITH INDEXES OF MUSCLE MASS AND ATTENUATES THE IMPACT OF C-REACTIVE PROTEIN LEVELS ON MUSCLE MASS .** E. Kelaiditi[1], A. Cassidy[1], A. Jennings[1], A. MacGregor[1], T. Spector[2], A. Welch[1] *(1. Norfolk, United Kingdom; 2. London, United Kingdom)*

Background: The causes of sarcopenia are incompletely understood, but dietary intake may exert effects on chronic inflammation, which is related to muscle mass. The aims of the current study were firstly to assess associations between indexes of muscle mass and both diet quality, according to three predefined diet scores (the Mediterranean Diet Score (MDS), Alternate Healthy Eating Index (AHEI), and DASH-style score), and C-reactive

protein (CRP). Additionally we aimed to examine whether diet mediates the association between muscle mass and CRP. Methods: In a cross sectional study in 2570 women aged 18-79 years from the TwinsUK cohort, body composition was measured using dual-energy X-ray absorptiometry. Indexes of muscle mass, fat free mass (FFM, kg) and fat free mass index (FFMI – lean mass in kg/height2), were compared between quartiles of the diet scores after adjustment for age, physical activity, smoking, energy intake and total body mass. In a subgroup analysis (1658 women), CRP was measured and the potential attenuation of diet on the relationship between CRP and muscle mass was determined. Ethical approval and informed consent were obtained from all participants. Analyses were performed in STATA version 11.0 (STATA Corp, USA). Results: Mean age was 49.7 years, FFM 39.6 kg, FFMI 15 kg/m2, and CRP 2.49 mg/L. Higher adherence to the three diet scores was positively associated with muscle mass. The magnitude of associations ranged from 1-3% between extreme quartiles of diet scores. Higher CRP levels were also associated with lower indexes of muscle mass with between quintile differences of 2%. The MDS and AHEI scores attenuated the association between muscle mass and CRP by 1-8%. Conclusions: In adult women, a healthier dietary pattern high in fruit and vegetables, whole grains, dietary fiber, nuts and legumes and low in saturated fat and processed meats may be important in reducing the negative impact of CRP levels on muscle mass.

**IDENTIFICATION OF GENETIC MARKERS OF SUSCEPTIBILITY TO FRAILTY SYNDROME IN OLDER MEXICAN COMMUNITY-DWELLING ADULTS: PRELIMINARY RESULTS.** T.G. Pérez-Suárez, M. Escamilla-Tilch, L.M. Gutiérrez-Robledo, J.A. Ávila-Funes, J.F. Muñoz-Valle, J.R. Padilla-Gutiérrez, N. Torres-Carrillo, N.M. Torres-Carrillo *(Mexico City, Mexico)*

Background: Frailty is a late-life syndrome of unknown etiology, characterized by muscle weakness, weight loss and fatigue. Even though the knowledge of the pathophysiological mechanisms underlying frailty syndrome remains limited, evidence suggests that inflammation has a major role in the pathophysiology of frailty. Taking into account the current knowledge about the biological basis of frailty, we hypothesize that genetic variants within genes that encode for molecules involved in the regulatory patter of the inflammatory response, would associate with frailty syndrome. Methods: Genomic DNA was extracted from the peripheral blood of all subjects (n=630). The genotyping of the variable number of tandem repeat (VNTR) polymorphisms of IL-1RN and IL-4 genes was carried out by the polymerase chain reaction (PCR) technique. The statistical analysis was performed using SPSS v18.0 and Genetic Data Analysis. Results: Mean age was 77.7±6.0 years, 52.5% were women. Prevalence of frailty was 11.6%. Frail subjects were older, had lower MMSE scores, 86.3% had disability for IADL, and 67.6% had disability for ADL. We did not observed a significant difference in the distribution of genotypic frequencies between frail, pre-frail and robust groups for IL-4 and IL-1RN gene polymorphisms ($p>0.05$); but when we compared the allelic frequencies for both polymorphisms, we observed a significant difference for allele A2 of IL-1RN gene polymorphism (frail vs robust; OR 1.84, 95% CI 1.08-3.12, $p=0.02$). Likewise, we analyzed the combined effect of IL-4 and IL-1RN gene polymorphisms and their possible association with frailty, we identified the IL-4low-IL-1RNhigh combined genotype as a haplogroup of risk to frailty syndrome (OR 7.86, 95% CI 1.83-33.69, $p=0.006$). Conclusions: Our results suggest that A2 allele of IL-1RN gen polymorphism and IL-4low-IL-1RNhigh haplogroup are genetic markers of susceptibility to frailty in older Mexican adults. However, further studies are required to evaluate the actual mechanism of these associations in frailty syndrome. Funding: The present study is supported by a grant no. DI-PI-003/2012 to Dra. Nora Magdalena Torres-Carrillo of the National Institute of Geriatrics (Instituto Nacional de Geriatría, México, D.F.)

**MITOCHONDRIAL DYSFUNCTION AND MOTOR NEURON DEGENERATION IN SARCOPENIA.** K.A. Rygiel, J.P. Grady, D.M. Turnbull *(Newcastle Upon Time, United Kingdom)*

Sarcopenia, a natural age-related process of muscle mass and strength decline, is complex like all ageing phenomena. It appears that both the affected muscle and the nervous system are involved. Evidence supporting denervation has been provided previously and it includes fibre type grouping, angular fibres expressing denervation markers, larger but fewer motor units and reduction in lower motor neuron population (around 30% in human and rodents). We were interested to investigate mechanisms driving motor neuron (MN) degeneration and we hypothesized that one of them could involve mitochondrial dysfunction. We assessed 14 post mortem lumbar spinal cord tissue samples obtained from individuals with no known neuromuscular disease (68-99 years). Histochemical (COX/SDH) analysis revealed only one cytochrome c oxidase-deficient MN throughout the cases. Immunohistochemistry to subunits of mitochondrial respiratory chain complexes demonstrated normal levels of complex II or IV but marked downregulation or absolute loss of complex I subunits in a proportion of cells (around 20 and 10% respectively). This phenomenon was restricted to aged individuals as a similar observation was not made for young controls. Complex I-deficient MNs were laser microdissected (LMD) from the tissue sections and mitochondrial DNA (mtDNA) was analysed. We found a significant reduction in mitochondrial copy number in complex I-deficient MNs versus MNs with maintained complex I expression (P-value = 0.02). Importantly, MNs with complex I-deficiency were significantly smaller than complex I-normal cells (P-value < 0.0001). This study demonstrates that mtDNA copies decrease in MNs with age. Reduction in copy numbers is likely to cause the downregulation of complex I subunits which may further lead to MN size reduction. It is possible that complex I deficiency is an initial step in mitochondrial dysfunction and further accumulation of mtDNA damage over a certain threshold causes the cell to degenerate. This study was supported by the Centre for Brain Ageing and Vitality, Medical Research Council UK

**SARCOPENIC OBESITY IN OLDER PERSONS: MODIFICATIONS OF BODY COMPOSITION, MUSCULAR STRENGTH AND PHYSICAL PERFORMANCE DUE TO RESISTANCE TRAINING.** K. Stoever, A. Heber, S. Eichberg, W. Zijlstra, K. Brixius *(Cologne, Germany)*

Background: At present, it is unclear whether obese older persons with and without signs of sarcopenia respond differently to resistance training. Therefore, the objective of this study is to investigate the influence of resistance training on physical parameters of obese men with and without sarcopenia. Methods: The participants were 33 physically inactive and obese older men (≥ 65 years, BMI ≥ 30 kg/m2), without diabetes mellitus and other serious diseases. Sarcopenia was assessed using the Short Physical Performance Battery (SPPB), handgrip strength, skeletal muscle index (SMI) by bioelectrical impedance analysis, and gait speed at a 6 meter walkway. Subjects were divided into group 1 (no or presarcopenia, n= 15) or group 2 (sarcopenia, n= 18). Furthermore, the one-repetition maximum (1 RM) and isometric muscular strength were assessed by leg and chest press. The intervention consisted of a progressive resistance training, twice a week for 16 weeks with 80-85% of 1 RM and three sets with 8-12 repetitions. Cohens 'd' was calculated to evaluate effect size of different variables. Results: At baseline, the two groups differed significantly in SMI, SPPB-score, handgrip strength, 1 RM and isometric strength. After training, the results displayed an increase in isometric strength of lower (d=0.73, group 1: 22%, group 2: 34%) and upper limbs (d=0.19, 4%, 6%), the 1 RM at the lower limbs (d=0.73, 18%, 38%) and the upper limbs (d=0.16, 12%, 14%). Also, the SPPB-score (d=0.38, 11%, 15%) and the 6m-gait speed (d=0.4, 5%, 10%) increased. Group 2 was able to increase its right hand grip strength by 12%, whereas group 1 maintained its initial high strength values. SMI remained constant in both groups. Conclusions: Both groups show improvements after the resistance training with slightly more benefits for persons with sarcopenia, but the two groups did not differ significantly after training. Funding: The present study is supported by the German Sport University Cologne.

**SUSTAINED ATTENTION CORRELATES WITH TWO MODELS OF FRAILTY AT BASELINE AND FOLLOW-UP: THE IRISH LONGITUDINAL STUDY OF AGEING.** A.M. O'Halloran, B.L. King-Kallimanis, M.D.L. O'Connell, I.H. Robertson, R.A. Kenny *(Dublin, Ireland)*

Background: Frail older adults perform poorly on tasks placing high demands on resources of attention, a fundamental aspect of executive function. We investigated the relationships between two models of frailty and sustained attention, at baseline and follow-up, in a cognitively intact cohort of community-living adults aged 50+ years. Methods: 4,229 participants completed a comprehensive health assessment at Wave 1 and home interviews at Waves 1 (2010) and 2 (2012) of The Irish Longitudinal Study on Ageing (TILDA). Frailty index (FI) scores from 0 -1 were calculated from 40 self-report items (Rockwood et al, 2007). The FRAIL scale was also used to defined frailty or pre-frailty as the presence of 3+ or 1–2 items respectively, from fatigue, resistance, ambulation, illness and loss of weight (Morley et al, 2012). Multivariate and multinomial regression analyses computed associations between measures from the Sustained Attention to Response Task (SART) and the frailty models at baseline and at follow-up. Results: Respectively, the prevalence of frailty and pre-frailty increased from 1.1% (FI score: 0.38, ±0.10), and 17.9% (FI score: 0.19, ±0.11) at baseline, to 1.4% (FI score: 0.40, ±0.10), and 18.6% (FI score: 0.19, ±0.11) at follow-up. Declining sustained attention was associated with pre-frailty ($p<0.01$), frailty ($p<0.05$) and higher FI scores ($p<0.01$) in this cohort aged 50 years and older at baseline. This was indexed by slower mean reaction time (RT), greater RT variability, and more SART errors. Correlations between the measures of sustained attention and pre-frailty, frailty and FI scores were strengthened at a follow-up of 2 years. All correlations were adjusted for age, gender and education. Conclusions: Sustained attention is significantly correlated with two models of frailty at baseline and at a follow-up of 2 years, suggesting an objective and modifiable cognitive marker of frailty progression. Funding: The present study is supported by the Department of Health and Children, the Atlantic Philanthropies and Irish Life plc.

**INCIDENCE AND PREVALENCE OF SARCOPENIA AND SARCOPENIC OBESITY IN A COHORT OF ELDERLY BRAZILIANS: SABE SURVEY – HEALTH, WELL-BEING AND AGING.** M.F.N. Marucci, M.A. Roediger[1], D.R. Bueno[1], L.S. Ferreira[2], L.A. Gobbo[1], Y.A.O. Duarte[1], M.L. Lebrão[1] *(1. São Paulo, Brazil; 2. Rio de Janeiro, Brazil)*

Background: The prevalence of sarcopenia and sarcopenic obesity has increased in elderly, however the knowledge of incidence rate are still scarce. This study verified the incidence and prevalence of sarcopenia and sarcopenic obesity in cohort of elderly in community-dwelling. Methods: It was analyzed elderly (≥ 60 years), of SABE Survey, in 2000 (n=2,143) and 2006 (n=1,115), carried out in the city of São Paulo, Brazil. The analyzed variables were: prevalence in 2000 of sarcopenia and sarcopenic obesity; and incidence in 2006, by gender and age groups (60-74 and ≥ 75). Sarcopenia was identified considering: low performance in the sit and rise from a chair test - S&R (time ≥ 75th percentile); low handgrip strength-HS (≤ 25 percentile); and low muscle mass-MM (≤ 20th percentile), using percentile of this study population; where diagnosed sarcopenic elderly who had both poor performance and low MM or, normal performance, but low HS and MM. It was considered to be Sarcopenic Obese-SO if the elderly, besides having the sarcopenia, showed waist circumference ≥ 80 cm for women and ≥ 94 for men. It was used the Rao & Scott test and software Stata/SE 10.1. Results: In six years of study the incidence rate of sarcopenia and obesity sarcopenic were 12/1.000 person-years (14 for

women and 11/1.000 person-years for men; 11 for 60-74 and 14/1.000 person-years for ≥ 75 years) and 2/1.000 person-years (4 for women and 0/1.000 person-years for men; 0 for 60-74 and 7/1.000 person-years for ≥ 75 years), respectively. The prevalence of sarcopenia and sarcopenic obesity in 2000 was 10% (58% in women and 55% in the age group ≥ 75) and 3% (91% in woman and 71% in the age group ≥ 75), respectively. Conclusion: The incidence and prevalence of sarcopenia and sarcopenic obesity presented different values considering sex and age group. Funding: FAPESP - Foundation for Research Support of the State of São Paulo and CAPES - Coordination for the Improvement of Higher Level

**MMP-2 MEDIATED DEGRADATION OF TITIN IN MUSCLE ATROPHY STUDY.** S. Sun[1], A. Nedergaard[1], M.A. Karsdal[1], K. Henriksen[1], G. Armbrecht[2], D.L. Belavý[2], J. Rittweger[3], D. Felsenberg[2] *(1. Herlev, Denmark; 2. Berlin, Germany; 3. Cologne, Germany)*

Background: Muscle loss is a problem which is getting increased clinical awareness, as loss of muscle mass and function are important predictors of mortality, morbidity and quality of life. In muscle loss syndromes, there is a pronounced lack of biochemical biomarkers that can predict or monitor pathological progress. In order to identify novel biomarkers of muscle loss, we set out to test if a cleavage fragment of the muscle protein titin identified in urine could be used as such a marker and we raised an antibody and constructed an ELISA assay for serum detection of said fragment. Methods: A competitive ELISA assay measuring the titin fragment was developed. For biological validation of the assay, it was measured in rat tissue extractions and in vitro rat muscle enzymatic cleavage model, in order to characterize how the fragment is produced in vivo. Then the titin degradation marker was validated in a human 56-day bed rest study. Results: The ELISA measuring titin fragment was technically robust and the fragment was shown to be produced by MMP-2 cleavage. This titin-MMP2 degradation fragment had higher expression in rat EDL muscle extraction compared to extractions from soleus and cardiac muscle. In a human bed rest study, the titin-MMP2 fragment was initially decreased about 10% after 1 day of bed rest, and then gradually increased until day 47, up to an average of 17% increase. On the last day of bed rest, the concentration did not significant differ to day 47. Conclusions: We developed an ELISA measuring titin-MMP2 degradation fragment in human serum. We proposed that the titin-MMP2 marker during bed rest process may potentially reflect compensatory mechanisms to the catabolic immobilization stimulus. The gradually increased titin-MMP2 may reflect aspects of the catabolic processes in human long-term bed rest-induced muscle loss.

**NEUROPHYSIOLOGICAL DETERMINANTS OF MUSCLE WEAKNESS IN AGING.** B.C. Clark, T.D. Law, R.L. Hoffman, J.T. Gau, D.W. Russ *(Athens, USA)*

Background: Muscle weakness predisposes seniors to a 4-fold increase in functional limitations. The potential for age-related degradation in nervous system function to contribute to muscle weakness and physical disability has garnered much interest of late. We have reported that experimentally-induced weakness in young adults results in impairments in voluntary (neural) activation (VA), and that this impairment is associated with increases in indices of motor cortex GABAergic inhibition assessed using transcranial magnetic stimulation (TMS). In this study we tested the hypothesis that weaker seniors have impairments in VA and increases in cortical inhibition. Methods: Young adults (n=46; 21.2±3.4 yrs; 20 women; 23.8±3.7 kg/m2) and seniors (n=42; 70.8±5.9 yrs; 27 women; 24.3±3.4 kg/m2) had their wrist flexion muscle strength quantified along with VA capacity (by comparing voluntary and electrically-evoked forces). Additionally, single-pulse TMS was used measure motor evoked potential (MEP) amplitude and silent period duration during isometric wrist flexion contraction tasks equal to 15% and 30% of strength. Paired-pulse TMS was used to measure intracortical facilitation and short-interval and long-interval intracortical inhibition. Seniors were divided into stronger (top two tertiles) and weaker (bottom tertile) cohorts based on wrist flexion strength relative to body weight. Results: The most novel findings are: 1) weaker seniors exhibit a 20% deficit in VA, which was a significantly greater impairment when compared to the stronger seniors; 2) the weakest tertile of seniors demonstrated ~20% smaller MEPs during the 30% contraction task when compared to the stronger seniors suggesting reduced corticospinal excitability associated with increasing contraction intensity; and 3) the weaker seniors demonstrated nearly 2-fold higher levels of long-interval intracortical inhibition compared to the stronger seniors upon resting conditions. Conclusions: These findings indicate that weaker seniors exhibit significant impairments in voluntary (neural) activation, and that this impairment may be mechanistically associated with increased motor cortex GABAergic inhibition. Funding Source: This work was supported in part by grant R15HD065552 from the National Institutes of Health's Eunice Kennedy Shriver National Institute of Child Health and Human Development to B. C. Clark.

**CROSS-SECTIONAL ASSOCIATIONS BETWEEN DIFFERENT MEASURES OF OBESITY AND MUSCLE STRENGTH IN MEN AND WOMEN FROM A BRITISH COHORT STUDY.** V.L. Keevil[1], R. Luben[1], N. Dalzell[1], S. Hayat[1], A.A. Sayer[2], N.J. Wareham[1], K.T. Khaw[1] *(1. Cambridge, United Kingdom; 2. Southampton, United Kingdom)*

Background: Obesity is a modifiable risk factor for poor health but its relationship with grip strength, a marker of sarcopenia, has been inconsistently reported. Therefore, we examined the cross-sectional associations between grip strength and both body mass index (BMI), an indicator of total adiposity, and waist circumference (WC), an indicator of central adiposity. Methods: 8,441 community-based participants enrolled in the European Prospective Investigation into Cancer-Norfolk study (aged 48-92 years old) underwent assessment of maximum grip strength (Smedley dynamometer), WC (measured at the natural waist) and BMI (weight/height$^2$). Associations between grip strength and adiposity measures were explored using linear regression. Analyses were performed separately for men and women and adjusted for age, height, social class, physical activity, co-morbidity, smoking and alcohol intake. Results: Mean BMI was 27.1 kg/m2 (+3.6 kg/m2) for men and 26.6 kg/m2 (+4.8 kg/m2) for women. Grip strength increased across quartiles of BMI. Men and women in the upper quartile of BMI were 2.70kg (95%CI 2.07, 3.33) and 1.46kg (95%CI 1.05, 1.86) stronger respectively than those in the bottom quartile. Grip strength also increased weakly across quartiles of WC. However, including both BMI and WC in the same model (as continuous measures) revealed an inverse association between grip strength and WC, whilst the positive associations with BMI strengthened. For every 10cm increase in WC, grip strength was 3.56kg (95%CI 3.04, 4.08) lower in men and 1.00kg (95%CI 0.74, 1.24) lower in women. Conclusions: Higher WC and lower BMI were associated with lower grip strength. In this context, BMI likely indicates lean mass reserves and WC levels of abdominal fat, the type of fat most associated with the adverse metabolic consequences of obesity. This provides intriguing insights into possible mechanisms linking obesity and sarcopenia and reinforces the need to measure WC in older people with normal or low BMI.

**NO PROTECTION OF MUSCLE MITOCHONDRIAL FUNCTION IN ELITE OCTOGENARIAN MASTER ATHLETES.** S. Spendiff, M.-E. Filion, G. Gouspillou, K. Wright, M. Vuda, J. Morais, R.T. Hepple, T. Taivassalo *(Montreal, Canada)*

Background: Muscle exhibits a progressive deterioration with advancing age. Clinical impact is most severe in those > 75 y and mitochondrial functional alterations are hypothesized to play a causal role. As such, we reasoned that elite octogenarian Master Athletes (MAs), as individuals who exhibit remarkable physical function at an age typically associated with marked muscle deterioration, would exhibit superior retention of mitochondrial function. Method: 15 elite MAs and 14 age-sex matched non-athlete (NA) controls (≥75years) underwent assessment of thigh muscle cross sectional area (CSA) and a needle biopsy of the vastus lateralis. Mitochondrial respiration, reactive oxygen species emission and calcium retention capacity were assessed in saponin-permeabilized myofibres. Mitochondrial content was assessed by Western blotting for mitochondrial proteins and biochemical measurement of citrate synthase (CS) activity. The combined cytochrome c oxidase/succinate dehydrogenase stain was performed to provide an indication of the number of fibres with severe respiratory chain defects (RCD). Results: MAs had a greater thigh CSA (NAs 89±18 vs MAs 111±33cm2), a lower abundance of fibres with RCD (NAs 5±4.7 vs MAs 2±2.6%) and a greater CS activity (NAs 4±1.5 vs MAs 7±2.5µmol/min/g) when compared to NAs. However, there were no differences in mitochondrial protein contents or in any aspect of mitochondrial function in permeabilized myofibres. Conclusions: Despite the markedly superior physical function and muscle content in elite octogenarian MAs and higher muscle CS activity, this translated only to a reduced abundance of RCD fibres with no other protection of mitochondrial function. Whilst this may be counter to the proposed impact of mitochondrial dysfunction in aging muscle, our analyses cannot rule out whether mitochondria from MAs are more resistant to stressors, which in turn may impart greater resilience in their muscles against age related deterioration. Funding: The present study was supported by operating grants from the Canadian Institutes of Health Research (MOP to R.T.H, MOP to T.T). M.V. is funded by SNSF.

**SHORTER TELOMERES IN PERIPHERAL BLOOD LYMPHOCYTES FROM OLDER COMMUNITY-DWELLERS WITH SARCOPENIA.** M. Lorenzi, G. Onder, D.L. Vetrano, F. Landi, R. Bernabei, E. Marzetti *(Rome, Italy)*

Background: Telomere shortening in peripheral blood lymphocytes (PBLs) has been associated with chronological age and several disease conditions. However, its association with sarcopenia has never been investigated. The aim of the present study was to determine whether telomeres of PBLs obtained from older community-dwellers with sarcopenia were shorter relative to non-sarcopenic peers. We further explored if PBLs telomere length correlated with muscle mass. Methods: Analyses were conducted in 107 consecutive persons aged > 65 years referred to the outpatient clinic of our Geriatric Center. The presence of sarcopenia was established according to the European Working Group on Sarcopenia in Older People (EWGSOP) criteria, with bioimpedance analysis (BIA) used for muscle mass estimation. Telomere length, defined as Telomere-Single copy gene ratio (T/S), was determined in PBLs by quantitative real-time polymerase chain reaction (PCR). Results: Among 107 outpatients (mean age 75.1 ± 6.6 years, 61.7% women), sarcopenia was diagnosed in 18 individuals (16.8%).PBL telomeres were significant shorter in sarcopenic subjects (T/S = 0.226 ± 0.09) relative to non-sarcopenic individuals (T/S = 0.263 ± 0.20; p = 0.038), independent of age. Age-adjusted linear regression analysis showed a positive correlation between telomere length and muscle mass (Beta = 0.23; 95% CI = 0.72-7.56; p = 0.01). Conclusions: Telomere shortening in PBLs is associated with sarcopenia and correlates with muscle mass in community-dwelling older adults. PBL T/S may therefore serve as a novel biomarker for sarcopenia. Funding: Intramural grant from Catholic University; Centro Studi Achille e Linda Lorenzon

**INCIDENCE, RISK FACTORS AND THE PROTECTIVE EFFECT OF HIGH BODY MASS INDEX AGAINST SARCOPENIA IN COMMUNITY-LIVING OLDER CHINESE PEOPLE.** R. Yu, M. Wong, J. Leung, J. Lee, T.W. Auyeung, J. Woo *(Hong Kong)*

Background. There are few studies relating to the incidence of sarcopenia. We examined the incidence of sarcopenia and its risk factors over a 4-year period using the European Working Group on Sarcopenia in Older People (EWSOP) criteria. Methods.

4,000 community-living men and women aged 65 years and above were evaluated for which detailed information regarding demographics, socio-economic, medical history, lifestyle, and clinical factors were documented at baseline, 2 years, and 4 years later. Sarcopenia was defined according to the EWGSOP algorithm. Incident sarcopenia was documented at each follow-up year, and related to possible risk factors. Results. At baseline, of the 4,000 subjects 361 (9.0%) had sarcopenia. Between baseline and 2-year follow-up, 217 (6.0%) of the subjects without sarcopenia at baseline had developed sarcopenia and 68 (18.8%) of the initially sarcopenic subjects had reverted to normal. Between baseline and 4-year follow-up, the corresponding figures were 6.3% and 14.1%, respectively. The average annual incidence over 4 years was 3.1%. Age (OR, 1.11; 95% CI, 1.08-1.14), stroke (OR, 2.53; 95%CI, 1.31-4.91), physical activity (OR, 0.995; 95%CI, 0.991-0.999), instrumental activities of daily living impairments (OR, 2.30; 95%CI, 1.60-3.29), and body mass index (OR, 0.66; 95%CI, 0.62-0.70) were predictors of the development of sarcopenia from baseline to 4-year follow-up. Female gender (OR, 1.54; 95%CI, 1.11-2.13) was only significant between baseline and 2-year follow-up. Conclusion. Sarcopenia incidence increased with age but is potentially reversible in a Chinese elderly population. High BMI was protective against incident sarcopenia. Increasing physical activity and maintaining a healthy weight may be beneficial in the prevention of sarcopenia. Funding: The present study is supported by the SH Ho Centre for Gerontology and Geriatrics, Faculty of Medicine, The Chinese University of Hong Kong

**INFLUENCES OF BODY FAT DISTRIBUTION ON MUSCLE STRENGTH IN ELDERLY PEOPLE: GENDER DIFFERENCES.** C. Castillo, J.A. Carnicero, M. Ángeles de la Torre, S. Amor, S. Humanes, G. Gutiérrez, L. Rodríguez-Mañas, F.J. García-García *(Barcelona, Spain)*

Background: Visceral fat is considered to have a high metabolic activity with deleterious effects on health increasing the risk for disability, morbidity and mortality. It has been shown that Waist circumference (an indicator for visceral fat accumulation) is better than BMI to predict frailty syndrome. We think that an increase in visceral fat may affect the skeletal muscle (fat infiltration, inflammation) causing muscular weakness. We studied the influence of the waist-hip ratio on upper and lower extremity strength. Methods: This is an observational study of 2488 individuals aged 65 and older. The data was obtained from the Toledo Study for Healthy Aging (TSHA) with a first transversal cut done from 2006 till 2009. Men and women had a different behavior, therefore we analyzed them separately. In each case, we have explored the relationship of the WHR, BMI, height and age for all strengths (grip, shoulder, knee and hip). To do this, we have computed a kernel regression model where the smoothing parameter had been estimated by least squares cross validation with the aim of generalizing the results obtained. Results: From the 2488 individuals who participated in the TSHA, 1742 had criteria to belong to the present study. Mean age was 75.2 (SD 6.2), and 56.1% were women. WHR was higher in men than in women, mean 0.977(SD 0.069) and mean 0.905 (SD 0.075) respectively (mean difference was 0.072 (SD 0.0035)). In women with high WHR we observed a decrease in strength especially in those in whom the BMI was normal. As the WHR lowered, the strength increased regardless of the BMI. In men, lower strength was obtained with the lowest and highest WHR´s in general. Maximum strength in men was seen with the WHR around 1 and the highest BMI´s. Conclusions: In women, the effect of WHR on strength is worse when the WHR is High (high visceral fat) and the BMI low (normal weight obesity). In men, the effect of WHR on strength is worse when the WHR is very high or very low, regardless of the BMI. The results of this study suggest that, in order to prevent frailty syndrome, interventions should be individualized according to sex and the individual´s body fat distribution. More studies are needed to explore these differences.

**INTRAMUSCULAR FAT INFILTRATION AND CHANGES IN FUNCTIONAL ABILITY ARE KEY FEATURES ACCOMPANYING LOSS OF MUSCLE MASS IN EARLY SARCOPENIA.** R.A. Merchant, S. Banerji, E. Chew, C.L. Poh, K. Sheah, G. Singh, B. Pereira, Y.R. Guo, Y.W. Pang, R. Kambadur, M. Sharma, S.K. Tay *(Singapore)*

Background: Sarcopenia definitions are dependent on measuring a quantitative loss of muscle mass and function in the elderly, and these are notoriously unreliable when applied across different populations. The objective of this study was to identify the early markers of sarcopenia in healthy community-dwelling Chinese men so as to develop objective measures to accurately identify sarcopenia in our local population. Methods: We recruited 50 healthy normal weight Chinese men: young 21 – 30 years (n=10), middle-aged 40 – 50 years (n=10), elderly 60 – 80 years (n=30). They underwent MRI lower limbs for quantitation of muscle and fat volumes, hand grip strength testing, functional testing with 6 minute timed walk, timed up-and-go, and motion analysis for gait parameters. Low function was characterized by slow gait speed, slow timed up and go and abnormal cadence of walking. Results: In the elderly group, only 2/30 (6.7%) had low muscle mass 2 SD below the mean for the control young age group. For those with low muscle mass 1 SD below the mean, it was found that 5/30 (16.7%) had low muscle mass only, and 8/30 (26.7%) had both low muscle mass and low strength and/or function. Among the elderly who showed no muscle mass loss, 8/17 (47.0%)had at least 2 deficits in strength and function. Low muscle mass, particularly in posterior compartment muscles was associated with increased intramuscular fat infiltration. Conclusion: Early signatures of sarcopenia may include change in functional ability, strength and intramuscular fat infiltration that are prevalent even in individuals who had normal muscle mass. Prospective studies are needed to see if those with these signs progress to sarcopenia more rapidly than other individuals without these risk factors. Multimodal treatments may be required to target various aspects of strength and function to retard the progress of sarcopenia.

**DETECTING SARCOPENIA IN COMMUNITY-DWELLING OLDER ADULTS.** S. Ishii, T. Tanaka, K. Iijima *(Tokyo, Japan)*

Background: Sarcopenia is prevalent in the elderly and associated with increased risk of physical disability and death. Interventions such as resistance training may be more effective earlier in the course. Therefore it is imperative to develop a simple screening test to identify sarcopenic patients early in the course when they are still functionally independent. Methods: We studied 1971 functionally independent, community-dwelling adults aged 65 years or older (977 men, 994 women) randomly selected from the resident register of Kashiwa city, Chiba, Japan. Data collection was conducted between September and November 2012. Sarcopenia was defined based on low muscle mass measured by bioimpedance analysis and either low muscle strength characterized by hand grip or low physical performance characterized by slow gait speed. Results: The prevalence of sarcopenia was 17.3% in men and 23.6% in women. The prevalence was higher among 703 adults older than 75 years (35.2% in men and 23.6% in women). Among the preselected candidate predictors (age, body mass index, grip strength, thigh, calf and upper arm circumferences), age, grip strength and calf circumference were selected by the variable selection procedure and included in the final prediction model. The area under the receiver operating characteristic curve, a measure of discrimination, of the final model was 0.933 with 95% confidence interval (CI) of 0.914-0.952 for men, and 0.895 with 95% CI of 0.872-0.919 for women. When the sum of sensitivity and specificity was maximized, sensitivity, specificity, and positive and negative predictive values for sarcopenia were 85.8%, 86.5%, 57.1%, 96.7% for men, 71.9%, 91.3%, 71.9%, 91.3% for women, respectively. Conclusions: Sarcopenia could be identified using three easily obtainable predictors with high accuracy. The screening test we developed is simple enough for population screening and may help identify functionally independent older adults with sarcopenia who are good candidates for interventions. Funding: This work was supported by a Health and Labor Sciences Research Grant (H24-Choju-Ippan-002) from the Ministry of Health, Labor, and Welfare of Japan.

**VALIDATION OF FNIH SARCOPENIA PHASE I CRITERIA FOR CLINICALLY RELEVANT WEAKNESS AND LOW LEAN MASS.** R. Correa-de-Araujo *(Bethesda, USA)*

Background : Sarcopenia results in serious health consequences that can lead to frailty, disability, and increased mortality. Evidence continues to grow about its causes, consequences, and possible treatments, but individual investigators still use differing criteria for its diagnosis. The FNIH Sarcopenia Phase I Project used the largest pooled existing data of community-dwelling older adults (> 25,000) from multiple studies of aging to establish criteria for clinically relevant weakness (grip strength) as it relates to slow walking speed (< 0.8m/s) and low lean mass (DXA) as it relates to clinically relevant weakness. The predictive validity of these criteria is supported by the demonstration that weakness is associated with increased risk of mobility limitation regardless of low lean mass. A conclusive confirmation of the ability of Phase I criteria to predict relevant clinical outcomes is needed. Methods: Phase II of the FNIH Sarcopenia Project will continue to take a comprehensive evidence-based approach to consensus building by validating/confirming the predictive validity of Phase I criteria within population with substantial levels of physical impairment. A two-pronged analytic strategy is planned, with results examined in each of the target population from which cohorts are recruited, as well as the extent of any heterogeneity of findings. Results: Pre-existing data from a total of 2,504 older adults, average age of 78 years are included in the Phase II. The development of Phase I criteria and the methodological approach to Phase II will be discussed in detail. Conclusion: Phase II substantially advances Phase I project. Analyses of populations more severely compromised by physical limitations are likely to demonstrate stronger associations of Phase I criteria with outcomes. Funding: The present study is supported by the Foundation for the National Institutes of Health

**CROSS SECTIONAL ANALYSIS OF THE FACTORS ASSOCIATED WITH LONG TERM RISK OF DEATH AMONG FRAIL ELDERLY: OBSERVATIONS FROM THE WOMEN'S HEALTH INITIATIVE OBSERVATIONAL STUDY.** O. Zaslavsky[1], A. Zisberg[1], E. Shadmi[1], N.F. Woods[2], B.B. Cochrane[2], A.Z. LaCroix[3] *(1. Haifa, Israel; 2. Seattle, USA)*

Background: Frailty is a common geriatric condition with a wide array of sequelae, including increased risks of mortality, morbidity and disability, Although most frail older adults develop age-related deficits affecting multiple biological systems, their clinical outcomes are not universally poor. Several mechanisms have been suggested to explain the underlying heterogeneity; however, the results among studies are inconclusive. We used Women's Health Initiative Observational Study (WHI OS) data to examine factors that are associated with long-term survival among frail participants. Methods: Data were analyzed from the WHI OS; a prospective study conducted at 40 U.S. clinical centers, beginning in 1993. Women ages 65 and older by their year 3 visit and screened positively for frailty were analyzed. Components of frailty were self-reported low physical function, exhaustion, low physical activity, and unintended weight loss. All-cause mortality was ascertained annually. Logistic regressions characterized the association of baseline risk factors with long-term survival. Results: Frailty was classified in 27.1% of participants (n=13,193); among those 8,292 (62.9%) were alive in December 2013, and 4,901 (37.2%) died during follow up. Older age, more severe frailty, abnormal hemodynamic and blood count measures, selected chronic conditions, smoking status, being underweight and higher number of ADL deficits were positively associated with elevated risks of all-cause mortality, whereas income, overweight or obese categories, and self reported health were

inversely associated. Relative to healthy weight women, adjusted odds ratios (95% CIs) of long term mortality were 1.47 (1.00-2.16) for underweight women and 0.75 (0.67-0.83), 0.79 (0.70-0.88) for overweight and obese respectively. Conclusion: These results suggest that overweight or even obesity is somehow protective in regard to long-term mortality among frail elderly. Weight might partially explain differential mortality rate even among individuals sharing the same level of frailty initially. The findings indicate important targets for intervention.

**SEDENTARY BEHAVIOURS IN HOSPITALIZED FRAIL PATIENTS.** O. Theou[1], M.A. Maclean, K. Rockwood *(Halifax, Canada)*

Background: During hospitalization, older adults are at greater risk for functional decline, which may be associated with increased time spent in bed. The purpose of this project is to examine how much time hospitalized patients spend per day in sedentary behaviours and whether sedentary behaviours are associated with changes in frailty, mobility and physical function during hospitalization. Methods: In an ongoing study with a planned sample of 100 hospitalized patients, 25 patients (70+ years; mean 86±8 years; 11 women) were recruited within 48 hours of admission to the Emergency Department (n=19) or a geriatric medical unit (n=6). Sedentary behaviours (lying down, sitting) were objectively measured daily using ActivPAL accelerometers until patients' discharge or for 2 week. Changes in frailty, mobility, and physical function were also assessed at admission and discharge/2 weeks. Results: On admission all patients were frail (frailty index>0.25) and 18% were able to walk unaided. At discharge/2 weeks, 75% were frail and 36% were able to walk unaided. Across all days patients were sedentary on average 22.8±1.5 hours per day. On the first day of admission patients spent 66±103 minutes per day upright (standing, walking). Among patients who remained in the hospital for at least 14 days, upright time increased by 37±50 minutes per day at the end of the second week (p=0.05). Improvement in time spent upright was mirrored in patients' self-reports of overall health (63% reported feeling better at discharge/2 weeks) and in assessments of frailty index (0.47±0.12 vs. 0.37±0.16; p=0.02), HABAM mobility (10.3±7.4 vs. 14.4±6.0; p=0.02), 30-sec arm curl repetitions (5±6.2 vs. 8±5.8; p<0.01), 15ft walk time (7.0±4.6 vs. 3.5±1.3 sec; p=0.02). Conclusions: Hospitalized patients spend much of their time lying in bed even when they can walk independently. Objectively measured sedentary behaviour assessments can be used to track the recovery of patients during hospitalization. Funding: The present study is supported by Capital Health Research Fund, Canadian Institute of Health Research, and a Banting Fellowship;

**A SYSTEMATIC REVIEW OF THE PREVALENCE OF, AND INTERVENTIONS FOR, SARCOPENIA IN AGING ADULTS, AS DEFINED BY THE EWGSOP GROUP (EUGMS).** A.J. Cruz-Jentoft[1], T. Cederholm[2] on behalf of the International Sarcopenia Initiative and the European Union Geriatric Medicine Societyd *(1. Madrid, Spain; 2. Uppsala, Sweden)*

Background: The European Working Group on Sarcopenia in Older People (EWGSOP) and the International Working Group on Sarcopenia developed two close clinical definitions of age-related sarcopenia in 2009–2010. In 2013, both groups came together as the International Sarcopenia Initiative (ISI) to develop an evidence-based systematic review of the present state of sarcopenia using the new definitions. The aims were to 1) examine clinical evidence on prevalence, outcomes and interventions in sarcopenia using the EWGSOP definition, and 2) based on those findings, provide a framework to guide clinical practice. Methods: PubMed and DIALOG were searched (January 2000–October 2013) using predefined search terms. Selected studies were in well-defined populations, included patients aged ≥50 years, used a EWGSOP-consistent definition of sarcopenia for prevalence. For intervention studies, those that used muscle strength and performance-functionality as outcome measures were chosen. Results: Prevalence of sarcopenia was 1–29% in community dwelling populations, 14–33% in long-term care populations and 10% in the only acute hospital care population examined. The main source of variability was the use of different methods to assess muscle mass. Results suggest that exercise interventions, especially resistance training, increase muscle function. Results of nutrition intervention are equivocal, with very few studies using diverse designs, but they suggest that protein, essential amino acids and HMB may improve muscle function. Again, results were limited for interventions that combine exercise and nutrition, but they suggest an additive effect of both interventions. Conclusions: Prevalence of sarcopenia is significant in most geriatric settings. There is need for well-designed, standardized studies evaluating exercise or nutrition interventions before treatment guidelines can be developed. It seems sensible to recommend that physicians screen for sarcopenia in both community and geriatric settings, and use definitions of based on both muscle mass and function in clinical practice. Supervised resistance exercise may be recommended for sarcopenic individuals. Nutrition interventions may improve outcomes, but further evidence is needed. Funding: Supported by an unrestricted educational grant from Abbott Nutrition International (ANI) to the European Union Geriatric Medicine Society ( EUGMS).

**FATIGUE IS ASSOCIATED WITH SERUM INTERLEUKIN-6 LEVELS AND SYMPTOMS OF DEPRESSION IN PATIENTS ON CHRONIC HEMODIALYSIS.** M. Bossola, E. Di Stasio, P. Silvestri, S. Giungi, L. Tazza *(Rome, Italy)*

Background: The present study aimed at evaluating in chronic HD patients the possible correlation between fatigue and markers of inflammation such as serum levels of Interleukin-6 (IL-6) and C-reactive protein (CRP). Methods: One hundred chronic HD patients were assessed for the presence of fatigue through the SF-36 Vitality subscale (score >50 represent well-being, non-fatigued group whereas scores ≤50 represent limitations or disability related to fatigue) and were administered the Beck Depression Inventory (BDI), the Hamilton Anxiety Rating Scale (HARS), the Mini Mental State Examination (MMSE), the activities of daily living (ADL), the instrumental activities of daily living (IADL). We also calculated the time of recovery after hemodialysis (TIRD) in each patient. In all, the number/severity of comorbidities was assessed through the Charlson Comorbidity Index (CCI) and laboratory parameters were measured as well as serum Interleukin-6 (IL-6) and C-reactive protein (CRP) levels. Results: Forty three patients constituted the fatigued group and 57 the non-fatigued group. The age of fatigued patients was significantly higher than that of non-fatigued ones. CCI, BDI, HARS and TIRD were significantly higher in fatigued patients than in non-fatigued ones. Conversely, the scores of ADL, IADL and MMSE were significantly lower in fatigued than in not-fatigue ones. Serum IL-6 levels (pg/ml) were significantly higher in the fatigued group (5.1±3.4) than in the non-fatigued one (1.6±1.5; p<0.001), whereas serum albumin and creatinine levels were significantly lower. At the univariate analysis, the score of the SF-36 Vitality subscale was correlated to age, dialytic age, Charlson comorbidity Index, BDI, HARS, MMSE, TIRD, ADL, IADL, serum urea, creatinine, albumin and IL-6 levels. At the multivariate analysis, BDI and serum IL-6 levels were independently associated with the score of the SF-36 Vitality subscale. Conclusion: Fatigue was significantly associated with symptoms of depression and serum IL-6 levels in end-stage renal disease patients receiving chronic hemodialysis

**PREDICTIVE VALUE OF POTENTIAL FRAILTY CRITERIA FOR DISABILITY AND MORTALITY OUTCOMES: RESULTS FROM THE ESTHER COHORT STUDY.** K.U. Saum[1], A.K. Dieffenbach[1], H. Müller[1], B. Holleczek[2], K. Hauer[1], H. Brenner[1] *(1. Heidelberg, Germany; 2. Saarbrücken, Germany)*

Background: Frailty has been associated with an increased risk of adverse health outcomes, such as disability and premature death. Nevertheless, it still lacks a standard definition. Although several studies have explored associations of various physical and psychosocial frailty criteria with disability in activities of daily living (ADL) and mortality outcomes, most of them did not control for other potential frailty criteria. In this study we aim to assess to what extent individual frailty criteria are independent predictors of ADL disability and all-cause mortality. Methods: This analysis was performed among 2715 participants aged 60 to 84 of the 8-year follow-up of ESTHER, a large epidemiologic cohort study conducted in Germany. Frailty criteria were assessed according to the frailty phenotype, described by Fried et al.; cognitive impairment was considered as an additional potential frailty criterion. Logistic regression models and Cox regression models were performed to assess the association of the single frailty criteria with prevalent ADL disability and all-cause mortality, respectively. Unadjusted and adjusted odds ratios (OR) and hazard ratios (HR) and 95%-confidence intervals (CI) were calculated to quantify these associations. Results: Prevalence of ADL disability measured with the Barthel index was 14.0%, 124 (4.6%) participants died during a mean follow-up of 3.6 years. Whereas weakness (OR: 1.48, 1.11-1.97), slowness (OR: 1.44, 1.07-1.92), physical inactivity (OR: 1.45, 1.09-1.93) and exhaustion (OR: 1.75, 1.26-2.42) were independently associated with ADL disability, only physical inactivity (HR: 1.54, 1.01-2.35) and exhaustion (HR: 2.19, 1.38-3.48) were independently associated with all-cause mortality. Cognitive impairment was neither significantly associated with ADL disability nor with all-cause mortality. Conclusion: In conclusion, our results showed that exhaustion was the strongest predictor of ADL disability, and all-cause mortality. Further research on the independent predictive value of frequently used potential frailty criteria is needed to determine which components are necessary for a frailty score. Funding sources: This work was supported in part by the Baden-Württemberg State Ministry of Science, Research and Arts, by the Federal Ministry of Education and Research (grant no. 01ET0717) and by the CHANCES project funded in the FP7 framework programme of DG-RESEARCH in the European Commission (grant no. 242244).

**NEUROMUSCULAR PROFILE OF HEALTHY AND PRE-FRAIL ELDERLY MEN: A PILOT STUDY.** C.H. Pion, S. Barbat-Artigas, S. Chevalier, P. Gaudreau, G. Gouspillou, J.A. Morais, M. Aubertin-Leheudre, M. Bélanger *(Montréal, Canada)*

Background: "Pre-frail" individuals (≥ 1/5 Fried criteria) have more functional difficulties associated to a greater loss of muscle strength during aging as compared healthy individuals. Muscle strength (MS) results from neuronal and muscular factors. While muscular changes begin around 30 years of age, neuromuscular factors seem affected only from the seventh decade. No study has yet characterized the neuromuscular profile of pre-frail elderly men after controlling for muscle characteristics. Objective : To determine possible neuromuscular differences between healthy (HM) and pre-frail older men (PFM). Method : Thirteen sedentary elderly men (8 HM, age=76±3y vs. 5 PFM, age=73±4y) were evaluated for spinal excitability [Soleus maximal Hoffmann reflex (H) / maximal motor response (M) {Hmax/Mmax} ratio], Vastus Lateralis fatigue test (FT) [repeated 2s contraction - 1s rest cycles until 50% of the initial maximal contraction strength was reached] and muscle twitches [amplitude, contraction time (CT) and . relaxation time (.RT)]. Fiber type proportion (biopsy), total (in %; DXA) and thigh subcutaneous fat mass (MRI) and MS (handgrip) were measured. Results : Significant difference for MS (HM: 344±20N vs. PFM: 308±26N; p=0.042 ) was observed between HM and PFM. No differences for spinal excitability (HM: 0.29±0.17 vs. PFM: 0.31±0.17) and MT variables (amplitude, 10.9±4.62N vs. 8.9±4.51N; CT, 116±28ms vs. 108±18ms; .RT, 84±34ms vs. 84±41ms; for HM vs. PFM respectively) were observed between our groups. However, the FT duration (HM: 194±141s vs. PFM: 117±15s) tended to be shorter in PFM group. Finally, no differences for muscle characteristics [total (23±9% vs. 23±7%) and subcutaneous (29±12cm2 vs. 46±22cm2) FM; for HM vs. PFM respectively; and fiber

type proportion] were observed between our groups. Conclusion : Despite a difference in MS, our pilot data shows no neuromuscular and muscular differences between HM and PFM, except for the fatigability. Fundings : The study is supported by the Quebec Network for Research on Aging. MAL, PG, SC and JAM are funded by FRQS and SBA is supported by a CIHR fellowship.

**ASSOCIATION BETWEEN SOCIODEMOGRAPHIC AND ANTHROPOMETRIC FACTORS WITH FRAILTY SYNDROME IN BRAZILIAN ELDERLY: THE FIBRA STUDY.** F.P.A.S. Pessanha[1], R.C. Dias[2], R.A. Lourenço[3], A.L. Neri[1], J.C. Moriguti[1], N.K.C. Lima[1], E. Ferriolli[1] *(São Paulo, Brazil; 2. Belo Horizonte/Minas Gerais, Brazil; 3. Rio de Janeiro, Brazil)*

Background: Frailty is characterized by the accumulation of deficits in multiple systems and associated with adverse health outcomes of the elderly population. This syndrome is associated with sociodemographic and anthropometric profiles which are still little explored in developing countries like Brazil. The aim of this study was to identify the prevalence of frailty according to nutritional status and its association with the physical, social and economic factors of elderly who participated in the FIBRA study (Frailty in Brazilian Elderly study). Methods: The study included community-dwelling people aged ≥ 65 years in 14 Brazilian cities. Data were collected through a multidimensional questionnaire and anthropometry by height, weight and waist (WC), hip (WH) and mid-arm (MAC) circumferences. Body Mass Index (BMI) and Waist-hip ratio (WHR) were calculated. Participants were considered frail according to the phenotype criteria proposed by Fried et al. Data analysis was performed using multinomial logistic regression adjusted for gender, age, education, income, and BMI. Results: The study included 5006 participants, mostly women (65.9%), with low income (56.3%) and low educational level (50.1%). Mean age was 73.1 years. The prevalence of frailty was 11.6%. 22.1% and 27.6% of the frail participants were, respectively, underweight and obese. Frailty was associated with female gender, older age, lower income and education, not being white, and with the presence of low weight and moderate to severe obesity ($p<0.001$). Participants with BMI ≤ 18.5 and ≥ 35.0 kg/m2 had, respectively, 1.7 (1.4-2.1) and 1.6(1.2- 2.2) times more risk to be frail when compared to those with normal weight. Those with low MAC and high WC had higher risk of being frail: 2.0 (1.3-3.1) and 1.2 (1.1-1.4), respectively ($p<0.001$). No associations were found with WHR ($p=0.82$). Conclusion: Both sociodemographic and anthropometric characteristics have a strong influence on the profile of frailty among Brazilian older people. The presente study is supported by National Counsel of Technological and Scientific Development/CNPQ. Process: 5550777/2006-3.

**PHYSICAL ACTIVITY, HEALTHY DIET AND GOOD COGNITIVE FUNCTIONING: FINDINGS FROM THE LONGITUDINAL AGING STUDY AMSTERDAM.** W. Nijholt[1], H. Jager-Wittenaar[1], M. Visser[2], J.S.M. Hobbelen[1] *(1. Groningen, The Netherlands; 2. Amsterdan, The Netherlands)*

Background: In an ageing society cognitive decline is expected to become an important health problem. Previous studies showed that a healthy lifestyle, i.e. sufficient physical activity and a healthy diet,can benefit cognitive function. In this study, we aimed to assess the (synergistic) association of physical activity and a healthy diet with cognitive functioning in 1,741 Dutch men and women aged 57-97 years. Methods: In this cross-sectional study, data from the 2005-2006 examination wave of the Longitudinal Aging Study Amsterdam were used. Good cognitive functioning was defined as Mini-Mental State Examination score ≥27. Physical activity was assessed by the LASA Physical Activity Questionnaire and was considered sufficient if ≥ 20 min/d being moderate-intensity physically active. A healthy diet score was conducted adding up the intake of fruit, vegetables and fish. Each of the food groups were assigned a score ranging from 1 (well below guideline) to 4 (well above guideline), which were added up to determine a healthy diet (≥ 9 points). Multiple logistic regression analyses were used to examine the (synergistic) associations of physical activity and healthy diet with good cognitive functioning. All analyses were adjusted for potential genetic, chronic diseases and lifestyle confounders. Results: Of all participants, 23% were diagnosed with cognitive impairment, 82% were physically active and 45% had a healthy diet. Physical activity (odds ratio (OR): 2.545; 95% CI: 1.289-2.162) or adherence to a healthy diet (1.831 (1.281-2.617)) were independently associated with good cognitive functioning. After adjustment for confounding, these associations remained significant. No interaction between physical activity and healthy diet was observed ($p=0.17$). Conclusions: This study confirmed that physical activity and a healthy diet benefit cognitive function, although no synergistic association between the two lifestyle factors was observed. As these findings are based on a cross-sectional study, the research question should be addressed in prospective studies. Funding: The Longitudinal Aging Study Amsterdam is largely supported by a grant from the Netherlands Ministry of Health Welfare and Sports, Directorate of Long-Term Care.

**ASSOCIATION BETWEEN OXIDATIVE STRESS AND FRAILTY IN AN ELDERLY GERMAN POPULATION: RESULTS FROM THE ESTHER COHORT STUDY.** K.U. Saum[1], A.K. Dieffenbach[1], H. Müller[1], E.H.J.M. Jansen[2], C. Stegmaier[3], K. Hauer[1], H. Brenner[1] *(1. Heidelberg, Germany; 2. Bilthoven, The Netherlands; 3. Saarbrücken, Germany)*

Background: In recent years oxidative stress (OS) and inflammatory biomarkers have been postulated to be important factors in the development of age-related diseases. The causes of frailty are complex and must be accepted as multidimensional based on the interaction of genetic, biological, physical and environmental factors. Thus, the biological basis of frailty has been difficult to establish. In this study we aim to assess the possible association between different OS and inflammatory biomarkers and the development of frailty. Methods: This cross-sectional analysis was performed among 2494 subjects participating in the 8-year follow-up of a large epidemiologic cohort study conducted in Germany. Frailty was assessed according to the frailty phenotype, proposed by Fried et al. The OS biomarkers – Total Thiol Levels (TTL), Reactive Oxygen mMetabolites (ROM), Biological Antioxidant Potential (BAP) – and inflammatory biomarker C-Reactive Protein (CRP) were measured by spectrophotometry and immunoturbometry. Subjects were classified by their frailty state. Group differences were tested by Chi2-test or analysis of variance. Logistic regression models were performed to assess the relationship between the OS biomarkers and frailty status. Odds ratios (OR) and 95%-confidence intervals (CI) were calculated to quantify the associations. Results: There were more pre-frail and frail women than men (p-value <.0001). Mean levels of ROM, TTL, and CRP significantly differed between frail and non-frail participants (p-values <.0001). Significant positive associations with frailty were observed for ROM, the adjusted OR for an increase of 50 units was 1.19 (95% CI: 1.06–1.33). An inverse significant association with frailty was observed for TTL (OR: 0.42, CI: 0.25–0.69) and CRP (OR: 3.15, CI: 2.00–4.96), respectively. Conclusion: In conclusion, the analysed inflammatory and OS biomarkers, point to a potential role of oxidative stress and inflammation on the geriatric syndrome of frailty. Further especially longitudinal studies are required to further elucidate potential underlying mechanisms. Funding sources: This work was supported in part by the Baden-Württemberg State Ministry of Science, Research and Arts, by the Federal Ministry of Education and Research (grant no. 01ET0717) and by the CHANCES project funded in the FP7 framework program of DG-RESEARCH in the European Commission (grant no. 242244).

**ELEVATED ERYTHROCYTE SEDIMENTATION RATE IS ASSOCIATED WITH MUSCLE STRENGTH BUT NOT WITH MUSCLE MASS IN COMMUNITY-DWELLING ELDERLY WOMEN.** E.Y. Lee, D.P. Choi, Y.M. Yoon, J.M. Lee, Y. Rhee, H.C. Kim, Y. Youm, C.O. Kim *(Seoul, Korea)*

Background: There is growing evidence that inflammatory mediators have a profound role in the pathogenesis of sarcopenia, which is prevalent in the elderly. Several inflammatory markers such as C-reactive protein (CRP) and interleukin-6 were shown to be associated with lower muscle mass and strength. However, there have been few studies about the relation between erythrocyte sedimentation rate (ESR) and sarcopenia. The aim of this study is to investigate the association of ESR, a non-specific marker of inflammation, with muscle mass and strength in healthy elderly people. Methods: A total of 270 healthy elderly aged 64 to 85 years were recruited from the Korean Urban Rural Elderly (KURE) cohort study. Whole body composition was determined using bioelectrical impedance analysis. Muscle strength was measured using jumping mechanography. Results: According to the tertiles of ESR, there were no differences in age, weight, body mass index, and thigh circumference. As expected, ESR and high sensitivity CRP levels were higher with increasing ESR tertiles. Muscle mass and its index were lower with increasing ESR tertiles, while body fat was higher with increasing ESR tertile. Mean jump power (W/kg) was greater in the lowest tertile of ESR. In correlation analysis, ESR was negatively correlated with muscle mass and strength. After adjusting for age, sex, and body mass index, ESR showed negative correlation with muscle strength. In women, multiple logistic regression results showed that odds ratio for lowest tertile of muscle strength was 2.05 (95% CI, 1.020-4.412) per standard deviation increase of ESR in the highest tertile of muscle strength. Conclusions: Higher ESR levels are associated with lower muscle strength, but not with muscle mass, in well-functioning elderly women. Funding: The present study is supported by a fund (2013-E63007-00) by Research of Korea Centers for Disease Control and Prevention.

**SUPERIOR STRENGTH AND FUNCTIONAL PERFORMANCE IN ELITE OCTOGENARIAN MASTERS ATHLETES IS ASSOCIATED WITH PRESERVED MUSCLE QUANTITY NOT QUALITY.** M.E. Filion, S. Spendiff, J. Morais, P. Vellner, T. Taivassalo, R.T. Hepple *(Montreal, Canada)*

Background: Aging is associated with a progressive deterioration of muscle mass and function that leads to greatest clinical impact in those ≥80 y of age. Conversely, elite octogenarian masters athletes (MA) retain a remarkable degree of physical function at an age normally associated with severe muscle impact. For this reason, we hypothesized that elite MAs would exhibit not only superior indices of functional performance and muscle strength, but also better protection of muscle mass and fiber cross-sectional area compared to age-matched non-athlete (NA) controls. Methods: Quadriceps strength (QS), quadriceps area (QA) and functional capacity (chair stand and stand-up & go) were measured in NA controls (n=14, age: 81.2±4.4y) and elite MAs (n=15, age: 80.0±4.8 y). Muscle biopsies were also obtained for analysis of fiber type distribution and fiber size. Results: Elite MAs exhibited greater QA ($p=0.05$), QS ($p=0.04$), chair stand ($p<0.01$) and stand-up & go performance ($p<0.01$) compared to NA. When QS was divided by QA to assess muscle specific force, differences between groups disappeared. Fiber size was significantly greater in MA in comparison to NA ($p=0.02$), but was not dependent upon fiber type. Furthermore, there was no significant difference in fiber type distribution between MA and NA. Conclusion: Consistent with our hypothesis, elite MAs exhibited not only superior indices of functional performance and muscle strength, but also better protection of muscle mass and fiber cross-sectional area than NA controls. Interestingly, the superior retention of muscle mass did not translate to superior muscle specific force, nor was there a better protection of fast twitch fibers, which are frequently suggested to be impacted to a greater extent with aging, showing the protection of muscle in elite MAs was principally related to the quantity not the quality of the muscle per se. Funding: The present study was supported by the Canadian Institutes of Health Research (TT, RTH). ME Filion is supported by a Canadian Institutes of Health Research PhD Fellowship.

**PRE-FRAILTY AND FRAILTY AS MARKERS OF COGNITIVE FUNCTION IN COMMUNITY DWELLING OLDER ADULTS.** D.A. Robertson[1], G.M. Savva[2], R.F. Coen[1], R.A. Kenny[1] *(1. Dublin, Ireland; 2. Norwich, United Kingdom)*

Background: Frailty is an increasingly recognised problem for the ageing population. While much research has focussed on physical frailty, however, relatively little work has explored the cognitive burden. Frailty is associated with an increased risk of dementia but it is not yet known how this association manifests itself in the early stages (pre-frailty) and which cognitive domains are affected. We sought to profile the cognitive performance of frail and pre-frail participants in a population-representative sample of community dwelling adults aged 50+. Methods: 4,651 participants of The Irish Longitudinal Study on Ageing underwent tests of general cognition, attention, memory, executive function, processing speed, and self-rated memory. Frailty was measured according to Fried's criteria by slowness, weakness, weight loss, exhaustion and sedentariness. Participants with 1 or 2 indicators are pre-frail while those with ≥3 are frail. Results: 90 participants were frail and 1,445 pre-frail. Compared to their robust peers pre-frail and frail participants had increasingly poorer performance across all cognitive domains after adjustment for age, gender and education. We examined the relationship between cognition and individual frailty indicators; exhaustion was associated only with general cognition (β=-.18(S.E. = .06), and memory (β=-.16(.06); β=-.21(.06), while slowness was associated with executive function (β=-.20(.05), attention (β=-.25(.05), and processing speed (β=-.18(.06)). Weight loss did not predict performance in any domain. Conclusions: There is a dose-response type relationship between frailty and cognition as pre-frail and frail participants exhibit increasingly poorer performance across all cognitive domains. This highlights the need for early intervention as the cognitive burden of frailty is apparent even at the pre-frail stage and, moreover, in our relatively young and healthy sample. Furthermore, not all indicators of frailty are equally associated with individual cognitive domains. In a clinical setting, therefore, note should be taken of not just whether but how someone is defined as pre-frail or frail.

**CAROTID INTIMA-MEDIA THICKNESS AND ENDOTHELIAL DAMAGE IN FRAILTY: THE THREE-CITY STUDY.** J.A. Avila-Funes[1,2], C. Meillon[2], J.F. Dartigues[2], H. Amieva[2] *(1. Mexico City, Mexico; 2. Bordeaux, France)*

Background: Recently, frailty has been identified as a major risk factor for incidental vascular dementia. However, there is no evidence of an objective vascular damage among frail persons. Carotid intima-media thickness is a non-invasive measurement used to detect the presence of atherosclerotic disease. Objective: To demonstrate the association between carotid intima-media thickness and frailty. Design, setting, and participants: Cross-sectional study of 4,257 community-dwelling subjects aged 65-95 years, participating in the Three-City Study, a French prospective cohort designed to evaluate the risk of cognitive decline attributable to vascular risk factors. Measurements: Frailty was defined as having at least three of the following criteria: weight loss, weakness, exhaustion, slowness, and low physical activity. Intima-media thickness was determined by carotid Doppler ultrasonography. Multinomial logistic regression models, including adjustment for traditional cardiovascular and dementia risk factors, were used to evaluate the independent association between carotid intima-media thickness and frailty. Results: 6.8% of participants were classified as frail. Multivariate regression models showed an independent association between carotid intima-media thickness and frail status after adjusting by socio-demographic factors, cardiovascular risk factors, disability, and ApoE ε4 genotype (an increase by 1 standard deviation of the intima-media thickness was associated with an increased probability of being frail; OR = 1.15; P = .042). Conclusions: The association between carotid intima-media thickness and frailty suggests that frail elderly are exposed to endothelial damage. This may explain, at least partly, why several adverse health-related outcomes are frequently observed in frail elderly. Funding: The 3C Study is supported by the INSERM, the ISPED of the Victor Segalen-Bordeaux 2 University, and Sanofi-Aventis.

**SERUM 25-HYDROXYVITAMIN D DEFICIENCY IS ASSOCIATED TO FRAILTY SYNDROME IN ELDERLY MEN AND WOMEN: PROVA STUDY**. S. Sarti, A. Coin, E. Ruggiero, L. Berton, G. Sergi, E. Manzato, E.D. Toffanell *(Padua, Italy)*

Background: Frailty is the most problematic expression of population ageing. Identifying early markers for the onset of this clinical syndrome is more than just a scientific challenge. Recent insight suggests that vitamin D may be important in preserving from muscle mass and strength losses which are key components of frailty. We examined the relationship between serum 25-hydroxyvitamin D (25OHD) levels and the presence of frailty syndrome. Methods: This research is part of the Progetto Veneto Anziani (Pro.V.A), an Italian prospective population-based cohort study conduct in Italy between 1995 and 2001 with follow up assessment at 4.4 years. A total of 2036 subjects (1281 women, 775 men) aged ≥65 years completed the study. Serum 25OHD levels were measured at the baseline and categorized into clinical groups: 25OHD deficient (<50nmol/L), insufficient (≥50 to <75nmol/L) and sufficient (≥75nmol/L). Frailty syndrome was defined using the modified Cardiovascular Health study criteria. Analyses were adjusted for relevant confounders including health status and physical performance. Results: Frailty was present at baseline in 362 (28%) women and in 134 (18%) men. The prevalence of frail syndrome was significantly higher among 25OHD-deficient participants compared to 25OHD-sufficient ones (61 % vs 20% in women; 42% vs 10% in men; p<.0001). Compared to normal Vitamin D status, Vitamin D deficiency was independently associated to the likelihood of being frail both in women (OR:1.69, 95%CI: 1.27-2.24, p=.0003) and in men (OR: 2.9, 95%CI: 1.86-4.75; p <.0001 ), even controlling for several confounding factors. In a subsample of 1195 non-frail participants, the 27% became frail at 4.4y; nevertheless after adjusting for health and functional confounders, Vitamin D deficiency was no longer associated to the risk of the onset of frailty. Conclusion: Vitamin D deficiency is an independent risk factor associated to frailty syndrome in elderly men and women.

**THE GREEN TEA POLYPHENOL, EPIGALLOCATECHEIN-3-GALLATE (EGCG), ATTENUATES SKELETAL MUSCLE ATROPHY IN A RAT MODEL OF SARCOPENIA.** S.L. Pereira[1], B.M. Meador[1], M.B. Skelding[1], K.A. Mirza[2], M.J. Tisdale[2], L.A. Reaves[1], N.E. Edens[1] *(1. Columbus, USA; 2. Birmingham, United Kingdom)*

Background: Sarcopenia, the loss of lean body mass and function with age, leads to mobility-disability and frailty. EGCg, the predominant catechin in green tea, has been previously shown to preserve muscle mass and function in animal models of cancer cachexia and muscular dystrophy. Here we investigated the effects of EGCg on muscle atrophy in an aging rat model of sarcopenia. Methods: Twenty four aged (20 month) male Sprague Dawley rats were randomly assigned to either Control diet (AIN-93M) or EGCg diet (AIN-93M + EGCg (Teavigo)-200 mg/kg bw/d). Diets were fed ad libitum for eight weeks. Body weights were collected at the start and end of study. At the end of study, gastrocnemius muscles were analyzed for wet weight, fiber cross section area (400 fibers per animal) by histology, and a wide array of muscle protein catabolic and anabolic markers by western blotting, q-PCR, and activity assays . Results: At the end of the study, the EGCg group had significantly higher muscle wet weights than Control (3.00 ± 0.03 g vs. 2.85 ± 0.06 g respectively; p=0.04, paired t-test), and tended to have larger muscle fiber CSA compared to the Control group (3347 ± 349 μm2 vs. 3087 ± 274 μm2 .

**DIETARY MAGNESIUM IS POSITIVELY ASSOCIATED WITH INDICES OF MUSCLE MASS AND MAY ATTENUATE THE ASSOCIATION BETWEEN C-REACTIVE PROTEIN AND MUSCLE MASS.** A. Welch[1], E. Kelaiditi[1], A. Jennings[1], A. MacGregor[1], T. Spector[2], A. Cassidy[1] *(1. Norfolk, United Kingdom; 2. London, United Kingdom)*

Background: Chronic age-related muscle loss is one component of sarcopenia (the loss of muscle mass and strength). Dietary magnesium (Mg) intake may relate to muscle loss as it may influence low-grade inflammation, a risk factor for muscle loss. Therefore, this study investigated cross-sectional associations firstly, between indices of skeletal muscle mass in women, secondly, between indices of muscle and circulating C-reactive protein (CRP), and thirdly the potential attenuation by Mg of the relationship between CRP and muscle. Methods: A cross-sectional study of 2570 women aged 18-79 years with fat free mass measured using dual-energy X-ray absorptiometry, and with circulating HsCRP measured in 1658 of the participants. Dietary Mg was calculated using a Food Frequency Questionnaire and indices of fat free mass (fat free mass, as a percentage – FFM% and fat free mass index – FFMI - fat free mass in kg/height2) calculated according to quintile of Mg using multivariate regression. Indices of muscle were adjusted for age, physical activity, smoking, energy intake, anti-inflammatory medication, HRT, and for FFMI with BMI. Results: Significant positive associations were found between Mg and FFM% (P for trend =0.004) and FFMI (P for trend=0.001) with between extreme quintile differences of 1.58% for FFM% and 0.5 kg/m2 for FFMI. The association between indices of muscle mass and CRP (per quintile of CRP) was -1.2 % P<0.001 for FFM% and -0.07 kg/m2 for FFMI. When Mg was included in the models these associations were attenuated by 0.7 % for FFM% and 5.4% for FFMI, per quintile of Mg intake. Conclusions: Significant positive associations between Mg and indices of muscle mass were found, and furthermore dietary Mg attenuated the associations between circulating CRP and indices of muscle mass. Magnesium is found in green leafy vegetables, nuts and fruit, and dietary intervention studies are needed to confirm this observational finding.

**SEX AND AGE RELATED DIFFERENCES IN MUSCLE MASS AND QUALITY DETERMINED BY MID-THIGH COMPUTED TOMOGRAPHY IN A MIDDLE-AGED AND ELDERLY JAPANESE POPULATION.** T. Kasai[1], Y. Matsui[1], A. Harada[1], A. Yuki[2], Y. Kato[1], R. Otsuka[1], F. Ando[3], H. Shimokata[5] *(Obu, Japan; 2. Kochi, Japan; 3. Nagakute, Japan; 4. Nisshin, Japan)*

Background: Age-related loss of muscle mass and function (sarcopenia) is a cause of loss in activity of daily life in elderly people. Computed tomography (CT) has been considered a precise method to evaluate muscle mass, but few studies have evaluated muscle mass by CT in a general population. The aim of this study is to clarify sex and age differences in muscle mass and quality by mid-thigh CT. Methods: The subjects were randomly selected 2,310 men and women aged 40-89 years from local residents. They were examined by CT at the mid-thigh of the right legs. Total muscle CSA and quadriceps femoris (QF) CSA were measured. Non-QF CSA was calculated total muscle CSA minus QF CSA. Knee extension strength (KES) was measured, and KES / QF CSA was calculated as an index of muscle quality. Sex and age differences in these indices were analyzed. Results: Total muscle CSA was 156.0cm2 (49.3% QF CSA, 50.7% non-QF CSA) in 40 years old men, and 114.1cm2 (48.5% QF CSA, 51.5% non-QF CSA) in 40 years old women. Total muscle CSA decreased with age 0.6%/year in men and 0.3%/year in women. The decrease in total muscle CSA was 66% QF decrease and 34% non-QF decrease in men, and 82% QF decrease and 18% non-QF decrease in women. The index of muscle quality decreased with age in both sexes, but there was no statistical difference in the slope of the regression line in muscle quality between men and women. Conclusions:

Total muscle decreasing rate in men was twice as much as in women. Total muscle CSA decreased with age mainly due to QF CSA, especially in women. Muscle quality decreased with age similarly in both sexes. Funding: The present study was supported in part by grants from The Reserch Fund for Longevity Sciences (25-8, 25-22) from the National Center for Geriatrics and Gerontology (NCGG), Japan.

**EFFICACY OF EXERCISE TO IMPROVE PHYSICAL FUNCTION IN COMMUNITY□DWELLING FRAIL OLDER PEOPLE.A SYSTEMATIC REVIEW.** M. Roqué-Figuls, M. Giné-Garriga, L. Coll-Planas, M. Sitjà-Rabert, A. Salvà-Casanovas *(Barcelona, Spain)*

Background: Exercise has been proposed as a beneficial intervention to prevent disability and maintain physical performance in frail older adults. Objective: To conduct a systematic review to determine the efficacy of exercise-based interventions on improving performance- based measures of physical function and markers of physical frailty, in community-dwelling frail older people. Methods: We applied Cochrane methodology and standards for systematic reviews. We conducted comprehensive bibliographic searches in Medline The Cochrane Library, PEDro, EMBASE, and CINAHL databases (up to April 2013). We selected randomized clinical trials of community-dwelling older adults, defined as frail according to physical function and physical difficulties in basic activities of daily living (ADL). Included trials had to compare an exercise intervention to a control or another exercise intervention, and assess performance-based measures of physical function such as mobility and gait, or disability in ADL. Results: Nineteen trials were included, twelve of them comparing exercise to an inactive control. Most exercise programs were multicomponent. Clinical heterogeneity was observed in terms of frailty definition, characteristics of exercise programs delivered, and outcomes assessed. Compared to control interventions, exercise has shown to improve normal and fast gait speed, and the Short Physical Performance Battery. Results are inconclusive for endurance outcomes, balance and ADL (functional mobility). Conclusions: Exercise has some benefits in frail older people, although uncertainty still exists with regards to which exercise characteristics (type, frequency, duration) are most effective. Funding: None.

**DIFFERENCES IN OBJECTIVE BALANCE STRATEGY PARAMETERS ACROSS FRAILTY CATEGORIES**. J. Mohler, N. Toosizadeh, M. Fain, M. Slepian, M. Schwenk, S. Parvaneh, G. Grewal, B. Najafi *(Tucson, USA)*

Background: Postural instability is associated with frailty syndrome and increased risk of falling. Balance requires open-loop (OL) postural muscle control, and closed-loop (CL) vestibular, visual, proprioceptive and somatosensory cues for regulation of balance. We present objective (body-worn sensor) balance parameters with high potential for early indication of frailty, and targeted neuro-rehabilitation of frail elders. Methods: 122 older adults (≥ 65 years) were recruited without mobility disorders or cognitive impairment (MMSE>23); frailty was measured using Fried's criteria. Participants performed two 15 second Romberg trials, eyes-open and eyes- closed. Body-worn sensors estimated three-dimensional ankle and hip joint angles, and center-of-gravity (COG) plots. Body sway (traditional stabilogram analysis) and open-loop/closed-loop (stabilogram diffusion analysis) parameters were derived using COG plots. Frailty categories were compared using ANOVAs and post-hoc Tukey, and odds ratios were estimated using logistic regression. Results: 44 non-frail, 59 pre-rail, and 19 frail subjects underwent testing. Mean open-oop rate-of-way increased in frail (163%), and pre-rail (65%), compared to non-frail (mean 0.03±0.02cm2/sec, p<0.001). CL rate-of-sway increased in frail (264%) and pre-frail (99%), compared to non-frail (0.005±0.003cm2/sec, p<0.01). We also observed that CL somatosensory strategies were implemented sooner (i.e., within a shorter time-interval) by frail (25%), and pre-frail (24%) subjects, compared to non-frail subjects (mean1.9±1.1 sec, p=0.01). Using the OL/CL method, we found high frail/pre-frail sensitivity(97%/82%) and specificity(85%/74%), respectively. Overall, when comparing the OL/CL and traditional COG analyses, sensitivity and specificity of frailty and pre-frailty were improved by 37% and 23%, respectively. Conclusions: Postural muscle deconditioning compromises balance in frail elders, leading to dependency on somatosensory feedback to compensate for errors and stabilize the system. Objective (body-worn sensor) OL/CL parameters were able to distinguish between non-frail and pre-frail, and pre-frail and frail groups. These objective measures could be used for diagnosis, assistance with targeting rehabilitation, and sensitive measurement of change. Funding:NIH National Institute on Aging STTR Phase II Award Number 2R42AG032748

**THE EVALUATIVE FRAILTY INDEX FOR PHYSICAL ACTIVITY (EFIP): A RELIABLE AND VALID INSTRUMENT TO MEASURE CHANGE IN LEVEL OF FRAILTY.** N.M. De Vries, J.B. Staal, M.G.M. Olde Rikkert, M.W.G. Nijhuis- van der Sanden *(Nijmegen, The Netherlands)*

Background: Physical activity is assumed to be important in the prevention and treatment of frailty. It is however unclear to what extent frailty can be influenced, because an outcome instrument on frailty is lacking. Therefore, an Evaluative Frailty Index for Physical activity (EFIP) was developed based on the method of deficit accumulation. Methods: The content of the EFIP was determined in a written Delphi procedure. Intra-rater reliability, inter-rater reliability and construct validity were determined in a small observational study (n=24). Cohen's kappa was calculated to determine reliability and construct validity was determined by correlating the score on the EFIP with those on the Timed Up &Go Test (TUG), the Performance Oriented Mobility Assessment (POMA) and the Cumulative Illness Rating Scale for geriatrics (CIRS-G). In addition, data of a larger cohort are currently being collected which will be used to determine the responsiveness of the EFIP. Results: Fifty items on multiple dimensions (physical, psychological, social and general health) were included in the EFIP based on the Delphi procedure. Inter-rater (Cohen's kappa: 0,72) and intra-rater reliability (Cohen's kappa: 0,77 and 0,80) were good. A moderate correlation with the TUG, POMA and CIRS-G was found (0,68 -0,66 and 0,61 respectively, P< 0.001) as was expected. Results on responsiveness of the EFIP in a larger cohort will also be presented. Conclusion: The EFIP is the first instrument that has been specifically developed as an outcome instrument to evaluate the effect of a (physical activity) intervention on the level of frailty. The clinimetric properties of the EFIP have been tested in a small sample. However, the method of deficit accumulation has been internationally validated in large cohort studies and is a well known method to measure frailty. References: Vries, NM de, Staal, JB, Olde Rikkert, MGM, Nijhuis-van der Sanden, MWG. The Evaluative Frailty Index for Physical Activity (EFIP): A Reliable and Valid Instrument to Measure Changes in Level of Frailty. Physical Therapy 2013, 93 (4); 551-561. Funding: Royal Dutch Society for Physical Therapy (KNGF).

## POSTERS

**P1- PROGNOSTIC FACTORS OF DEATH AMONG NURSING HOMES RESIDENTS FOLLOWED PROSPECTIVELY FOR A PERIOD OF 2 YEARS.** F. Buckinx, C. Beaudart, J. Slomian, D. Maquet, M. Demonceau, S. Gillain, J. Petermans, J.Y. Reginster, O. Bruyère *(Liège, Belgium)*

Introduction: The objective of this research was to determine the predictors factors of risk of death among nursing homes residents, followed prospectively for a 2-year period. Methods: A total of 100 institutionalized subjects were included in the study and were followed prospectively for 2 years. At the beginning of the monitoring period, demographics characteristics were collected and functional tests (Tinetti test) and motor analysis (quantitative gait analysis performed using a triaxial accelerometer) were performed. Results: At the end of the study period, 27 deaths had occurred. The patients who deceased had, compared to subjects still alive, a body mass index significantly lower (23.3 ± 4.9 kg/m$^2$ vs. 26.5 ± 5.3kg/m$^2$, p= 0.007), a dependence score of Katz significantly higher (18.3 ± 4.9 vs. 15.3 ± 4.9, p=0.009) and a score of Tinetti significantly lower (16.9 ± 4.6 vs. 19.6 ± 4.4, p=0.008). However, there was no difference between these two groups for gender, age, number of drugs consumed and the use of a walking support. In addition, 48.1% of the deceased had a history of repeated falls against 24.7% among the patients still alive (p=0.01). After adjustment on potential confounding variables, only body mass index was statistically significantly associated with the risk of death with an odds ratio of 0.86 (95 % CI: 0.77-0.96, p=0.04). Conclusion: A decreased body mass index seems to be a predictor of risk of death among patients living in nursing homes. However, many confounding variables (strength, weakness,...) were not evaluated in this study and therefore these results should be interpreted with caution.

**P2- FRAILOMIC : AN EUROPEAN INICIATIVE TO FIND OUT PROGNOSIS/DIAGNOSIS ANS RISK FACTORS PROFILES ON FRAILTY.** M. González-Colaço[1], P. Jansen-Dürr[2], S. Chatterji[3], A. Sinclair[4], J. Tegner[5], T. Hardman[6], L. Del Pozo[7], L. Rodriguez Mañas[1] on behalf of the Frailomic Collaborative Project *(1. Madrid, Spain; 2. Innsbruck, Austria; 3. Geneva, Switzerland; 4. Bedforshire, United Kindom; 5. Stockholm, Sweden; 6. Richmond, United Kindom)*

Background: The forecasted increase in the number of older people for this century will be accompanied by an increase of those with disabilities. Disability is usually preceded by frailty that encompasses changes associated with ageing, life styles and chronic diseases. To detect and intervene on it is of outstanding importance to prevent disability, as recovery from disability is unlikely. Recent documents stress the necessity of testing the clinical utility (in terms of risk prediction, diagnosis validity and prognostic significance) of the existing definition of frailty by using combinations of clinical criteria and laboratory Biomarkers. Methods: The main objectives of the study are to find out the role of several –omics based BMs in the characterization of the risk of developing frailty, in the contribution to a better diagnosis of frailty and in the implementation of stronger predictors of the prognosis of frailty. With these main aims in mind, we have designed a study in two phases: - Fist exploratory phase: We will measure the levels of blood and urine omic-based BMs in old people selected from four prospective cohorts, which include up to 7,500 participants, using standardized and innovative technology. Combining these laboratory and clinical biomarkers, we will develop predictive, diagnostic and prognostic models, with its modulation by nutrition and physical activity, in general old population and in old people showing some characteristics that confer a high risk for developing frailty (selected cardiovascular risk factors and diseases). - In a second phase a selected set of Biomarkers will be validated prospectively in different cohorts and assessed to find the best-fitted models. These will guide the development of the ready-to-use kits to be implemented into clinical settings. Results: Results of laboratory biomarkers and epidemiological data of diagnostic, risk prediction and prognosis of Frailty from exploratory phase are expected by the end of 2014. Funding: The present study is supported by EU HEALTH. 2012.2.1.1-2 (Grant agreement no: 305483

**P3- THE SIGNIFICANCE OF AGE-ASSOCIATED SARCOPENIA AND APOPTOSIS AS PREDICTORS OF MYOCARDIAL DYSFUNCTION IN AGING.** N.K. Gorshunova, N.V. Medvedev, A.N. Tarasov *(Kursk, Russia)*

Background: Sarcopenia - progressive degenerative atrophic change in muscle with decrease in muscle mass and muscle strength is one of the criteria for age-related frailty. In

its pathogenesis involved multiple processes leading to faster muscle cell apoptosis, including cardiomyocytes, which creates conditions for the development of chronic heart failure. The purpose of the study - to evaluate the predictive significance of apoptosis and sarcopenia expression in the development of myocardial dysfunction (MD) in hypertensive elderly patients. Methods: The group of 84 patients (mean age 68,3 ± 1,8 years) with arterial hypertension stage II, and 22 healthy persons 67,6±2,6 years (control group) has been investigated by echo and dopplercardiography. The level of apoptosis serum key enzyme caspase -3 was assessed using analyzer Human Caspase- 3 of Bender MedSystems GmbH (Austria). Muscle mass of the body was determined by bioimpedance, muscle strength by dynamometry. Results: It is established that the content of muscle body mass in elderly hypertensive patients was - 43,5±1,1 kg, in control group - 47,8±1,5 kg ($p < 0,05$), level of muscle strength brushes - 8,5 kg±1,2 and 12,3±1,4 kg ($p<0,05$). The intensity of the apoptotic process in patients with hypertension, according to caspase - 3 level - 12,6±1,4 ng/ml, was higher than of healthy persons - 5,4±0,8 ng/ml ($p<0,01$). Diastolic MD was diagnosed in 72 elderly patients, systolodiastolic MD – in 12. In the subgroup with diastolic dysfunction content of muscle mass - 44,3±0,7 kg and apoptotic activity - 10,4±1,1 ng/ml were significantly different from similar parameters of patients with systolodiastolic MD - 41,6±0,6 kg and 16,5 ± 1,3 ng/ml ($p < 0,05$). Conclusions: The results confirm the role of an unfavorable increase the severity of sarcopenia and apoptosis combination in the myocardial dysfunction progression, which allows to use them as predictors of chronic heart failure in aging.

**P4- IMPACT OF AN AEROBIC TRAINING PROGRAM TO MUSCLE STRENGTHEN IN ELDERS 'AT RISK OF SARCOPENIA': CLINICAL TRIAL.** L.P. Lustosa[1], D.A.G. Pereira[1], R.C. Dias[1], J.M.D. Dias[1], A.N. Parentoni[2], L.S.M. Pereira[1] *(1. Belo Horizonte, Brazil; 2. Diamantina, Brazil)*

Background: Physical exercises are beneficial to a healthy aging. To identify sarcopenia, the European Consensus of Sarcopenia (CES) advocated the use of an algorithm, with specific cutoff points for gait speed and handgrip strength. Objective: To investigate the effect of isolated muscular training compared to the same associated with aerobic training in community-dwelling elders, who were classified as 'at risk of sarcopenia', according to the algorithm of the CES. Methods: It was included women (≥ 65 years), sedentary, with gait speed > 0,8m/s and handgrip strength < 20kg/f ('at risk of sarcopenia'). It was excluded: surgery and/or fracture history; dependent gait, neurological and acute inflammatory disease; low Mini-Mental State Examination score according to schooling level. The participants were divided in two training groups – muscular strengthen (MSG) (75% of 1RM) (3t/ week, 10 weeks) and, muscular strengthen (75% of 1RM) associated with aerobic training (30min) (MSAG) (3t/ week, 10 weeks). It was evaluated the mobility and balance (Timed up and go - TUG) and; functional capacity and estimated force of the lower limbs (sit -stand test – SST). The statistical analysis was made through ANOVA (post hoc Bonferroni) ($\alpha$= 0.05). Results: 25 elders participated – 12 MSAG (70.25 ± 4.78 yrs) and 13 MSG (73.00 ± 4.88 yrs). The two groups showed improvement, after the training program, in mobility and balance (TUG) and, in functional capacity and muscular estimated force (SST) ($p< 0.05$). There was significant difference between groups, in mobility and balance ($p> 0.05$), of which the associated training was more effective. Discussion and conclusion: The two training programs were effective for the improvement of the functional capacity of elder women 'at risk of sarcopenia'. The associated training was more effective. These results point to the indication of this program in the clinical practice and to the importance of a combined training.

**P5- EXAMINATION OF CUT-OFF LEVEL OF THE INDEX THAT DETERMINES HOME DISCHARGE OF ELDERLY INPATIENTS.** H. Suzuki *(Baraki Prefecture, Japan)*

Objectives:In a Japanese medical system,Medical institutions must make patients discharge at an early stage.Our research verify compromise point which determines whether patients who has a risk of fall should stay or leave from hospital to their home. Design: Retrospective study. Setting:Ishioka daiichi hospital. Measurements:We evaluate physical function (Timed "Up & Go" Test,Performance-Oriented Mobility Assessment,Timed chair rise,Modified Gait Abnormality Rating Scale,Gait speed,Berg Balance Scale,Functional Reach Test,Seated Step Test,Short physical performance battery,Grip strength), ADL index (Katz Index,Barthel Index,FIM,Nagi scale,Rosow-Breslau score), and cognitive function (HDS-R,MMSE,The Montreal Cognitive Assessment) of elderly inpatients ≥65 years old in our hospital .They were divided into the Grup A(patients who discharged to home) and B(patients who entered nursing home). These test results were applied to the t-test,and verifies which measures has significant difference. Results: Measurements that has significance level of 5% or less is Functional Reach Test,Grip strength,and Modified Physical Performance Test.These cut off point is 18cm,8.0kg,19/36. Conclusion: FRT,Grip strength,and MPPT suggests cut off point which determines whether patients should stay or leave from hospital. However,a lot of elderly patients who discharged from the hospital to home still have a great risk of fall.So we must further research of safety discharge planning for older patients.

**P6- DEVELOPING A PROGRAM FOR PROMOTING INTERGENERATIONAL EXCHANGE ACTIVITIES BETWEEN NURSING STUDENTS AND HEALTHY ELDERLY.** P. Zhang, M. Otsuka, R. Tsuji, M. Azegami, Y. Maruyama, M. Zensho, S. Asai *(Koshigaya , Japan)*

Background: In Japan, more than 80% of elderly people are healthy, live independently, and do not require care services. To improve the health and longevity of community elderly through community activities and train nursing students to assess the healthy elderly and the community, it is necessary to develop a program for promoting intergenerational exchange activities between nursing students and healthy elderly. Methods: This study included a literature review, an investigation of needs regarding intergenerational exchange, and the implementation and assessment of intergenerational exchange. Herein, the results of the need investigation are reported. The protocol of this study was approved by Saitama Prefectural University. In June 2013, nursing students interviewed community elderly to determine their needs regarding intergenerational exchange by asking about their characteristics and the contents of their intergenerational exchange with students. In July 2013, first- to fourth-year nursing students completed a questionnaire about their characteristics and the contents of their intergenerational exchange with the elderly. Data were analyzed qualitatively. Results: In total, 38 elderly (6 males, 32 females; mean age, 75.55 years) were interviewed. The contents of their intergenerational exchange with nursing students included conversations about the youths' mindset or with the aim of imparting their own wisdom, and collaborative activities, such as cooking and playing games. In addition, 477 nursing students completed the questionnaire on their intergenerational exchange with the elderly. The contents of their intergenerational exchange with the elderly included conversations and playing games. Regarding their conversations, the students most often wanted to learn about the wisdom of the elderly and their life histories and inform them of medical knowledge to improve their health (except first-year students). Conclusions: This study identified commonalities in intergenerational exchange among nursing students and healthy elderly. Furthermore, nursing students' awareness of their responsibility as health care workers was increased. Funding: The present study was supported by a grant from Saitama Prefecture for a longevity project.

**P7- A RARE CASE OF RECURRENCE OF AN EXTRAMAMMARY PAGET'S DISEASE IN THE ELDERLY AND REVIEW OF LITERATURE.** A.A. Zulfiqar, A. El Adli, R. Mahmoudi, J.L. Novella *(Reims, France)*

Background: Extramammary Paget's disease is an uncommon adenocarcinoma of apocrine gland-bearing skin, occurring on women fifties. Method: We report an interesting case, we analyse the diagnosis and treatment allowed in the elderly, by reviewing the literature. A patient of 96 years with a history of penil-scrotal extramammary Paget's disease treated surgically in 2004 without associated adenocarcinoma, was hospitalized for discovery of slow atrial fibrillation, actually processed. We found the presence of a skin lesion, which was erythematosous and squamous, at the right internal inguinal area only. Skin biopsy reveals an aspect of Paget acantholytic without infiltrating character; alcian blue staining showing the muco-secretory cells of Paget.No neoplasia has been found. After a multidisciplinary discussion, the skin lesions were not accessible to surgical resection, palliative radiotherapy was proposed. Results: Extramammary Paget's disease is an apocrine gland tumor occurring in both a benign and a malignant from, with metastatic potential. The most frequently involved site is the vulva, followed by the perianal area, perineum, scrotum, penis and axillae.The clinical appearance is that of an erythematosous plaque containing de-pigmented, crusted or scaly areas which may weep fluid. Extramammary Paget's disease is characterized by large basophilic or vacuolated cells in the epidermidis. The tumor is mainly primary but secondary forms associated to a visceral cancer are described in 12-45% (prostate in men, gynecological in women). Surgical excision is considered as gold standard. All forms of extramammary Paget's disease are typically treated by wide surgical excision. There is a high incidence of recurrences, especially after surgical management. Elderly patients, who are often undesirable surgical candidates, may benefit from primary radiotherapy as an alternative. Primary treatment with radiation therapy is seldom used. Radiotherapy has been successfully in patients with non-invasive extramammary Paget's disease. Conclusion: Extramammary Paget's disease remains a therapeutic challenge for clinicians, for the elderly. No funding for this oral presentation.

**P8- LATE-ONSET LUPUS AFTER 75 YEARS: DESCRIPTION OF A COHORT OF SIX PATIENTS.** A.A. Zulfiqar, T. Courtel, J.L. Novella, J.L. Pennaforte *(Reims, France)*

Background: Systemic lupus with disease-onset in the elderly has rarely been studied. Method: Multicentric retrospective study. The two inclusion criteria: presence of at least four criteria for 1982 classification of systemic lupus of the American College of Rheumatology (ACR) revised in 1997 and age of first symptoms retrospectively attributable to systemic lupus at 75 years or more. Clinical and laboratory features, comorbidities, treatments and prognosis were described. Results: The six patients were women. Mean age was 78,0±2,7 years at disease-onset, 7,8±8,9 months of diagnosis delay. At disease-onset, most common clinical features were skin involvement (4/6) with two cases of malar rash; one case of photosensitivity and one case with subacute cutaneous lupus, non erosive arthritis (4/6) and severe hematologic disorders (3/6: 1 hemolytic anemia and 2 thrombopenia), often with alteration of general condition (5/6). Serositis was present in one case at disease-onset and one case during evolution (2/6). Renal involvement appeared during evolution in one case (renal insufficiency). There was no neurological, lung, or other features. There was no thrombosis event, no sicca syndrome and no myalgia. Hematologic criteria became constant (6/6) during evolution (3 severe disorders, 1 leucopenia, 4 lymphopenia). Most frequent immunological finding was antinuclear antibodies (6/6), anticardiolipin (4/6) and anti-dsDNA (3/6). Patients had a mean of three elevated antibodies. Hypocomplementemia was found in 4 patients. There was no cryoglobulinemia in our study; and hypergammaglobulinemia was only found in

one patient. Corticosteroids (5/6) and antimalarial (4/6) were the most commonly used treatments, but heavy treatments (high-dose corticosteroid or immunosuppressive agents) were used for 3 patients. Survival data and causes of death were not available for all patients. Conclusion: We describe here a very rare cohort of late-onset systemic lupus after 75 years. Diagnosis is difficult to make because of the non-specificity of many features and association with comorbidities. No funding for this oral presentation.

**P9- ANTIOXIDANT DEFENSE PROFILE AND SARCOPENIA STADIUM IN A NURSING HOME.** M.E. Dudet Calvo *(Barcelone, Spain)*

Background: Antioxidants inhibit the oxidation rate, and it's suggested that antioxidant defense mechanisms may contribute to maintenance of the mass and skeletal muscle function. More research is needed to study the antioxidants-sarcopenia relationship, and there are few studies on sarcopenia in nursing homes. We performed this study to know the sarcopenia prevalence in a nursing home, and the antioxidant defense profile depending on sarcopenia stadium defined by the European Working Group on Sarcopenia in Older People (EWGSOP). Methods: Cross-sectional study was performed in 24 residents of a nursing home. Muscle strength was assessed by handgrip strength; muscle mass was determined by BIA, predictive equation of Janssen and muscular mass index (MMI); physical performance was assessed with speed in a 6 m distance. Antioxidant defense profile was determined through the serum concentration of uric acid, ferritin, albumin, total thiols, coenzyme Q10, -carotene, -carotene, lycopene, lutein-zeaxanthin, retinol-palmitate, retinol, vitamin C, -tocopherol, -tocopherol, - tocopherol and selenium, and catalase and superoxide dismutase (SOD) in blood. Results: 83.3 % of residents had sarcopenia. Residents without sarcopenia showed higher MMI (9.0±1.3 vs 4.9±0.2 vs 5.8±0.9; p=0.003). All residents had muscle strength deficit and walking speed was higher in people with sarcopenia (0.43±0.11 vs 0.91±0.05 vs 0.44±0.19; p=0.023). Residents without sarcopenia had a higher concentration of -tocopherol (1.17±0.35 vs 0.57±0.28 vs 0.58±0.30; p=0.04), selenium (80.97±4.72 vs 56.7±0.28 vs 70.5±16.4; p=0.092) and ferritin (280.6±205.4 vs 124.8±87.9 vs 112.1±86.0; p=0.101). All residents showed deficit in total thiol concentration, and low levels of SOD, albumin, coenzyme Q10, -carotene, retinol palmitate, retinol and selenium. Conclusions: Muscle quality has not been conditioned by muscle mass quantity. Probably the fear of falling could lead to the elderly to lower walking speed. Residents without sarcopenia showed higher antioxidant defense, situation that may have contributed to higher muscle mass observed in this group. Antioxidant defense profile observed in all residents could predispose them to an increased risk of muscle mass decline. References: (1) Cruz-Jentoft AJ. et al. Sarcopenia: consenso europeo sobre su definición y diagnóstico. Age and Ageing. 2010; 39: 412–423; (2) Cruz-Jentoft AJ. et al. La eclosión de la sarcopenia: Informe preliminar del Observatorio de la Sarcopenia de la Sociedad Española de Geriatría y Gerontología. Rev Esp Geriatr Gerontol. 2011. doi: 10.1016/j.regg.2010.11.004; (3) Doria E. et al. Relationship between human aging muscle and oxidative system pathway. Oxidative Medicine and Cellular Longevity. 2012: doi: 10.1155/2012/830257; (4) Janssen I. et al. Estimation of skeletal muscle mass by bioelectrical impedance analysis. J Appl Physiol. 2000; 89: 465–471; (5) Kim JS et al. Dietary implications on mechanims of sarcopenia: roles of protein, amino acids and antioxidants; (6) Masanés F. et al. ¿Qué es la sarcopenia? Semin Fund Esp Reumatol 2010; 11(1): 14–23; (7) Meng SJ, Yu LJ. Oxidative stress, molecular inflammation and sarcopenia. Int J Mol Sci. 2010; 11: 1509–1526. doi: 19.3390/ijms11041509.

**P10- ASSOCIATION BETWEEN FRAILTY AND ENDOTHELIAL DYSFUNCTION AND NEGATIVE OUTCOMES IN BRAZILIAN PREDIALYSIS PATIENTS WITH CHRONIC KIDNEY DISEASE.** H.N. Mansur, J.C.M. Lovisi, F.A.B. Colugnati, N.R.B. Raposo, N.M.S. Fernandes, M.G. Bastos *(Juiz de Fira, Brazil)*

Background: Frailty is a state of physiological vulnerability common among the elderly. It is more predominant in patients with chronic kidney disease than in healthy individuals; however, it can also be diagnosed in non-elderly individuals and is associated with numerous factors. The aim of this study was to verify the association between frailty and endothelial dysfunction and negative outcomes in Brazilian predialysis patients with chronic kidney disease. Methods: 61 predialysis patients from a Brazilian nephrology center who were diagnosed with CKD stages 3–5 were evaluated, 57 of whom were re-evaluated 12 months later. The diagnosis of frailty was based on the Johansen et al. (2007) criteria. Patients were classified as Non-frail or Frail. Sociodemographic variables, inflammatory markers (interleukin-6, tumor necrosis factor-α, ultra-sensitive C-reactive protein), endothelial dysfunction (using flow-mediated vasodilatation), body composition (using dual-energy X-ray absorptiometry), and 25-hydroxy-vitamin D levels were analyzed. The negative outcomes were verified by hospitalizations and death from any cause or referral to renal replacement therapy. Results: The average age of the patients was 60.5 ± 11.5years. The incidence of frailty was 42.6%, and 46% of these cases were identified among non-elderly subjects. After adjusting for confounding variables, frailty was found to be associated with female gender (OR = 11.32; 95%CI = 2.30–55.67), advanced age (OR = 4.07; 95% CI = 1.02–16.20), obesity (OR = 6.63; 95% CI = 0.82–11.44), and endothelial dysfunction (OR = 3.86; 95% CI = 1.00–14.88). The ratio of the incidence of frail subjects to the combined variable outcome was 2.5 (95% CI = 1.04–6.50). Conclusions: Our findings demonstrate that the frailty was prevalent in brazilian predialysis patients with CKD, and even among non-elderly individuals; frailty was found to be linked to both exacerbated endothelial dysfunction and mortality.

**P11- SARCOPENIA IN UKRAINIAN WOMEN OF DIFFERENT AGE.** V. Povoroznyuk, N. Dzerovych *(Kyiv, Ukraine)*

The aim of this study is evaluating of body composition and frequency of sarcopenia in women depending on age. Materials and methods. We've examined 8637 women aged 20-89 years (mean age – 56.7±0.14 yrs; mean height – 162.5±0.07 cm; mean weight – 73.5±0.16 kg). The patients were divided into two groups depending on age: 20-24 (n=143), 25-29 (n=209), 30-34 (n=271), 35-39 (n=326), 40-44 (n=419), 45-49 (n=794), 50-54 (n=1292), 55-59 (n=1534), 60-64 (n=1193), 65-69 (n=943), 70-74 (n=877), 75-79 (n=384), 80-84 (n=204) and 85-89 yrs (n=48). Lean and fat masses and total body, lumbar spine, femoral neck bone, forearm bone mineral density (BMD) were measured by DXA using a densitometer Prodigy, GE. Results. We have found the significantly differences of fat and lean masses in women with age: - fat mass: 20-24 yrs – 18630.12 g; 25-29 yrs – 18630.12 g; 30-34 yrs – 19201.00 g; 35-39 yrs – 21528.15 r.; 40-44 yrs – 24611.77 g, 45-49 yrs – 2750.54 g; 50-54 yrs – 27501.54 g; 55-59 yrs – 29909.92 g; 60-64 yrs – 31600.27 g; 65-69 yrs – 33508.25 g; 70-74 yrs – 33155.54 g; 75-79 yrs – 32284.86 g, 80-84 yrs – 30595.53 g; 85-89 yrs – 30303.68 g; F=83.19; p<0.0000001; - lean mass: 20-24 yrs – 37271.57 g; 25-29 yrs – 37954.09 g; 30-34 yrs - 39019.72 g; 35-39 yrs – 39928.62 g; 40-44 yrs – 40929.67g, 45-49 yrs – 41407.19 g; 50-54 yrs – 41936.27 g; 55-59 yrs – 42564.79 g; 60-64 yrs – 42519.73 g; 65-69 yrs – 41758.95 g; 70-74 yrs – 41233.77 g; 75-79 yrs – 41105.52 g, 80-84 yrs – 40308.00 g; 85-89 yrs – 38454.61 g; F=29.15; p<0.0000001. Frequency of sarcopenia in women aged 65 yrs and older was 7 % (women aged 65-69 yrs (n=943) – 7.6% (n=72), 70-74 yrs (n=877) – 6.1% (n=54), 75-79 yrs (n=384) – 6.3% (n=24), 80-84 yrs (n=204) – 6.9% (n=14), 85-59 yrs (n=48) – 10.4% (n=5). Conclusion. Fat and lean masses were significantly decreased with age. The maximal accumulation of fat and lean masses was in women aged 50-59 years. Frequency of sarcopenia in women aged 65 yrs and older was 7 %.

**P12- WISDOM OF THE MODEL DISTRICT THAT ESTABLISHED A CONSULTING SERVICE OF THE HOME CARE FOR RESIDENT (CS OF HC) - A QUARLITATIVE ANALYSIS.** M. Zensho[1], K. Sugano[2] *(1. Saitama Prefecture, Japon; 2. Nagoya, Japan)*

Background: In Japan, the civic enlightenment activity about the home medical care becomes the important point problem. Methods: We held a group interview (GI) in the form of a discussion (Theme "The actual situation and problem of the Tel-service of Home care "). Detail objects were the president of Japan Network of Home Care Supporting Clinics (the director of a A Clinic), A Clinic office manager (care worker), Staff of B city (The section manager of elderly support section and director of the District Support Center and public health nurse), C city Social worker, Hospital nurse, Care manager, the author. The objects totaled 9. GI Data under voice was recorded, and word-for-word record was created. It was 2 hours per time (2012). Data analysis extracted and abstracted important contents from word-for-word record. Ethical considerations: Word of mouth and a document explained the research meaning and private information protection to the object. Consent was obtained by the signature. Results: Wisdom of a CS of HC of the model district was following eight points. 1) Community health care service quality evaluation; 2) Grasp of the resident's potentiality needs; 3) Public relations activities of the administration; 4) Resident awareness-raising activities; 5) Intervention to municipal government; 6) Administrative leadership ; 7) InterProfessional Work; 8) Leadership. Conclusions: Our findings were suggested that the model district regarded employment cooperation practice and administrative leadership as important to plan consulting service of the home care for resident and the construction of the support system. And it was thought that the model district presented community health care service assessment, resident needs grasp, resident awareness-raising activities and contributed to the quality improvement of the support system. Funding: The present study is supported by Research scholarships of Saitama Prefectural University

**P13- PREVALENCE AND CORRELATES OF MOBILITY PROBLEMS IN PATIENTS ATTENDING MEMORY CLINIC: A CROSS-SECTIONAL STUDY.** H.K.M. Alhamad, A. Sankaranarayanan, T. Ramachandran, E.M. Al-Sulaiti *(Doha, Qatar)*

Background: Dementia is not just a cognitive disorder; patients with dementia are more likely to experience difficulties with mobility with resultant falls, fractures and admission to long-term care facilities. Gait and balance abnormalities in dementia could signify underlying early deficits in cognitive functions. This continues to remain a less researched topic, particularly from this region. The aim of the present study is to quantify the prevalence and identify correlates for mobility problems in a sample of patients presenting to a specialized, multi-disciplinary memory clinic service in Qatar. Methods: A cross-sectional audit of the first 50 patients presenting to the memory clinic service will be undertaken to study the prevalence and correlates of mobility problems. We use the following measures: Arabic version of MMSE and Clock-drawing tests to test cognitive functioning, DSM-IV criteria to diagnose the individual dementias, and the Functional Independence Measure (FIM) which will provide information on mobility. We will also collect results of routine blood investigations and information regarding comorbidities and medications, factors that can affect mobility. Results: We presently have information on 42 subjects; the gender distribution is fairly equal and the mean age is 75 years. Alzheimer's is the most common type of dementia. Rest of the results will be discussed at the conference. Conclusions: Gait, balance and mobility issues contribute to the adverse incidents and poor quality of life in patients with dementia. These risks can be mitigated by carefully monitoring for and developing clinical guidelines and pathways specifically for this patient population. Service and research implications of our findings will be discussed

in greater detail. Funding: Nil

**P14- PREVALENCE OF SARCOPENIA ACCORDING TO DIFFERENT DIAGNOSTIC TOOLS.** C. Beaudart, F. Buckinx, J. Slomian, A. Quabron, J. Petermans, S. Gillain, J.-Y. Reginster, O. Bruyère *(Liege, Belgium)*

Background: Sarcopenia can be defined as a progressive and generalized loss of muscle mass with either a loss of muscle strength or a loss of physical performance. Currently, there is no recommendation regarding the diagnostic tools to use to measure these three outcomes. In this cross-sectional study, we compared the prevalence of sarcopenia when using different diagnostic tools. Methods: To measure muscle mass, muscle strength and physical performance, we used for each outcome two different diagnostic tools. For muscle mass, we used Dual Energy X-Ray Absorptiometry (DXA) and Bio-impedance (BIA); for muscle strength, we used a hydraulic dynamometer (HD) and a pneumatic dynamometer (PD); for physical performance we used the Short Physical Performance Battery test (SPPB) and the walk speed (WS). Eight diagnostic groups were thereby established. Results: A total of 200 consecutive subjects were recruited in an outpatient clinic in Liège, Belgium (62% of women, mean age: 73.8 years). Prevalence of sarcopenia varied from 8.72% (BIA-HD-WS) to 28.5 % (DXA-PD-SPPB) depending of the definition. Regarding muscle mass, it seems that BIA systematically underestimate muscle mass compared to DXA (mean of prevalence with BIA= 13.4%; mean of prevalence with DXA= 21.4%). For muscle strength, the pneumatic dynamometer diagnosed twice more sarcopenic subjects than the hydraulic dynamometer (mean of prevalence with PD= 23.2%; mean of prevalence with HD= 11.6%). Finally, a really small difference of prevalence was observed between the walk speed and the SPPB test (mean of prevalence with WS= 17.3%; mean of prevalence with SPPB= 17.6%). Conclusion: Within the same definition of sarcopenia, prevalence of sarcopenia is highly dependent on the diagnostic tool used. It is necessary to reach a consensus on the recommended diagnostic tools to be used in order to make studies comparable. Funding: No funding.

**P15- EFFECTS OF A RESISTANCE TRAINING PROGRAM FOR PRE-FRAIL ELDER WOMEN WITH SARCOPENIC OBESITY: A RANDOMIZED CONTROLLED TRIAL.** J.M.D. Dias, K.S.S. Vasconcelos, B.S. Moreira, M.C. Araújo, A.C. Pinheiro, M.M. Maia, L.S.M. Pereira, R.C. Dias *(Minas Gerais, Brazil)*

Background: Sarcopenic obesity is characterized by excess of body fat and mass and muscle strength deficits. Resistance exercises are recommended for the treatment of both obesity and sarcopenia. However, elder sarcopenic obese (SO) individuals may have decreased response to stimuli, such as anabolic resistance exercises. The aim of this study was to assess the efficacy of a resistance training program for pre-frail elder SO women. Methods: Randomized clinical trial with parallel groups. Participants were aged 65-80 years with BMI ≥ 30 kg / m2 and handgrip strength (FPP) ≤ 21 Kgf. The exercise group (EG) participated in a 10-week-resistance-training program for the lower limbs. The control group (CG) received weekly phone calls. The level of muscle function was characterized by strength, power and endurance of the knee extensor muscles, measured by an isokinetic dynamometer, and the FPP, measured by a manual dynamometer. Functional activities were characterized by scores of the Short Physical Performance Battery (SPPB) and gait velocity (GV). The physical functioning domain of the SF-36 questionnaire ascertain for participation level. Results: The final analysis included 14 elderly women in each group. The EG had 20% improvement in muscle power ($p < 0.001$, $r = -0.55$), and 10% in the FPP ($p < 0.001$, $r = -0.66$). There were no differences between groups in levels of functional activity and participation. The number needed to treat (NNT) to improve the GV was 5 patients. Conclusions: Elder SO women can benefit from resistance training to improve muscle function. The low NNT for improvement in GV reinforces the clinical applicability of this intervention. Funding: The present study is supported by Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) and Fundação de Amparo à Pesquisa do Estado de Minas Gerais (FAPEMIG)

**P16- BLOOD PRESSURE IN ORTHOGERIATRIC PATIENTS WITH HIP FRACTURES.** J. Ingerslev *(Odense, Danemark)*

Background: Orthogeriatric service as coordinating management involving Orthopedic Department (OD) and Geriatricians has existed in Kolding since 2007. Aim: Search for the relation between the falls, the cause of the falls, and Blood Pressure. Methods: Elderly (65+) with hip fractures, admitted to the Orthopedic Department in 2012, were evaluated by the orthogeriatric team concerning history, medication, laboratory tests, daily blood pressure, and Orthostatic Blood Pressure Measurements (OBPM). Results: In 2012 342 patients, 229 (67%) women and 113 (33%) men were admitted to OD with hip fractures. Data from 100 elderly patients, 69 women and 31 men, were analyzed: 49 women (71%) and 15 (75%) received antihypertensive medication, often as a mixture, at arrival: calcium antagonists (24%), ACE-I (24%), beta blockers (23%), diuretics (21%), A-II-RA (15%), and others (3%). Among these patients hypotension and/ or positive OBBP were found in 28 (41%) women and 13 (42%) men, mostly because of antihypertensive medication and/ or varicose veins. Antihypertensive medication was adjusted. Elastic stockings were given in special cases. Training was a part of the treatment. Conclusions: Among elderly orthogeriatric patients with falls and hip fractures 64% received antihypertive medication. Hypotension was found in 41% of these cases, mostly because of antihypertensives and/ or varicose veins. The prospective study is ongoing.

**P17- TELEVISION VIEWING TIME MEASURED OVER TEN YEARS OF FOLLOW-UP, MUSCLE STRENGTH AND USUAL WALKING SPEED IN COMMUNITY-BASED BRITISH MEN AND WOMEN.** V.L. Keevil[1], R. Luben[1], N. Dalzell[1], A.A. Sayer[2], N.J. Wareham[1], K.T. Khaw[1] *(1. Cambridge, United Kingdom; 2. Southampton, United Kingdom)*

Background: Sedentary behaviour, time awake spent sitting or lying, is an emerging health risk factor but few studies have considered its independent relationship with sarcopenia. We examined associations between television viewing, a surrogate marker of sedentariness, and two physical capability measures proposed as indicators of sarcopenia, grip strength and walking speed. Methods: Community-based British men (n=3,861) and women (n=4,762) enrolled in the European Prospective Investigation into Cancer-Norfolk study, aged 48-92years old, underwent assessment of maximum grip strength (Smedley dynamometer) and usual walking speed at a third health examination (2004-2011). Participants (n=6,466) reported their usual television viewing behaviour, both concurrently and previously (1998-2000), allowing estimation of average daily television viewing time over 10years. Sex-specific associations were explored by quartile (<2hours/day; 2<3hours/day; 3<4hous/day; >4hours/day) and per hour of television viewing with adjustment for concurrent age, physical activity, anthropometry, education, social class, co-morbidity, smoking and alcohol intake. Results: Women who watched <2hours/day of television walked 0.03m/s faster (95%CI 0.01, 0.05; p trend=0.002) and were 0.56kg stronger (95%CI 0.03, 1.09; p trend=0.02) compared to those who watched >4hours/day. In men, those watching the least television were 0.03m/s faster (95%CI 0.00, 0.05) than those watching >4hours/day (p trend=0.106), but no consistent differences in grip strength were observed (p trend=0.604). For every extra hour/day of television viewing, walking speed was 0.01m/s (95%CI 0.003, 0.016; p=0.001) slower and grip strength 0.17kg (95%CI 0.04, 0.31; p=0.01) weaker in women. A similar trend with usual walking speed was observed in men, although results attenuated with multivariable adjustment. Conclusions: To our knowledge, this is the first study examining the relationship between prospectively measured television viewing and current physical capability. Those watching the least television walked 0.03m/s faster than those watching >4hours/day, equivalent to three years difference in age. Television viewing time, a marker of sedentariness, appears to predict physical capability.

**P18- VALIDATION OF THE MINI NUTRITIONNAL ASSESSMENT®-SHORT FORM IN FRAIL ELDERLY PEOPLE.** M. Lilamand, G. Abellan van Kan, M. Cesari, S. Guyonnet, B. Vellas *(Toulouse, France)*

Background. The Mini Nutritional Assessment (MNA®)-Short Form (SF) is a combination of six questions from the original full MNA®, recently validated as a screening tool for identifying malnourished older adults. However, this tool has never been evaluated in frail elderly people, who are at high risk for malnutrition. We aim to validate the MNA®-SF against the full MNA® in a large sample of frail elderly people. Methods. More than 1000 subjects were evaluated at the Frailty Day Hospital of Toulouse, France in 2012 and 2013. Nutritional assessment was performed systematically, with a standard MNA® tool. Different thresholds of MNA®-SF score will be tested using Receiver Operating Characteristic curves to examine the predictive value of the short form compared with the full MNA®. Analyses will be conducted after freezing of the 2013 database, in January 2014. Results and Conclusions. The MNA®-SF may represent a faster and more feasible screening tool to assess malnutrition in frail older adults. Optimizing the screening of malnutrition in this population is a key condition to provide nutritional intervention to frail older persons, and may help decreasing adverse health outcomes.

**P19- SARCOPENIC OBESITY AND SARCOPENIA AS RISK TO HOSPITALIZATION IN BRAZILIAN ELDERLY: SABE SURVEY – HEALTH, WELL-BEING AND AGING.** D.R. Bueno[1], M.F.N. Marucci[1], M.A. Roediger[1], L.A. Gobbo[1], L.S. Ferreira[2], M.L. Lebrão[1], Y.A.O. Duarte[1] *(1. São Paulo, Brazil; 2. Rio de Janeiro, Brazil)*

Background: Sarcopenia and sarcopenic obesity predisposes the elderly to health problems. Objective: To verify if sarcopenia and sarcopenic obesity are variables associated to hospitalization in the elderly. Methods: Cross sectional study with 607 elderly (≥ 69 years) participants from SABE Study (Health, Wellness and Aging), held in 2010 in São Paulo - SP, Brazil. Hospitalization (yes / no) in the past 12 months was self-reported at an interview. Sarcopenia was identified using The European Working Group on Sarcopenia in Older People (EWGSOP), which considers three components, all according to sex: poor performance in the sit and rise from a chair test (S&R) (time ≥ 75th percentile); poor handgrip strength (HS) (≤ 25th percentile, according to body mass index); and low muscle mass (MM) (≤ 20th percentile), considering the percentile of this study population. Where diagnosed sarcopenic elderly who had both poor performance and low MM or, normal performance, but poor HS and low MM. It was considered to be Sarcopenic Obese (SO) if the elderly, besides having the sarcopenia, showed a waist circumference ≥ 80 cm for women and ≥ 94 cm for men. Logistic regression analysis was performed, with a confidence interval (CI) of 95 % and $p < 0,05$. Results: Compared to the elderly without SA and SO, the chance (odds ratio) of hospitalization for sarcopenic patients was 2,57 (CI95% = 1,42 - 4,64; $p < 0,001$) and for obese sarcopenic patients the odds ratio was 3,19 (CI95% = from 1,64 - 6,20; $p = 0,001$). The elderly who reported hospitalization in the last 12 months represented 14,39 % of the sample, of which 62,9% were female. Conclusion: Sarcopenia and sarcopenic obesity are conditions that represent a risk for hospitalization among the elderly in São Paulo city, Brazil. Funding: FAPESP -

São Paulo Research Foundation; CAPES - Coordination of Improvement of Higher Education Personnel.

**P20- OLDER PEOPLE WITH COMORBIDITY ASSISTED BY A CASE MANAGER – ADDRESSING THE LACK OF INFORMATION AND FOLLOW-UP IN ELDERLY CARE.** P.C. Fagerström, A. Lengstedt, A. Davidsson *(Karlskrona, Sweden)*

Background: Older people with comorbidity consume large healthcare and health service resources, they are fragile and demand that interventions from different institutions are coordinated. Typically, healthcare and health service interventions are built on the services these institutions provide and not on the actual needs of the elderly. This increases the risk that individual needs go unheeded. These circumstances suggest a need of a coordinating function that assists the elderly when they are in contact with healthcare; a person who makes sure that individual needs are met and the proper steps taken. When coordinating methods based on a person-centred perspective are lacking, there is insufficient understanding of the group's need of support. The purpose of this study, which constitutes a pilot practice, is to describe the needs of the elderly when offered the assistance of a coordinating case manager. Methods: Forty-four persons (> 75 years) with comorbidity were observed during one year and data have been collected through structural interviews. Results: The results clearly show that people with comorbidity are not a homogeneous group in terms of their need of healthcare assistance. Thus, they need different healthcare interventions. The study further revealed that support in the form of giving information on where and to whom one should turn was especially important. Conclusion: Consequently, the greatest shortcomings were found in the spreading of information and in follow-up procedures. The study identifies three types of older people with comorbidity. The results can be used to advantage to meet individual needs among people with comorbidity.

**P21- NURSE HOME VISITS WITH OR WITHOUT ALERT BUTTONS VERSUS USUAL CARE IN THE FRAIL ELDERLY: A RANDOMIZED CONTROLLED TRIAL.** J. Favela[1], L.A. Castro[2], F. Franco-Marina[3], S. Sánchez-García[3], T. Juárez-Cedillo[3], C. Espinel-Bermudez[3], J. Mora-Altamirano[3], M.D. Rodriguez[3], C. García-Peña[3] *(1. Baja California, Mexico; 2. Ciudad Obregon, Mexico; 3. Mexico City, Mexico)*

Objective. To assess whether an intervention based on nurse home visits including alert buttons (NV+AB) is effective in reducing frailty compared to nurse home visits alone (NV-only) and usual care (control group) for older adults. Design. Unblinded, randomized, controlled trial. Setting. Insured population covered by the Mexican Social Security Institute living in the city of Ensenada, Baja California, Mexico. Participants. Patients were aged over 60 years with a frailty index score higher than 0.14. Intervention. After screening and informed consent, participants were allocated randomly to the control, NV+AB, or NV-only groups. Measurements. The primary outcome was the frailty score 9 months later. Quality of life, depression, comorbidities, health status, and health service utilization were also considered. Results. The framing sample included 819 patients. Of those, 591 were not located because they did not have a landline/telephone (341 patients), they had died (107), they were ill (50), or they were not currently living in the city (28). A screening interview was applied to 228 participants, and 57 had a score ≤0.14, 171 had ≥0.14, and 16 refused to complete the baseline questionnaire. A home visit was scheduled for 155 patients. However, 22 did not complete the baseline questionnaire. The final 133 subjects were randomized into the NV+AB (n = 45), NV-only (n = 44), and control (n = 44) groups. There were no statistically significant differences in the baseline characteristics of the groups. The mean age overall was 76.3 years (standard deviation 4.7) and 45% were men. At the baseline, 61.65% were classified as frail. At end of follow-up the adjusted prevalence of frailty in NV+AB group was 23.3% versus 58.3% in the control group. Conclusion. An intervention based on NV+AB seems to have a positive effect on frailty scores. Keywords. Gerontechnology, frailty, elderly

**P22- LACK OF PROGNOSTIC SIGNIFICANCE OF SARCOPENIA IN THE ACUTE HIP FRACTURE PATIENTS.** J.I. González-Montalvo, T. Alarcón, P. Gotor, R. Queipo, A. Otero, R. Hoyos, D. Ariza , A. Pardo *(Madrid, Spain)*

Background: Sarcopenia is known to be a predictor of bad outcome in community elders. Since the definition of EWGSOP criteria a reproducible measurement tool of sarcopenia is suitable for application in clinical settings, where many data are not yet available. This study was carried out to know the prognostic significance of sarcopenia assessed by EWGSOP criteria in a sample of acute hip fracture (HF) patients. Methods: FONDA Cohort is a sample of acute HF patients admitted to the orthogeriatric unit at a university hospital in Madrid where assessment and treatment have been standardised in order to optimize the management of all the areas of unmet needs in these frail patients. The treatment of functional impairment, osteoporosis, malnutrition, pain and anaemia are strictly protocolized. EWGSOP criteria of sarcopenia (low muscle mass and low muscle strength) were applied to this cohort in the pre-surgical period, within 72h from admision. Demographic and functional characteristics were collected. The variables selected to assess the influence of sarcopenia in outcome were: pre-surgical stay, total hospital stay, cognitive impairment, in-hospital death, and gait ability and destination at discharge. Cognitive impairment was assessed by Pfeiffer's scale and gait by FAC scale. Results: Two hundred and sixty seven patients were included. Mean age was 85.9 years (±6.7), and 232 (80%) were women. Mean hospital stay was 10.9 (±6.2) days. We did not find any significant association among the presence of sarcopenia (14.2% of patients) and the variables included: pre-surgical stay, total hospital stay, cognitive impairment, in-hospital death, gait ability and destination at discharge. Conclusions: Our data do not show sarcopenia as a prognostic factor related to the more important outcome in acute HF patients. We do not know if sarcopenia does not influence at all or if its effect has been minimized due to FONDA management protocol.

**P23- PREVALENCE OF PRE-FRAIL AND FRAIL STATUS AMONG ELDERLY PATIENTS CONSULTING IN PRIMARY CARE CENTERS.** X. Sist, E. Burdoy, A. Saiz, L. Jurado, R. Domenich, A. Roces, E. Palomera, M.Serra-Prat *(Spain)*

Background: Frailty is a well accepted geriatric syndrome which results in functional decline, disability and loss of independence. Moreover, frailty is associated with a high health and social care resource consumption. Therefore, and given the progressive aging of the population, frailty is now considered a real public health problem and a major health challenge to face. It is thought that frailty is, in its initial phases, a reversible process that may be prevented with specific programs, but prevalence of pre-frailty in elderly subjects is not well established. Aim: To determine the prevalence of pre-frailty and frailty among elderly population consulting in primary care services. Methods: A cross-sectional study was designed. The first 20 subjects 70 years old or more consulting in 8 GP offices (in two primary care centers) were consecutively recruited and screened for frailty according to the L Fried criteria (weight loss, exhaustion, physical activity, walk time and grip strength). Subjects were considered robust if fulfill no criteria, pre-frail if fulfill one or two criteria and frail if fulfill three or more criteria. Results: Overall, 167 elderly subjects were recruited with a pre-frail prevalence of 43.1% (95% CI: 35.6-50.4%) and a frail prevalence of 35.3% (95% CI: 28.1-42.5 %), being 21.6% of the sample considered as robust. Significant differences were observed between sexes with a prevalence of pre-frailty and frailty of 41.7% and 43.5%, respectively, in women and 45.8% and 20.3% in men (p=0.002). Frailty status was also associated with age with a prevalence of pre-frailty and frailty of 28.8% and 69.5% in >80 years old subjects and 50.9% and 16.7% in 70-80 years old subjects (p<0.001). Conclusions: Pre-frailty is a high prevalent clinical condition among elderly subjects consulting in primary care services. Prevalence of frailty is higher in women and in >80 year old subjects. Opportunistic screening for frailty in primary care may contribute to prevent functional decline and dependence in the elderly.

**P24- INTRA-SESSION TEST-RETEST RELIABILITY AND FEASIBILITY OF THE TIMED "UP & GO"-TEST IN HIP FRACTURE PATIENTS.** A.G. Faleide, B. Bogen, L.H. Magnussen *(Bergen, Norway)*

Background: Hip fracture patients constitute a vulnerable group with high risk of functional decline, and feasible tests of physical performance are needed. The Timed "Up & Go"-test (TUG) has been suggested as a possible predictor of frailty and sarcopenia. In this study, we investigate intra-session test-retest reliability and feasibility of the TUG for elderly patients upon discharge from hospital after hip fracture surgery. Methods: Patients with surgical fixation of hip fracture were recruited consecutively. To be included, patients had to be orientated for time and place, and not be critically ill. Upon discharge, patients were asked to perform the TUG three times; one practice walk and two, counting walks. The last two walks were used for analysis of intra-session test-retest reliability. Tests were performed in the patient's room or in the common areas. Reliability is presented as Intraclass correlation coefficient (ICC (1,1)), and smallest detectable change for group (SDCgroup) and individual (SDCind). Results: 67 hip fracture patients were eligible, but only 37 patients were able to perform the TUG three times. Analysis returned an ICC (1,1) of .96. SDCgroup was 1.2 seconds and SDCind was 7.51 seconds. Only 55% of the participants were able to complete the TUG three times. The non-completers were significantly older, had significantly lower premorbid New Mobility Score and tended to have fallen significantly more often indoors. Conclusion: ICC (1,1) was high, but longer periods between tests may give different results. Also, the SDCind was high, suggesting that individual results should be interpreted with caution. Almost half the participants were unable to complete the test, suggesting that it is unsuited for in-hospital assessment of mobility in hip fracture patients. Dichotomizing the test into 'able'/'unable' may yield clinically valuable information.

**P25- SELECTED FACTORS PREDICTING HEALTH STATUS AMONG PERSONS WITH KNEE OSTEOARTHRITIS.** S. Aree-Ue, I. Roopsawang, S. Vanavanant *(Bangkok, Thailand)*

Background: Osteoarthritis of the knee (OA knee) is known as age related diseases, which is common cause of disability in older adults, and can affect their health status. Little is known about factors influencing health status in older Thais with knee osteoarthritis. The aim of this cross-sectional study was to investigate the associations between selected factors and health status in older Thais with self-reported osteoarthritis of the knee (OA knee). Methods: A total of 327 older adults with OA knee living in six communities in Bangkok and its vicinity was recruited. The data were collected through home and health care center visits using questionnaires including the Disease Severity Scale, the Brief Illness Perception Questionnaire, the London Coping with Rheumatoid Arthritis Questionnaire, the Self-Efficacy Expectation Questionnaire, the MOS Social Support Survey, and Arthritis Impact Measurement Scale 2-Short Form. Data were analyzed using descriptive statistics, correlation techniques, and multiple regressions. Results: The mean age of participants was 63.48 years old (SD = 5.82 years; range 50-90 years). A significant correlation was found between total AIMS2- SF scores and disease severity, illness threat, illness consequence, illness concern, and social support, but not with BMI, disease duration, age, job characteristics, coping behavior, or self-efficacy. Participants with minimal disease severity differed from those with mild and moderate in terms of illness threat and social support. Multiple regression analysis showed that disease

severity was the strongest predictor of health status in our participants. Conclusions: Our findings demonstrate that the perception of health status among older Thais with self-reported OA knee is negatively affected by increasing illness threat perception and disease severity. The need for reducing the progression of this disease in this group of participants is crucial.

**P26- USE OF THE FRAILTY INDEX TO COMPARE THE STAGES OF AGING IN TWO MOUSE MODELS OF ALZHEIMER'S DISEASE.** R.E. Brown, A.A. Wong, H. Feridooni, S.E. Howlett *(Nova Scotia, Canada )*

Background: mice show neural and behavioural changes as they age, but the lifespan of mice differs across strains and, in some strains, there are sex differences in longevity. Thus all mice go through the same stages of age-related decline, but at different chronological ages. Methods: In order to compare the stages of aging across mice of different genotypes, a measure is required which is independent of longevity. The Frailty Index (FI) appears to meet this criterion [Parks RJ, et al. 2012. J Gerontol A Biol Sci Med Sci. 67: 217-27; Whitehead J et al. 2013. J Gerontol A Biol Sci Med Sci., in press.]. We have used the FI to compare age-related changes in behaviour and physiology of females of two transgenic mouse models of Alzheimer's disease and their wild-type controls. Results: At 12 months of age, the 5X-FAD mice show a higher FI score than their wild-type B6SJLF1 controls, whereas the 3X-Tg AD mice show a lower FI score than their wild type B6129 control strain. These FI scores correlate with measures of motor control, which decline more rapidly in the 5X-FAD than the 3xTg-AD mice. As these two transgenic mouse models differ in longevity, we are examining the changes in the FI in these mice from 12-24 months of age to determine how well the age-related changes in the FI predict the lifespan in these two mouse models. Conclusions: Our data show that the 5X-FAD and 3xTg-AD mouse models of Alzheimer's disease differ in their Frailty Index scores at 12 months of age, suggesting that the Frailty Index may be a useful measure for determining the rate of age-related deterioration in mouse models of neurodegenerative diseases. Funding: The present study was supported by NSERC1 and CIHR 2 of Canada.

**P27- EVOLUTION OVER TWO YEARS OF FUNCTIONAL AND MOTOR ABILITIES AMONG NURSING HOME RESIDENTS.** F. Buckinx, C. Beaudart, J. Slomian, D. Maquet, M. Demonceau, S. Gillain, J. Petermans, J.Y. Reginster, O. Bruyère *(Liège, Belgium)*

Background: The objective of this study was to observe the evolution, over a 2-year period, of functional and motor abilities among institutionalized elderly people. Methods: A total of 100 subjects were included in the study and followed prospectively for a 2-year period to assess the evolution of their functional and motor skills. The Tinetti test and a quantitative gait analysis performed by a triaxial accelerometer test were performed, in single and dual task, at the beginning and at the end of the study. Results: The final tests were performed on 36 subjects (27 deceases, 20 physical disability, 12 refusals and 5 relocations). Patients who completed the final tests showed, at baseline, clinical characteristics significantly different from patients who did not carried out these tests for the dependence score of Katz (13.6 ± 3.7 vs. 17.5 ± 5.1, p = 0.0001), the Tinetti score (21.3 ± 3.8 vs. 17.5 ± 4.5, p = 0.00004) and step length (0.79 ± 0.24 vs. 0.68 ± 0.27, p=0.03). Gait speed (p=0.0003), step length (p=0.004) and coefficient of regularity of gait cycles (p=0.00002) decreased significantly between the beginning and the end of the study. Quantitative gait analysis, measured by dual task, showed a significant reduction in gait speed (p=0.00002) and regularity of gait cycles (p=0.03). The evolution of the Tinetti score, over a 2-year period, was not significant (p=0.38) but was significantly correlated with changes in step length (r=0.57) and regularity of gait cycle (r=0.75). Conclusion: The degradation of some gait parameters is observed in elderly institutionalized patients followed for a period of two years. The evolution of step length and regularity of gait cycles is not correlated to the evolution of the Tinetti test. This test seems to be less sensitive to changes than certain parameters of quantitative gait analysis.

**P28- HANDGRIP STRENGTH AND MORBIDITY ASSOCIATED IN OLDER PATIENTS OF HOME CARE PROGRAM IN BOGOTÁ, COLOMBIA.** M.O. Cadena Sanabria, F. Barragan, M.A. Garcia Ortiz, M.R. Guarin-Parra *(Bucaramanga, Colombia)*

Objective: to determine the handgrip strength in a population over 60 years old in home care and to assess its association with hospitalization and death.Methods: Study place: Bogotá, Colombia. Study design: prospective cohort analytic observational study. Patients: adults over 60 years old belonging to the program of home care of the division of health services of the National University of Colombia (Unisalud). Measurements: strength (Kg/f) grip, determined by dynamometer JAMAR digital. Weight, height, calf's circumference, BMI (kg/m2), age, gender, Comorbidities. Outcome: hospitalization and/or death to 3 months follow-up. The statistical analysis was performed in the IBM SPSS Statistics version 20.0 statistical software. The correlation was measured by the coefficient of correlation of Spearman, which requires no assumptions of normality. A logistic regression model raised was to evaluate the association between grip strength and outcomes evaluated. Results: 97 patients who fulfilled the inclusion criteria were included. Mean age was 85 years (63-103), 68% were women. Medium weight 62 kg, BMI of 26 and 32 cm calf perimeter. The median of grip strength was 13.3 kg/f (RIQ 9.3-17.3), 15.3 men and women 12 kg/f. There were 12 hospitalizations (12.4%) and 2 deaths (2.1%). The average of grip strength in patients who are hospitalized or died was 11.4kg/f vs 13.84 kg/f and 14.6 kg/f without outcomes (p0.282). Conclusions: the handgrip strength is a practical measure and useful in home care, taking into account their relevance in the concepts of sarcopenia and frailty. Presented lower values than the previously evaluated in Colombia, although were data from outpatient patients. Values less than 12 kg/f may be related to a greater likelihood of hospitalization or death at 3 months, although there was no statistical significance.

**P29- FRAGILE PILOT STUDY OF ELDERLY IN CHILEAN GERIATRIC DAY HOSPITAL.** J. Chávez, D. Guzmán, A. Ibaceta, L. Ereña, C. Ortega *(Santiago, Chile)*

Introduction: The Geriatric Day Hospital (GDH) of INGER is a unit of ambulatory care, with emphasis on functional rehabilitation of older adults (OA). We use the Comprehensive Geriatric Assessment (CGA) and his goal is to diagnosis, therapy and management, in addition to selecting the appropriate functional rehabilitation therapy for the fragile OA. The frailty increase the risk of handicap and death. Methodology: A descriptive, retrospective, cross random sample 185 OA. Criteria were considered Fried (involuntary weight loss, low energy, exhaustion, slow mobility, muscle weakness, low physical activity), obtaining three groups by degree of risk. Variables were analyzed: sociodemographic, medical. Functional assessment was performed and cognitive applied geriatric assessment scales Barthel, Lawton & Brody, FIM, MMSE, GDS, TINNETTI. SPSS was used. Results: From 185 OA, 25.9% non-fragile average age 75.0 years, 69.7% pre-frail average age 76.8 years, 4.3% fragile average age 83.0 years, significant differences average ages three groups p=0.006. 70.1% women and 20.9% men. 28.8% live alone, 92.5% cared for a family member, 36.8% had good or very good health perception, 43.9% regularly, 19.4% perceived poor health, 33.2% participation, 75.4% use technical assistance, 60.4% of OA presents comorbidity, 38.4%, hypertension, 23.6% osteoarthritis, 8.9% dyslipidemia and 4.4% diabetes. Factors associated with frailty: high risk of falls, running disorder, cognitive disorders, IADL and ADL dependence increased. Assessment scales applied all existence show association with frailty level (test $\chi 2$). Conclusions: The intervention of the CGA identify fragile by 74%, indicating we access target population. The correlation fragility and physical dependence and cognitive corroborates the literature. Stresses that the only criteria Fried apply directly correlates with the fragility measured by other scales that need further training and application time. This study allows to manage prevention and intervention programs specific actions in GDH and extend primary health care continuum of care for fragility detection.

**P30- SUCCESS OF PROMOTING AGING RESEARCH IN TAIWAN: NOW AND THE FUTURE.** L.-K.Chen *(Taipei, Taiwan)*

As one of the fastest aging countries in the world, Taiwan is facing her unique challenges to the demographic transition that has never happened in human history. In the coming 12 years, the population of people aged 65 years and older will be doubled in Taiwan. Therefore, promoting aging research covering basic, clinical and social domains is of great importance in Taiwan and to the world. In the past 10 years, we focused on aging researches that covered the followings: (1) developing the geriatric specialty on international backgrounds, (2) developing various geriatric service models in Taiwan, in particular intermediate care services, (4) applied health service research using minimum data set, (5) dementia care research and education, and (6) frailty and sarcopenia. In the past 5 years, we have published over 90 SCI-indexed articles and 20% of these articles are published in high impact journals (top 10% of the disciplines). We created a geriatric specialty training program with extensive international collaboration with the British Geriatrics Society, European Union Geriatric Medicine Society, Johns Hopkins University of United States and the National Center for Geriatrics and Gerontology of Japan. Overall, we are among world leaders in intermediate care research, applied research in minimum data set and the overall academic performance. Based on the success in the past years, we are moving forward to a new era of aging research. We launched a longitudinal aging cohort research focused on aging, frailty, sarcopenia and cognitive function aiming to explore the complex interrelationship between physical, mental and social frailty. We organized the Asian Working Group for Sarcopenia, and the Asian Consensus on Sarcopenia Diagnosis will be published in March of 2014. In the future, more research emphasis will be placed on age-friendly society, frailty, sarcopenia, dementia and promoting seamless integrated care between health and social sectors.

**P31- ASSOCIATION OF COGNITIVE IMPAIRMENT, DEPRESSIVE SYMPTOMS AND SARCOPENIA AMONG MALE ELDERLY IN THE VETERANS HOME IN SOUTHERN TAIWAN.** M.-Y. Chou[1,2], Y.-H. Hsu[1,2], C.-K. Liang[1,2], M.-C. Liao[1], Y.-T. Lin[1,2], L.K. Chen[2] , Y.-K. Lo[1,2] *(1. Kaohsiung, Taiwan; 2. Taipei, Taiwan)*

Background: To evaluate the association of cognitive impairment, depressive mood and sarcopenia among older men living in the veterans home in southern Taiwan. Methods: This cross-sectional study recruited 353 men aged 65 years and older. In addition to demographic characteristics, all subjects were measured for gait speed, handgrip strength, and muscle mass by using bioelectrical impedance analysis (BIA). The diagnosis of sarcopenia was made according to the European Working Group of Sarcopenia for Older People criteria. Slow walking speed was defined as ≤ 0.8 meter/second, and low muscle strength was defined as the handgrip strength lower than 20th percentile of the study population. A height-adjusted muscle mass of 8.87 kg/m2 from a previous Taiwanese study was defined as low muscle mass. Cognitive function was evaluated by the Mini-Mental State Examination (MMSE) and the Geriatric Depression Scale-15 (GDS-15) was used for screening of depressive symptoms. Results: Among the 353 subjects (mean age 82.7±SD 5.3), 29.7% (105/353) of them were classified as sarcopenia. Multivariate logistic regression showed that sarcopenia was independently associated with older age (adjusted OR: 1.07; 95% CI: 1.01-1.14; P=0.02), cognitive impairment (adjusted OR: 3.01;

95% CI: 1.64-5.52, P<0.001) and depressive symptoms (adjusted OR: 2.46; 95% CI: 1.16-5.22; P <0.02). Conclusions: Sarcopenia was significantly associated with older age, cognitive impairment and depressive symptoms among otherwise healthy older men living in the veteran retirement community. Further outcome study is needed to explore the interrelationship of cognition, depressive symptoms and sarcopenia in the elderly. Keywords: cognitive impairment; depressive mood; elderly; men; sarcopenia. Funding: The present study is supported by Veterans Affairs Commission, Executive Yuan, R.O.C.

**P32- ASSOCIATION BETWEEN SARCOPENIA AND UNDERNUTRITION IN OLDER PEOPLE ASSISTED AT THE PRIMARY HEALTHCARE SYSTEM.** V.E. Closs, L.S. Rosemberg, B.G. Ettrich, R.D. Rosa, R. Deon, M.G.V. Gottlieb, I. Gomes, T.P. Galdino, C.H.A. Schwanke *(Porto Alegre, Brazil)*

Background: nutritional disorders and sarcopenia are common in older people. But there is a lack in the information about the association of these conditions among Brazilian people. So, the aim of the study was to determine the association between undernutrition and sarcopenia in older people assisted at the primary healthcare system. Methods: a cross-sectional study with a random sample of 567 individuals aged 60 years or more from Family Health Strategy of Porto Alegre-Brazil (Southern region) was developed. Nutritional status was determinate using the MNA (the older people with scores <17 were classified as "malnourished", 17-23.5 as "at risk of malnourished" and >23.5 as "well nourished"). Sarcopenia was assessed through the EWGSOP European Consensus algorithm [components: (1) gait speed= usual gait speed-UGS; (2) grip strength-GS; (3) muscle mass= anthropometric measurements of calf circumference-CC]. Data analysis was performed in SPSS 17.0. Measures of central tendency, dispersion and proportion, Student's t test and Pearson Chi-Square were used in the analysis of data. Results: the age ranged from 60 to 103 years, mean of 68.5±7.1 years old. The majority of the sample was female (63.6%). Among the elderly evaluated, 409 (75.9%) were classified as well nourished, 118 (21.9%), at risk of malnourish and 12 (2.2%) malnourished, according to the MNA. We found 23 (4.1%) sarcopenic individuals. The average score of the MNA of sarcopenic was significantly lower than that of non-sarcopenic elderly (20.0±5.2, and 25.8±3.2, respectively; P<0.001). The prevalence of sarcopenia was greater in malnourished elderly (P<0,001). Conclusions: Our findings demonstrate that there is as association between undernutrition and sarcopenia in older people assisted at the primary healthcare system. Funding: The present study is supported by FAPERGS. VEC, LSR, RDR, TG, and MGVG received scholarship from CAPES.

**P33- MELATONIN TREATMENT DOWNREGULATES AUTOPHAGY IN THE LIVER OF OB/OB MICE.** B. de Luxán-Delgado, B. Caballero, Y. Potes, A. Rubio-González, I. Rodríguez, J. Gutiérrez-Rodríguez, J. J. Solano, A. Coto-Montes *(Oviedo, Spain)*

Background: Despite efforts to curb the incidence of obesity and its comorbidities, this condition remains the fifth leading cause of death worldwide. Autophagy is closely associated with adipogenesis, so to identify ways to reduce this global effect, we investigated the actions of daily melatonin administration on autophagic processes as a possible treatment of obesity in obese (ob/ob) mice. Methods: Eight six-week-old male leptin-deficient ob/ob (B6.V-Lepob/J) mice were housed under 12:12 h dark-light cycle with tap water and a standard chow diet ad libitum. Half of the animals were treated with melatonin for two weeks, and the remaining four were maintained as a control group. Measurements of main autophagy markers: Beclin1, microtubule-associated protein 1 light chain 3 (LC3) and p62, in the liver mice were conducted by western blot. Statistical analysis was performed using SPSS vs. 15.0 (SPSS Inc., Chicago, IL, USA). Differences were considered statistically significant when $p < 0.050$. Results: The immunoblot analysis showed a significant decrease in Beclin1 protein expression in the melatonin-treated group compared with the control group ($p<0.01$). No significant differences were observed between either group, for LC3-I and LC3-II. Nevertheless, a significant increase in the LC3-II/LC3-I ratio and p62 protein expression was showed in the melatonin-treated group compared with the control group ($p<0.01$). Conclusions: LC3-II/LC3-I ratio results seem to contradict those of Beclin1. However increased LC3-II/LC3-I ratio after melatonin treatment could be due to the increased conversion of LC3-I into LC3-II or indicate the reduced degradation of this protein through the inhibition of autophagic activity. p62 data seem to support the decreased autophagic activity after treatment with melatonin. Taken together, these results suggest that melatonin treatment downregulates autophagy in the livers of ob/ob mice.

**P34- INFLUENCE OF N-3 POLYUNSATURATED FATTY ACIDS (N-3 PUFAS) ON BODY COMPOSITION IN ELDERLY PEOPLE WITH LOW MUSCLE MASS-PRELIMINARY RESULTS.** N. Czepulis, R. Krzymińska-Siemaszko, J. Witowski, K. Wieczorowska-Tobis *(Poznan, Poland)*

Background: Nowadays there is a search for the therapeutic approach for the treatment of low muscle mass in elderly people. The therapeutic approach includes, i.a., increase of dietary intake of protein or antioxidants, vitamin D supplementation as well as increase intake of n-3 PUFAs. Influence of n-3 PUFAs on muscle mass has not been fully recognized. However there are suggestions about their positive influence on metabolism of muscle tissue including the ageing one. The aim of this research was to assess influence of n-3 PUFAs on parameters of body composition in elderly people with low muscle mass. Methods: 10 subjects (5 women and 5 men over 60 years of age, with no cognitive impairment), who were meeting criteria of low muscle mass (i.e. with Appendicular Lean Mass index below the mean minus 2 SDs of the value for young population) were taken daily 1.3 g of n-3 PUFAs (560 mg EPA+ 440 mg DHA) over 12 weeks. Body composition parameters (evaluated by means of BIA)were compared before and after intervention. Results: The first analysis included the following parameters of body composition: Weight-55.45±9.05 kg, Fat Mass-13.02±3.51 kg, Percent Body Fat-23.61±5.48 %, Fat Free Mass-42.43±7.88 kg, Appendicular Lean Mass-16.34±4.05 kg, Lower Limbs Lean Mass-11.98±2.76 kg, Upper Limbs Lean Mass-4.36±1.35 kg. After the intervention there were no significant changes in evaluated body composition parameters. Conclusions: At the present stage of this research, after a 12-week supplementation with n-3 PUFAs, no statistically significant changes of body composition parameters in elderly people with low muscle mass were observed. A lack of any significant changes may result from a small number of people who underwent the intervention. Therefore, the research shall be continued. Funding: This study was sponsored by the grant no. RG 5/2012 obtained from NUTRICIA Foundation

**P35- GAIT SPEED AS PREDICTOR OF OUTCOMES OF ELECTIVE CARDIAC SURGERY IN OLDER PATIENTS.** M. de Saint-Hubert, J. Jamart, L. Gabriel, M. Gourdin, J. Mitchell, I. Michaux *(Yvoir, Belgium)*

Background: Commonly used predictors of postoperative complications of cardiac surgery failed to accurately predict complications in older patients. Frailty identifies patients with a diminished adaptive capacity to respond to stressors and assesses functional and physiological reserves. We hypothesised that indicators of frailty may be a better predictor of functional evolution and length of stay in ICU (LOS-ICU) and in hospital (LOS-H). Methods: Older patients aged >=75 years consecutively admitted for elective cardiac surgery (valvular or coronary). Edmonton Frail Scale (EFS: 0-14), functional status (IADL), comorbidity (CIRS-G) and gait speed were measured and LOS-ICU and LOS-H were recorded. Functional decline (FD) was assessed 3 months after discharge (loss of 1point in IADL). Results: Among 116 eligible patients, full data for follow up were available for 47 (mean age, 80.2±3.4, 48.9% were female). FD occured for 24 patients. Gait speed was significantly lower in patients with FD (0.7±0.23m/s vs 0.58±0.19m/s, p=0.048). There was no difference in comorbidity in patients' with/without FD. EFS was significantly correlated to LOS-ICU & LOS-H (spearman's rho=0.357 and 0.383, p=0.007 and 0.006 respectively). Conclusions: In elective cardiac surgery, preoperative gait speed is significantly associated with functional outcomes after discharge. Frailty screening may contribute to identify patients at risk for in-hospital complications (LOS). Recruitment is still ongoing and further analyses will test if combined conventional preoperative assessment and frailty screening improve the identification of older patients at higher risk before surgery. The final outcome is to improve surgical decisions (in case of higher risk) and perioperative management.

**P36- PHYSICAL AND FUNCTIONAL PERFORMANCE AND FALLS OF NON-FRAIL AND PRE-FRAIL ELDERLY WITH LOW BONE MINERAL DENSITY.** J.M.D. Dias[1], P.A. Garcia[2], D.B.B. Silva[2], J.P.C. Matheus[2], L.S.M. Pereira[1], R.C. Dias[1] *(1. Minas Gerais, Brazil; 2. Brasilia, Brazil)*

Background: Low bone mineral density (BMD) due to osteoporosis or osteopenia predispose the elderly to increased fracture risk and fear of falling, and to reduced activity, affects the functional capacity and thus can make the elderly more frail. The aim of this study was to compare the physical and functional performance, the fall risk and the number of falls among non-frail and pre-frail low BMD elderly. Methods: 92 female elderly with low BMD (t-score<-1.0) participated in this cross-sectional study. The elderly were divided into two groups of 46 subjects according to the frailty classification of Fried (2001): (G1) non-frail and (G2) pre-frail elderly. The main outcome measures were peak torque per body weight at 60°/s (PTBW) and average power at 180°/s (AP) of the dominant knee extensors and flexors muscles (isokinetic dynamometer), balance (fast speed Timed Up and Go test - TUG), falls risk (Biodex Balance System) and previous falls in the last year (self-report). Results: There was a higher prevalence of self-reported exhaustion (21.7%, p=0.001) and handgrip weakness (95.7%, p=0.000) in the pre-frail group. The non-frail group had a higher PTBW of knee extensors muscles (G1=131.31±32.90 vs G2=104.36±24.52; p<0.001; Power=99%) and knee flexors muscles (G1=59.02±16.91 vs G2=52.50±14.05; p=0.047; Power=51%), greatest AP of knee extensors (G1=69.20±16.85 vs G2=60.38±20.54; p=0.027; Power 60%) and better performance on the TUG (G1=7.65±1.94 vs G2=8.72±2.13; p=0.005; Power=70%) than the pre-frail group. The two groups did not differ in relation to previous falls and fall risk. Conclusions: This study demonstrated that the physical and functional performance differentiated non-frail and pre-frail elderly with low BMD. It is possible that the maintenance of high levels of physical activity by pre-frail elderly has protective feature of falls. These results indicate that the function components assessed in this study should be addressed in prevention programs for frailty. Funding: The present study was supported by Conselho Nacional de Desenvolvimento Cientifico e Tecnologico - CNPq.

**P37- INFLUENCE OF FUNCTIONAL CAPACITY IN TRANSITION OF FRAILTY IN ELDERLY COMMUNITY-DWELLING INDIVIDUALS: A LONGITUDINAL STUDY.** R.C. Dias[1], S.L.A. Silva[1], J.U. Viana[1], A.C.C. Maciel[2], M.G.A Assis[1], L.S.M. Pereira[1], J.M.D. Dias[1] *(1. Belo Horizonte, Minas Gerais, Brazil; 2. Rio Grande do Norte, Brazil.)*

Background: Frailty is a multifactorial syndrome. According to a phenotype the elderly individuals can be classified as frail, pre-frail and non-frail and, over time, transitions among these levels may occur frequently. The functional capacity is highly related to frailty and also can modify over time. The objective of this study was to evaluate whether

the functional capacity influences the transition between levels of frailty. Methods: We conducted a longitudinal study with 200 community-dwelling elder persons in the City of Belo Horizonte – Brazil. The interval between assessments was 13 month apart. Frailty was defined on the basis of five itens of the phenotype of frailty and functional capacity was ascertain by self-report scales of basic (BADL) and instrumental (IADL) activities of daily living. Comparison of functional capacity in both assessments was made by paired t test and binary logistic regression models were outlined to identify the influence of functional capacity on transition between levels of frailty 13 months later. Significance level was 0.05. Results: Mean age of participants was 73.71 (6,06), 68% were women, 55.5% were married. The pre-frail group changed more between two assessments, reducing from 55.5% to 50.5% after 13 months, and 40% moved between levels of frailty and functional capacity worsened for BADL and IADL in 13 months. Greater independence for IADL at baseline accounted for less chance of worsening frailty (OR = 0.825, 95% CI 0.963 to 1.209, p <0.05). In contrast, in the BADL scale, greater dependence increased the chance of change to worse level of frailty (OR = 1.150, 95% CI 1.090 to 4.556, p <0.05). Conclusion: Functional capacity and frailty changed during follow-up, and the worst performance of functional capacity was important in the transition of frailty, strengthening the link between the two conditions on the health of the elderly. Funding: The present study is supported by Conselho Nacional de Desenvolvimento Científico e Tecnologico (CNPq) and Fundação de Amparo a Pesquisa de Minas Gerais, Brazil.

**P38- TRANSITIONS PATTERNS FROM FRAILTY SYNDROME IN COMMUNITY-DWELLING ELDERLY INDIVIDUALS: A LONGITUDINAL STUDY.** R.C. Dias[1], S.L.A. Silva[1], J.U. Viana[1], A.C.C. Maciel[2], M.G.A. Assis[1], L.S.M. Pereira[1], J.M.D. Dias[1] *(1. Minas Gerais, Brazil; 2. Rio Grande do Norte, Brazil)*

Background: There is little information available about transition patterns in frailty levels and item contribution for that transition for elderly community-dwelling individuals. The objectives were to verify the transition patterns and to determine which phenotype items are involved in this process. Methods: We studied 200 elderly community-dwelling individuals; the 5 items of the phenotype assessed at baseline and 13 months later ascertain for frailty. Participants were classified as frail, pre-frail, and non-frail. The frequency distribution between-assessment comparisons were conducted with the Pearson's Square Chi test and to assess the contribution of items in this transition a binary logistic regression was used. The level of significance was set at $\alpha$=0,05. Results: The mean age of participants was 73.71 (6.06), most (68%) were women. At baseline, 13,5% were frail, 55,5% pre-frail and 31% non-frail. After 13 months, 14% were frail, 50,5% pre-frail and 35,5% non-frail. The group that decreased the most the level of frailty was the pre-frail. 75 (42.5%) individuals transited among frailty levels, 46 improved, while 39 transited to a worse level of frailty. The results of the binary logistic regression showed that among the elderly who have worsened their frailty level after 13 months, those who have not scored in the low handgrip strength item at baseline had 2.64 bigger chances to score in this item after 13 months, and then likely to worse their frailty level. Among those who improved their frailty level, those who scored in the weight loss and low level of physical activity items had 3.24 and 2.99 chances, respectively, of do not improving the frailty level. Conclusions: Handgrip strength, weight loss and low level of physical activity are the most influential variables in the transition, leading to worse levels of frailty or making the improvement more difficult.

**P39- FRAILTY PHENOTYPE CRITERIA IN PORTUGUESE CENTENARIANS – EXPLORATORY FINDINGS FROM THE OPORTO CENTENARIAN STUDY.** N. Duarte, C. Paúl, L. Araújo, D. Brandão, L. Teixeira, M.J. Azevedo, O. Ribeiro *(Porto, Portugal)*

Background: The most acceptable definition of frailty in medical literature is Fried et al.'s frailty phenotype (2001) which includes at least 3 clinical states: shrinking, weakness, self-reported exhaustion, slowness, and low physical activity level. Methods: This study is based on the preliminary findings of the Oporto Centenarian Study and the aims to determine the prevalence of frailty (phenotype) and bring to discussion the appropriateness of the available assessment instruments in this population. The sample comprises 35 centenarians (mean age=101.34, SD=1.88; 78.1% female). Shrinking was assessed using the question "Have you lost a lot of weight recently without wishing to do so?" (≥6kg during last 6 months, or ≥3kg during last month); weakness was measured using a dynamometer (grip strength); endurance and energy were obtained with the question "do you feel full of energy?"; slowness was evaluated considering the time taken to walk 3 meters; physical activity was assessed by the question "do you practice any of the follow activities (dancing, walking, farmer work or gardening)?". Finally, we used the last quartile to classify centenarians according to their weakness (<14.45) and slowness (<14.73). Results: Participants with 0/5 criteria were considered as nonfrail, 1-2/5 as prefrail and ≥3/5 as frail. Most centenarians in this study were found to be frail (28, 80.1%) and prefrail (6, 17.1%); only one case (2.9%) was considered nonfrail. Conclusions: This population is very heterogeneous and some centenarians stand out due to their good health, functionality and/or cognition. Instruments used to assess frailty have to be sensitive enough for this population.

**P40- GUIDELINES PROPOSAL FOR INTERVENTION IN FRAIL OLDER PEOPLE.** M. Duarte[1,2], C. Paúl[1] *(1. Porto, Portugal; 2. Braga, Portugal)*

Background: The development of frailty is a matter of life course, so prevention of this condition should be initiated as soon as possible. However, according to Ferrucci et al. (2004), there is a clear and obvious need to elucidate ways to prevent and treat frailty. Associated with the frailty condition there is the recognition of a set of practical implications, where the definition of strategies for primary prevention, is emerging (Markle - Reid & Browne 2003). This scientific work has the objective to propose possible lines of intervention of this condition in the elderly. Methods: This research is based on the empirical work conducted in a representative sample of the municipality of Guimarães with 338 subjects living in the community. By using regression models predictor and protective factors of the frailty condition were identified. Results: The results show that by identifying determinants of the frailty condition, it makes sense to propose guidelines for the prevention of frailty, namely at the physical level (physical exercise practice, encouraging participation in activities of daily living and instrumental activities of daily life, sensorial processes and good nutrition); at the psychological level (coping strategies, mood, self-control and self-efficacy skills, emotional management and cognitive stimulation) as well as at the social level (promotion of social relations, favoring the contact within and between generations, support social networks and social participation). Conclusions: The investment in prevention aims at delaying/avoiding frailty, in the sense that predisposing factors are changed and factors that are seen as protective of this condition are optimized. So as to promote ways to improve the quality of life and well-being of people in a process of ageing.

**P41- PSYCHOMETRIC PROPERTIES OF THE MULTIDIMENSIONAL MEASURE OF FRAILTY FOR IDENTIFYING FRAIL OLDER PEOPLE.** M. Duarte[1,2], C. Paúl[1] *(1. Porto, Portugal; 2. Braga, Portugal)*

Background: The concept of frailty in elders has evolved in such a way that in its definition and mensuration, multidimensional aspects related to the process of ageing have been added.. These factors include dimensions at the physical, psychological and social levels so there's a need to develop an instrument that includes these same dimensions. The Groningen Frailty Indicator (GFI) (Schuurmans et al., 2004) is a multidimensional instrument and includes a diversity of frailty indicators. Methods: We have used a non-random sample, of 201 individuals (Mean= 73, 4; SD= 10,7). The GFI is a quick and easily applicable instrument composed of 15 items. Results: The results show, through the factorial analysis the existence of 3 factors that adequately describe the psychometric properties of the instrument. These factors include 12 out of the 15 items that constitute the original version. In the reliability study, we obtain a good internal consistence (Cronbach's Alpha 0,78). The Coefficient of Intraclass Correlations (ICCs) shows that this instrument has a good reproducibility index (ICCs= 0,78). To understand the discriminative power of the GFI to differentiate between clinical and community groups (100 without pathology and 101 with a diagnosis of peripheral vascular disease). We used the discriminant validity. The obtained result shows that there are statistically significant differences between the two groups. Based on the ROC curve and considering the area under the curve of 0,687 (p=0,001), with a sensibility of 66,7% and specificity of 39,5% for a cutoff of 5 points. Conclusions: We conclude that these results show good psychometric qualities that potentiate the use of the GFI in gerontological investigation and practice.

**P42- RELATIONSHIP BETWEEN MUSCULOSKELETAL DISORDERS AND PHYSICAL FUNCTION IN ACTIVE ELDERLY.** M.M. Dubuc, S. Barbat-Artigas, C. Brûlé, S. Dupontgand, M. Aubertin-Leheudre *(Montreal, Canada)*

Background: Normal aging is related to the increase of functional incapacities with age. Musculoskeletal disorders (MSDs), which are the main work-related diseases, are associated with a decreased quality of life and an increased morbidity. Physical activity practice is recommended in people with MSD to prevent the pain and increase the physical function. Objective: 1) To compare the functional profile between active individuals aged 50 years and over with or without MSDs (back pain, and joint pain) and 2) to test the hypothesis that differences in physical activity may participate to differences in term of physical function. Methods: Four hundred and eighty-four active subjects (≥ 2hrs of physical activity/wk) aged 50 years and over were recruited. Participants were asked if they had back or joint pain. They were subsequently divided into 3 groups according to the presence or absence of MSDs (No-MSD: n=196; 1-MSD: n=201; 2-MSD+: n=87). Body composition, functional capacity, quality of life and physical activity, were also assessed. Results: We observed that bone density and blood pressure were higher while functional capacity (determined by the Stand Up and Go test, the chair test and trunk flexion) and sub-scores of SF-36 questionnaire (physical functioning, pain, general health and global score) were lower in subjects with MSDs compared to those who were exempt of this chronic disease. However, we observed no difference in term of physical activity between the 3 groups. Conclusion: It seems that even in active elderly, MSDs lead to lower levels of physical function and quality of life. Thus, a specific adapted PA practice and guidelines are needed to improve autonomy in elderly with MSDs. Funding: This study is supported by the YMCA's foundation, MAL by FRQ-S, SBA by CIHR student award an MMD by FRQSC student award.

**P43- PREVALENCE OF SARCOPENIA AMONG MEXICAN ELDERLY: A SECONDARY ANALYSIS OF MEXICAN NATIONAL HEALTH AND NUTRITION SURVEY 2012.** M.C. Espinel-Bermudez[1], C. García-Peña[2], J.A. Robles-Cervantes[1], B. Trujillo-Hernández[3], X. Trujillo-Trujillo[3], S. Sánchez-García[2], L. Villarreal-Hernández[1] *(1. Guadalajara, Mexico; 2. Mexico City, Mexico; 3. Colima, Mexico)*

Background: Mexico don't have a national study about sarcopenia on elderly, however the National survey of health and nutrition 2012 included measures that may be subrogated to study of sarcopenia. Objective. Determine the differences on the prevalence of

sarcopenia by selected variables among Mexican elderly. Methods. Cross-sectional secondary analysis was carried out using data from the Mexican National Health and Nutrition Survey 2012 (ENSANUT 2012). A subsample of 5,130 adults ≥60 years old who completed the self-reported health questionnaire and anthropometric measurements were included in this study. The sample size is representative of 7,617,222 elderly people on nationwide. Sarcopenia was assessed with the 4-meter walk test (<0.8 m/s) and calf circumference (<31 cm). Cognitive impairment by Mini-cog, functionality for basic and instrumental activities of daily life, number of falls in the last year and social conditions were analyzed. Statistical analysis was done by STATA 8 SE. Results. The mean age overall was 70.2 years (standard deviation 7.7) and 54.8% were women. The global prevalence of sarcopenia was 11.8%, this percentage being doubled in the group aged ≥80 years old (27.4%) but the highest frequency of sarcopenia was between subjects ≥90 years old with 54.4% (p≤0.001), the prevalence of sarcopenia was higher among women (15.9% women and 7.0% men, p≤0.01), there is a higher prevalence of sarcopenia in rural areas (13.5%) and social marginality (13.6%), sarcopenia is doubled in presence of cognitive impairment (14.8%, p≤0.01), which increases the impact on disability of the elderly, about this the sarcopenia was 33% of cases, 40% of subjects with sarcopenia had falls in the previous year, no relationship was found between the prevalence of sarcopenia and overweight or obesity even though they accounted for 70% of cases. Conclusion. The prevalence of sarcopenia among Mexican elderly is relatively low through subrogated measurements. Keywords. Elderly, Sarcopenia, Prevalence

**P44- ANTHROPOMETRIC INDICATORS OF NUTRITIONAL STATUS AS TOOLS FOR TRIAGE IN ELDERLY WOMEN SARCOPENIA** M.H. Fernandes, P.A. Pinheiro, J.A.O. Carneiro, R.S. Coqueiro *(Jequie-BA, Brazil)*

Introduction: The objective of this study was to investigate the association between sarcopenia and different anthropometric indicators of nutritional status, and evaluate which indicator best discriminates sarcopenia in elderly women living in community. Methods. Observational, analytical, cross-sectional which analyzed data from 173 elderly women aged ≥ 60 years living in the urban area of Lafaiete Coutinho, in Bahia, Brazil. The association between sarcopenia (defined by decreasing muscle mass, muscle strength and / or performance) and anthropometric (body mass index, arm muscle area and calf circumference) was tested by means of binary logistic regression. The significance level was 5%. Results. The average age was 74.8 years and the prevalence of sarcopenia of 17.8%. The adjusted regression model indicated that all anthropometric indicators were inversely associated with sarcopenia, and an increase in one unit in BMI, AMA or calf circumference decreased by approximately 46%, 14% and 42%, respectively, the probability of sarcopenia in older women. All indicators showed satisfactory values of sensitivity and specificity to discriminate sarcopenia with the following cutoffs: 22,9 to BMI, 27,1 to AMA, and 31,0 for calf circumference. BMI was appointed as the indicator with improved sensitivity and calf circumference with better specificity. Conclusion: Anthropometric indicators were identified with good discriminatory power for the elderly showed that sarcopenia, mainly through the calf circumference and BMI. Keywords: Anthropometry, body mass index, sarcopenia, elderly health, triage.

**P45- TEST "GET UP AND DOWN IN A CHAIR" AS SIMPLE TOOL FOR TRIAGE IN ELDERLY WOMEN SARCOPENIA.** M.H. Fernandes, P.A. Pinheiro, J.A.O. Carneiro, R.S. Coqueiro *(Jequie-BA, Brazil)*

Introduction : The objective of this study was to investigate the association between sarcopenia and test performance of "get up and down in a chair," and evaluate this test as a discriminator of sarcopenia in elderly community residents. Methods : Observational, analytical, cross-sectional which analyzed data from 173 elderly women aged ≥ 60 years living in the urban area of Lafaiete Coutinho, in Bahia, Brazil. The association between sarcopenia (defined by decreasing muscle mass, muscle strength and / or performance) and test performance "get up and down in a chair" was tested by binary logistic regression. The significance level was 5%. Results : The average age was 74.8 years and the prevalence of sarcopenia of 17.8%. The model showed that the time taken for the test "get up and down in a chair" was positively associated (OR = 1.08, 95% CI = 1.01 to 1.16, p = 0.024) sarcopenia, indicating that each increment of 1 s in the time of the test increased by 8% probability of sarcopenia in elderly women. The cutoff point that showed the best balance between sensitivity and specificity was 13 seconds. Conclusion : The test "get up and down in a chair" has predictive ability in simple and effective triage of older women with sarcopenia, as well as good discriminatory power and can be used to track these individuals for early intervention and so provide better quality of life. Keywords : Elderly, skeletal muscle, muscle strength, sarcopenia

**P46- GAIT SPEED, A SINGLE ITEM TOOL TO ASSESS FRAILTY: RESULTS FROM THE FRAILTY DAY HOSPITAL AT TOULOUSE.** G. Abellan van Kan, M. Lilamand, M. Cesari, S. Guyonnet, B. Vellas *(Toulouse, France)*

Background: Gait speed over a short distance (4 meter track) is an easy, quick, not expensive and straight forward screening tool to assess the presence of frailty. The gold-standard to assess physical frailty are the Fried Criteria, but these are difficult to perform in current clinical practice. To use gait speed in substitution of Fried criteria could simplify the assessment of frailty and extend its assessment in clinical practice. Methods. 2012-2013 data of more than a thousand frail patients, from our clinical activity at the Frailty Day hospital, will be used for the present analysis. Receivers operating curves will be performed to assess the best thresholds of gait speed that identify frailty as done by the Fried criteria. Results and Conclusions. Upon freezing of 2013 database beginning of January 2014, analysis will be performed. As shown in the table with clinical data of the 2012 activity, the research question whether gait speed can be used as a single item assessment instead of the full Fried criteria can be answered with pertinent analysis.

| Variable | | n=466 |
|---|---|---|
| Age (years), mean standard deviation | | 82.9 ± 6.0 |
| Women, number % | | 291 (62.5) |
| ADL (score), median interquartile range | | 6 [5.5-6] |
| IADL (score of 8 over 8), number % | | 151 (33.0) |
| Living alone, number % | | 193 (42.0) |
| Gait speed (meters per second), mean standard deviation | | 0.8 ± 0.3 |
| Involuntary weight loss*, number % | | 175 (37.9) |
| Fatigue*, number % | | 256 (56.1) |
| Handgrip strength*, number % | | 179 (38.6) |
| Sedentary*, number % | | 275 (59.3) |
| Fried Criteria | Robust (0 criteria) | 22 (4.8) |
| | Pre-frail (1-2 criteria) | 143 (31.1) |
| | Frail (3-5 criteria) | 295 (64.1) |
| SPPB | High performance (score of 10-12) | 188 (41.5) |
| | Intermediate performance (score of 7-9) | 157 (34.7) |
| | Poor performance (score of 0-6) | 108 (23.8) |

**P47- TRANSITION IN SEVERITY OF DEPRESSIVE SYMPTOMS AND MORTALITY: RESULTS FROM THE ITALIAN LONGITUDINAL STUDY ON AGING.** L. Galluzzo[1], S. Ghirini[1], C. Gandin[1], F. Panza[2], V. Solfrizzi[3], E. Scafato[1], for the ILSA Working Group *(1. Roma, Italy; 2. San Giovanni Rotondo (Foggia), Italy; 3. Bari, Italy)*

Background. Depressive symptoms (DS) are very common in late life, and are frequently associated with a wide range of behavioural, physical and socio-demographic factors that may interact to raise disability and frailty risk. The association between DS and increased mortality among elderly subjects seems well established but the impact of remission of DS over time has been scarcely investigated. Methods. The Italian Longitudinal Study on Aging (ILSA) is an extensive 3-wave prospective study on a community random sample of 5632 subjects aged 65-84 years, with a 10-year follow-up of vital status. The 30-item Italian version of the Geriatric Depression Scale (0-9=no DS; 10-19=mild DS; 20-30=severe DS) was administered to 3214 subjects at baseline and to 2070 at second survey 3 years later. Changes in severity of DS over time (stable, remitted, worsened) were analysed in the 1941 participants in both evaluations. Cox mortality hazards ratios (MHR) were estimated for DS severity and longitudinal variations, adjusting for a comprehensive set of possible confounding factors. Results. The association between severity and increased mortality was confirmed, with a risk almost doubled for severe DS. Changes in severity of symptoms occurred over the 3-year interval were powerful and significant predictors of 7-year mortality in both genders, even after controlling for potential confounders, leading to a reduction of risk in subjects with transition to a better status (MHR 0.63, 95% CI 0.44-0.90), and to excess mortality for those with worsened symptoms (MHR 1.34, 95% CI 1.05-1.71). Conclusions. Our findings extend the magnitude of the association between severity and persistence of DS on excess mortality, demonstrating that remission of symptoms is associated with a significant reduction in mortality. Since most DS remit partially or completely, either spontaneously or with treatment, these results highlight the need to enhance case-finding and successful treatment strategies for late-life depression. From 1991 through 1995, the ILSA was supported by the Italian National Research Council (CNR). The study was then funded by the Italian Ministry of Health (D.L. 502/92, 1998).

**P48- ANALYSIS OF DIFFERENT METHODS USED IN IDENTIFICATION OF SARCOPENIA IN ELDERLY FROM SAO PAULO CITY, BRAZIL.** L.A. Gobbo[1], L.S. Ferreira[2], M.A. Roediger[3], D.R. Bueno[3], M.L. Lebrão[3], Y.A.O. Duarte[3], M.F.N. Marucci[3] *(1. Presidente Prudente, Brazil; 2. Rio de Janeiro, Brazil; 3. São Paulo, São Paulo, Brazil)*

Background: Even with the increasing number of studies about sarcopenia, there is still a gap about comparison of different diagnostic criteria for this syndrome. The purpose of this study is to compare different methods for identification of sarcopenia in Brazilian elderly. Methods: Data from 1323 aged men and women (60-99 years old) from the SABE Survey, performed in the city of São Paulo, Brazil, in the year of 2006, were analyzed. Measures of height, body weight, hip circumference, handgrip strength and gait speed, and information on sex, age and race, were collected to enable identification of sarcopenia according to four criteria, suggested by four different studies: the New Mexico Elder Health Survey (CRIT1), the Third National Health and Nutrition Examination Survey (CRIT2), the International Working Group on Sarcopenia (CRIT3) and the European Working Group on Sarcopenia in Older People (CRIT4). Cut-offs values for skeletal muscle mass for CRIT3 and CRIT4 were used as suggested by CRIT2. Prevalence rates for each criterion were identified for the whole sample, and comparison by sex was performed by the Rao & Scott test, for complex samples, while logistic regression was performed to verify association between each method and dependence to perform at least one of six basic activities of daily life (BADL), in software Stata IC 11.0. Results: Prevalence rates for sarcopenia were, respectively, from CRIT1 to CRIT4, 24.4%, 11.9%, 0.6% and 4.1%. When analyzed according to sex, men presented higher rate for CRIT1 only (p<0.05). In the logistic regression analysis, CRIT3 (OR 5.27; CI 95% 1.33-20.91) and CRIT4 (OR

2.01;CI 95% 1.14-3.56) were associated to BADL. Conclusions: All four criterions showed different prevalence rates for sarcopenia, with association with BADL for CRIT3 and CRIT4. Methods for identification of sarcopenia should be chosen carefully, considering specificities of samples and possibilities of measurements. Funding: The present study was supported by FAPESP and CAPES.

**P49- FRAILTY IN OLD AGE, A CHALLENGE FOR THE PUBLIC HEALTH SYSTEM, BRASOV, ROMANIA.** M. Gurgu[1], A. Zamfirescu[2], E. Chiracescu[1], C. Trif[3], M. Teodorescu[1], A.M. Stroie[3], A. Romila[1], M. Gurgu[4] *(1. Brasov, Romania; 2. Bucharest, Romania; 3. Bretagne, France; 4. Cluj-Napoca, Romania)*

Background: Frailty is a "clinical condition of high vulnerability and low ability to maintain the body homeostasis"; it affects the quality of life of the elderly; it is frequently observed in hospitalized but neglected elderly patients. The aim of this study is to evaluate the prevalence of frailty in a group of hospitalized elderly patients. Methods: The study was performed in February- April 2013, in the department of Internal Medicine from the Emergency Clinical Hospital – Braşov, Romania; bedridden patients were excluded from the study. To identify the frailty we applied the Frailty Scale – the model devised by Rockwood K. We used the MMSE test (Mini Mental State Examination, with a maximum of 30 points) to determine the cognitive impairment: score 30-27 normal, 26-20 mild cognitive deficit, 19-11 moderate cognitive deficit and under 10 for severe cognitive deficit. We evaluated the functional capacity using the ADL (Activities of Daily Living) and IADL (Instrumental Activities of Daily Living) scales; we assessed the level of education. Results: We evaluated 159 patients, mean age 68, most of them females (63.8%). The level of education was in favor of men: 76% having more than 10 years of school compared to 43% in women. Cognitive impairment, accordingly to MMSE scores was much higher in females (60%) compared to males, probably due to the higher educational level. ADL and IADL scores were higher in females (58%); the most affected domains being locomotion, urinary continence, taking medication, public transport, handling finances. Conclusions: From the statistical correlations, it appears that cognitive impairment is a risk factor responsible for the apparition of both frailty and functional dependency. Frailty is a negative predictor for the evolution of elderly patients. A multidisciplinary approach, creation and development of geriatric services and actions to prevent frailty may contribute to improve the elderly patient's quality of life.

**P50- FRAILTY AND CHRONIC HEART FAILURE: CLINICAL AND PATHOPHYSIOLOGICAL RELATIONSHIPS.** A.N. Ilnitski[1,4], K.I. Prashchayeu[1], A.N. Krivtsunov[1], S.V. Bogat[2], V.I. Poliakov[3], G.I. Gurko[3] *(1. Moscow, Russia; 2. Belgorod, Russia; 3. S.-Petersburg, Russia; 4. Belarus)*

Background: Actually in geriatric's science and practice development of chronic heart failure intensified the need for researching of pathophysiological and clinical aspects of frailty performing. The objective of our research was studying of clinical and neuroimmunoendocrine relationships of frailty syndrome development associated with chronic heart failure. Methods: Participants were 32 patients, 14 men and 18 women, at the age between 75 and 84 (median age 78,4+1,2), suffering frailty syndrome associated with chronic heart failure. Comprehensive geriatric assessment was carried out. ëontrol group included 31 patients, 11 men and 20 women, at the age between 75 and 84 (median age 79,0+2,1) without frailty. Results: Frailty syndrome associated with chronic heart failure characterized by group of syndromes, included cognitive deficiency (r=0,094, p<0,01), anxiodepressive syndrome (r=0,084, p<0,02), falling down syndrome (r=0,091, p<0,01) and sarcopenia syndrome (r=0,095, p<0,001). Chronic heart failure associated with frailty and main geriatrics syndromes related by neuroimmunoendocrine changes, in particular proinflammatory hypercytokinaemia (r=0,094, p<0,01) and level of proinflammatory cytokines decreasing (r=0,081, p<0,04). Conclusion: The main way to prevent frailty syndrome development, as socially significant elderly patienthood status, associated with chronic heart failure is to use special comprehensive geriatric assessment tool, that helps to prevent special geriatrics syndromes (cognitive deficiency, falling down syndrome, sarcopenia, anxiodepressive syndrome) leading to frailty. Funding: The present study is supported by Belarusian Association of Gerontology and Geriatrics, Belarus and Researching Medical Centre, Moscow, Russia

**P51- PREVALENCE OF MALNUTRITION-SARCOPENIA SYNDROME AND ITS RELATION TO DAILY ACTIVITIES, PHYSICAL FUNCTION, AND COGNITIVE FUNCTION IN NURSING HOME FRAIL ELDERLY.** T. Kamo[1], K. Takayama[2], H. Ishii[1], K. Iwagaya[1], T. Ishida[1], H. Wakabayashi[3], Y. Nishida[1] *(1. Shizuoka, Japan; 2. Kanagawa, Japan; 3. Kanagawa, Japan)*

Background: Malnutrition-Sarcoepenia Syndrome (MSS) is the clinical presentation of both malnutrition and accelerated age-associated loss of lean body mass, strength, and/or physical performance. Malnutrition and sarcopenia are each independently associated with negative health consequences that impact older adults across health care settings. The aim of this study was to assess the prevalence of MSS and its association with functional and daily activities in nursing home frail elderly people. Methods: A total of 184 institutionalized elderly (86.6 ± 7.6 years) were recruited at two nursing homes. The European Working Group on Sarcopenia in Older People (EWGSOP) criteria were adopted. Accordingly, sarcopenia was diagnosed in cases with documented low muscle mass and either low muscle strength (grip strength) or low physical performance (short physical performance battery [SPPB]). We also assessed the participants' nutritional status (MNA-SF), mental state (MMSE), and daily activities (Barthel Index [BI]). Results: MSS was diagnosed in 65 participants (35.3%). Sarcopenia was diagnosed in 149 participants (81.0%). Lower values for ADL (22.2 ± 26.4 vs 52.1 ± 27.7), more severe cognitive impairment (6.3 ± 8.2 vs 16.1 ± 8.5), and lower physical function (0.6 ± 1.9 vs 2.0 ± 3.0) were observed for MSS than for sarcopenia. ADL scores, MMSE, and SPPB were not significantly different between sarcopenia and robust (52.1 ± 27.7 vs. 52.1 ± 25.1 for ADL, 16.1 ± 8.5 vs. 15.6 ± 9.9 for MMSE, and 2.0 ± 3.0 vs. 1.8 ± 2.5 for SPPB, respectively). Conclusions: The prevalence of MSS was high in nursing home frail elderly people. MSS was associated with disability, functional status and cognitive status. However, sarcopenia was not associated with disability, functional status and cognitive status in nursing home frail elderly people. Therefore, adequate nutrition and physical programs for the nursing home frail elderly are necessary. Funding: The present study is supported by Japanese Physical Therapy Association.

**P52- ASSOCIATIONS BETWEEN GRIP STRENGTH AND AGING BIOMARKERS ON OLD ADULTS IN TAIWAN.** T.W. Kao, Y.W. Chang, W.L. Chen *(Taipei, Taiwan)*

Background: Low grip strength is a contributor to functional decline in the elderly. Researches about grip strength and aging biomarkers in Taiwan are relatively sparse. The aim of this study was to examine the associations between grip strength and aging biomarkers among community-dwelling old adults in Taipei City, Taiwan. Methods: A cross-sectional, observational study was designed. Old adults with ages 65 and above who lived in the community were recruited. Basic demography, medical conditions, health behaviors were reviewed and measured. Serum biochemistry profiles and aging biomarkers including leukocyte telomere length, p16INK4A mRNA expression level, serum myostatin and follistatin levels were also measured. Using multiple linear regression with extended-model approach for covariates adjustment to estimate the relationships between grip strength and aging biomarkers. Results: Two-hundred and five old adults were recruited, and mean age was 76±8. Nighty-eight were men(47.8%). After controlling for age, gender, health behaviors, the _ coefficient, representing the change of grip strength for each increase in leukocyte p16INK4A mRNA expression level, was -0.129 (R2=0.590, p=0.021). After additional adjusting covariates of chronic diseases, levels of serum biochemistry and aging biomarkers, the _ coefficient was -0.134 (R2=0.603, p=0.021). Associations between grip strength and leukocyte telomere length, serum myostatin, follistatin levels were not significant statistically. Conclusions: Leukocyte p16INK4A mRNA expression level was negatively associated with grip strength among community-dwelling old adults in Taipei City, Taiwan. Funding: none

**P53- MĀORI AND NON-MĀORI IN ADVANCED AGE, A CONTRAST OF FRAILTY MEASURES.** N. Kerse[1], R. Teh[1], Mr Moyes[1], L. Dyall[1], M. Kepa[1], T. Wilkinson[2], M. Connolly[1] *(1. Auckland, New Zealand; 2. Christchurch, New Zealand)*

Background: The utility of frailty concepts in indigenous and very old people is not known. Methods: A cohort study of Māori 80-90 years and non-Māori 85 years at inception in 2010 compared the Fried and Rockwood Frailty Indices in predicting mortality over three years follow up. Rockwood was constructed from 34 deficits on the complete sample, 410 Māori and 512 non-Maori. The Fried was constructed from community dwellers that completed the full interview (206 Māori and 344 non-Māori) using gait speed; PASE activity score; grip strength; energy, and weight loss. Mortality was from National mortality data. Rockwood was examined in the full sample and prediction of mortality of both Rockwood and Fried compared using regression techniques and survival analyses adjusting for deprivation, education and age. Results: Over three years 100 Māori(24%) and 109 non-Māori(21%) died(ns). Rockwood frailty for Māori 0.25(0.13) and non-Māori 0.25(0.11) was similar in the whole sample and the smaller sample. According to Fried, Māori were less frail than non-Māori. Māori: 34% notfrail, 59% prefrail, 7% frail; non-Māori 20% notfrail, 65% prefrail and 15% frail(p <0.001) with no gender variation. The lowest and highest Rockwood quartile had 10% and 47% mortality(p<0.001) for Māori and 6% and 38% mortality (p<0.001) for non-Māori. Fried showed 40% and 20%(p 0.016) mortality for the frail and prefrail group respectively for Māori and 28% and 16%(p 0.004) for non-Māori. Using regression the Rockwood predicated mortality(p<0.002) and produced fit statistic of 483, (scaled Pearson fit statistic 294 for Māori, 182 for non-Māori). Fried prediction was comparable significant prediction of mortality(p 0.003) and a fit statistic of 489; (181 for Māori and 305 for non-Māori). Survival analyses confirmed results. Conclusions: Fried scale was able to show differences in frailty between Māori and non-Māori. Both scales equally and accurately predicted mortality. The Fried better differentiates populations. The study was supported by the Health research Council of New Zealand, Nga Pae o te Maramatanga, Ministry of Health, New Zealand.

**P54- LIFESTYLE FACTORS ON SARCOPENIA IN OLDER KOREAN ADULTS.** J. Kim, Y. Lee, S. Kye, Y.-S. Chung, K.-M. Kim *(Suwon, Republic of Korea)*

Background: Several studies have examined the effects of specific nutrients and exercise on sarcopenia. However, the association of food group consumption and exercise with sarcopenia has not been extensively studied in community-dwelling older people. The objective of this study was to examine the association of the frequency of food group consumption and exercise with sarcopenia in older Korean adults. Methods: This study used cross-sectional data from the Fourth and Fifth Korea National Health and Nutrition Examination Survey (KNHANES IV-V) in 2008-2011. Subjects were community-dwelling 1,486 men and 1,881 women aged ≥ 65 years. Frequency of food group consumption (meats/fish/eggs/legumes, vegetables, and fruits) was obtained by using the food frequency questionnaire. Aerobic and resistance exercise were based on self-reports. A healthy lifestyle score was calculated as the number of recommended levels of food group

consumption and exercise. Body composition was measured with the dual-energy x-ray absorptiometry. Logistic regression was used to assess the association of lifestyle factors with sarcopenia, controlling for sociodemographics and health-related variables. In women, age at menarche, oral contraceptive use, and hormone use were additionally adjusted. Results: The prevalence of sarcopenia was 9.3% in men and 10.0% in women proposed by Janssen's definition. In men, healthy lifestyle score was inversely associated with sarcopenia after controlling for covariates (odds ratio [OR] = 0.80; 95% confidence interval [CI]; 0.64-0.10). In women, vegetables consumption (OR = 0.51; 95% CI; 0.30-0.86), aerobic exercise (OR = 0.62; 95% CI: 0.39-0.98), and healthy lifestyle score (OR = 0.75; 95% CI: 0.62-0.92) were inversely associated with sarcopenia. Conclusions. Healthy lifestyle factors including food group consumption and exercise may have protective effects on sarcopenia in older adults. Funding: The present study is supported by the Basic Science Research Program through the National Research Foundation of Korea (NRF), funded by the Ministry of Education, Science and Technology (No. 2012R1A1B3002939).

**P55- CARDIOMETABOLIC IMPLICATION OF SARCOPENIA USING TWO DIFFERENT INDICES: THE KOREA NATIONAL HEALTH AND NUTRITION EXAMINATION STUDY (KNHANES) 2008–2010.** K.M. Kim, S. Lim, S.H. Choi, J.H. Kim, C.S. Shin, K.S. Park, H.C. Jang *(Seoul, Korea)*

Background: Shortage of muscle mass or sarcopenia is associated with cardiovascular events or mortality, particularly in elderly persons. However, it is unclear which definition provides better predictions for cardiometabolic risks. We aimed to determine an appropriate operational definition for sarcopenia from the perspective of cardiometabolic disorders. Methods: Using the Korea National Health and Nutrition Examination Survey (KNHANES) 2008–2010 (n = 20,812, ≥20 years old), two different indices, appendicular skeletal muscle mass (ASM) divided by height squared (ASM/ht2) and ASM divided by weight (ASM/wt), were used for defining sarcopenia. Classes I and II sarcopenia were defined as one or two standard deviations, respectively, below the sex-specific means of reference values obtained from adults aged 20–29 years. Results: The prevalence rates of classes I and II sarcopenia based on ASM/ht2 were 18.6% and 3.5% in men and 6.1% and 0.2% in women. The rates based on ASM/wt were 25.1% and 4.7% in men and 23.6% and 5.5% in women, respectively. The rate of metabolic syndrome and insulin resistance status increased with the severity of sarcopenia defined by ASM/wt, but there were opposite associations for ASM/ht2 in both sexes. Subjects with sarcopenia based on the ASM/wt index had higher Framingham 10-year scores and greater risk of cardiovascular diseases, but these relationships were not provided consistently using the ASM/ht2 measure. Conclusions:The ASM/wt definition was more closely associated with metabolic or cardiovascular risk than ASM/ht2. Sarcopenia defined by the ASM/wt is appropriate from a cardiometabolic perspective, particularly in elderly populations. Funding : This study was supported by a a research grant (02-2008-036, 02-2013-051) from the SNUBH.

**P56- MALNUTRITION, POSSIBLY FRAIL PATIENTS HAS RISK OF CLOSTRIDIUM DIFFICILE ASSOCIATED DIARRHEA (CDAD) INFECTION.** Y. Kitagawa *(Obu, Japan)*

Background: Clostridium difficile associated diarrhea (CDAD) is popular digestive disorder among aged personnel. One of the most important factors of CDAD infection is use of antibiotics, however, nutritional status of the patient is poor in general. In present study, the nutrition status in patients with CDAD is explored. Method: From Aug 2010 to Sept 2013, 574 cases was examined Glutamate dehydrogenase (GDH) using EIA method for identification of Clostridium difficile (CD) toxin. In these cases, 87 cases were diagnosed as CD toxin positive. 25 cases were elucidated multiple examinations within these cases, and 62 patients were identified as having CDAD. The nutritional status and other related factors with CDAD in these 62 patients were explored. Results: The mean age of the patients were 82.7, and 40 male and 22 female were identified. The prior infectious diseases were found in 56 patients. As for co-morbidity, dementia was revealed in 33 patients, cerebral infarction was disclosed in 18 patients and other neurological diseases were found in 11 patients. Antibiotics use within a week prior to the CDAD diagnoses was revealed in 54 patients. The mean and median Barthel index as ADL indicators were 17.38 and 5, respectively. The mean body mass index, Prognostic Nutrition Index (by Onodera) and Geriatric Nutritional Risk Index were 18.11, 37.25 and 73.89, respectively. The each index of nutrition were dismal than normal limits. Conclusions: Malnutrition, possibly frail patients has risk of CDAD infection. Funding: This study was supported by The Research Funding for Longevity Sciences (24-1) from National Center for Geriatrics and Gerontology (NCGG), Japan.

**P57- LOW BMI IS ASSOCIATED WITH ADVERSE DRUG REACTIONS IN GERIATRIC INPATIENTS.** T. Kojima, S. Ishii, Y. Kameyama, Y. Yamaguchi, S. Ogawa, M. Akishita *(Tokyo, Japan)*

Background: Frailty is known to be a risk for adverse drug reactions (ADR) in elderly patients, along with high age and particular drugs. Whether a component of frailty, such as low BMI, is a significant risk independent of drugs requires further discussion. Methods: All records of inpatients aged 65 years or older who were admitted to the Department of Geriatric, The University of Tokyo Hospital from 1995 to 2010 were reviewed retrospectively. Low BMI was defined as body mass index (BMI) <18.4. ADR was diagnosed by each patient's clinicians in charge. Results: Analytic sample were 1384 patients (male: 51.4%, mean age: 78.1±7.3, mean number of drugs: 6.2±3.8) and ADR was observed in 138 patients (9.97%). Mean BMI was 22.3±4.2 and low BMI was observed in 17.4%. ADR was significantly associated with the number of drugs, number of comorbidity, and low BMI on univariate analysis. On logistic regression analysis, ADR was significantly associated with low BMI ($p<0.05$, odds ratio 1.85) and number of drugs ($p<0.05$, odds ratio 1.08/drug) when adjusted for age, sex, Barthel index at discharge and number of comorbidity. Comparable result was obtained when 939 patients who were 75 years or older (male 47.2%, mean age: 81.9±5.1, mean number of drugs: 6.4±3.8, low BMI: 19.7%, and ADR 10.0%) were analyzed on univariate and multivariate analysis. Conclusions: Low BMI is associated with adverse drug reactions in geriatric inpatients. More considerable attention is required in drug prescription among elderly patients with frailty, especially those with low BMI.

**P58- HIGH C-REACTIVE PROTEIN (CRP) LEVEL AND ITS IMPACT IN FRAILTY.** M.S. Khater, M.I. Mohamad *(Cairo, Egypt)*

Background: Frailty is an important geriatric syndrome that is characterized by multisystem dysregulation, leading to decreased physiological reserve and increased adverse health outcomes. It has been postulated that inflammatory state may play an important role in the pathogenesis of frailty, directly or through its influence to other physiologic systems. Moreover, certain inflammatory cytokines play an important role in the pathogenesis of osteoporosis. Objective: to evaluate easily detectable inflammatory markers; namely WBC count and CRP level; in frail elderly. Methods: 150 elderly subjects were involved in this study and were divided into frail (n=50), pre-frail (n=50), non-frail (n=50) based in SOF index. Measurements: Comprehensive geriatric assessment, anthropometric measurements,; Hand grip strength measurement; Study of Osteoporotic Fractures (SOF) frailty index; Bone mineral density (BMD) measurement, Detection of c-reactive protein (CRP) and white blood cell count(WBC) in blood. Results: Our frail subjects had the highest CRP level and WBC ($P<0.05$). CRP level, not WBC, was not affected by co-morbid diseases. Multi-regression analysis revealed that Waist to hip ratio (W-H), mid arm circumference (MAC), hand grip, and femoral bone mineral density (BMD) were significantly affected by CRP. Discussion: Frail elderly had active inflammatory status. Elevated CRP in these frail subjects had negative impact on muscle state which indirectly affects BMD. After exclusion of acute infection, CRP may be a simple, easy inflammatory marker which be used in follow up of frail elderly at risk of developing osteoporosis. Funding: No funding

**P59- CARDIAC DYSRHYTHMIA IN PATIENT WITH FRAILTY SYNDROME.** H. Korshun *(Saint-Petersburg, Russia)*

The importance of the study. Elder patients represent the major part of all cardiological patients. The frailty syndrome, a relatively novel clinical entity, needs to be considered when managing this population. The goal of the study. To study cardiac dysrhythmia in elder patients with the frailty syndrome and to develop the ways to improve the treatment outcomes in this population. Materials and methods. Retrospective cohort study to analyze the prevalence and types of cardiac dysrhythmia in patients with the frailty syndrome in different age groups. Review of current treatment options and outcomes to develop comprehensive ways to manage cardiac dysrhythmia in patients with the frailty syndrome, followed by prospective controlled study of this newly developed therapy to evaluate its effectiveness. Results. We have characterized different types of cardiac dysrhythmia in elder patients with the frailty syndrome, compared cardiac dysrhythmia in elder patients with and without the frailty syndrome as well as in patients with different comorbidities and treatment options. We have developed optimal therapies to manage cardiac dysrhythmia in patients with the frailty syndrome and provided scientific background for such therapies. Conclusion. The results of our study allowed to develop and improve management of dysrhythmia in patients with frailty syndrome.

**P60- ASSOCIATION OF MUSCLE STRENGTH, POWER AND OPTIMAL SHORTENING VELOCITY WITH FUNCTIONAL ABILITIES OF WOMEN WITH CHRONIC OSTEOARTHRITIS.** J. Kostka, J. Czernicki, T. Kostka *(Lodz, Poland)*

Background: In available literature there are no studies assessing the association of muscle strength, power and optimal shortening velocity (υopt, i.e. velocity at which a muscle obtains its maximal power) with functional performance gains obtained through a commonly prescribed multi-modal exercise training. Methods: We assessed the relative association of quadriceps muscle strength and power as well as υopt to physical functioning in 28 women aged 50-87 years with chronic osteoarthritis participating in a 3-week multi-modal exercise program. Quadriceps muscle strength, power, υopt and functional performance using the Activities of Daily Living scale, Timed Up & Go test (TUG), Tinetti test and 6-Minute Walking test (6-MWT) were assessed pre- and post-rehabilitation. Results: With rehabilitation, patients improved the values of strength, power and the results of all functional tests. Both at baseline and post-rehabilitation functional status was more strongly related to power and υopt than to strength. Functional gains obtained with rehabilitation were not related to changes in power or υopt, and only very modestly related to changes in strength. Conclusions: Quadriceps muscle power, optimal shortening velocity, and to a lesser extent, knee extensor muscle strength are associated with functional status of middle-aged and older women with osteoarthritis. Improvements in functional status after a three-week multi-modal rehabilitation program are only moderately related to increased muscle strength and not related to changes in power or velocity indices. As best results were predicted by lower baseline values, the patients with the lowest ADL, Tinetti and 6-MWT values should be the primary target for rehabilitation as well as for future studies. Funding: This study was supported by grant 503/6-077-01/503-01 from the Medical University of Lodz.

**P61- PREVALENCE OF SARCOPENIA IN ELDERLY WOMEN ACCORDING TO THE EUROPEAN CONSENSUS DEFINITION.** R. Krzymińska-Siemaszko, N. Czepulis, J. Witowsk , K. Wieczorowska-Tobis *(Poznan, Poland)*

Background. Little is known about the prevalence of sarcopenia in Poland. Thus, the aim of the study was to assess its frequency in the community living elderly women in one of largest cities in Poland (Poznan) based on The European Working Group on Sarcopenia in Older People (EWGSOP) diagnostic criteria. Methods. The studied group included 350 women aged from 60 to 88 (mean 71.27 ± 7.13 SD). Low muscle mass was defined with the Appendicular Lean Mass index (measured with BIA) below the mean minus 2 SDs of the value for young healthy women (n = 350, aged from 18 to 30). Sarcopenia was identified if low muscle mass was accompanied by low muscle strength (average hand grip < 20kg) or low performance (Timed Up & Go Test (TUG) > 14 s or 4-m walking speed test <0.8 m/s). In case when only low muscle mass was observed, presarcopenia was diagnosed. Results. Low muscle mass had 18 (5.14%) participants, low muscle strength 88 (25.14%) and low performance: 9 (3.69%) women in case of TUG test (only 244 elderly women underwent TUG test) and 12 (6.52%) women in case of 4-m walking speed test (only 184 women underwent that test) and 4 (2.17%) women in case of both tests. Presarcopenia was present in 18 women (5.14%) and sarcopenia had only 8 women (2.29%). Women with sarcopenia were on average older (p>0,05), shorter (p<0,05), weighed less (p<0,001), had lower fat mass (p<0,001) than women without sarcopenia. Conclusion. The present study suggests that prevalence of sarcopenia among elderly Polish women is lower than in other countries. The cause of it need to be clarified. Funding: This study was sponsored by the grant no. RG 5/2012 obtained from NUTRICIA Foundation

**P62- USE OF ANTHROPOMETRIC MEASUREMEMTS AND MNA-SF TO PREDICT PHYSICAL ACTIVITY AND MUSCLE STRENGTH IN HOSPITALIZED ELDERLY PEOPLE.** Y. Kuroda *(Nagasaki, Japan)*

Background: One problem in the evaluation of sarcopenia and associated risk factors in hospitalized elderly people is the lack of feasible assessment method. Anthropometric measurements are assuming growing importance for the clinical assessment of nutritional health and sarcopenia in frail elderly people. Mini Nutritional Assessment Short-Form (MNA-SF) is also a feasible tool to assess nutritional risk in elderly people. The aim of this study was to evaluate the potential of anthropometric measurements and MNA-SF for predicting physical activity and muscle strength in hospitalized elderly people. Methods: The participants of this study were 73 elderly patients admitted to an acute hospital and had nutritional risk ("malnutrition" or "at risk" by MNA-SF), consisting of 26 men and 47 women with a mean age of 83.6 (SD 7.7) years. Anthropometric measurements included mid-upper arm circumference (MUAC), calf circumference (CC), and mid-arm muscle circumference (MAMC). MNA-SF score was used to assess nutritional status. Physical activity was assessed using a 6-point rating scale ranging from 0 (completely bedridden) to 5 (able to walk without assistance). Muscle strength was measured by hand-grip strength for only 26 participants.Results: The means (SDs) of MUAC, CC, MAMC, and MNA-SF were 19.7 (3.4) cm, 25.0 (3.7) cm, 17.8 (2.8) cm, and 5.3 (2.9), respectively. Physical activity scores were significantly correlated with MNA-SF (rs = 0.61), CC (rs = 0.55), but not with MAMC (rs = 0.19) or MUAC (rs = 0.13). The hand-grip strength was significantly correlated with MAMC (r = 0.76), MUAC (r = 0.74), CC (r = 0.70), and MNS-SF (rs = 0.49).Conclusions: Physical activity of the participants was best predicted by MNA-SF, while muscle strength was best predicted by MAMC. These results suggest that the combination use of MNA-SF and MAMC may be useful in predicting sarcopenia and associated risk factors in hospitalized elderly people. Funding: The present study received no financial support.

**P63- THE POWER OF THE MIND: THE MOTOR CORTEX AS A CRITICAL DETERMINANT OF MUSCLE STRENGTH/WEAKNESS.** T.D. Law, B.C. Clark, R.L. Hoffman, N.K. Mahato, M. Nakazawa, J.S. Thomas *(Athens, USA)*

Background: Muscle weakness predisposes seniors to a 4-fold increase in functional limitations. It was historically believed that weakness was due to muscle wasting, but recent data suggests that neurological factors are key contributors to weakness. We tested the hypothesis that the primary motor cortex (M1) is a critical determinant of muscle strength and voluntary (neural) activation (VA) and that high level of intracortical inhibition are an important neurophysiologic factor regulating force generation of muscle. Due to difficulties in conducting longitudinal studies of muscle weakness in seniors, we used an experimental model of immobilization to induce weakness in healthy adults. Methods: A group of young adults (n=15) underwent 4-weeks of wrist-hand immobilization to induce weakness. Another group (n=14) also underwent 4-weeks of immobilization, but they also performed mental imagery (MI) of strong muscle contractions five days/wk. MI has been shown to activate cortical areas involved with motor behaviors (e.g., M1). A control group (n=15), who underwent no interventions, also participated in this study. Before, immediately after and one-week following immobilization, we measured changes in wrist flexor strength, VA, and the cortical silent period (SP; a measure generally thought to reflect intracortical inhibition quantified via transcranial magnetic stimulation). Results: Immobilization decreased strength 45.1±5.0%, impaired VA capacity 23.2±5.8%, and prolonged the SP 13.5±2.6%. MI training, however, attenuated the loss of strength and VA by ~ 50% (23.8±5.6% and 12.9±3.2% reductions, respectively), and also eliminated prolongation of the SP (4.8±2.8% reduction). We observed significant associations between the percent changes in muscle strength and VA (r=0.56) and SP duration (r=-0.39). Conclusions: These findings suggest that neurological mechanisms arising at the cortical level are a substantial contributor to disuse-induced weakness, and that regular activation of the motor cortical regions via MI attenuates disuse-induced losses in strength and VA by maintaining normal levels of inhibition. Funding Source: This work was supported in part by grants R15HD065552 to Clark BC and R01AT006978 to Clark BC and Thomas JS from the National Institute of Health.

**P64- ASSOCIATION OF CIRCULATING LEVELS OF IGF-1 AND IGFBP3 WITH MUSCLES QUALITY AND PHYSICAL FUNCTION IN OLDER MEN: PRELIMINARY RESULTS.** J.-P. Leduc-Gaudet, C.H. Pion, S. Barbat-Artigas, M. Bélanger, G. Gouspillou, J.A. Morais, P. Gaudreau, M. Aubertin-Leheudre *(Montréal, Canada)*

Introduction: Normal aging is associated with changes in body composition (i.e. fat gain/ muscle loss) potentially leading to lower muscle strength and physical functioning. Aged-related muscle atrophy is associated with decreased circulating levels of total insulin-like growth factor (IGF)-1 and IGF binding protein 3 (IGFBP3). However, the association of higher level of IGF-1 and IGFBP3 with higher muscle strength and functional capacities in elderly people remains controversial. Objective: The aim of the present study was to examine the association between serum levels of total IGF-1, its binding protein 3 (IGFBP3) and their molar ratio (IGF-1/IGFBP3) with muscle quality and functional capacity in autonomous older men. Methods: Circulating levels of IGF-1 and IGFBP3 were measured in 37 older men (age: 60±5yrs; BMI: 20±3kg/m$^2$) by ELISA (R&D Systems). Body composition was estimated using Dual Energy X-ray Absorptiometry while knee extension strength (KES) was determined from one maximal repetition evaluation. Muscle quality was defined as the ratio of KES per unit of appendicular lean body mass. Functional capacity was assessed using 4-meter walking speed, the timed up and go (TUG), the chair stand, the alternate step and the unipodal balance tests. Daily energy expenditure (DEE) was measured using Armband Senswear (7-days). Results: IGF-1/IGFBP3 was significantly associated with gait speed (r = 0.42, p = 0.031), and the TUG score (r = 46, p = 0.017) after controlling for DEE. No relationship between blood biomarkers and muscle quality was observed. Conclusion: The results suggest that the molar IGF-1/IGFBP3 ratio is associated with some measures of functional capacity. Additional data will be needed to determine the impact of circulating IGF-1 and IGFBP3 on muscle quality in aging, including gender differences. Fundings: This study was supported by the Quebec Network for Research on Aging/Fonds de recherche du Québec-Santé to MAL, JM and PG. SBA and JPLG hold a studentship from the Canadian Institutes of Health Research.

**P65- SARCOPENIA AND SARCOPENIC OBESITY IN CHILEAN OLDER PEOPLE.** L. Lera, C. Albala, B. Ángel, H. Sánchez, Y. Picrin, M.J. Hormazabal, A. Quiero *(Santiago de Chile, Chile)*

Background: Sarcopenia, namely the age-associated progressive loss of mass, muscle-strength and quality, has several negative effects on older adults 'health The high frequency of obesity in this group suggest that the joint presence of these two conditions is a major risk for elderly. Objective: To determine the frequency of sarcopenic obesity in older adults. Methods: 440 community dwelling, no-disabled subjects ≥60 years (mean ± SD: 68.9±6.0 years 66.4% female) living in Santiago, participating in ALEXANDROS study. Anthropometric measurements, handgrip strength, mobility and physical performance tests and DEXA were performed. Appendicular skeletal muscle mass index (SMI), was calculated as the ratio of appendicular skeletal lean mass (ASM) and height2 (kg/m2). Sarcopenia was defined using the 20th percentile (p20) of SMI calculated on a sample of 565 subjects (ALEXANDROS study) (SMI men: 7.19; SMI women: 5.77). Sarcopenic obesity was defined as ≥p60 of % fat mass (FM) (men: 32; women: 44) and ≤p20 of SMI. Nutritional status, obesity and abdominal obesity were defined according to WHO; Results: The 33.9% of older people were obese and 51.0% had abdominal obesity. The 25.2% (95%CI: 21.2-29.6) of the subjects had sarcopenia, similar in men and women (men: 27.0; women: 24.3; p=0.536). There is a decreasing trend of sarcopenia with nutritional status: BMI 18.5-24.9: 67.6%; BMI 25-29.9: 25.2 % and BMI ≥30: 4.5% (p<0.001). The 6.6% (95% CI: 4.5-9.3) of participants were sarcopenic obese (≥p60 of FM and ≤p20 of SMI), men: 8.1% and women 5.8% (p=0.36). From the total of obese participants only 3.4% (95%CI: 1.1-7.7) met the criteria for sarcopenic obesity. 6.7% (95%CI: 3.8-10.8) of sarcopenic obeses had abdominal obesity. Conclusions: In this cohort of older adults, the obesity is mainly non-sarcopenic (96.6%; 95%CI: 92.3-98.9). Other studies in younger cohorts are necessary to assess the effect of the cohort 'demographic origin. Funding: The present study is supported by Fonis SA12I2337 and Fondecyt 1080589

**P66- ASSOCIATIONS OF FRAILTY AND FUNCTIONAL STATUS IN ELDERLY PATIENTS WITH TYPE 2 DIABETES.** Y. Li, S. Wang, J. Li, X.F. Jing, M.X. Yang, L.X. Wang *(Sichuan, China)*

Background: Frailty and diabetes are common among older people. The objective of this study was to investigate the relationship between frailty and functional status in elderly patients with type 2 diabetes in Southwest China. Methods: The study was a cross-sectional study of 151 type 2 diabetes mellitus patients aged≥60 years . Frailty was assessed with FRAIL scale ( Fatigue, Resistance, Ambulation, Illnesses and Loss of weight). FRAIL scale scores range from 0-5 (1 point for each component) and represent frail (3-5), pre-frail (1-2), and healthy (0). Mini-Mental Status Exam (MMSE) was used to assess cognitive function. Functional status was determined by activities of daily living (ADLs), instrumental activities of daily living (IADLs) and Timed ' Up and Go' Test (TUG). Results: Of the total 151 patients (median age 80 (IQR:74-84) years, 77.5%

female), 36.4% were pre-frail and 17.2% were frail. There was no significant HbA1c difference between frailty categories. Frail patients had worse cognitive function than healthy or pre-frail patients. After adjusting for age, gender and cognitive function, both being frail and pre-frail were significantly associated with more IADL difficulties, ADL difficulties and TUG inability. Conclusion: Frailty according to FRAIL scale was related to functional status in geriatric patients with type 2 diabetes.

**P67- EFFECT OF A MUSCULAR STRENGTHENING PROGRAM IN SARCOPENIC ELDERS: A CLINICAL TRIAL.** L.P. Lustosa[1], D.A.G. Pereira[1], R.C. Dias[1], J.M.D. Dias[1], A.N. Parentoni[2], L.S.M. Pereira[1] *(1. Belo Horizonte, Brazil; 2. Diamantina, Brazil)*

Background: The European Consensus of Sarcopenia (ECS) advocated an algorithm for sarcopenia, using as discriminatory variables the gait speed (GS) and the handgrip strength (HS). Objective: To investigate the effect of muscular training on the functional capacity, muscle strength, and plasma levels of inflammatory mediators, comparing "non sarcopenic" elders (NS) and "at risk of sarcopenia" (RS), divided according to the algorithm of the ECS. Methods: The participants were women (≥ 65 years), sedentary e with GS > 0.8m/s. It were excluded surgeries and/or fractures of the lower limb; dependent gait; neurological and acute inflammatory diseases; cognitive alterations. They were divided in accordance to the sarcopenia algorithm (ECS) in NS (GS> 0.8m/s e HS > 20kgf) and RS (GS> 0.8m/s e HS ≤ 20kgf). They performed muscle training with load (75% of 1RM) (3t/ week; 10 weeks). It was evaluated functional capacity (Timed up and go – TUG); muscular strength of knees extensors (dynamometer Byodex System 3 Pro®); plasma levels of IL-6 and sTNFr1 (ELISA, R&D Systems). Comparisons were made through ANOVA (post hoc of Bonferroni) and qui-square analysis (α= 0.05). Results: 32 elders participated, being 14 RS (72.7 ± 0.9 yrs.) and 18 NS (71.4 ± 1.1 yrs.). It was detected significant within-group changes (F= 161.8; p= 0.001). RS showed improvement in the GS (p= 0.017) and HS (p= 0.022). NS showed improvement in the TUG (p= 0.001). Other analyses were not significant (p> 0.05). After training, four elders once classified as RS became NS (p= 0.001). Discussion and conclusion: There was not an improvement of the muscular strength and of the inflammatory mediator levels, in both groups. RS demonstrated improvement in the functional capacity, even switching categories after training. This results point to the need of longer muscular trainings in order to provide changes in other variables involved in sarcopenia.

**P68- MULTIDIMENSIONAL OR PHYSICALFRAILTY: ASSESSMENT OF FRAILTY AMONG MALAYSIAN ELDERS IN AN URBAN PRIMARY CARE SETTING.** J. Sathasivam, S. Kamaruzzaman, F. Hairi, C.W. Ng *(Kuala Lumpur, Malaysia)*

Background: Population ageing is gaining momentum globally with improvements in healthcare systems and delivery, declining fertility rates and higher socio-economic development. Most developed countries have had decades to adjust to this change which has been supported by relative economic prosperity. In contrast, the ageing of populations in developing countries is moving at a much faster rate with far less well developed infrastructure. The lower income countries therefore have far less time to prepare themselves for health problems that arise with increasing age. The detection,treatment and prevention of frailty is one of many strategies to face the challenge of population ageing. This study helps to add to the body of evidence on prevalence of frailty and its correlates in a multi-ethnic population. Methods: The data is from a cross sectional study involving 400 community dwelling elderly citizens randomly sampled from a cohort of patients attending primary care clinics in an urban district in Malaysia. Prevalence of frailty and pre-frailty were estimated and logistic regression measures were done to analyse factors significantly associated with levels of frailty. Results: The multidimensional Frailty Index detected 31.6% frail and 32% pre-frail elders in the population and the Fried's physical frailty measure obtained 8.3% physically frail and 58.5% prefrail. Physical status, visual status, hearing defects, comorbidities, respiratory symptoms, and psychological symptoms were positively associated with increasing levels of frailty after controlling for socio-demographic factors. Self-reported exhaustion, weight loss and physical exercise were significantly associated with physical frailty in both the pre-frail and frail categories. Conclusions: The prevalence of frailty and pre-frailty levels which are comparable to international data has broad implications for public health measures specific for elderly care in Malaysia. On-going longitudinal studies will enable policy makers to design targeted interventions and preventive measures for these individuals. Funding: The present study is self-funded and has no conflicts of interest.

**P69- KINEMATICS ANALYSIS OF GAIT IN SARCOPENIC ELDERLY: FIBRA-RJ STUDY.** V.O.B. Cezario, F.M. Malini, J.M.M. Brasil, M.A.S. Sanchez, R.A. Lourenço *(Rio de Janeiro, Brazil)*

Background: Sarcopenia can be characterized by loss of muscle mass with consequences in the functionality of the elderly and measuring by DEXA is considered the gold standard in this assessment. It can also be helpful in daily practice the assessment through physical and functional measures and the gait parameters could be used with this purpose in the elderly to identify functional consequences of sarcopenia. Objective: To determine which gait parameters discriminates the elderly with sarcopenia. Methods: 270 individuals of the study FIBRA-RJ database, residents of the city of Rio de Janeiro, and clients of a healthcare operator were evaluated. To evaluate muscle mass decrease it was used DEXA, considering sarcopenia below the 20 percentile. Kinematics analysis of gait was evaluated using GaitRite®, a computadorized mat. The following parameters were assessed: stride and step length, support base, swing and stance time, single and double support time and walking speed. For statistical analysis, descriptive characteristics were calculated, and to test the difference in means of the gait parameters of sarcopenic and non sarcopenic unpaired t test with unequal variances was used. Significance level was 0.05. Results: 54(20%) presented a decrease in muscle mass. Of those, 38(14.1%) were females and 15(5.6%) males; 15(5.6%), 30(11.1%) and 9(3.3%) in the age 65-74, 75-84 and >85 years respectively; 33(12.2%) were whites; 24(8.9%) with 6 to 11 years of education; 19(7%) lived alone; 20(7.4%) were widowed, 30(11.1%) had fear of falls and 51(18.9%) were engage in physical activity. Among the gait parameters, the length of the support base ($p < 0.01$) and double stance time ($p < 0.05$) discriminated those with and without sarcopenia. Conclusion: The findings of this study contribute to knowledge that the gait parameters can be indicators of sarcopenia, being an assessment of lower cost and easier in order to help in decision-making in rehabilitation programs.

**P70- ASSOCIATION BETWEEN SKELETAL MUSCLE HISTOMORPHOMETRIC INDICES AND BODY COMPOSITION IN MEN WITH AGE-RELATED SARCOPENIA.** A. Mastaviciute, V. Alekna, M. Tamulaitiene *(Vilnius, Lithuania)*

Background: Sarcopenia is important cause of frailty,disability and loss of independence in the elderly. There are not sufficient data about muscle fiber composition and morphology in elderly men with sarcopenia. The aim of the study was to analyze the associations of histomorphometric indices of skeletal muscle with body composition in men with age-related sarcopenia. Methods: This is a cohort study on men aged 70 years and more. Total fat mass, lean mass, bone mineral density were estimated by dual-energy X-ray absorptiometry (iDXA, GE Lunar). Sarcopenia was defined as appendicular skeletal muscle mass divided by stature squared <7,26 kg/m2. Skeletal muscle needle biopsy (16 gauge ) was taken to analyse possible morphological and histochemical changes in myocites. Biopsies were frozen and stored in liqued nitrogen, then sections made in cryostat. Stainings with hematoxyllin/eoozin (H/E), Oil-red-O (ORO), Acid phosphatase (AF), cytochromoxydase/succinildehidrogenase (COX/SDH), adenozyne triphosphatase (ATP) were maden. Results: Thirty skeletal muscle microbiopsies were performed on sarcopenic men. On average, the sample was chosen for further analysis of 100 fibers. Average fiber length - 180.8 $\mu$m. The average fiber cross-sectional area is 2110 ± 125.6 μm2. It was found that mean fiber cross-sectional area is significantly positively associated with total body lean mass (r=0.86, p=0.02), leg muscle mass (r=0.84, p=0.03) and weakly with total hip BMD (r=0.08, p=0.05). It was found that 4 m walking time is negatively related to mean cross-sectional fiber area (r=-0.65, p=0.019). Muscle strength and balance are not significantly related to cross-sectional fiber area in age-related sarcopenia. There is no significant correlation between fiber type and body components or physical performance. Conclusion: Our findings demonstrate that cross-sectional area of muscle fiber of musculus vastus lateralis is positively associated with lean mass and leg muscle mass and negatively associated with 4 m walking time in men with age-related sarcopenia.

**P71- CLINICAL FRAILTY SCORE ASSOCIATED WITH SUBJECTIVE AND OBJECTIVE MEASURES OF PHYSICAL ACTIVITY.** A.S. McNelly, J. Rawal, P. Chan, N. Hopkinson, J. Moxham, S.D.R. Harridge, N. Hart, H. Montgomery, Z.A. Puthucheary *(London, United Kingdom)*

Background: Functional impairment and frailty frequently occur in Intensive Care Unit (ICU) survivors. We sought to assess their prevalence and relationship to subjective and objective measures of physical activity (PA). Methods: Subjects were ICU survivors drawn from the 63 participants in the Musculoskeletal Ultrasound Study in Critical Care: Longitudinal Evaluation ('MUSCLE') Study. All were aged >16 years and had been invasively ventilated for >48 hours, with an ICU stay >7days. Objective (SenseWear Pro accelerometers, BodyMedia Inc, Pittsburgh, US) and subjective PA levels (from health-related quality of life questionnaire, SF-36) (QualityMetric Inc, Lincoln, US) were assessed at a mean of 18 months post-ICU discharge. Frailty was scored using the Clinical Frailty Scale (CFS), a 9-item scale which correlates with a 70-item assessment of frailty. Results: CFS scores ranged from 1-9 ('Very Fit'-'Terminally Ill'), median = 4 ('Vulnerable'). Strong, inverse relationships between CFS (Time Post Discharge (TPD)-adjusted/unadjusted) and several SF-36 domains were observed, e.g. TPD-CFS versus physical function (PF) and vitality (Spearman's rank correlation coefficient, rho=-0.71,-0.55;$p<0.01$). Similar associations were apparent between TPD-adjusted daily steps and adjusted/unadjusted CFS (rho=-0.64,-0.49;$p<0.05$). Hierarchical Multiple Regression indicated that age and TPD contributed 7% to variation in CFS, whereas Physical Component Summary (PCS), daily steps, length of stay and chronic disease explained an additional 62% of variance in CFS, with PCS and daily steps making the greatest unique contributions ($\beta$=0.48;$p<0.01$:0.35;NS). Area Under Receiver Operating Characteristic analysis (AUROC) showed that CFS is an excellent predictive test for functional ability (AUROC for daily steps and PF, 0.88:$p<0.005$;0.995;$p<0.0005$). Conclusions: Frailty in the critically ill, as quantified by CFS, can successfully predict patient-related outcomes, such as domain scores from the HRQOL questionnaire, SF-36, and daily physical activity. PCS (from the SF-36) was the largest contributor to CFS variation. The present study is supported by The National Institute for Health Research (ZP), and the Batchworth Trust (AM).

**P72- SARCOPENIA AND SARCOPENIC OBESITY AMONG MEN AGE 80 YEARS AND OLDER IN BEIJING: PREVALENCE AND IT ASSOCIATION WITH FUNCTIONAL PERFORMANCE.** P. Meng[1], Y.-X. Hu[1], L. Fan[1], Y. Zhang[1], M.-X. Zhang[1], J. Sun[1], M. Li[1], L.-K. Chen[2] *(1. Beijing, China; 2. Taipei, Taiwan)*

Background: Sarcopenia and sarcopenic obesity are significant associative factors for functional impairment related to aging. The main aim of this study was to investigate the prevalence of sarcopenia and sarcopenic obesity and their associations with functional status among men age 80 years and over in Beijing. Methods: A total of 75 young healthy volunteers and 101 older men aged 80 years and older participated in this study. Demographic characteristics, anthropometry, skeletal muscle mass measured by dual x-ray absorptiometry (DXA), 6-meter walking speed, and handgrip strength were collected. Relative appendicular skeletal muscle index (RASM) and percentage skeletal muscle index (SMI) were obtained. Results: Overall, the prevalence of presarcopenia and sarcopenia was 49.4% and 23.6% by using RASM, respectively. Among sarcopenic subjects, 7.9% were classified as severe sarcopenia. By the weight-adjusted skeletal muscle index definition (SMI), the prevalence of presarcopenia, sarcopenia , severe sarcopenia and and total sarcopenia was 62.8%,14.0% , 9.3%, 23.6%, respectively. The prevalence of sarcopenia obesity was lower by using RASM than SMI (8.1% vs 19.4%, $p<0.05$). When compared the sarcopenia prevalence (%) in obese participants, it was also remarkably lower by using RASM(42.1%) than SMI (100%). By using either RASM or SMI, walking gait speed were of no sigfinicant difference among the pure sarcopenia group,pure obese proup and sarcopenia obesity group(0.76± 0.27 vs 0.82± 0.37 vs 0.82± 0.27,$p>0.05$, by RASM ), (0.75± 0.25 vs 0.92± 0.27 vs 0.82± 0.35 m/s, $p>0.05$ by SMI),respectively. Multiple linear regression analyses revealed thigh skeletal muscle mass was positively correlated with gait speed indipendently ($\beta=0.221$, $p=0.011$), total body fat ($\beta=-0.216$, $p=0.002$) and age ($\beta=-0.524$, $p=0.000$) were negatively correlated with gait speed indipendently. Conclusion: Presarcopenia are highly preva¬lent among older Chinese men age 80 years and older. Functional limitations were significantly associated with older age, high skeletal muscle mass, and total body fat. Funding: This study was supported by Military Healthcare Grants of China(12BJZ40).

**P73- THE IMPACT OF DISTRIBUTION OF PROTEIN AND ENERGY INTAKE ON THE MUSCLE MASS OF OLDER PEOPLE. AN INVESTIGATION IN THE CONTEXT OF THE BERLIN AGING STUDY II (BASE-II).** J. Nikolov, K. Norman, I. Demuth, E. Steinhagen-Thiessen, R. Eckardt *(Berlin, Germany)*

Rationale: Equal distribution of energy and protein intake has been suggested as a preventive measure to preserve appendicular muscle mass (ASM) in elderly people. (25-30 g of high quality protein per meal) (Paddon-Jones 2009). Methods: The appendicular muscle mass was determined by dual-energy X-ray absorptiometry. A 5-day dietary protocol was used to investigate the intake of energy and protein. Results: A sample of 133 subjects (96 male; 37 female; 68 years SD3.7) was included in the analysis. The mean daily energy and protein intake was 24.5kcal/kg or 0.97g/kg in men and 28.2kcal/kg or 1.08g/kg in women. The average BMI of all subjects was 27 kg/m$^2$ (SD4.4) 1.5% was underweight, 35.3% normal, 44.4% overweight and 18.8% obese. The energy and protein uptake was distributed as follows: breakfast (6.2 kcal/kg; 0.24g/kg), lunch (11kcal/kg; 0.44g/kg), and diner (14kcal/kg; 0.5g/kg). The energy and protein intake differed significantly between main meals ($p<0.001$). The total amount of protein of the single meals was 20g (SD13) (breakfast), 33g (SD11) (lunch), and 39g (SD15) (dinner). There were no significant differences between the sexes. The average appendicular muscle mass was 23.7kg (SMI=7.6kg/m$^2$) in males and 15.8kg (SMI=6kg/m$^2$) in females. There were no significant differences with regard of ASM, for subjects (male and female) whose protein intake was less than 30g per meal (breakfast 22 vs. 21, lunch 20 vs. 21, dinner 20 vs. 22 kg). Conclusion: Energy and protein intake was unevenly distributed between the main meals which indicates that an equal distribution might not be necessary to preserve the muscle mass of elderly people, provided that sufficient protein intake is available.

**P74- THE IMPLICATIONS OF BODY MASS INDEX (BMI) AND MALNUTRITION UNIVERSAL SCREENING TOOL (MUST) SCORE IN REHABILTATION OUTCOMES.** N. Nordin, M. Vassallo, L. Poynter *(Bournemouth, United Kingdom)*

Introduction: While poor nutrition has been shown to have adverse outcomes in stroke patients, the significance in general rehabilitation (non-stroke/ non-orthogeriatrics) needs further understanding. It is important to have an effective rehabilitation programme considering multiple factors including cognitive and nutritional status aiming for improved rehabilitation outcome. Methods: This is a prospective observational study of the association of Body Mass Index (BMI) and Malnutrition Universal Screening Tool (MUST) score with rehabilitation outcome. Data were collected over a 2.5 year period in 2 general rehabilitation wards. All patients had BMI and MUST score calculated. Cognitive function was measured using the Mini Mental State Examination. Comorbidities were measured using the Carlson Comorbidity Index (CCI) Functional ability was assessed using the Barthel score on admission and discharge whilst improvement was evaluated using the difference. Statistical analysis was performed with SPSS. Results: 115 patients (Female: 70) with a mean age of 84.7 (SD: 6.27) were recruited. 80/115 (69.5%) showed an improvement in Barthel. No significant differences in gender, admission Barthel, CCI, or MMSE were identified compared to the group with no improvement. Patients with a MUST ≥2 were less likely to have shown improvement in Barthel (14/35(40%vs.13/80(16.3%)-p=0.008). Patients showing improvement had a significantly higher BMI (24.1 vs 20.9-p=0.003) with the group BMI <20 showing significantly less improvement (14/35(40%)/vs14/80(17%)-p:0.01) remaining significant on Logistic regression (p=0.02). Cox regression analyisis showed MUST <2 had higher rate of improvement in rehabilitation beginning at day 40. Conclusions: High MUST score and a low BMI are both independent variables associated with a poorer rehabilitation outcome. Patients who are nutritionally compromised may not benefit from rehabilitation therapy and further research on the possible benefit of nutrition improvement on rehabilitation outcomes is required.

**P75- FRAILTY PREDICTORS AND LENGTH OF STAY FOR GERIATRIC IN-PATIENTS.** N. Nordin[1], D. Tiwari[1], M.P. Tan[2] *(1. Bournemouth, United Kingdom; 2. Kuala Lumpur, Malaysia)*

Introduction: Frailty results in vulnerability which increases adverse outcomes, such as disability, falls, institutionalization, hospitalization, and mortality. Our average length of stay (LOS) is above national average therefore we wanted to test the hypotheses that frailty is a contributor, and among many frailty indicators recorded routinely during admission if there are any significant predictors. In our pilot study (N=53), we observed that frailty scores such as Barthel and Waterlow are significant predictors of LOS. We have then extended the study to observe the difference. Method: This is a retrospective cohort study of case notes of the patients who were admitted to the geriatric ward at the Royal Bournemouth Hospital. Length of stay as dependent variable was studied for frailty indicators as independent variables; demographics, socio-economic status, mini-mental state examination (MMSE), MUST score, Barthel index, medications, previous falls, elderly mobility score (EMS), co-morbidities AF, CCF, IHD, Waterlow scores ,BMI were recorded and subsequently analyzed. Results: 138 patients were recruited, 52.9% were males and mean age was 85.4 years. 103/138(74.6%) stayed on the ward for more than a week. 18/103 vs 2/35 had a BMI <18.5, p= 0.000, and 25/103 vs 3/35 had a MMSE of < 21, p=0.000.Those who stayed on the ward longer had a low Barthel score. 39/103 vs 11/35 had Barthel <26, p=0.041. 23/103 vs 10/35 had MUST of ≥ 2 (p=0.001), and 42/103 vs 8/35 had a very high Waterlow pressure score(20+), p=0.000.There were no significant difference for cardiovascular diseases, history of falls and EMS in the LOS. There was a 63.6% (21/33) mortality amongst those who scored very low in Barthel (p=0.000). Conclusion: Frailty scores such a Barthel, MUST, Waterloo, BMI and MMSE are significant predictors of LOS. However, no significant correlation was found for cardiovascular diseases and previous falls.

**P76- DOES DIET QUALITY AFFECT APPENDICULAR SKELETAL MUSCLE MASS? AN INVESTIGATION WITHIN THE BERLIN AGING STUDY II (BASE-II).** V.K. Norman, J. Nikolov, I. Demuth, E. Steinhagen-Thiessen, R. Eckardt *(Berlin, Germany)*

Rationale: Selected nutrients or food groups have often been studied in relation to mortality, whereas the relation to appendicular skeletal muscle (ASM) has rarely been researched. Aim of the study was to determine the influence of diet quality on the ASM in community-dwelling older people. Methods: The appendicular muscle mass was determined by dual-energy X-ray absorptiometry. The nutrient intake was determined with the EPIC-Food Frequency Questionnaire. To assess the food quality, we used two diet quality scores: Mediterranean Diet Score (MDS; Trichopoulou et al. 1995) and Healthy Diet indicator (HDI; Huijbregts et al. 1997). Results: A sample of 1077 older subjects (460 male; 617 female; 68 years ±3.6) was included in the analysis. There was no significant difference regarding ASM between seniors consuming a low quality diet (MDS Score: 1-3; ASM 24.2kg (m), 16.5kg (f)), better quality diet (MDS score: 4-5; ASM 23.7kg (m), 16.1kg (f)) or a high quality diet (MDS score: 6-9, ASM 23.9kg ±2.2 (m), 16.4kg ±1.8(f)). ASM was significantly higher in women with higher animal protein intake (energy adjusted 2000 kcal; MDS) (ASM 16.5 ±2 vs. 15.9 ±1.9 kg p=0.003). Likewise according to the HDI significant difference was found with regard to protein intake within the recommended 10-15 energy %; ASM=16.1kg ±1.8 vs. ASM=16.6kg ±1.9 in women ingesting more protein (p=0.01). Conclusion: While overall diet quality according to MDS or HDI was not associated with lower ASM, women consuming less animal protein had significantly lower ASM. The results imply that these diet quality scores might not be suitable to assess the risk for decreased ASM.

**P77- LIPIDOMIC AND PROTEOMIC STUDIES OF FERTILIZED CHICKEN EGG YOLK: THERAPEUTIC IMPLICATIONS FOR SARCOPENIA.** N.D. Padliya[1], K. Green[2], J.D. Leszyk[2,3], S.A. Shaffer[2,3], M. Dariani[1], R.J. Hariri[1] *(1. Cedar Knolls, USA; 2. Shrewsbury, USA; 3. Worcester, USA)*

Background: We have established that fertilized chicken egg yolk [fChEY] contains significant levels of follistatin. The protein, follistatin is a powerful antagonist of myostatin-mediated inhibition of myogenesis. Mass spectrometry has been applied to characterize the fChEY lipidome and proteome to gain insight into other biomolecules that may promote myogenesis and attenuate inflammation thereby reversing sarcopenia. Methods: Lipidomics: Polar lipids were extracted from fChEY powder, spiked with representative standards for phosphatidylglycerols, phosphatidylethanolamines, phosphatidic acids, phosphatidylserines, phosphatidylcholines and sphingomyelins. The extract was analyzed using a high resolution, accurate mass benchtop quadrupole-orbitrap mass spectrometer and data analysis was performed using LipidSearch software. Proteomics: Dehydrated fChEY protein was digested with trypsin, separated on a nanoLC column, ionized and then analyzed by mass spectrometry. Tryptic peptide fragmentation spectra were searched against a Gallus gallus database using MASCOT software (Matrix Science). Results: Inflammatory mediators including IL-6 and markers such as C-reactive protein (CRP) are associated with muscle loss. Pathway analysis software was employed

to ascribe function to 268 Gallus gallus proteins that were identified using mass spectrometry (1.4% FDR). Pathway analysis of the fChEY proteome revealed proteins associated with myogenesis along with anti-inflammatory functions (i.e. hen egg lysozyme, chemerin, cystatin c, thrombin and RGD peptides). These molecules may reduce the risk of muscle loss as sarcopenia is associated with chronic low-grade inflammation. Using purified standards, we also quantified molecules in the phosphatidylglycerol, phosphatidylethanolamine, phosphatdic acid and sphingomyelin classes along with the phosphatidylcholines, phospatidylserines and phosphatidylinositols – three classes of polar lipids with powerful anti-inflammatory activity. Conclusions: Chronic inflammation is regarded as an important causative factor for sarcopenia. Using mass spectrometry-based lipidomics and proteomics, we have identified a number of biomolecules with pro-myogenic and anti-inflammatory activity which may possibly serve to reverse sarcopenia.

**P78- GAIT SPEED AS A PREDICTOR OF RESPIRATORY CAPACITY, MUSCLE STRENGTH AND FRAILTY SYNDROME IN ELDERLY COMMUNITY.** A.N. Parentoni[1], L.P. Lustosa[2], D.A.G. Pereira[2], F.O. Ferreira[1], K.D. Santos[1], L.F. Sá[1], V.A. Mendonça[1] *(1. Diamantina, Brazil; 2. Belo Horizonte, Brazil)*

Background: The gait speed (GS) has been considered a predictor of health outcomes in the elderly, and has been associated to sarcopenia. The decline of muscle strength is also identified in the respiratory muscles, which can lead to decreased lung function. Objective: To verify the impact of GS in the handgrip strength (HGS), in the frailty syndrome and the inhale pressure (PI) and exhale pressure (PE) of elderly community. Methods: It was included women (≥ 65 years), classified with frailty phenotype and evaluated for GS; HGS and PI and PE (Ger-Air, Model MV-150/300). It was excluded: Mini-Exam of Mental State incompatible with schooling; dependent gait; neurological, respiratory or cardiovascular uncompensated diseases; hospitalization in less than three months; acute musculoskeletal condition; use of digoxin. A regression analysis was conducted ($\alpha = 0.05$). Results: 106 elders participated (73.96 ± 6.91 years). 32 were considered non-frail; 42 pre-frail and 32 frail. In the univariated model, it was verified a significance between the variables GS ($R^2 = 0.253$, $p < 0.0001$) and age ($R^2 = 0.091$, $p = 0.002$). The GS was predictive of HGS, having the increased one-point (1m/ s) in the GS corresponded to the increase of 11.42 points (kgf) in HGS. In addition, after controlling the age, the increase of the GS reduced by 100% (OR = 0.001) the probability of the individual to be considered pre-frail or frail. The increase of GS reduced by 88.9% the probability of having PI lower than expected and also reduced by 89% the probability of PE lower than expected for the age (OR = 0.110). Discussion and conclusion: The GS was confirmed to be a predictor of some health outcomes. The results suggest that interventions that may increase the GS can afford better respiratory capacity, muscle strength, and less chance of being a frail elderly.

**P79- FRAILTY SYNDROME AND SEDATIVE LOAD OF DRUGS.** J. Peklar[1,2], A.M. O'Halloran[2], M. Kos[1], M.C. Henman[3], I. Maidment[1], R.A. Kenny[1] *(1. Ljubljana, Slovenia; 2. Dublin, Ireland; 3. Birmingham, United Kingdom)*

Background: Use of sedative drugs has been associated with falls and fractures, cognitive and memory impairment and impaired physical function among community-dwelling older people. However, association between use of sedative drugs and frailty syndrome has not been yet explored. Methods: We studied 1,642 men and 1,804 women aged 65 and over in The Irish Longitudinal Study on Ageing (TILDA), a nationally representative cohort of the community dwelling population aged 50+ years. Frailty syndrome was assessed using Fried's definition of frailty. Cognitive and physical assessment took place at participants' homes and health care centres. Sedative effect of drugs was quantified using the Sedative Load Model. Drug use was recorded during in-home interview. Multinomial regression analysis adjusted for multiple confounders was used to assess the relationship between sedative load and the frailty syndrome. Results: Sedative load was positively associated with being pre-frail (OR=1.31; 95% CI 1.14-1.51) and frail (OR=1.43; 95% CI 1.08-1.90) for each sedative load score. Gender was not significantly associated with the relationship, but age was (OR= 1.10 (95% CI 1.08-1.13) for being pre-frail and OR=1.29 (95% CI 1.21-1.37) for being frail). Other significantly associated variables with both being pre-frail and frail were stroke, ADL, cognitive impairment and self-rated health. Factors associated with being pre-frail alone were diabetes, alcohol consumption and BMI >30 or <18.5. Factors associated with being frail only were arthritis, currently smoking and IADL. Factors not associated with pre-frailty or frailty were education, cardiovascular diseases, COPD/asthma, and loneliness. Conclusion: Use of sedative drugs was positively associated with being both frail and pre-frail. Further longitudinal studies are needed to assess any possible causal nature of the association. Funding: The Irish Longitudinal Study on Ageing (TILDA) is supported by Irish Life; the Department for Health and Children; and by The Atlantic Philanthropies.

**P80- THE SIGNIFICANCE OF MEASURING NUTRITIONAL PARAMETERS AND INTRAMUSCULAR ADIPOSE TISSUE IN THE ASSESSMENT OF SARCOPENIA.** S. Perkisas, M.F. Vandewoude *(Antwerp, Belgium)*

Background: In sarcopenia, muscle mass, strength and functionality are paramount. However, it is not exactly known why the loss of muscle mass is not linearly correlated with muscle strength or functionality. This study investigates the importance of measuring the intramuscular adipose tissue (IAT) and nutritional parameters. Methods: All patients admitted to the geriatrics department (01/08/2012-31/01/2013) were screened for nutritional status, muscle mass/strength and functional capacity by Mini-Nutritional Assessment-Short Form (MNA-SF), (pre-)albumin, a CT-scan of the upper leg, handgrip strength and the short physical performance battery (SPPB). Results: A total of 304 patients was evaluated; 67.1% was female; mean age 83.9 (±6.3) years. Mean muscle mass of the left and right upper leg was 522±210 and 531±219 grams respectively. Mean IAT of the left and right upper leg was 29.3%±13.4 and 29.1%±12.5; range was 3.2-82.7% and 8.5-86.2%. Mean and median (interquartile range) SPPB-score was 3.6±3 and 3 (0;6), for handgrip strength 20.4±19.1kg and 16kg (12;22). Patients with lower values of albumin/pre-albumin had lower total muscle mass ($p<0.05$), SPPB-scores ($p<0.05$) and handgrip measurements ($p<0.05$). Patients with the lowest MNA-SF-scores had lower total muscle mass ($p<0.02$), SPPB-scores ($p=0.006$) and handgrip measurements ($p<0.044$). There was a clear correlation between IAT and hand grip strength ($p=<0.001$) and SPPB-scores ($p=<0.001$).Conclusions: Our findings demonstrate that there is a clear link between muscle mass, strength, functionality and nutritional status. Screening of the latter is important in the evaluation of the malnutrition-sarcopenia syndrome. There is also a strong correlation between muscle mass, strength, functionality and IAT, yet little data on this topic is available. It seems important as in this population a very high percentage of the initially measured lean body mass was actually adipose tissue. More research in this area needs to be done. Funding: There was no funding for this study.

**P81- ATORVASTATIN-INDUCED ACQUIRED MYOPATHY IS WORSENED BY AGING PROCESS IN RAT SKELETAL MUSCLE.** G.M. Camerino, M. De Bellis, M. Cannone, A. Liantonio, K. Musaraj, E. Conte, R. Romano, S. Pierno *(Bari, Italy )*

Background: Skeletal muscle is a target of statin side effects, indeed patients undergoing this therapy complain muscle disorders ranging from myalgia to severe myopathy. Advanced age patients, suffering from senile muscle atrophy and loss of performance, experience an increased risk of statin-induced muscle disorder. We previously demonstrated that statin administration to adult rats reduces resting chloride conductance (gCl) in skeletal muscle. This parameter is sustained by the ClC-1 muscle channel and controls the resting membrane potential and excitability. Indeed, a large reduction of gCl produces myotonic-like symptoms. Resting gCl is also reduced in skeletal muscle of aged rats. Methods: The aim of our study was to investigate whether statin therapy has higher influence on the aging-associated changes in skeletal muscle performance by evaluating the resting gCl, by two-intracellular microelectrode technique and the resting intracellular calcium (restCa) level by FURA-2 in the extensor digitorum longus (EDL) muscle of 6-months-old adult and 29-months-old aged animals chronically treated with 10mg/kg/day atorvastatin. Results: Resting gCl was found to be strongly reduced in the aged treated animals with respect to the adult-treated ones. Indeed, it was 1319±70μS/cm2 (n=42) and 1840±99μS/cm2 (n=45) in treated and untreated aged rats and was 1650±111μS/cm2 (n=27) and 2512±44μS/cm2 (n=16) in treated and untreated adult rats, respectively. Since the restCa was increased by statin in vitro application we evaluated this parameter in EDL muscle of atorvastatin-treated aged rats. No modification of restCa was found between treated and untreated fibers of aged rats suggesting that this parameter was not involved in gCl reduction. To address the causes of gCl reduction we are investigating on the ClC-1 mRNA expression by the real time quantitative PCR analysis. Conclusions: The alteration of gCl may be one of the significant causes of muscle damage in elderly patients under statin therapy.

**P82- EFFECTS OF COMMUNITY LEADERS-LED HEALTH PROMOTING MODEL ON HEALTH PROMOTHING BEHAVIORS OF THE ELDERLY.** D. Plianbumroong *(Bangkok, Thailand)*

Background: Presently, the growth number of elderly population make to occure the social and economy problems because from the degeneration of the elderly. The elderly's health problems can prevent by health promotion behavior. Community leader group is a factor that can support the elderly to care themselves. Method: This quasi-experimental study aimed to examine the effects of health promoting behaviors by among elderly population. 30 elderlies aged 60 years old and above were simple randomly recruited from the elderly live in Tambol Sateng, Muang District, Yala Province. 10 volunteers of the community leaders were trained were selected by the elderly to be trained on the appropriate health promoting behaviors. Each two volunteers were assigned to be counsultant about health promoting behavior for a group of elderly. The data were collected by using health promoting behaviors questionair for the pre test and post test on the 1st week and the 4th week. Data were analyzed by using frequency distribution, percentage and paired t-test. Results: The study result showed that the mean score of the total section of health promoting behaviors of the elderly at the post test phase was statistically significant higher than the mean score at the pre test. Conclusions: This study proved that this testing is an effective intervention that could help improve the health promoting behaviors of thai elderly. The use of this community leader Model for the elderly on health promoting behaviors should be extended to other communities. However, further studies might be needed to study in other group example, peer group, and caregiver group to find the best group for care the elderly. Funding: Praboromarajchanok Institute Health Workforce, Thailand

**P83- REDUCTIONS IN SINGLE FIBER RATE OF FORCE RE-DEVELOPMENT WITH AGING IS NOT ATTENUATED IN WORLD CLASS OCTOGENARIAN MASTERS ATHLETES.** G.A. Power [1], F.C. Minozzo [2], M.E. Filion[2], J.A. Morais[2], M. Aubertin-Leheudre[2], R.T. Hepple[2], D.E. Rassier[2], T. Taivassalo[2] *(1. Alberta, Canada; 2. Montreal, Canada)*

Background: Contractile properties of single muscle fibres are dependent highly upon myosin heavy chain (MHC) isoforms and physical activity level. Interestingly, in old age, contractile function is impaired even when matched for MHC and cross-sectional area

(CSA). Despite indirect evidence suggesting that such impairment may be associated with cross-bridge function, it is currently unknown to what extent cross-bridge kinetics are impaired in old age. We therefore compared cross-bridge function between young and older adults. We also examined world-class masters athletes as individuals with exceptional preservation of muscle function in advanced age. Methods: We biopsied, permeabilized and isolated muscle fibres from the vastus lateralis of young(~23y), older adults(~78y), and masters athletes(~78y). To determine cross-bridge function we measured, using standard procedures in a high [Ca2+] activating solution: specific tension, unloaded shortening velocity, and the rate of force re-development; kTR. To determine kTR, the fiber was activated fully, shortened by 15% with a 10Lo•s–1 ramp, reducing the force momentarily to zero, this was followed by a rapid (500Lo•s–1) re-stretch to the initial length allowing for the dissociation of all cross bridges and force re-development independent of regulatory proteins. Results: Fibre CSA was similar across ages and groups. Specific force was ~50% and ~60% lower in old and masters athletes than young, respectively. Maximal unloaded shortening velocity was ~75% and ~60% lower in both old and masters athletes, compared with young, respectively. The kTR was ~50% lower in both old and masters athletes than young. There were no differences between old and masters athletes in any measurement. MHC analysis of all fibers is ongoing. Conclusions: The lower maximal shortening velocity in both old groups relative to young, coupled with a similarly reduced kTR suggests impaired cross-bridge kinetics are responsible for impaired single fiber contractile properties. These preliminary results appear independent of physical activity level. Funding: This project is funded by CIHR (TT). G.A. Power is supported by the Alberta Innovates Health Solutions Postgraduate Fellowship.

**P84- SARCOPENIA INCREASES THE RISK OF DISFUNCTION OF TEMPOROMANDIBULAR JOINT.** K.I. Prashchayeu[1], I.P. Ponomareva[1], A.N. Ilnitski[1,2], S.I. Matevosian [3] *(1. Moscow, Russia; 2. Belarus; 3. S.-Petersburg, Russia)*

Purpose: to evaluate the influence of frailty on the reserve capacity of the supporting apparatus of teeth. Materials and methods: the main groups of the study - elderly 60-74 years, the average age 67.1+3.5 years in the amount of 58 people (men 45 people, women - 13 persons), persons aged patients 75-89 years, the average age of 81.2+3.1 years in the amount of 126 people (male 56 people, women up to 70 people. The comparison group consisted of patients of middle age 45-59 years, the average age of 49.2+3.4 years in the amount of 42 people (male, 36 people, women, 6 people). The study used the criteria EWGSOP (2009) for the diagnosis of sarcopenia and method gnatodynamometria for revealing functional disorders of the temporomandibular joint (TMJ). Results and discussion: sarcopenia revealed in 68 people of senile age (54%), including 50 men, 18 women. When conducting gnatodynamometria were received the following indicators: for middle age in the field of chewing teeth left - 38,3±2.4 kg, in the anterior region - 33,1±1.8 kg, the area of the back teeth on the right - 39,0±2,0 kg. Elderly patients in the field of chewing teeth left by 30.4±1.8 kg, in the anterior region - 27,4 about 1.6 kg, in the area of the back teeth on the right - 31,1±1.9 kg, the difference between the groups is present fairly significant ($p<0.05$). In the group of persons of old age without sarcopenia the results were the following: in the field of masticatory teeth left - 29,2 about 1.6 kg, in the anterior region of 26.5±1.7 kg, in the area of the back teeth on the right - 29,4 within (2.5 kg, $p<0.05$ compared with patients of middle age. In comparison with the elderly there are no significant differences were revealed. In elderly patients with саркопенией indicators were significantly below: in the field of chewing teeth left - 20,2 within (2.5 kg, in the anterior region - 14,1 to + / -3, 0 kg, in the area of the back teeth on the right - 19,0±2.1 kg, $p<0.05$. Conclusion: Frailty increases the risk of dysfunction of the temporomandibular joint, which exacerbates its forecast. Significantly more often TMJ dysfunction occurs in individuals with sarcopenia. Funding: The present study is supported by Belarusian Association of Gerontology and Geriatrics, Belarus and Researching Medical Centre, Moscow, Russia

**P85- DOES HIP FRACTURE TYPE OR THE METHOD OF SURGICAL REPAIR IMPACT THE LENGTH OF HOSPITAL STAY AND THE ANNUAL RATE OF HOSPITALIZATIONS?** P. Primatesta[1], E. Plana, Y. Zhu[3], L.B.Tankó[1] *(1. Basel, Switzerland; 2. Barcelona, Spain; 3. Shanghai, China)*

Background: Hip fracture continues to pose a major burden on health care systems. Limited population-based data is available on whether length of hospital stay (LoS) and/or the annual rates of hospitalization due to major complications differ depending on fracture and/or surgery type. Methods. Data on 28,771 hip fracture patients aged 65+ (80% females) were analyzed using the linkage of English Hospital Episode Statistics with the Clinical Practice Research Datalink (CPRD). Patients were stratified according to the type of hip fracture (femoral neck (82.5%), pertrochanteric (13.7%), or other/NOS (3.8%)) or the type of fracture repair (total hip arthroplasty (THA, 7.2%), hemiarthroplasty (HA, 48.4%), or other hip fixation (HF, 44.3%). Baseline characteristics such as age, BMI, smoking habit, major co-morbidities, and use of anti-osteoporosis medication were compared between strata. Medians of LoS as well as annual rates of hospitalizations due to falls, injuries, fractures, and venous thromboembolic complications together with mortality rates were calculated for each stratum. Annual incidence of re-hospitalization and the Relative Risk (95% CI) for each outcome were estimated using robust Poisson regression models, adjusting for baseline characteristics. Results. When comparing baseline characteristics THA patients were younger and had lower prevalence of cardiovascular comorbidities and/or cognitive impairment. Median LoS characterizing the two main fracture types (femoral neck fracture: 15 vs. pertrochanteric fracture: 17 days) or the surgical methods (THA: 14, HA: 15 and HF: 16 days) showed no significant differences. Moreover, there were no differences in annual cumulative incidence rates of deaths, overall hospitalizations, hospitalizations due to falls, injuries, fractures or venous thromboembolic complications between strata of either fracture or surgery type. Conclusions. This population-based analysis indicates that the burden of hip fracture on the in- patient care system is not influenced by either the type of the fracture or the surgical procedure chosen for fracture repair. Funding: Novartis Pharma AG.

**P86- ARE ELDERLY WOMEN WITH LOW BMI AT HIGHER RISK OF UNDERNUTRITION AND FRAILTY?** M.V. Miyamoto, C.M. de Melo, S.M.L. Ribeiro *(São Paulo, Brazil)*

Background: Longitudinal studies, both epidemiologic and clinical, have shown that elderly with lower body mass index (BMI) are in higher risk of frailty and under nutrition than the ones with higher values. Aim: to evaluate if higher BMI values are associated with better nutritional status, and therefore, lower frailty risk. Methods: Thirty-two women (60 years and above; free-living and active), were distributed into three BMI groups (according to a South American multicentre study: G1 (BMI<23kg/m2); G2 (23<BMI<28Kg/m2); and G3 (BMI>28Kg/m2). We analyzed: body mass and height to calculate BMI; waist (WC) and hip (HC) circumference and the waist/hip ratio (WHR); bioelectrical impedance vector analysis (BIVA); resting energy expenditure (REE); and biochemical markers of nutritional status (blood glucose, total cholesterol, HDL and LDL, IGF-I and leptin). The groups were compared by ANOVA and by Hotelling's T2 test for vector analysis. Results: The mean vector displacement across the groups showed lower reactance and higher resistance in G1. G3 presented the highest WC, BF, and leptin levels; REE was lower in G3. Therefore, the highest BMI values pointed, at the same time, the best soft tissues results and the worst prognostic to chronic diseases. In turn, lower BMI (G1) values pointed a fat-free mass reduction, which could be related to frailty risk. Conclusion: Our results reinforce the differentiated BMI classification to elderly and point BIVA as a feasible tool in physical and nutritional evaluation. Key-words: elderly, BMI, nutritional status, BIVA analysis. Funding: São Judas Tadeu University.

**P87- INVESTIGATION OF FRAILTY AND DIETARY PATTERNS OF FREE-LIVING ELDERLY INDIVIDUALS.** T.J.O. Marques, S.M.L. Ribeiro *(São Paulo, Brazil)*

Background and Aims: to investigate: -Frailty in community-dwelling elderly group;- Association between frailty and dietary patterns. Methods: subjects from an Open University to the Third Age; - inclusion criteria: 60+ years, both genders, minimal literacy; -exclusion: any signal of dementia, serious vision and audition problems. Diet pattern: from a Food Frequency Questionnaire (FFQ) and some specific questions related to food behavior; Cognitive decline: from Mini Mental-Status Exam; Anthropometry: BMI (body mass index, in Kg/m2); Frailty: according to criteria suggested by Fried et al: weight loss, exhaustion, weakness, gait speed and physical activity. Data analysis: -cluster analysis (partition method) to identify the relationship among the investigated variables; - U-test to compare the clusters; -multivariate logistic regression analysis (stepwise forward). Results: two clusters were constituted. Cluster 1: - higher intake of all the food groups, except dairy group; -higher intake of onion, beef and pork, milk, white sugar and spices; - more pleasure in cooking and eating. Cluster 2: - higher intake of white rice, butter and artificial sweetener, besides a higher intake of medicines, and higher number of frail and depressive individuals. From multivariate logistic regression, the variables that explained the most the inclusion on Cluster 2 were medicines intake and housing arrangement. Conclusions: affective and social aspects of food behavior, together with the amount of food consumed, seem to explain the frailty more than the consumption of specific foods or food groups. Key-words: elderly, frailty, dietary pattern, cluster analysis. Funding: Institutional scholarship "Ensinar com Pesquisa"- University of São Paulo- Brazil.

**P88- RELATIONSHIP BETWEEN DIET, ANTHROPOMETRIC AND PHYSICAL ACTIVITY ENERGY EXPENDITURE: FEASIBLE TOOLS TO IDENTIFY FRAILTY IN ELDERLY.** C.M. de Melo, R. Urasaki, A.M. Freitas, S.M.L. Ribeiro *(São Paulo, Brazil)*

BAackground and Aims: to investigate the relationship among physical activity level, food intake and anthropometric variables of a group of healthy elderly people. Methods: 99 elderly subjects, both genders were evaluated for: -physical activity diary, calculated for daily energy expenditure (EE), according to 9 (CAT 1-9) categories (Bouchard et al,1983); -24-h food recall (calculated for energy (EI), macronutrients, calcium and vitamin D); - weight (W), height (H), arm circumference (AC), tricipital skin folder (TS), waist circumference (WC) and calf circumference (CC); body mass index (BMI), arm muscle area (AMA), arm fat area (AFA). The data were analysed by regression and correlation analysis. Resuts: mean percentage of contribution of each category of physical activity: CAT1= 24.0%, CAT2=30.8%, CAT3=14.7%; CAT4=15.1%, CAT5=14.5%, CAT6= 0.5%, CAT7=0.0%, CAT8=0.3%, CAT9= 0.0%. CAT 1-5 accounted for 21% of CC ($R2= 0.21$; $p=0.01$), however after colinearity exclusion (forward stepwise), only CAT1 ($R2=0.07$; $p<0.00$) and CAT3 ($R2=0.6$; $p<0.00$) presented significance. CAT 1-5 accounted for 50% of AMA ($R2= 0.50$; $p<0.00$), without colinearity exclusion. EE significantly correlated with CC ($r=0.40$; $p<0.05$) and with AMA ($r=0.63$; $p<0.05$). In addition, EE significantly correlated with AFA ($r=0.55$). Protein intake relative to body weight negatively correlated with all anthropometric variables (BMI: r= -0.38; AMA: r= -0.24; AFA: r= -0.27; EE: r= -0.34; EI: r= -0.34). Daily protein intake was 0.95± 0.54 g/Kg body weight/day; EI was 20.4±10.6 Kcal/kg body weight/day. Calcium intake was low for all individuals (519.7± 285.9 mg/day, against a recommendation of 1000mg/day). Calcium intake correlated positively with CC ($r=0.21$). Conclusions: Physical activity showed significant relationship with both lean mass and fat mass, despite of the intensity, which reinforces the important role of physical activity on body mass preventing frailty and the

related chronic and acute illnesses. Protein intake seems to confirm the "protective factor" related to excess body weight. Key words: physical activity, diet, body mass. Funding: Institutional scholarship "Ensinar com Pesquisa"- University of São Paulo- Brazil.

**P89- GAIT SPEED AND FUNCTIONALTY OF THE OLDER PATIENTS DISCHARGED FROM THE EMERGENCY DEPARTMENT.** L.V. Robles-Jiménez, M.C. García-Peña, S. Sánchez-García, T. Juárez-Cedillo, E. Moncada-Tobías, J.J. García-González, U. Pérez-Zepeda, C. Espinel-Bermúdez *(Cyoacan, Mexico)*

Background. Loss of functionality at discharge represents a serious issue because of its consequences. Aim of this study was to describe the relationship between gait speed and functional capacity in older patients at discharge of the emergency service. Methods: Data are from the study "Elderly patients in the emergency services: Effectiveness of an educational intervention to improve health outcomes". Patients 65 years or older who were admitted to the emergency services in two General Hospitals of the Mexican Institute of Social Security, regardless the clinical reason, previous informed consent were included to the study. This observational report includes only the measurement of discharge. The study included diverse sociodemographic and clinical variables. Functionality at discharge was measured by Barthel scale. Gait speed was identified if participants could not walk 4 meters or required longer than approximately 7 seconds to walk this distance. Data were collected from March to July, 2013 through a standardized questionnaire, face-to-face interviews by nurses previously trained, during 7 days per week. Data analyses were performed using STATA v10, descriptive and bivariate analysis is presented. Results: 66 patients were evaluated. The mean age was 74.4 years and 62.12% were female. 45 cases had hypertension diagnosed by a doctor and 5 cases had also chronic renal failure, depending on dialysis or hemodialysis. 65.15% reported falls in the past two years and 37.21% had more than two falls. 37 cases required more than 7 seconds to walk 4 meters, 36 cases were scored with low dependence, and 1 case had total dependence. Of the 29 cases that required less than 7 seconds, 26 had low dependence and no one had total dependence. Conclusions: Our findings demonstrate that Gait speed and functionality was not related at discharge of the emergency service. Further analysis has to be performed. Funding: This project is supported by grants from the Mexican Institute of Social Security

**P90- ILLNESS REPRESENTATION AND COPING BEHAVIORS AMONG OLDER THAIS WITH KNEE OSTEOARTHRITIS: A COMPARISON BETWEEN OLDER THAIS LIVING IN RURAL AND URBAN AREAS.** I. Roopsawang, S. Aree-Ue *(Bangkok, Thailand)*

Background: Knee osteoarthritis is the most common cause of disability in older adults, and it accumulates as people age. Illness perception and coping behaviors may have decisive impacts on this chronic disease management among older adults. The aims of this descriptive study were to describe the differences in illness representation and coping behaviors among older Thais living in rural and urban areas and to examine the relationship between illness representation and coping behaviors among those older adults in rural and urban areas. Methods: One hundred and sixteen knee osteoarthritis (OA) persons (M = 65.78 ± 9.88 years) living in rural areas and 112 OA knee persons (M = 60.63 ± 9.18 years) living in urban areas responded to the Brief Illness Perception Questionnaire and the London Coping with Rheumatoid Arthritis Questionnaire. Descriptive statistics, t-test, and Pearson's product moment correlation coefficient were used to analyze data. Results: There was no significant difference in illness representation between two groups, but the older adults living in rural areas had a significantly lower mean score of treatment control and emotional representation subscales than those living in urban areas ($p < .01$). In terms of coping behaviors, the older adults living in urban areas had a significantly higher mean score than those living in rural areas ($p < .01$). A negative correlation between illness representation and coping behaviors was found in a rural group ($r = -.19$; $p < .05$), but no significant correlation was observed in the urban group. Conclusions: Our findings demonstrate that older Thais living in rural and urban areas had different coping behaviors. Therefore, a further study emphasizes the need for promoting appropriate coping behaviors concerning living areas would be beneficial.

**P91- THE OXIDATIVE, INFLAMMATORY STATUS AND THE POLYMORPHSIM OF APOE GENES IN BRAIN AGING.** Q. Ruan, Z. Yu, Z. Bao, J. Li, J. Wang, C. Ma, H. Ma, R. Han, Y. Ma *(Shanghai , China)*

Background. Brain aging can be indirectly showed by Mini-Mental Status Examination (MMSE) in combination with clinical tests. The relationship between bain aging degree and the body's oxidative and inflammatory status is little known. The present study is designed to investigate the relationship between bain aging degree and the body's oxidative and inflammatory status, and the effect of the ploymorphism of ApoE genes. Methods. Data are from a cohort study of 543 subjects (48~103 year-old ) with complete medical history. To exclude the subjects with malignant tumor and these failed to finish MMSE test, The final subjects in this study is 443 (male 299, female 44). Bain aging is divided into three groups (MMSE ≥ 28, MMSE 24~27 and MMSE ≤ 23). Each group further is divided into three subgroup according age (≤74, 75~84 and ≥85). The polymorphism of ApoE genes (Eε2, Eε3/3, Eε4, Eε2/4 genotype is not contained when the effect of ApoE gene on oxidative and inflammatory status is studied) was detected by Snapshot method. The values of hs-CRP, LPO, POD, CAT, SOD, GSH-px and cytokines in serum was detected by using ELISA KIT or Bioplex ProTM cytokine assays. Results. The results showed that ApoE genotype is significantly associated with brain aging at 74~84 year-old people. ApoE ε4 frequency is significantly higher in people with severe brain aging (MMSE ≤ 23), and ApoE ε2 frequency is significantly higher in MMSE ≥ 28 people. Age factor has a significant effect on body's oxidative and inflammatory status in people with different brain aging. The values of POD (F1, 291=3.91, p=0.049 SOD (F1, 280=3.923, p=0.049 CAT (F1, 285=5.69, p=0.018) and IL-6 (F1,289=8.96, p=0.003) increased following age increase; The interaction between brain aging and age factor also is significant difference in CAT (F2, 290=5.69, p=0.049) and IL-6 (F2,294=3.575, p=0.029). In MMSE ≥ 28 people, the abnormal percentage of Hs-CRP is increased following age increase; In MMSE < 28 people, the abnormal percentage of Hs-CRP is decreased following age increase. In different brain aging, ApoE genotype has significantly effects on LPO (F2, 35 = 3.063, p = 0.049) and IL-6 (F2,286 = 3.19, p = 0.043). Conclusions. Our findings demonstrate that brain aging, age and ApoE genotype have significant effects on body's oxidative and inflammatory status.

**P92- FRAILTY AND ADVANCE AGE DIABETIC.** S. Sable-Morita, S. Satake, N. Kobayashi, K. Takamichi, K. Shimada, S. Kawashima, H. Tokuda *(Aichi, Japan)*

Background: Japanese Kihon Cheklist (JKC), a frailty index officially used in Japan, provides a common nation-wide assessment for the state of frailty in elder person. The frailty of diabetes in elder has not yet been fully elucidate. Purpose: The aim of this study is to clarify the characteristics of frailty in elder diabetic patients by using JKC score. Method: The diabetic outpatients of our hospital administrated in the Endocrine service aged above 65 with informed consent (n=296) were divided into 2 groups by their frailty status according to JKC score (≧10, with frailty, n=85; 10>, without frailty, n=211), and their clinical features (height, weight, glycemic control, diabetic complications and treatment) and JKC items were compared. Results: Age (76.7 ± 6.8 vs 72.6 ±5.5), a prevalence of retinopathy (50.6% vs 34.3%),JKC score about motor function (2.1±1.6 vs 1.6±1.7),JKC score about "homebound" (0.6 ±0.6 vs 0.4 ± 0.6),and the experiment of past fall (60% vs 19%) were significantly higher, but height (152.8±9.3 cm vs 156.7 ±8.5cm ) was significantly lower in the frailty group. From a logistic regression analysis about frailty and diabetic clinical features, age (OR=107, 95% CI 1.01-1.13) and a prevalence of retinopathy (OR=1.55, 95% CI 1.05-2.28) were determined as significant. Conclution: JKC score in diabetes in elder outpatiets were thoroughly estimated. Our present findings strongly suggest that the age of patient and the prevalence of retinopathy are major determinant of their frailty in diabetes in elder. Funding: I received a great of CYUKYO longevity Health Foundation 2013

**P93- RISK OF FALLS IN ACTIVE AND SEDENTARY AGED WOMEN.** A. Rocha[1], E. Ferreira[2], J. Campanari[2], G.M. Tavares[1], M.F. Saccol[1,2] *(1. Rio Grande do Sul, Brazil; 2. São Paulo, Brazil)*

Background: Episodes of falls are markers of frailty and health decline in aged people. One way to prevent this episodes is to maintain elderly physically active and also encourage then to practice exercises. However, if we consider the wide range of physical exercises avaliable, which is the most beneficial to prevent fall risk? Also, if a woman is sedentary but active in daily living routines, is her fall risk comparable to physically active women? Methods: this cross-sectional study evaluated 56 elderly women separated in five groups according to physical activity: walking (n=10, 70,9±5,95 ys), hidroterapy (n=10, 71 ± 6 ys), Tai Chi Chuan (n=10; 69,6 ± 7,19 ys), multiple activities (walking/dancing/stretching, n=12; 73,66 ± 7,98 ys) or sedentary (n=14, 66,07 ± 4,77 ys). Active women should practice physical exercises at least 2 times/wk in the past 6 months. Sedentary women were able to do routine activities without assistance and do not participate in any physical fitness programs. The Timed Up & Go Test (TUG) was used to measure functional mobility, considering: low risk of falls- complete the task in less than 10 sec; medium risk- between 10-20 seconds and high risk- 20 seconds or longer. The ANOVA one-way with a Tukey Post Hoc ($p<0,05$) were used. Results: Active elderly women presented lower values of TUG compared to sedentary ones: 11±1,46 sec in sedentary versus 8,03±0,87 sec in walking group; 8,14±1,38 sec in hidroterapy group; 8,81±1,33 sec in Tai Chi Chuan and 8,41±1,56 sec in multiple activities group. Also, TUG values were above 10 seconds in the sedentary group. Conclusions: Independently of type of physical activity, active aged women presented better functional mobility and lower risk of falls compared to sedentary ones. Our finding reinforces the importance to practice any type of oriented exercise to prevent the risk of falling.

**P94- OCCORRENCE OF DYSMOBILITY SYNDROME IN ELDERLY AGED 80 YEARS OR MORE.** J.V.R. Santos[1,2], L.A. Gobbo[2], I.C. Gomes[3], V.C. Batista[2], M.R. Cardoso[2], L.A. Gonçalves[2], D.G. Oliveira[2], I.F. Freitas Junior[1,2] *(1. Rio Claro, Brazil; 2. Presidente Prudente, Brazil; 3. São Paulo, Brazil)*

Background: Due to the potential harm of sarcopenia, sarcopenic obesity and of osteoporosis in mobility, falls, fractures and disability, it has been currently suggested the investigation of the combination of the aforementioned clinics factors, in order to allow a better risk identification, named dysmobility syndrome. The purpose of this study is to analyze the occurrence of dysmobility syndrome in elderly aged 80 years and older. Methods: The sample consisted of 128 aged men and women between 80 and 95 years (83.4±2.8 years old). Body composition and bone density of femur and of spine was assessed by dual energy x-ray absoprtiometry. Sarcopenia was identified by the ratio of appendicular lean soft tissue and height to the square (ALSTi). Men and women with ALSTi values lower than 7.59 and 5.57 kg/m2 (2 standard deviations below the average of reference population of young adults) respectively, were considered sarcopenic. The elderly with fat percentage above the 60th percentile and sarcopenia were classified as sarcopenic obesity. The ones with presence of one or more clinics factors (sarcopenia,

sarcopenic obesity, osteopenia/osteoporosis [femur or spine]) were considered with dysmobility syndrome. Chi-square test was used to determinate the occurrence of dysmobility syndrome and in the analysis of the association according to gender. Binary logistic regression was used to express the magnitude of the association. The software used was the SPSS(17.0) and the significance level was established at 5%. Results: The percentage of elderly with dysmobility syndrome was approximately 23%. Males showed higher occurrence (63%, OR 4.32 CI 95% 1,82-10,23) of the syndrome (p=0.001). Conclusion: Brazilian elderly aged 80 years old and older showed a considerable occurrence of dysmobility syndrome, with higher prevalence observed in the male population.

**P95- SELF-REPORTED KNEE OSTEOARTHRITIS, KNOWLEDGE ABOUT, AND ILLNESS REPRESENTATION OF KNEE OSTEOARTHRITIS AMONG OLDER ADULTS LIVING IN A COMMUNITY.** Y. Saraboon[1], S. Aree-Ue[2] *(1. Nakhon Phanom, Thailand; 2. Bangkok, Thailand)*

Background: Osteoarthritis of the knee (OA knee) is one of the most common public health problems in older adults. Most patients with OA knee will be managed in the community and primary care. The aim of this pilot study was to investigate self-reported OA knee, knowledge, and illness representation of OA knee among older adults living in a community. Methods: The sample consisted of 34 community participants aged 60 years old and above. Data were collected by using: 1) the demographic and personal health questionnaire; 2) the screening of OA knee tool; 3) the OA knowledge test; and 4) the illness representation of OA knee questionnaire. Data were analyzed by using descriptive statistics. Results: Thirty-four participants were aged between 60 and 84 years (mean = 68.82 year; SD = 6.32). Most participants were female (64.7%) and 55.9% of them were overweight and obesity. The majority of participants (64.7%) have encountered symptoms of OA knee including stiffness and crepitation (64.7 %) and knee pain (100%). Fifty percent of participants experienced pain in both knees. A period of knee pain of the participants was 1-3 years (55.9%). The participants had mean scoring of knowledge about OA knee as 6.03 points (SD = 1.14), and most of them (70.6%) earned knowledge about OA knee scores of less than 60%. For illness representation of OA knee, 79.4% of the participants perceived minimal to moderate of OA knee conditions. Regarding top three causes of OA knee, increasing of age, physical inactivity, and eating inappropriately (47.1, 29.4 and 26.5, respectively) were reported by the participants. Conclusions: Our findings give significant information for health care providers to develop a health education program, which focuses on promoting of illness representation and health behaviors, for prevention and reduction of OA knee progression among older adults living in the community.

**P96- EXPLORING THE RELATIONSHIP BETWEEN FRAILTY AND DISABILITY ACROSS THE NORTH AND SOUTH OF IRELAND: A DATA HARMONISATION STUDY.** S. Scarlett, B.L. King-Kallimanis, J. Briody, R.A. Kenny, M.D.L. O'Connell *(Dublin, Ireland)*

Background: Northern Ireland (NI) has a higher prevalence of disability compared to The Republic of Ireland (RoI). The potential role of frailty in this country difference is unclear. This study aimed to develop a measure of frailty within harmonised datasets from NI and the RoI and explore its relationship to disability. Methods: Data are from The Irish Longitudinal Study on Aging (TILDA) and the Health Survey Northern Ireland 2010/2011 (HSNI). Respondents aged 60 and over were included with 4,901 participants aged over 60 in TILDA and 1,359 in HSNI. A frailty measure was adapted from Morley's frail scale using five harmonised indicators. Participants with 0, 1-2 and ≥3 frailty indicators were classified as Non-Frail, Pre-Frail and Frail respectively. Logistic regression models were conducted separately on HSNI and TILDA to investigate the relationship between disability and frailty while controlling for socio-demographic and economic indicators; age, gender, social class and self rated health. Results: The prevalence of disability in TILDA was 25.04% compared to 45.77% of the HSNI sample. Prevalence of pre-frailty was similar between both countries: 37.23% HSNI, 35.5% of TILDA. However, NI had a higher prevalence of frailty with 24.8% categorised as frail compared to 7.06% of TILDA. Predicted probabilities of disability increased across both samples as the number of indicators for frailty increased. The predicted probability for a participant in HSNI with three indicators for frailty was 0.71 [95% CI: 0.66–0.77] compared to 0.51 [95% CI: 0.47–0.56] for participants in TILDA. Conclusions: Findings show that it is possible to harmonise large datasets for the purpose of cross-country analysis. Using the harmonised measure of frailty, differences were found between countries, and frailty was related to disability in each setting, encouraging further investigation. Funding: The present study is supported by an award from the Centre for Ageing Research and Development in Ireland's second datamining programme (DM13-16).

**P97- OVERWEIGHT AND OBESITY ARE ASSOCIATED WITH THE LOWER INITIAL NEUROLOGICAL DEFICIT AND BETTER FUNCTIONAL STATUS IN ACUTE ISCHEMIC STROKE.** N. Scherbakov, M. Knops, J. Fiebach, A. Meisel, A. Sandek, S. von Haehling, S.D. Anker, W. Doehner *(Berlin, Germany)*

Background: Obesity is a common risk factor for cardiovascular diseases such as stroke. The impact of obesity on stroke severity is less well established. The aim of this study was to evaluate the initial neurological severity of acute ischemic stroke according to body weight. Methods 129 consecutive patients with mild to moderate ischemic stroke (NIHSS <14; age 68±13y, BMI 27.7±4.4kg/m2, all mean±SD) admitted to stroke unit were prospectively studied. Patients were categorized as normal weight (BMI 18.5-25, n=39), overweight (BMI 25-30, n=59), obesity (BMI 30 -35, n=22) and advanced obesity (BMI≥35 all kg/m2, n=9). The neurological deficit was assessed by National Institute of Health Stroke Scale [NIHSS] on admission to the hospital. Physical examinations were performed during early hospitalization phase (3±2 days after acute stroke) and functional status was assessed by Barthel Index [BI], modified Rankin Score [mRS], and short physical performance battery test [SPPBT]. Results: Obese patients presented the lowest neurological deficit by NIHSS score on admission (5.5±3.8, p<0.05 compared to normal BMI) followed by overweight patients (6.1±4.6, p<0.05) and patients with advance obesity (7.3±4.6). Patients with normal BMI had the highest NIHSS score (8.6±6.0). Best functional status was observed in obese patients (BI: 73±32 and mRS: 2.0±1.4, p<0.05) and patients with overweight (BI: 73±33 and mRS: 2.3±1.4), followed by advanced obesity (BI: 62±43 and mRS: 2.7±2.1). Normal weight patients had the worst functional outcome (BI: 57±34 and mRS: 2.8±1.5). Only 36% patients with normal BMI were capable to complete the SPPBT in contrast to 46% patients with overweight, and 59% with obesity. The highest score was observed in patients with advanced obesity (12±0, p<0.05), followed by overweight and obese patients (9.3±2.3 and 8.9±3.4), while patients with normal weight presented the worst score (8.2±3.1). Conclusions: Obesity and overweight were associated with the lower initial neurological deficit in acute ischaemic stroke. In addition, patients with overweight and obesity showed better functional outcome after stroke compared to patients with normal weight. Funding: This work was supported by AG2R La Mondiale and the Université Versailles Saint Quentin.

**P98- HANDGRIP STRENGTH AS A ROBUST MARKER OF MUSCLE WASTING AND FUNCTIONAL STATUS AFTER ACUTE STROKE.** N. Scherbakov[1], M. Knops[1], N. Ebner[1], M. Valentova[1], A. Sandek[1], S. von Haehling[1], M. Joebges[2], W. Doehner[1] *(1. Berlin, Germany; 2. Brandenburgklinik Bernau, Germany)*

Background : Muscle wasting is a common observation in patients with ischemic stroke. The main clinical manifestations of wasting such as loss of muscle mass and loss of muscle strength should be detected early in order to prevent further decline. Hand grip strength is a simple isometric method for assessment of muscle strength of the upper extremities; is easy to apply at bed side and independent of physical performance. We studied hand grip strength as a metrical marker of muscle wasting in patients with ischemic stroke. Methods : 101 patients with acute ischemic or haemorrhagic stroke (age 70±11y, BMI 26.7±5.7kg/m2, all mean±SD) admitted to hospitalized early rehabilitation centre were studied. Base line (BL) physical examinations performed at admission (23±18 days after acute stroke, all mean±SD) followed by follow up (FU) examinations (27±5 days) included functional assessment scores: Barthel Index [BI], modified Rankin Score [mRS], and Rivermead Motor assessment [RMA], hand grip testing, body composition analysis by bioelectrical impedance analysis (BIA) and blood samples collected after over night fasting. Results : Hand grip strength of the weaker/paretic arm improved at discharge from the rehabilitation centre in 61 patients by 5.7±4.5kg (+46%), and hand grip strength of the stronger arm improved in 50 patients by 4.1±2.5kg (11%). Improvement of hand grip strength of the both arms was related to lean mass (BIA) at discharge (weaker arm r=0.305, p<0.05 vs. stronger arm r=0.6, p<0.0001). Hand grip strength of the weaker hand was associated with Barthel Index (admission: r=0.430, p<0.0001; discharge r=0.330, p<0.01), modified Rankin scale (admission r=0.488, discharge r=0.435, both p<0.0001) and Rivermead Motor Assessment score (admission r=0.284, p=0.0337, discharge r=0.357, p=0.0045). Conclusion : Hand grip strength could be a simple and robust metrical marker for stroke-induced muscle wasting and to monitor rehabilitation progress in stroke patients.

**P99- EFFICACY OF THE MINI-NUTRITIONAL ASSESSMENT AND THE MNA SHORT FORM IN IDENTIFYING SARCOPENIA IN ELDERLY ASSISTED AT PRIMARY HEALTHCARE SYSTEM.** C.H.A. Schwanke, V.E. Closs, L.S. Rosemberg, B.G. Ettrich, R.D. Rosa, R. Deon, T.P. Galdino, I. Gomes *(Porto Alegre, Brazil)*

Background: nutritional disorders are common in elderly and aging is intrinsically associated with a progressive reduction of skeletal muscle mass and strength, named sarcopenia which in turn result not only in loss of functionality but also in worse outcome. The objectives of the study were to determine the prevalence of undernutrition in elderly assisted at primary healthcare system and to evaluate the efficacy of the Mini-Nutritional Assessment (MNA) and the MNA short form (MNA-SF) in identifying sarcopenia. Methods: we conducted a cross-sectional study with a random sample of 583 individuals aged 60 years or more from Family Health Strategy of Porto Alegre-Brazil. Nutritional status was determinate by MNA and MNA-SF. Sarcopenia was assessed through the EWGSOP consensus algorithm and the components measured were calf circumference (CC) for muscle mass determination, grip strength (GS), and usual gait speed (UGS). The analysis of the data was performed by SPSS 17. Results: mean age was 68.5±7.1 years (range 60-103) and 66.6% of elderly were female. By MNA, 409 (75.9%) were well nourished, 118 (21.9%), at risk of malnourish and 12 (2.2%) malnourished; by MNA-SF, 361 (66.6%) were well nourished, 151 (27.9%) at risk of malnourish and 30 (5.5%) malnourished. The EWGSOP algorithm quantified 23 (4.1%) of sarcopenic elderly. MNA correlated highly with MNA-SF (r=0.846, P<0.001) and sarcopenia was negatively associated with MNA (r=0.223, P<0.001) and MNA-SF (r=0.224, P<0.001). The area under curve of the Receiver operator Curve (ROC) showed good accuracy of MNA (0.844, P<0.001) and MAN-SF (0.838, P<0.001) in identifying sarcopenia. Standard cut-off MAN<17 and MNA-SF<7 demonstrated a high specificity (0.880 vs. 0.978 respectively) but a low sensitivity (0.263). The cut-off points considered optimal by the highest Youden Index (YI) were 23.3 for MAN (sensitivity=0.789; specificity=0.803; YI=0.592) and 11.5 for MAN-SF (sensitivity=0.895; specificity=0.695; YI=0.590). The optimal MNA-SF presented higher sensitivity than MNA, but both the MNA and MNA-SF were similar in

prediction of sarcopenia as indicated by the YI. Conclusions: MNA-SF proved to be a good tool for predicting malnutrition and sarcopenia in elderly primary care. Funding: The present study is supported by FAPERGS. VEC, LSR, RDR, and TG received scholarship from CAPES.

**P100- FUNCTIONAL STATUS AND CO-MORBIDITIES OF OLDER PATIENTS WITH CANCER.** R. Sharma *(Delhi, India)*

Background and Objective: Cancer is a disease associated with ageing. Patients aged 65 years and older have an 11-fold increase in cancer incidence and a 16-fold increase in cancer mortality when compared with those younger than 65 years of age. The discussion on various aspects related to the treatment of cancer in older patients has occupied the centre-stage of modern day geriatric oncology. Our objective was to determine the co-morbidity and functional status of older patients with cancer and to assess their impact on management. It also intended to study the various determinants of management planning in older patients with cancer. Methods: It was a cross-sectional observational study conducted among the admitted patients in the Geriatric Department ward of All India Institute of Medical Sciences, New-Delhi, India. As per convenient sampling, consenting, treatment naïve, 71 patients, aged 60 and above, with histo-pathologically proven diagnosis of cancer, were included for the study between January 2013 to September 2013. A detailed evaluation of the functional status and co-morbidities was done as per validated various scales. Then the patients were referred to Dr.B.R Ambedkar Institute Rotary Cancer Hospital, AIIMS for further management. The management of patients was observed. Results: Out of 71 patients, 65% of patients were males. More than two-third of the patients were between the age of 60-75. The proportion of cancer patients abruptly decreased after the age of 85. 72% of the patients were living with their spouse and children. Lung cancer contributed to the greatest share of malignancy in the old age, followed by haematological and the prostate. Despite breast cancer being the most common malignancy among females worldwide, very few breast cancer patients turned up in our department. 58% of the patients were diagnosed the stage-4 of their malignancy. No patients were diagnosed in Stage-1. Malnutrition was prevalent in a large proportion of cancer patients. The most common co-morbidities were hypertension (29.7%), Diabetes Mellitus (15%) followed by COPD (14%). Vision problem in the form of cataract was the most common disability. 42% of the patients were depressed as per Geriatric Depression Scale. 68% of patients had no cognitive impairment. 55% of patients had Barthel ADL between 17-20. 64% of the patients had their Karnofsky performance status (KPS) scale between 80 to 100. But 40% of the older cancer patients did not receive any form of treatment, not even the palliative one. The most common excuses made by the oncologists behind denying treatment was advanced age followed by poor performance status. Conclusion: Most of the findings from our department were congruent with the global cancer scenario. With the global rise in the prevalence, cancer has become the unavoidable truth of old age. But various traditional myths and stigmata present even in the oncologists, regarding cancer of old age has guarded the timely detection, availability and accessibility as well as right to treatment of cancer in the elderly population.

**P101- IATROGENIC DISABILITY IN ELDERLY PATIENTS DURING HOSPITALIZATION IN A LARGE UNIVERSITY HOSPITAL.** S. Sourdet, C. Lafont, F. Nourhashemi, S. Andrieu, M. Cesari, B. Vellas *(Toulouse, France)*

Background : In older patients, hospitalization is often associated with new or worsening disability. This hospitalization-associated disability may be partly explained by the cumulative effect of aging, frailty, comorbidities and illness, but results also from health care management and hospital environment. Our objective was to determine the frequency of disability induced by the processes of care or “iatrogenic disability”. Methods: Participants were 503 patients, aged 75 years and older, hospitalized in the 105 medical and surgical units of Toulouse University Hospital, for more than 2 days. Hospitalization-associated disability was defined as a loss of 0.5 points or more in the Katz Activity of Daily Living Score, between the time of hospital admission and at discharge. To determine the frequency of iatrogenic disability among patients with hospitalization-associated disability, an expert panel in geriatrics medicine reviewed each medical chart using a standardized record review and identified precipitating iatrogenic adverse events (IAE). Results: Ninety-one patients (18.1%) declined in ADL function between baseline and discharge. Among them, 60 cases (69.8 %) were judged by the expert panel to be iatrogenic, and 49 (53.8 %) were assessed to have been preventable. Lack of physical therapist intervention (71.4% of all IAE), overuse of diapers (47.3%), complication of urinary catheterization (30.0%), and excessive bed rest (25.0%) were the main iatrogenic events identified. Conclusions: The present study suggests that a significant portion of hospitalization-associated disability is induced by iatrogenic events, and most of them are potentially preventable. Hospital care and environment that focus on function should be promoted. Funding : The present study is supported by Toulouse University Hospital, Toulouse, France.

**P102- MUSCLE MASS, STRENGTH OR MOBILITY – WHAT IS IDENTIFIED BY THE CURRENT SARCOPENIA DEFINTIONS? – DATA FROM THE BERLIN AGING STUDY II (BASE-II).** D. Spira, K. Norma, J. Nikolov, I. Demuth, E. Steinhagen-Thiessen, R. Eckardt *(Berlin, Germany)*

Background: Sarcopenia describes the age-associated loss of muscle mass, strength and function. The aim of this study was to determine the prevalence of sarcopenia in a cohort of old healthy community dwelling individuals living in Berlin, Germany according to the criteria proposed by current consensus statements. Methods: 1405 healthy community-dwelling participants from the Berlin Aging Study II (BASE-II) were recruited. Appendicular skeletal muscle mass index (SMI) was assessed with dual-energy X-ray absorptiometry (DEXA). Muscle strength was measured by hand grip strength and the Timed Up&Go test was performed as functional parameter. Results: The prevalence of sarcopenia was 24.3 % in terms of reduced SMI only but considerably lower for either sarcopenia with reduced grip strength (4.1 %) or sarcopenia with limited mobility (2.4%). Only 0.6% of the participants fulfilled all three criteria. Of those subjects with a normal SMI, 8.6% had reduced grip strength and 5.1% had limited mobility, whereas 1.3% subjects had both criteria fulfilled. Age had a modest influence on TUG (r=0.217 in men and r=0.252 in women, p<0.0001) and on grip strength (r=– 0.142 with men and r=– 0.173 in women, p<0.0001) that was negligible on muscle mass. Conclusion: In BASE-II, low skeletal muscle mass was much more frequent (>20%) than reduced grip strength or poor physical performance. Combining different diagnostic criteria leads to strikingly different prevalence. Low skeletal muscle mass seems to be no prerequisite of low strength and function and confounding factors pertaining to grip strength and TUG have to be considered in clinical praxis. This study was produced as part of a project which was supported by the German Federal Ministry of Education and Research under grant number 16SV5536K. Responsibility for the contents of this publication lies with the author[s].

**P103- THE CORRELATION BETWEEN FEAR OF FALLING AND FUNCTIONAL ABILITY AMONG OLDER PATIENTS UNDERGOING HIP SURGERY.** A. Tamsat, S. Aree-Ue, S. Leelacharas *(Bangkok, Thailand)*

Background: Hip fracture is one of the most common injuries among older adults caused by falls. Most people who experienced falls develop a fear of falling that may cause them to limit their activities. The aim of this study was to describe the correlation between fear of falling (FOF) and functional ability among older adults undergoing hip surgery before rehabilitation and after discharged home, at a 6-week follow-up. Methods: A total of 15 patients who were 60 years of age and older, were diagnosed with hip fracture, were cognitive intact, and were able to perform activity of daily life before the admission, was recruited in this pilot prospective study. Data were obtained from older patients admitted to orthopaedic wards at four tertiary care hospitals in Bangkok, Thailand. The questionnaire measurements used in this study were: 1) demographic; 2) fall efficacy scale; and 3) the Barthel Index. Statistical analysis was performed by using descriptive statistics and Pearson correlation coefficient. A p value < .05 was considered statistically significant. Results: The mean age of participants was 75.67 years (SD = 8.34; range = 61-91 years old). Nearly 45% reported some activity restriction at a 6-week follow-up, such as bathing, dressing, and grooming. Moreover, functional ability of the participants declined after surgery when compared between before admission and a 6-week follow-up. FOF before rehabilitation had a negative association with functional ability (r = -.59; p< .05), and there was a strongly negative correlation between FOF after discharged home and functional ability (r = -.69; p< .01). Conclusions: Our findings demonstrate that participants’ functional ability declined after hip surgery. FOF both before rehabilitation and after discharged home was associated with functional ability. Some FOF activities may be lead to a functional limitation in older patients undergoing hip surgery.

**P104- ASSOCIATION OF DEMENTIA WITH WEIGTH LOSS, ENERGY EXPENDITURY AND PHYSICAL ACTIVITY.** G.M. Nogueira[1], L. Leite[1], T. Yrigarai[1], V.E. Closs[1], C. Schwanke[1], G.M.S. Tavares[1,2], I.G. Silva[1], M.G.V. Gottlieb[1] *(1. Porto Alegre, Brazil; 2. Uruguaiana, Brazil)*

Background : Evidence has suggested that the loss of cognitive functions are closely related to decreased body weight, energy expenditure and physical activity level. Above all, weight loss is very common in elderly patients with Alzheimer's disease (AD). Within this context, the objective of this study was to investigate the association between dementia, weight loss, energy expenditure and physical activity. Methods : cross-sectional study with comparison groups: 1) normal cognitive function (184 elderlies), group 2) mild cognitive decline (157 elderlies) and 3) dementia (31 elderlies). The sample was composed of 372 (221 women and 151 men) elderly patients in the Family Health Strategy in Porto Alegre, Rio Grande do Sul, Brazil. The variables investigated were weight , body mass index, energy expenditure in metabolic equivalents (METS), physical activity and cognitive function. The instruments used were the following: for the evaluation of physical activity was used Minnesota Leisure Time Physical Activity (LTPA) Questionnaire and the measurement of energy expenditure (METS ) was used Compendium of physical activities: classification of energy costs of human physical activities . For the assessment of cognitive ability and diagnosis of dementia was applied a battery of neuropsychiatric instruments (Mini Mental State Examination and CERAD battery). Results : Group 1 consisted of 75 men and 109 women, group 2 was composed of 62 men and 95 women, group 3 was composed of 14 men and 17 women. The ANOVA showed that there is statistically significant difference in weight (p < 0,001), BMI (p = 0,004) , moderate physical activity (p = 0,009) and energy expenditure (p = 0,009 ) between the groups . Conclusion: The results suggest that the greater the cognitive impairment is lower weight and BMI, energy expenditure and physical activity. Funding: The present study is supported by PNPD CAPES 2009 (SILVA IG; GOTTLIEB MGV).

**P105- CARE SERVICE FOR OLDER PEOPLE: FRAILTY OF THE ORGANIZATIONS IN SÃO CARLOS CITY, BRAZIL.** V.A.G. Varoto *(São Paulo, Brazil)*

In recent years aging of the Brazilian population has become an important issue.New spaces of elderly people care are emerging in brazilian municipalities to the new demands of the aging population characteristics of fragility.Municipal Councils Rights of the Elderly-CMDI are the one responsible to verify how these spaces are working according to

the Elderly Statute (Law n.10741/2003). This project aims to identify and register the spaces for elderly people care in São Carlos, SP, in Brazil and characterize them in terms of care for the elderly people more active or the elderly people frail.Data are from a descriptive, documentary, retrospective and cross. All ethical principles were applied and approved by the ethics committee of Federal University of São Carlos.Data were collected from 2003 until the first half of 2013.Identified n=102(100%)spaces available where n=23(22.55%) are registered in the CMDI in São Carlos and n=79(77.45%) are not. Of n=23, n=8(34.8%) attending the frail elderly people who are spaces for long term care and the remaining n=15(65.2%)are spaces that offer opportunities to encourage social interaction with different activities for seniors active and healthy. Of n=79 are grouped into non registered health care services n=57 (72%) and social assistance n= 22 (28%) all linked to the public and serve the elderly people with physical frailty, mental or social. The city of São Carlos has approximately 250 million inhabitants of which 11% are elderly people. With increased longevity and assistance needs of the fragility of the elderly people is observed that the services in this municipality emphasize health care and supportive aspects of social vulnerability through services in health facilities as the hospitals as well as to the long term care which aspect of fragility is usually identified.Note the lack of services that prioritize life long care with services to encourage primary and secondary care to avoid institutionalization long term care. Key words: Gerontology, organizations, frail elderly, elderly people, community networks, Funding: The presente study is supported by São Paulo Research Foundation –FAPESP (process n.2012/11030-5) health services, social services.

**P106- PREVALENCE OF SARCOPENIA WITH THE EUROPEAN ALGORITHM USING DXA AND ANTHROPOMETRIC MEASUREMENTS TO ESTIMATE SKELETAL MUSCLE MASS.** M.C. Velazquez-Alva, M.E. Irigoyen-Camacho, I. Lazarevich, J.A. Delgadillo-Velazquez, S.P. Acosta-Dominguez, A. Cogordan-Ramirez *(Mexico City, Mexico)*

Background: The European Working Group on Sarcopenia in Older People (EWGSOP) proposes an algorithm to determine sarcopenia (EWGSOP-A), which includes: gait speed, handgrip strength, and skeletal muscle mass. Objective: Determine prevalence of sarcopenia using the EWGSOP-A defining muscle mass: dual-energy X-ray absorptiometry (DXA), calf circumference (CC) and the mid-arm muscle circumference (MAMC). Methods: A cross-sectional study was carried out in old people attending a recreational center in the southern part of Mexico City. Gait speed was measured in meters per second (m/s), ≤0.8 m/s identified subjects with poorer physical performance. Handgrip strength was measured using Takey dynamometer. Low muscle strength was classified as grip strength <20 kg in women and <30 kg in men. DXA (Hologic Discovery Wi S/N 86508) was used to obtain appendicular skeletal muscle mass (ASM), measured as the sum of the lean soft tissue mass of arms and legs. ASM/ height (m2) was used to obtain skeletal muscle mass index (SMI), the cut-point criteria according to sex is ≤5.67 kg/m2 in women and ≤7.23 in men. Calf circumference (CC) was measured at the thicker point of circumference. To calculate mid-arm muscle circumference (MAMC) we used: MAMC = mid-arm circumference – (3.14 x triceps skinfold thickness) formula. Results: 189 elders were included; 61 men and 128 women, their average age was 74.9 and 73.6 respectively. The prevalence of sarcopenia was 31.1% in men and 14.0% in women using SMI. In contrast, the prevalence was 6.6% in men and 9.3% in women using CC and 8.2% in men and 10.9% in women using MAMC. Conclusion: the prevalence of sarcopenia varies according to the method used to define muscle mass. When anthropometric measurements are used, the prevalence is lower than when DXA is used in both sexes. This means that the anthropometric values might underestimate this prevalence.

**P107- LONELINESS, DEPRESSION, SOCIAL NETWORK AND QUALITY OF LIFE AMONG FRAIL NURSING HOME RESIDENTS.** A.S.W. Wong, J.Y.W. Lui *(Kowloon, Hong Kong)*

Background: Most nursing home residents are frail elderly and parameters that have impact on their quality of life (QOL) are unclear. The aim of this study was to explore loneliness, depression, social network and quality of life among frail nursing home residents. Methods: A total of 45 nursing home subjects (27 female and 18 male) aged between 69 and 104 years participated in this study and data was collected through convenience sampling. Subjects' loneliness, depression, social network and quality of life were evaluated by UCLA loneliness scale (UCLA), geriatric depression scale (GDS), Lubben social network scale (LSNS) and WHO quality of life scale – Brief (WHOQOL-BREF) respectively. Results: At least 90% of the frail subjects had scored three in the items related to exhaustion and physical activity in the FRAIL scale questions, followed by illnesses (47%) and weight loss (13%). The percentages of subject experienced normal loneliness, mild to moderate depression and isolated were 88.9, 77.8 and 86.7 respectively. Loneliness was the significant predictor of "Social relationships" domain in quality of life. Furthermore, loneliness and depression were the significant predictors of "Environment" domains in quality of life. However, social network had no significant impact on any of the quality of life domains. Conclusion: Intervention aims to reduce frail residents' loneliness and depression level would improve their quality of life. Funding: The present study is supported by the Sik Sik Yuen, Hong Kong.

**P108- ASSESSMENT OF SARCOPENIA WITH THE EUROPEAN ALGORITHM USING BIOLECTRICAL IMPEDANCE ANALYSIS TO ESTIMATE SKELETAL MUSCLE MASS.** M.C. Velazquez-Alva, M.E. Irigoyen-Camacho, I. Lazarevich, J.A. Delgadillo-Velazquez, S.P. Acosta-Dominguez, A. Cogordan-Ramirez *(Mexico City, Mexico)*

Background: The algorithm recommended by the European Working Group on Sarcopenia in Older People (EWGSOP-A), includes gait speed, handgrip strength and skeletal muscle mass to define sarcopenia. Objective: Determine prevalence of sarcopenia using the EWGSOP-A defining muscle mass by bioelectrical impedance analysis (BIA). Methods: A cross-sectional study was carried out in elderly women attending a geriatric service in southern part of Mexico City. Physical performance was assessed by gait speed. Speed lower than 0.8 m/s identified participants with low physical performance. Muscle strength was assessed by grip strength, measured using a hand-held dynamometer (Takey). Low muscle strength was classified as grip strength <20 kg in women. Muscle mass was calculated using the following BIA equation used by Janssen et al: skeletal muscle mass (kg) = ([height2 / BIA (resistance) x 0.401] + [gender x 3.825] + [age x -0.071]) + 5.102. Height = centimeters, resistance = ohms, sex: women = 0, age = years. Low muscle mass was classified as the skeletal muscle index less than 6.42 kg/m2. Results: 177 patients were studied; their average age was 73.9 (± 6.8). This patient attended to medical assistance for the control of the following diseases: hypertension (59%), rheumatism (38.0%) and diabetes (30%); some of these patients reported to have more than one disease. 112 (63.3%) showed a gait speed below the recommended cutoff point. 44 (24.8%) were below the reference value of muscle strength. 58 were categorized as having low muscle mass. The prevalence of sarcopenia was 32.7%. Volpato et al in Italy (2013) reported a prevalence of 31.6% (n= 91) in community dwelling elderly women. Both studies show a similar percentage in their prevalence. CONCLUSION: In this sample of Mexican community-dwelling older women, the EWGSOP-A criteria identify sarcopenia as a relatively frequent geriatric syndrome.

**P109- THE PATHOPHYSIOLOGICAL BASIS OF LONGEVITY.** Z. Yu, Q. Ruan, Z. Bao, J. Li, H. Ma, C. Ma, R. Han, Y. Ma *(Shanghai, China)*

Background: Aging is the basis of age-related diseases. However, only minor elderly people with age-associated diseases are longevity. The present study is designed to investigate the pathophysiological difference and associated genetic factors among both healthy people, and people with age-ralated diseases under the age of 65, and the nonagenarian elderly with age-ralated diseases. Methods: Data are from a cohort study of 48~103 year-old subjects with complete medical history. The healthy population is defined as without geriatric syndromes, metabolic syndrome and age-related diseases. The values of TCH, TG, HDL-C and LDL-C, Hypersensitive c-reactive protein, thyroid function (FT3, FT4, T3, T4 and TSH); the ratio of CD4+T cell and CD8+ T cell, the percentages of both B cell and NK cell in peripheral blood were detected. The polymorphism of ApoE genes was detected by Snapshot method. The values of LPO, POD, CAT, SOD, GSH-px and cytokines in serum was detected by using ELISA KIT or Bioplex ProTM cytokine assays. Results: The mean age of participants are 58.94 (healthy people under the age of 65, n = 17), 58.77 (people under the age of 65 with age-ralated diseases, n = 48) and 92.4 (the nonagenarian elderly, n = 89) respectively. The nonagenarian elderly had a significant lower LDL-C and higher HDL-C; lower FT3 and T3 ($F = 6.09$, $p = 0.004$), higher TSH ($H = 8.47$, $p = 0.014$); abnormal low percentages of B cell and higher percentage of NK cell; higher POD ($H = 6.74$, $p = 0.034$) and SOD ($F = 4.6$, $p = 0.012$) values; significant higher percentages of abnormal Hs-CRP, ApoE ε2 and lower ApoE ε4 genotype frequency; significant higher concentrations of pro- and anti-inflammatory cytokines. Conclusions: Our findings demonstrate that there is significantly different pathophsiological basis in the elderly with long life span.

**P110- WORK, FRAILTY & HEALTH: A COMPARATIVE ANALYSIS OF OLDER ADULTS IN THE U.S. AND EUROPE.** M.P. Silver *(Toronto, Canada)*

Background. As the proportion of older adults increases in the United States and more dramatically in Europe pressure is increasing to find ways of alleviating the dependency ratio and finding ways to extend paid labor force participation among older adults. This may pose a challenge for older adults who are physically frail and possibly in physically demanding jobs. This study examines the relationship between self-rated health, age, and work status using three different ways of measuring frailty among older adults in Europe and the U.S. Methods. Data are from the United States Health and Retirement Study (HRS) and from the The Survey of Health, Ageing and Retirement in Europe (SHARE), a survey of 19 European countries. Analyses examine measures of frailty that include functional loss, cognition, and chronic health conditions. Results. The mean age of participants in the European samples were significantly older and featured a higher number of frailty conditions. Respondents with a higher number of frailty conditions were less likely to participate in the paid labor force. Findings suggest that when frailty is measured strictly in terms of chronic conditions, starting at 60 years old respondents in the U.S. sample rate their own health less favorably relative to the use of a frailty index which takes into account the number of conditions being assessed overall. In contrast, significant declines in self-rated health among the European samples show up closer to 70 years old using chronic health conditions relative to a frailty index. Conclusions. Extending retirement age or creating disincentives for retiring early may pose a threat to frail older adults; however, results vary depending on the frailty measured used. Funding: No external funding sources were used.

**P111- BODY COMPOSITION, STRENGTH AND MUSCLE QUALITY IN HEALTHY, FRAIL AND CACHECTIC OLDER PEOPLE.** A.F.J. Dos Santos[1], J.A.O. Carneiro[2], F.P.A.S. Pessanha[1], J.L.S. Marchesi[1], K. Pfrimer[1], R.F. Micheletto[1], N.M.C. Alves[1], E. Ferriolli[1] *(1. São Paulo, Brazil; 2. Jequié/Ba, Brazil)*

Background: Although frailty and cachexia have similar symptoms the elderly, like loss of weight and muscle strength, the pathophysiology of both syndromes and their differences remain unclear. The aim of this study was to compare body composition, muscle strength and muscle quality of healthy, frail and cachectic old people. Methods: An exploratory cross-sectional study was conducted on 62 persons aged 65 years or older divided in three groups: Frail (F, 10 women and 7 men), Cachectic (C, 11 women and 10 men) and Healthy (H, 12 women and 12 men). Body composition was evaluated by dual energy X-ray absorptiometry (DXA), muscle strength by hand dynamometry and lower limb strength by an isometric chair. Muscle quality was calculated as the reason between muscle strength of the dominant limb by its lean mass (DXA). Results: Mean BMI was different between groups ($p<0.01$): 27.3 ± 4.9 kg/m2 in H, 28.6 ± 6.0 kg/m2 in F and 19.7 ± 3.7 kg/m2 in C. Percent fat was different between F and C groups in women (44.0 ± 3.9 and 33.3 ± 8.9, $p<0.01$) and muscle mass (kg) in women (38.3 ± 8.5 and 27.8 ± 2.6) and men (42.2 ± 8.6 and 35.2 ± 5.3) ($p<0,05$). Muscle mass, handgrip strength and muscle quality of lower limbs was different between groups H and C in both genders ($p<0.05$) and handgrip strength and muscle quality of lower limbs between H and F also for both genders ($p<0.05$). Conclusions: There are differences between frailty and cachexia regarding body composition, muscle strength and quality. These differences suggest that different mechanisms are involved in the pathophysiology of these syndromes; cachexia may be associated with acute loss of muscle mass and inflammation, while in frailty muscle mass is more preserved but affected by long-term effects of co-morbidities and other factors.

**P112- PREVALENCE OF SARCOPENIA IN ELDERLY MAINTENANCE HEMODIALYSIS PATIENTS: THE IMPACT OF DIFFERENT DIAGNOSTIC CRITERIA.** F. Lamarca[1], J.J. Carrero[2], J.D.C. Rodrigues[1], F.G. Bigogno[1], R.L. Fetter[1], C.M. Avesani[1] *(1. Rio de Janeiro, Brazil; 2. Stockholm, Sweden)*

Background: The prevalence of sarcopenia on elderly maintenance hemodialysis (MHD) has been scarcely investigated. Therefore we aimed to investigate the prevalence of sarcopenia in elderly patients on MHD according to the recently consensuated criteria, methods and cutoff limits by the European Working Group on Sarcopenia in Older People (EWGSOP). Additionally, we evaluated the agreement between dual energy x-ray absorptiometry (DXA) and surrogate methods for the assessment of muscle mass. Methods: Observational and cross-sectional study. One hundred and tow non-institutionalized elderly (age > 60 years) patients on MHD were included. Sarcopenia was defined according to the EWGSOP consensus. Sarcopenia was considered when the patient fit one criteria for low muscle mass (DXA, bioelectrical impedance (BIA), sum of skinfold thicknesses [SKF], calf circumference and mid-arm muscle circumference [MAMC]) and one for low muscle strength (handgrip dynamometer). Results: The prevalence of sarcopenia varied from 2 to 16.8% depending on the method and cutoff limit applied. A small percentage of patients (<7%) was classified as sarcopenic by more than one diagnostic criteria. The agreement between DXA and the surrogate methods to assess muscle mass showed better kappa coefficients with BIA ($r=0.59$; $P<0.01$) and SKF ($r=0.59$; $P<0.01$). Conclusion: A wide prevalence of sarcopenia is observed depending on the EWSGPO diagnostic criteria. This may limit extrapolation to clinical practice. BIA and SKF were the surrogate methods to assess muscle mass with the best concordance with DXA in elderly MHD patients. Funding: The present study is supported by Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro (FAPERJ) (Grant number E-26/111.653/2010 and E-26/103.209/2011).

**P113- SARCOPENIA, LOW MUSCLE STRENGTH AND LOW MUSCLE MASS: ARE THEY ASSOCIATED WITH WORSE CLINICAL CONDITION IN ELDERLY HEMODIALYSIS PATIENTS?** F. Lamarca[1], J.C.D. Rodrigues[1], R.L. Fetter[1], F.G. Bigogno[1], M.A. Kamimura[2], J.J. Carrero[1], C.M. Avesani[1] *(1. Rio de Janeiro, Brazil; 2. São Paulo, Brazil)*

Background: Elderly patients undergoing maintenance hemodialysis are highly susceptible to develop sarcopenia, due to the natural process of ageing and to the catabolism induced by the hemodialysis procedure. The aim of this study was to evaluate whether the criteria applied for diagnosis of sarcopenia, low muscle strength (LMStrength) and low muscle mass (LMMass) proposed by international societies are able to distinguish patients on hemodialysis with worse nutritional status and quality of life. Methods: Ninety four elderly patients on hemodialysis (>60 years; Men: 65 [69.1%]; mean age: 69.8 ±6.4 years) were included. All participants underwent anthropometric measurements, body composition, handgrip strength, subjective global assessment and answered a health related quality of life questionnaire. For the diagnosis of sarcopenia, the criteria proposed by international societies were adopted, which included one criteria indicative of LMStrength and one of LMMass. LMStrength was diagnosed when handgrip strength was below 10 percentile for gender, age and arm specific side from a reference population. LMMass was diagnosed by lean body mass index (LBMI) below the 20 percentile for gender and age of a reference population, assessed by lean body mass from skinfold thicknesses. Results: Sarcopenia was present in 13.8% (n=13) of the patients, while LMStrength was observed in 37.2% (n=35) and LMMass in 35.1% (n=35). Sarcopenia was able to distinguish patients who had greater impairment of nutritional status and body composition, but had no impact on domains of quality of life. LMStrength identified patients with worse nutritional status and worse domains of quality of life. LMMass did not identify patients with either worse nutritional status or worse domains of quality of life. Conclusion: Low muscle strength rather than low muscle mass indentified patients on hemodialysis with worse nutritional status and worse quality of life. Funding: The present study is supported by Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro (FAPERJ) (Grant number E-26/111.653/2010 and E-26/103.209/2011).

**P114- VALIDATE THE ASSOCIATION BETWEEN BODY COMPOSITION AND PHYSICAL PERFORMANCE BASED ON FAT PERCENTAGE AND APPENDICULAR SKELETAL MUSCLE INDEX.** C.I. Chang[1], K.C. Huang[1], D.C. Chan[1], C.H. Wu[2], C.C. Lin[3], C.A. Hsiung[1], C.C. Hsu[1], C.Y. Chen[1] *(1. Taipei, Taiwan; 2. Tainan, Taiwan; 3. Taichung, Taiwan)*

Objective: An increased fat percentage with decreased skeletal muscle mass occurred during aging process. A preferred cutoff point of sarcopenic obesity is necessary for the diagnosis in clinics. However, the standard definition is penurious. Methods: Two thousand six hundred twenty nine subjects aged 65 and over were recruited from Sarcopenia and Translational Aging Research in Taiwan (START) including several studies from north, middle, and south part of Taiwan. Eligible subjects were measured body composition by bio-impedance analysis with Tanita BC-418 and physical performance including handgrip strength (kg), and lower extremity function. Demographic information and fall event during the past one year were recorded concurrently. Almost 1000 young adults (half in each gender) aged 20-40 were recruited for body composition with the same device. We defined the cutoff points as a value at 2 standard deviation (SD) from the gender-specific means of young population or at the 20th percentile of our elderly population. Results: Compared with the young groups, appendicular skeletal muscle index (ASMI, kg/m2) reduced while fat percentage (%) increased significantly among the elderly population. Based on either the young health adults or our elderly population, cutoff points of obesity and sarcopenia were 31.41%, 30.64%, 6.76 kg/m2, 5.28 kg/m2 for men and 39.17%, 43.25%, 7.09 kg/m2, 5.65 kg/m2 for women according to the fat percentage and ASMI. The prevalence of sarcopenic obesity was around 2%. Subjects were classified into 4 groups, normal, sarcopenia only, obesity only, and sarcopenic obesity. After covariates adjusted, sarcopenia only and obesity only was worse than normal group and sarcopenic obesity group was the worst in physical performance (all $p <0.05$). A stronger association observed using the cutoff points based on young reference group. Conclusions: The impact of sarcopenia and obesity has synergistic effect on physical performance in elderly. Body composition should be considered in clinics. Funding: The present study is supported by National Health Research Institutes, Zhunan, Taiwan (Chang CI, Huang KC, Chan DC, Lin CC, Hsiung C A.6, Hsu CC1, Chen CY), National Cheng Kung University Medical College, Tainan, Taiwan (Wu CH), and China Medical University (Lin CC)

**P115- EVALUATION OF INSULIN LIKE GROWTH FACTOR-1 (IGF-1) LEVEL AND ITS IMPACT ON MUSCLE AND BONE MINERAL DENSITY IN FRAIL MALE ELDERLY.** M.S. Khater, M.I. Mohamad *(Cairo, Egypt)*

Background: Decrease in the IGF-1 levels is a major endocrine dysregulation that has been implicated in frailty, disability, and mortality in older adults. Methods: A case-control study. 100 male elderly were included and subdivided into frail group (n=50) and robust group (n=50). Participants were subjected to anthropometric measures, femoral bone mineral density (BMD), and measurement of serum IGF-1 level. Results: IGF-1 level was significantly lower in frail male elderly. Receiver operating curve (ROC) analysis revealed that sensitivity was 88.5 %, specificity was 100%, cut-off value was 43$\mu$g/L and area under curve was 0.897. IGF-1 level had a significant positive correlation with some anthropometric measures namely, mid arm circumference (MAC), mid calf circumference (MCC), and hand grip strength. Moreover, IGF-1 level was positively correlated with femoral (BMD). Regression analysis was done using anthropometric measures and femoral BMD as dependent variables and IGF-1 percentiles (low, middle, high) as fixed factors with age adjustment. Among these dependent variables MCC and femoral BMD were widely affected with IGF-1 level variation. Frail male elderly were likely to have low percentile IGF-1 level than robust male elderly with odds ratio 12.8. Subjects with low BMD were likely to have low IGF-1 percentile than those with normal BMD with odds ratio 3.21. Conclusions: Lower IGF-1 level in frail male may play an important role in age-related sarcopenia and osteopenia. IGF-1 level may be used as screening marker for detection of frailty and osteoporosis. IGF-1 administration to frail elderly may improve muscle state and bone loss

**P116- VALIDATING AN ALTERNATIVE MODEL OF FRAILTY IN THE IRISH LONGITUDINAL STUDY OF AGEING.** B.L. King-Kallimanis[1], R.A. Kenny[1], G.M. Savva[2] *(1. Dublin, Ireland; 2.* Norwich, United Kingdom)*)*

Background: In the past decade numerous tools to measure the frailty phenotype have been developed. However, there is no consensus on which constitutes a gold standard. The aim of this work was to explore combining unique elements of 3 different tools to create a combination measure. This model was used to predict 2-year mortality and disability. Methodology: Data is from the Irish Longitudinal Study on Ageing (TILDA), a nationally representative sample of older adults aged 50 and older. We focused on participants 65+ (n =2,187). Components of Fried's phenotype measure, the Morely FRAIL scale and the Survey of Health, Ageing and Retirement in Europe frail scale were operationalised. Confirmatory factor analysis was used to assess construct validity, and full structural equation modelling was used to investigate the links between the resulting structure and mortality and disability, while controlling for age and sex. Results: Frailty is often conceptualized as uni-dimensional, and this was the first model tested. However, we found a two-dimensional model was more appropriate ($SB\chi2(53) = 133.96$, $p <0.001$); one factor represented physical components of frailty and the second represented emotional

components. Elements from each traditional frailty scale significantly contributed to the model. When age, sex disability and mortality were included, the risk of 2-year mortality and presence of disability was greater for participants with both greater physical and emotional frailty at wave 1. Conclusions: In combining unique components of different frailty tools, we found that a two-dimension structure for the construct of frailty was suitable. This alternative combination frailty model has sufficient construct and predictive validity. To our knowledge, this is the first attempt to unify indicators from different frailty scales into a single frailty model, and will potentially lead to new methods to identify frailty in a research setting. Funding: The present study is supported by an Irish Health Research Board grant (HRA_PHS/2011/26).

**P117- THE QUALITYOF LIFE OF FRAIL CHINESE RESIDENTS IN LONG-TERM CARE.** E.W.Y. Kwong, C.K.Y. Lai, F. Liu *(Honk Kong)*

Background: Frail nursing homes residents are at risk for a poor quality of life (QOL). Knowing their quality of life experiences and health factors associated with QOL are the necessary first steps before appropriate interventions can be developed. Methods: This study adopted a mixed methods design that included both a survey of the demographic and clinical characteristics of the participants and a descriptive qualitative arm consisted of focus group interviews. The aim of which was to explore the QOL of frail nursing home residents. Rockwood et al's 1999 version of their frailty index were used as the operational definition of the concept of frailty. Residents with a Mini-Mental State Examination Score of 10 or below and who had lived in the homes for less than six months were excluded. Ninety-one participants were recruited and four focus group interviews were conducted with 24 of the participants in the two study site. A content analysis approach was used for analyzing qualitative data. This paper reports the qualitative arm of the study. Results: Five themes were identified: "physical well-being to maximize independence in self-care," "peace of mind to cope with irreversible impairment," "connection to society," "fulfillment of basic needs," and "harmony in interpersonal relationships." The findings provided rich information for service providers in long-term residential care to improve the quality of care they deliver in order to enhance the QoL of frail residents. Conclusion: Our findings lend further support to the importance of promoting physical well-being in frail older people to maximize independence in self-care, which in itself is important to enhancing residents' QOL. Similarly, engagement in life and connections with family and society were essential components of a good QOL regardless of where people live. Keywords: aged care, frailty, quality of life

**P118- OBESITY, GRIP STRENGTH AND FUNCTIONAL ABILITY IN OLDER ADULTS.** S. Leahy, M.D.L. O' Connell, R.A. Kenny *(Dublin, Ireland)*

Background: Obesity and low muscle strength (dynapenia) are commonly observed in the older population, and both conditions have been linked to decreased physical functioning through various mechanisms. The co-existence of obesity and dynapenia may exacerbate these detrimental effects on physical health. The aim of the current analysis was to examine the relationship between dynapenic-obesity and the presence of functional impairment and disability in a large population-representative sample of older adults. Methods: Using data observed on 4879 population-representative community dwelling adults aged 50+ from the Irish Longitudinal Study on Aging (TILDA), objective height, weight and grip strength were obtained during a comprehensive health assessment. Obesity was defined as Body Mass Index≥30kg.m2 and dynapenia as the lowest tertile of age and sex-specific grip strength. Participants were classified as 'normal' 'obese only' 'dynapenic only' and 'dynapenic obese'. Self-reported physical limitations, Activity of Daily Living (ADL) disability and Instrumental ADL (IADL) disability were recorded as well as objectively measured gait speed (GaitRite®). Covariates studied include age, sex, chronic and cardiovascular disease, education, cognitive ability and health behaviours. Results: Mean age of participants was 61.9y and 54% were female. 10.1% of the sample were classified as 'dynapenic obese', 23% as 'obese only' and 21.5% as 'dynapenic only'. Compared to the 'normal' group (45.4%), dynapenic obesity was significantly associated with the presence of at least one physical limitation (Odds Ratio (OR) =2.03, p<0.001), ADL disability (OR=2.61, p<0.001) and reduced gait speed (11.1cm/sec slower, p<0.001), but not IADL disability (OR=1.50, p=0.088). Conclusions: The findings presented here indicate that older persons who are both obese and have poor grip strength have a greater likelihood of having impaired physical function compared to their non-obese, non-dynapenic counterparts. This group should be investigated as a target for physical activity and dietary interventions to improve & preserve physical function. Funding: The present study is supported by Irish Life plc, the Irish Government and the Atlantic Philanthropies.

**P119- PREVALENCE OF FRAILTY AND COMPONENTS OF FRAILTY ONE YEAR FOLLOWING SURGERY FOR HIP FRACTURE.** P. Thingstad, K. Taraldsen, I. Saltvedt, T. Egerton, O. Sletvold, J.L. Helbostad *(Trondheim, Norway)*

Background: Poor prognosis after a hip fracture has been attributed to frailty, but there are few reports on the prevalence of frailty within this group. This study aims to describe frailty and components of frailty according to the Fried phenotype one year following surgery for hip fracture. Methods: Longitudinal data from the Trondheim Hip fracture Trial, including 398 home-dwelling hip fracture patients, 73.8% women, mean age 83 years. Frailty components: 1. Reduced energy: single yes/no question from Geriatric Depression Scale, 2. Slow gait speed: below 0.8 m/sec, 3. Reduced muscle strength: a) grip strength below 20/30 kg (women/men), and b) greater than 16.7 sec for five sit-to-stands, 4. Weight loss: > 5% within the first 4 months after the fracture. Results: Eleven percent of the cohort was lost to follow up and 17% died within the 12-month follow-up period. At one year, 80% walked slower than the 0.8 cut-off, 75% were unable or used more than 16.7sec to complete five sit-to-stands and 55% were weaker than the cut-off values for hand grip strength. About one third had a weight-loss higher than 5% and 1/3 reported reduced energy. Dependent on which strength criteria was used 45-60% percent were below the cut off for one or two of the four components, and 30-40% were below the cut-off on three or more. Conclusion: Based on four assessed frailty criteria, at least 40% were likely to meet the Fried frailty phenotype criteria; however as the fifth frailty component of the Fried phenotype, activity, has not yet been included in these results, prevalence is likely to have been underestimated. These findings emphasize that hip fracture patients are at high risk of further functional decline and that there is a need for interventions that consider the frailty of this group.

**P120- IMPACT OF THE FRAILTY SYNDROME ON THE TREATMENT OF AGED CANCER PATIENTS.** J. Leibovici, O. Itzhaki, M. Huszar, R. Asfour, M. Michowitz, J. Sinai *(Tel-Aviv, Israel)*

Background: Most cancer treatments include aggressive procedures to which elderly individuals may be specially sensitive, particularly those who are frail. Post-operative complications and adverse drug resistance are related to frailty. Therefore cancer therapy in the elderly frail patients constitutes an extremely complex problem. Results: Elderly cancer patients were most often under-treated or not treated at all. These patients were often excluded from clinical trials and thus the under-treatment was not evidence based. Contrary to this cautious attitude towards cancer treatment in the old, certain authors stressed the idea that age per se should not preclude usual cancer treatment. This should include the "fit" old patients who, it was thought, constitute the majority of the elderly population. The percentage of frail people among the elderly is indeed low in many Western countries (around 6%). But this low prevalence is observed mainly in Northern Europe and in the USA while in Southern Europe frailty constitutes 20-30% and is much higher in Russia. Moreover, the prevalence of pre-frail individuals is very high – around 50%- in all countries. Pre-frail individuals are expected to become frail after several years. We suggest that it is this transit from pre-frail to frail which is more rapid in Southern and Eastern than in Western countries. Conclusions: We propose that the aggressive anti-cancer treatments could precipitate the pre-frail to frail transit, endangering thereby patient"s life. Since the pre-frail +frail elderly people constitute 70% of the elderly population, and thus only 30% can be considered fit, only this minority among elderly people could tolerate the usual anti-cancer treatments, while the large majority of cancer patients should undergo milder treatments. Integration of frailty into clinical practice has recently begun. Indeed, treatments of the main types of cancer, adapted for the different stages of frailty, have been suggested.

**P121- SARCOPENIA IN PATIENTS WITH RHEUMATOID ARTHRITIS.** N.A. Shostak, A.A. Muradyants, A.A. Kondrashov, V.A. Egorova, B.V. Nikiforov, V.S. Shemenkova *(Moscow, Russian)*

Background: Loss of muscle mass and muscle strength are common symptoms in patients with rheumatoid arthritis (RA), which are currently being considered as part of the syndrome of sarcopenia associated with chronic diseases. Sarcopenia in patients with RA has been studied few. Methods: 156 patients with RA were examined: 83 postmenopausal women (the mean age was 61,7 years) and 73 men (59 years). 95 patients with RA conducted a research of the body composition, using «Whole body» by densitometer «STRATOS dR» (DMS, France). Control group is consisted of 35 healthy people matched by sex and age. To assess of sarcopenia index of lean mass (LM) at Baumgartner R. et al. (1998), which is defined as the total lean mass (TLM) of the upper and lower extremities (kg)/height (m2). Sarcopenia was diagnosed with a decrease TLM less 5,45 kg/m2 for women and less than 7,26 kg/m2 for men. Results: Study of the body composition showed a statistically significant reduction TLM in patients with RA compared with the control group, while there was no significant difference between the groups in fat mass. Sarcopenia had 25% females and 55% of men with RA, whereas the control groups 8,7% and 0% respectively. Status LM in patients with RA was statistically significant (p<0,05), associated with the femur BMD and lumbar spine (r = 0,3), TLM (r = 0,5), the compressive force of brushes (r = 0,4), x-ray stage of RA (r = - 0,4), indicators of total protein (r = 0,5). Conclusion: Patients with RA have a significant decrease in lean mass. Sarcopenia in patients with RA was observed in the majority of men (55%) and 25% of women, which was significantly higher than in control groups.

**P122- FRAILTY AND COGNITIVE DECLINE: STUDY AMONG THE OLDEST OLD.** T.R.P. Brito, D.P. Nunes, L.P. Corona, M.L. Lebrão, Y.A.O. Duarte *(São Paulo, Brazil)*

Background: Cognitive decline can be an early manifestation of seniors transitioning to frailty. The objective of this study is to examine the association between frailty syndrome and its components, with the presence of cognitive decline in the elderly aged over 75 years in São Paulo, Brazil. Methods: It is a cross-sectional study using data from the SABE Study (Health, Wellness and Aging). The SABE Study is a longitudinal study of multiple cohorts, which was started in 2000 under the coordination of the Pan American Health Organization (PAHO). To evaluate the frailty syndrome, we used the five components: weight loss unintentional, report fatigue, loss of strength, reduced walking speed and low physical activity. The elderly who had three or more components have been classified as frail and those who scored in one or two components have been classified as pre-frail . To evaluate the cognitive status of the elderly used the Mini-Mental State Examination (MMSE). Results: Of the 433 elderly, 20.9% had MMSE score below the cutoff. Among the elderly with cognitive impairment, the proportion of frail elderly was much higher than those without deficit (67.8% and 18.8%, respectively) (p <0.001). The MMSE score was

inversely proportional to the number of components of frailty presented by the elderly: the lower the score on the test, greater the number of components present ($p < 0.001$). The reduction in walking speed, low physical activity and the reduction of the force components were more prevalent among older adults with cognitive impairment. Conclusions: Cognitive decline was associated with frailty, and the coexistence of these conditions is worrying, since it increases the risk of adverse outcomes, which requires the establishment of preventive interventions for this population.

**P123- FRAILTY AS A CONSEQUENCE OF THE METABOLIC SYNDROME (CASE STUDY OF THE DIABETES MELLITUS TYPE 2).** K.I. Prashchayeu[1], A.N. Ilnitski[1,3], N.M. Pozdnyakova[1,2], T.V. Pavlova[2], V.V. Bashuk[2] *(1. Moscow, Russia; 2. Belgorod, Russia; 3. Belarus)*

Background. In the 21st century, the problem of diabetes mellitus (DM) has acquired a global epidemic related to the population of all countries, nationalities and ages, due to its rapid spread among the population of the world. The information appears about the frailty senile more recently. Russia is one of the most troubled countries in the incidence of the frailty, this syndrome occurs in 84% of elderly and senile age. Therefore, the aim of our study was to examine frailty in association with the metabolic syndrome. Methods. Review of current scientific literature for 2000-2013 years. 68 patients from 28 to 77 years old. Light microscopy, scanning electron microscopy, scanning probe microscopy. Results. DM accelerates the aging process and may give rise to the processes leading to the prefrailty first, and then to the frailty. Elderly patients with diabetes are at risk of malnutrition is much higher compared with healthy elderly. In addition, weight loss is associated with an increased risk of muscle atrophy and decreased muscle strength in the presence of concomitant diseases. Malnutrition is widespread in patients with diabetic nephropathy due to a diet with restriction of protein in combination with vitamin D. This has been established in various studies that in elderly patients with diabetes to reduce the risk of walking speed of 1.87 times higher than in patients without diabetes. In addition, exercise tolerance and physical activity significantly lower in people with diabetes than in people without diabetes. This has been shown by electron microscopy of red blood cells that increase in changed forms of red blood cells occurred with the rise of gravity and severity of polymorbidity, especially in the presence of type 2 diabetes. It must be assumed that these changes may indicate the beginning of the frailty as well. Conclusion. Frailty can be seen as a consequence of the metabolic syndrome on the basis of the above written. Timely diagnosis and proper treatment of the metabolic syndrome will prevent the development of the frailty and prolong the period of active aging and improve the quality of life of elderly patients. Funding. The present study is supported by Belarusian Association of Gerontology and Geriatrics, Belarus and Researching Medical Centre, Moscow, Russia

**P124- HEART RATE COMPLEXITY DOES NOT CHANGE IN FRAILTY SYNDROME.** A.C.M. Takahashi[1], L.A. Bonjorni[1], M.S.S. Buto[1], V.V.B. Carmelo[1], S.M.A. Rocha[1], F.H.M. Ribeiro[2], A. Porta[3], A.M. Catai[1] *(1. São Carlos, Brazil; 2. Araraquara, Brazil; 3. Milan, Italy)*

Background: Frailty is a distinct geriatric syndrome; it has been described as a clinical state of vulnerability to stress, a result of declining resilience and physiologic reserve associated with aging. Additionally, in the frailty process occurs a critical loss of physiological complexity. Thus, measures for assessing the complexity could contribute to better understanding this syndrome. The aim of this study was evaluate de heart rate variability complexity in 3 groups: frail, pre-frail and non-frail. Methods: one hundred older people (60-94 years old) were divided into three groups (frail, pre-frail and nonfrail) according to the phenotype of frailty. It was analyzed the normalized complexity index (conditional entropy) during short heart period series (256 cardiac beats) derived from ECG recordings, during 10 minutes of rest in supine position. The ANCOVA, adjusted for age and betablocker use, was used in the statistical analysis. Results: Frail group (n = 10, media age 76 years), pre-frail (n=59, media age 70 years) and non-frail group (n=31, media age 68 years) were significantly different in age and betablocker use. The normalized complexity index did not show statistical difference between the frail, pre-frail e non-frail groups (0.81, 0.74, 0.74, respectively) ($p=0.06$). Conclusions: The conditional entropy was not a feasible technique to detect alteration in autonomic control of heart rate in frailty syndrome. Keywords: frailty, aging, homeostasis, complexity, conditional entropy. Funding: The present study is supported by São Paulo Research Foundation (FAPESP) grant 2012/04146-7.

**P125- ANTHROPOMETRIC DESCRIPTION AND ITS CORRELATION WITH HANDGRIP STRENGHT IN OLDER PEOPLE BRAZILIANS.** G.M.S. Tavares[1,2], V. Manfredini[1], A.A.C. Gullich[1], R.N. Fao[1], J.C.E. Piccoli[1,2], P.P. Schopf[1], J. Mezzono[1], M.G.V. Gottlieb *(1. Uruguaiana, Brazil; 2. Porto Alegre, Brazil)*

Backgroud: the changes in body composition, for example, increase fat mass and reduced lean body mass during the process of aging, is regarded as a normal event. However, when the loss of lean mass is marked and is associated with decreased muscle strength, causing functional dependency and interfering negatively on quality of life of the elderly, called sarcopenia. Thus, the objective of the study was a description associated with anthropometric and handgrip strength in the elderly. Methods: cross-sectional study. We selected 89 elderly people (31 men and 58 women) of the Public Health Care in Uruguaiana– Rio Grande do Sul, Brazil. The variables evaluated were: body mass index (BMI), circumferences and skinfold thickness, muscle mass (MM), muscle mass index (MMI) and handgrip strength (HGS). For the measurement of MM and IMM we used the following formulas: MM= height2 x (0,00744xarm circumference2 +0,00088 x thigh circumference2 +0,00441 x calf circumference) 2+2,4x sex–0,048x age+race+78) and MMI= (kg)/height(m)2. We performed a correction for subtraction of subcutaneous fat using the formula Cm = Climb _ πS. Results : The average age of the sample was 67,90 ± 5,90 years. Averages were highlighted BMI (28,68±5,91 kg), waist (97,24±12,62 cm), hip (101,45±10,88 cm), thigh circumference (47,36±5,36 cm), brachial (30,65±4,30cm) and calf (30,16±3,8). The average of MM was 22,95 ± 4,32 and IMM was 9,32±1,46. The average HGS of the right hand (HGSR) was (22.30 ± 9.44 Kg) and left hand (HGSL) was (22,55 ± 8,65Kg). Correlations were found between MMI and HGSR ($r = 0,305$, $p = 0,004$), calf circumference, HGSR ($r = 0,266$, $p = 0,012$) and HGSL ($r = 0,338$, $p = 0,001$), arm circumference with HGSR ($r = 0,448$, $p < 0.001$) and HGSL ($r = 0,514$, $p < 0,0001$). Conclusion : The results show that older people are overweight and anthropometric variables are positively correlated with HGS. Funding: The present study is supported by Public notice of the University extension Program (PROEXT MEC 2012) TAVARES GMS; MANFREDINI V; PICCOLI JCE; SCHOPF PP. (PBDA 2013) FÃO RN;SCHOPF PP.

**P126- OCCURRENCE OF SARCOPENIA IN OLDER ADULTS LIVING IN RETIREMENT COMMUNITY.** K.I. Prashchayeu[1], A.N. Ilnitski[1,3], S.V. Bogat[2], A.N. Krivtsunov[1], D.V. Volkov[2], S.S. Sultanova[4] *(1. Moscow, Russia; 2. Belgorod, Russia; 3. Belarus; 4. St. Petersburg, Russia)*

Background. Sarcopenia is known as general loosing of skeletal muscle mass during of aging. The result of it are developing of health disorders, accompanied by movement function, leading to increase risk of falls, fractures, limiting each person's ability to perform daily self-care activities, disability, loosing of independence and highly risk of death. That is why sarcopenia problem needs scientific evidence and thorough investigation. Methods. Study included 107 old and senile age persons, living in retirement community at Belgorod city, Russian Federation and 56 patients going outpatient treatment at Belgorod city hospital N1. Respondents were aged between 60 and 89, 97 (59,51%) women and 66 (40,49%) men. There were 92 (56,44%) old and 71 (43,56%) senile age patients. Median age was 71,0 + 2,3. We used EWGSOP (2009) criteries that includes: walking speed definition, dynamometry and muscle mass measurement. Results. In case studies walking speed definition results were divide in following order: 12 (13,04%) old and 19 (26,76%) senile age patients with walking speed below 0.8 meters per sec. Except that walking speed of major patients was normally, dynamometry measures of some elderly persons in relation of all patients in each category, were decreased - 14 (15,22%) _ 23 (32,39%) accordingly. Results of muscle mass measurement, finally stage of research, showed total muscle mass decreasing in 11 (78,57%) of old and 21 (91,30%) of senile age patients. In respondents, living in retirement community, sarcopenia were find out in 28 (26,17%) cases against of 12 (21,43%) outpatient once. Finally 15 (22,1%) of old and 25 (35,21%) of senile age patients suffered from sarcopenia. Conclusion. Therefore, our study shows that sarcopenia is common condition among the older adults, especially specific to retirement communities, increasing accordingly to aging. For better results in researching of methods sarcopenia prophylactics and treatment it is necessary to create step-by-step diagnostic algorithm for it immediately and early on identification not only in retirement communities, but also in general population. Funding. The present study is supported by Belarusian Association of Gerontology and Geriatrics, Belarus and Researching Medical Centre, Moscow, Russia

**P127- SARCOPENIC OBESITY IN BRAZILIAN OLDER ADULTS OF DIFFERENT COHORT: SABE SURVEY– HEALTH, WELL-BEING AND AGING.** L.S. Ferreira[1], M.F.A. Roediger[2], D. Bueno[2], L.A. Gobbo[2], Y.A.O. Duarte[2], M.L. Lebrão[2], M.F.N. Marucci[2] *(Rio de Janeiro, Brazil; 2. São Paulo, Brazil)*

Background and objective: It is clinically relevant to know the magnitude of sarcopenic obesity (SO) in the "new" generation of older adults of the developing countries that experience fast population aging and the obesity epidemic to support the planning of preventive actions. The aim of this studywas to estimate the prevalence of SO in Brazilian older adults of different cohort, participants of the SABE Survey. Methods: SABE Survey: Health,Well-Being and Aging is a longitudinal, epidemiological and household survey held in the city of São Paulo, Brazil, with older adults (≥60y), selected by probabilistic sample. Individuals that completed 60-65y in the years 2000, 2006 e 2011 (born ,in 1935/1940, 1941/1946 and 1947/1951, respectively) were included in this study. Sarcopenia was identified according to the adapted version of The European Working Group on Sarcopenia in Older People (EWGSOP), which considers three components, according to sex: chair rising capacity (time ≥ 75th percentile), handgrip strength (≤ 25 percentile, according to body mass index) and muscle mass index (≤ 20th percentile), considering the percentile of this study population. The obesity was diagnosed by waist circumference (≥80cm for women and ≥94cm for men). We calculated prevalence rates of SO for each generation of older adults. Results: Considering the sample as representative of the city of São Paulo, Brazil, the prevalence of SO 0.3% inolder adults born in 1935/1940, being all women, increased to 4.2% (all women) and 4.7% (men = 2.7%; women = 2.0%) in older adults born in 1941/1946 and 1947/1951, respectively. Conclusion: The prevalence of SO was different between the Brazilian older adults of different cohort. Although the prevalence of SO was low, it increased with each new generation of older adults, suggesting a growing trend of this syndrome in Brazil. Funding:The present study is supported by FAPESP – Foundation for Research Support of the State of São Paulo.

**P128- CASE STUDY OF DRUG-FOOD INTERACTIONS AS A BASIC TO INTERVENTION PROGRAM OF REDUCE UNWANTED INTERACTIONS AND POLYPHARMACY.** L.S. O. Friedman *(Jerusalem, Israel)*

The aging process is accompanied by multiple medications, which often have interactions with food. All this raises risk of unwanted interactions in elderly, in addition to their complex diseases. It is important to examine how drugs and foods affect the function of old patient, its frailty. The aim of this work is to describe a standard patient with possible interactions between drugs and food that she gets. In addition, information on interactions helps to interpret laboratory tests and clinical signs of the patient more accurately. We checked the drugs and food old patient at hospital and cross-checked the information with the reports of nurses and laboratory tests. In order to prove that the case is a standard, statistical processing was carried out among elderly patients. The number of medications, drugs that do interaction with food and medicines, and type of feed were tested. Weakness and drowsiness was a result of drug–drug and drug-food interaction. There were also changes in blood tests. Data show that there are many patients with possible interactions not only drug-drug, but also drug-food interactions. Foods that make interactions are part of the regular patients menu. Some foods have strong interactions with drugs and significant impact on the medical status of the patient. Necessary, that the drugs given to old must be suited to their food. Dietician, physician and pharmacist should work together to avoid side effects and unwanted drug-food interactions. In addition, it is necessity that multidisciplinary team interpreting laboratory results which may vary by drug and food a patient receives. This case study shows how certain foods may change patient function, and interfere with drug therapy. Based on the work, dietitian, pharmacist and a senior physician build intervention program to reduce unwanted interactions particular, and polypharmacy in general. Keywords: polypharmacy, food, drug interaction

**P129- SARCOPENIA RESEARCH ON MUSCLE CELLS USING AN IN VITRO CELL CULTURE MODEL.** A. Heber, H. de la Haye, A. Pyka, K. Stöver, C. Brinkmann, W. Bloch, S. Eichberg, K. Brixius *(Cologne, Germany)*

Background : Due to demographic changes sarcopenia is a phenomenon especially in elderly as an acute geriatric syndrome. Research on muscle tissue by means of biopsis is often a painful intervention especially for elderly. The aim was to prove to what extent C2C12 cells could be used as in vitro model to analyse the regeneration of muscle cells under the influence of human serum in geriatric research. Method : The cohort was divided into three groups of 10 men each. Group A and B were classified by BMI, muscle mass, muscle strength, physical performance and fitness using the definite cut-°©-off points of EWGSOP (Cruz-°©-Jentoft et al., 2010). Group A: sarcopenic, ≥ 65 years, obese (BMI ≥ 30). Group B: ≥ 65 years, healthy. Group C: 20-°©-30 years, healthy. ,To determine metabolic changes in the muscle cells, C2C12 cells were incubated with men's blood serum to compare the Fusion Index (FI) (%) (myonuclei in mytotubes/total amount of myonulei) of each group. Results : The FI of group A was determined with 4.0 ± 0.8% while group B had a 61.0% higher FI than group A with 10.2 ± 2.3%. The FI of group C was the highest with 16.2 ± 2.4%. The differences of the FI comparing group C t grou A (75.0% lower) and group B (37.0% lower) were significant, respectively. Conclusion : The study provides the evidence that an in vitro model incubating human serum on C2C12 cells is a suitable model to study muscle alterations measuring accumulation and fusion of myonulei/myotubes. To support these findings further studies with bigger cohorts are indicated.

**P130- PREVALENCE OF SARCOPENIC OBESITY IN OLDER ADULTS LIVING IN THE NORTHERN CITY OF RIO DE JANEIRO: FIBER III-RJ.** G.C. Campos, V.M. Garcia, C.S. Lopez, R.A. Lourenço *(Rio de Janeiro, Brasil)*

Introduction: The high prevalence of elderly subjects with obesity and sarcopenia highlight the need to prepare studies on this age group and has a direct impact on the quality of life of the elderly, causing decline in basic activities of daily living, functional dependency and disability. Objective: This study has the objective to determine the prevalence of sarcopenic obesity. Methodology: It is a cross-sectional study called FIBER III - RJ (Fragility in Elderly Brazilians) conducted with 402 elderly people over 65 years of both sexes living in the North of Rio de Janeiro between the period 2012 to 2013. Home interviews were conducted, and collected information on anthropometry, socioeconomic and demographic variables, gait velocity to 4.6 m feet, palmar pressure force measured by the Jamar dynamometer Mark and measure of muscle mass by electrical impedance. To assess body composition 284 subjects underwent bioelectrical impedance. With the measurement of the electrical impedance was estimated muscle mass through equation Janssen and defined as reduced muscle mass those in the first quintile. The sarcopenic were defined by muscle mass as those belonging to the first quintile and diagnosis of obesity, subjects were classified according to the cutoffs of percentage of fat recommended by Baumgartner ( 38 % for women and 27 % men ). The analyzes of the variables were calculated simple frequencies with confidence intervals of 95 % with a statistical significance of $p < 0.05$. Data were analyzed using SPSS 19. Results: To assess body composition due to functional impairment or refusal 116 individuals did not undergo BIA. The prevalence of sarcopenic obesity was 2.8 % higher and aged 65-74 years (2.5 %). The average age was 78.8 years (+ / -6.44), grip strength was 21.9 kgf (+ / -6.03) and average running speed 0.7 m / s (+ / -0.1802). More than half (63,1 % ) was with waist circumference compatible with very high risk for metabolic complications. Conclusions: The prevalence of sarcopenic obesity was similar to other studies. The data point to the need for nutritional and physical activity promotion in order to improve the quality of life for seniors.

**P131- DEVELOPMENT AND VALIDATION OF NEW CRITERIA OF FRAILTY IN INDIAN ELDERLY POPULATION- A PRELIMINARY REPORT.** P. Chatterjee[1], R. Kandel[1], G. Desai[1], V.G. Chellaiyan[1], A. Biswas[2], A.B. Dey[1] *(1. New Delhi, India; 2. Chennai , India)*

Introduction: Fried's phenotype of frailty, has it shortcomings when used in the developing country .Cultural differences, occupation and leisure time activity are significant confounding factors. A new set of criteria to diagnose frailty is being mooted to increase reliability, validity and comprehensibility. Methodology: 78 suspected frail or pre-frail elderly patients (>60 years) with 45 from community and 33 from AIIMS Geriatric ward were recruited after obtaining informed consent .Socio-demographic health profile, comprehensive geriatric assessment and frailty were assessed as per Fried's criteria as well as the new criteria (proposed by authors). The criteria has the following component : major - Gait speed, 1kg arm lift , 30 s chair rising ; and minor criteria including three questions relating to nutrition, mood and performance domain. Three major criteria or any two major with any one minor criteria or any one major criteria with three minor criteria were diagnosed as frail. Results: Prevalence of frail, pre-frail patient according to new criteria were 15.38% and 8.97% respectively where as by Fried criteria it were 44.48 %, 23.08% respectively. Pearson correlation between Fried scale versus New scale showed statistically significant linear correlation ($r = 0.312$ ,$p < 0.05$) with correlation coefficient (__2= 0.0906). We found significant correlation between Fried' versus major criteria [$r = 0.565$; $p < 0.05$] .However correlation between Fried's and minor criteria though linear but not significant ($r= 0.192$; $p>0.05$). Conclusion : The preliminary report of this found that new criteria in Indian population was found to be in agreement with Fried's criteria . Further research is required in a larger sample from various socio-cultural clusters to validate the new scale. Funding: National Program for Health Care of the Elderly, Ministry of Health and Family Welfare, Government of India.

**P132- CORRELATION BETWEEN PROTEIN INTAKE AND SARCOPENIA IN OLDER ADULTS WITH HIP FRACTURE.** A. Ballokova[1], R.E. Hubbard[2], N.M. Peel[2], D. Fialova[1], G. Onder[3] *(1. Prague, Czech Republic; 2. Brisbane, Australia; 3. Rome, Italy)*

Background: An adequate intake of dietary proteins is necessary for muscle trophism homeostasis. The aim of the present study was to determine protein and energy intake as well as the prevalence of sarcopenia among older patients admitted to the Orthopedic and Trauma Surgery ward for traumatic hip fracture. We investigated the association between daily protein intake and muscle mass. Methods: This is an observational study involving individuals aged > 65 years with hip fracture. Muscle mass was estimated by bioimpedance analysis (BIA) within 24 hour from admission. Daily protein and energy intake was collected via three-day dietary record. Dietary intake data were coded and energy and macronutrient intakes calculated using a food-calculation system (MetaDieta, Italy). Results: Among 62 patients (mean age 84.6 ± 7.6 years, 84% women), sarcopenia was present in 11 (7%); men were more likely to be sarcopenic than women (40% vs. 5.8%, $p<0.001$). The mean baseline habitual protein intake was 0.8 ± 0.27 g/kg body weight/day, without significant difference between males and females. More than 70% of subjects showed a protein intake below 1.0 g/kg body weight/day. Patients with the lower protein intake showed the higher prevalence of sarcopenia relative to those reporting the higher intake (11.8% vs. 8.2%, $p<0.001$). A positive correlation between daily protein intake, leucine intake and skeletal muscle mass was observed, which reached the statistical significance in men. Conclusions: A low intake of protein and essential amino acids is associated with sarcopenia in older patients with hip fracture. An increase in protein intake should be recommended to older adults, especially in men. Funding: None.

**P133- CONSTRUCTION INFORMATION SHEET ON A DIET LOW IN IODINE BEFORE RADIOACTIVE IODINE THERAPY.** O. Friedman *(Jerusalem, Israel)*

Background : Treatment with radioactive iodine ( RAI , I131 ) is one treatment for thyroid cancer. Low Iodine Diet allows more efficient absorption of RAI gland cells. Recommendations for LID range from 2 to 4 weeks. Limitation of IOD < 50 mcg / day. Diet compositionis a complex task in several aspects : LID is relatively long , there is a low response to diet, restriction in dairy products, fish, egg yolks while trying to improve the nutritional status of the patient. Another difficulty is the absence of sources of iodine in products, additional dietary restrictions such as therapy with warfarin, diabetes, fluid and salt restriction. There are pages of information on diet before RAI therapy, but the team need additional information and tools to provide treatment : explanation of food, recipes, menus0, the use of drugs . Goals : rise awareness of a multidisciplinary team and give information about preparation for the treatment of RAI. To allow the kitchen, patient and family deal with various aspects of diet. flood problem of lack of information on iodine content in foods and water. Intervention : International literature review was performed in LID and recommendations to the iodine content of different compounds in Israel. Information Sheet has been prepared which includes: 1. List of foods with a low content of iodine and of foods with a relatively high content of iodine which you should avoid, 2. Recipes and meal suggestions to LID. 3 General recommendations ,including medication and hygiene products that contain iodine. 4 Sample Menu for iodine diet in hospital. Results: The result is a high compliance , maintaining normal nutritional status In addition, the team knew the area and acquired skills to the patient before RAI. Keywords: iodine, diet

**P134- MUSCLE MASS, MUSCLE STRENGTH AND PHYSICAL PERFORMANCE IN OUTPATIENT OLDER ADULTS WITH DIFFERENT FRAILTY STATUS.** T.C. Chen, C.Y. Chen, M.H. Hu *(Taipei, Taiwan)*

Background: Muscle mass loss, muscle strength decline and poor physical performance including balance and gait are characteristics of frailty and sarcopenia. The purpose of this study was to examine the difference of lower extremity muscle mass and muscle strength in outpatient older adults with different frailty status, and to investigate the association between muscle strength and physical performance. Methods: This study was a cross-sectional design with 148 outpatient older adults recruited from geriatric clinics. Frailty status was characterized according to Fried's Frailty Phenotype. Predicted muscle mass of lower extremity was measured by bioelectrical impendence analysis (Tanita BC-418 Pro Segmental Body Composition Analyzer). Cybex Norm dynamometer was used to measure knee extensors and flexors isokinetic muscle strength at 0, 60, and 180 degrees/second. Physical performance was assessed by the 5-times sit-to-stand test (5tSTS), timed up and go test (TUGT) and 5-meter walk test (5MWT). Results: The average age of subjects were 77.2 years (range 69 to 92 y/o). Subjects in the robust, pre-frail, and frail status were 25%, 70%, and 5% respectively. The isokinetic muscle strength of knee extensors were significantly decreased in pre-frail and frail outpatient older adults compared with the robust group ($p < 0.05$), but there was no difference in predicted muscle mass of lower extremity. The isokinetic muscle strength of knee extensors at 60 degrees/second has higher correlation coefficients with 5tSTS (r=-.35, p=0.003), TUGT (r=-.40, p<0.001) and 5MWT (r=.21, p=0.06) than 0 or 180 degrees. Conclusions. Knee extensor muscle strength was critical for distinguishing outpatient older adults from robust to pre-frail or frail status, and was significantly related to physical performance. Funding: The present study is supported by National Health Research Institutes, Taiwan

**P135- CLINICAL APPLICATION OF THE KIHON CHECKLIST TO PREDICT FRAILTY AND SARCOPENIA IN JAPANESE ELDER OUTPATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE.** K. Senda, S. Satake, K. Kondo, H. Tokuda, M. Nishikawa, M. Miura, H. Endo, K. Toba *(Obu Japan)*

Background: Chronic Obstructive Pulmonary Disease (COPD) is a preventable, treatable, and highly prevalent chronic systemic inflammatory disease. COPD is an etiologic risk factor for frailty and often associated with sarcopenia. The Kihon Checklist (KCL) is a self-administrated questionnaire developed to screen for users of Preventive Care Service under Long-Term Care Insurance in Japan. The information about clinical application of KCL in patients with co-morbidity, including COPD, is scarce. Methods: Clinically stable 43 outpatients with COPD at the pulmonary rehabilitation clinic of the National Center for Geriatrics and Gerontology (40 male and 3 female; age: 74.9 +/-5.9, 65-87 years; The Global Initiative for Chronic Obstructive Lung Disease stage I: 8, stage II: 20, stage III: 11, Stage IV: 4; The BODE index: integrated body mass Index, air flow obstruction, dyspnea and exercise capacity; 2.7 +/-1.9. 0-7 /10) were underwent a comprehensive geriatric assessment including KCL, anthropometry and body composition with dual-energy X-ray absorptiometry. Results: With Fried's frailty criteria, 7 were classified as frail, 23 as pre-frail, and 13 as robust. Mean appendicular skeletal muscle mass index (ASMI) was 6.61 +/-0.64 kg/m2, and 14 had sarcopenia diagnosed with European Working Grope on Sarcopenia in Older People algorithm; 4/43: reduced gait speed, 11/39: low handgrip strength, 2: Severe sarcopenia, 23: pre-sarcopenia. All of 6 male frail patients were diagnosed as sarcopenia. The total KCL score was significantly associated with number of the frailty criteria by Fried, BODE index and parameters of health status, nutrition, mood, dyspnea, gait and physical activity, however, not with pulmonary function, co-morbidity and ASMI. Conclusions: The KCL score might have potential to predict the impacts of the constellation of frailty, disability and co-morbidity (COPD) on health status and mortality, and improve quality of care for elder COPD patients with comprehensive and interdisciplinary approaches for prevention to long-term care. Funding: The present study is supported by the Research Founding for Longevity Sciences 22-1 from National Center for Geriatrics and gerontology, Japan.

**P136- THE RELATIONSHIP BETWEEN SARCOPENIA AND AREA BONE MINERAL DENSITY IN MEN AGE 80 YEARS AND OLDER IN BEIJING.** Y.-X. Hu[1], P. Meng[1], L. Fan[1], Y. Zhang[1], M.-X. Zhang[1], J. Sun[1], M. Li[1], L.-K. Chen[2] *(1. Beijing, China; 2. Taipei, Taiwan)*

Background: The relationship between sarcopenia and bone mineral density in very old men remains unclear. The aim of this study was to investigate the prevalence of sarcopenia and its associations with BMDa among men age 80 years and older in Beijing. Methods: A total of 101 older men aged 80 years and older (mean age 88.8± 3.7) were invited to attend to this study. Appendicular lean mass (aLM), fat mass (FM) and whole-body, lumbar , thigh BMDa were measured by dual x-ray absorptiometry (DXA). 6-meter walking speed, and handgrip strength were collected. The European Working Group on Sarcopenia in Older People (EWGSOP) criteria was adopted for sarcopenia . Relative appendicular skeletal muscle index (RASM) was calculated as aLM/height2. Low muscle mass was defined as RASM is below– 2 SD for gender-specific young men reference group. The cutoff point of low physical performance and low handgrip strength was that the lower 20th percentile of the observed old samples respectively. Results: 1. The prevalence of presarcopenia, sarcopenia , severe sarcopenia and and total sarcopenia was 49.4%, 23.6% , 7.9%, respectively. 2. After adjustment for age , aLM, RASM were positively associated with lumbar BMD(r=0.303, p=0.001; r=0.329, p=0.000) and thigh BMD (r=0.316, p=0.001; r=0.267, p =0.004). 6-meter walking speed was negatively associated with lumbar BMD (r=-0.186, p=0.048), but not significantly associated with thigh BMD (r=-0.08, p=0.396). Trunk FM were positively associated with lumbar BMD(r=0.293, p=0.002) and thigh BMD(r=0.222, p=0.017),but lower lumbs FM were not associated with lumbar BMD(r=0.115, p=0.224) and thigh BMD(r=0.025, p=0.794). BMI was positively associated with both lumbar BMD(r=0.345, p=0.000) and thigh BMD (r=0.285,p= 0.002 ). Multiple linear regression analyses revealed lumbar BMD was only negatively correlated with gait speed indipendently (β=-0.283, p=0.037). Conclusion: Sarcopenia is associated with low BMDa in very old men in China. Funding: This study was supported by Military Healthcare Grants of China(12BJZ40).

**P137- ASSOCIATION OF HAND GRIP STRENGTH WITH 4-YEAR ALL-CAUSE MORTALITY AMONG OLDER SINGAPOREANS: FINDINGS FROM A PROSPECTIVE COHORT STUDY.** R. Malhotra[1], J.S. Huang[1], J.C. Allen[1], N.C. Tan[1], A. Chan[1], T. Østbye[1], Y. Saito[2] *(1. Singapore; 2. Japan)*

Background: While hand grip strength (HGS) has been shown to be predictive of mortality among older adults, most of the studies supporting this association have been conducted in Caucasian populations. The association of HGS with mortality is much less studied in Asian populations, which have different occupational, environmental and anatomical profiles, all known to be associated with HGS, relative to Caucasian populations. The aim of this study is to assess the association of HGS with 4-year all-cause mortality among community-dwelling older adults in Singapore, a rapidly aging multi-ethnic Southeast Asian nation. Methods: Data on HGS among 5000 community-dwelling older (aged 60+) Singaporeans who participated in the first wave (in 2009; baseline) of a national longitudinal survey, and on 4-year (2009 to 2012) mortality among survey participants, derived from the Singapore Registry of Births and Deaths, is utilized. The adjusted (for demographic and anthropometric confounders) association of baseline HGS, as a continuous variable as well as a categorical variable (HGS above or below Singapore-specific age/gender-specific 50th percentile of HGS) with 4-year mortality is assessed using Cox proportional hazards model. Effect modification of the association by gender, education and body mass index is also assessed. Results: The adjusted hazard ratios for the association of HGS with 4-year all-cause mortality will be presented. Conclusions. The findings observed in an Asian population in the current study will be discussed in context of previous associations of HGS with mortality reported primarily in Caucasian populations. Funding: The present study is supported by the Khoo Student Research Award (KSRA), awarded by the Khoo Foundation (Singapore).

**P138- NUTRITIONAL CHANGE AND MUSCLE WEAKNESS IN ALZHEIMER'S DISEASE.** T. Sakurai, N. Ogama, Y. Matsui, K. Toba *(Obu Japan)*

Background: Little is known about sarcopenia and physical frailty in patients with Alzheimer's disease (AD). The purpose of the present study is to clarify the changes of nutritional status and muscle power during the progression of AD. Methods: Cross-sectional design. 596 subjects diagnosed as amnestic Mild Cognitive Impairment (aMCI) or AD were enrolled. AD patients were subclassified into 4 groups by scores of the Mini-Mental State Examination in reference to the Functional Assessment Staging of AD: Mild AD (MMSE score range, 21 to 30), Moderate AD (17 to 20), Moderate-severe AD (12 to 16), Severe AD (0 to 11). Fall risk index (FRI) and Barthel index were measured for functional assessment. To know the nutritional status, BMI, serum levels of nutrients were measured. Bio-impedance analysis was performed to estimate the body composition. Muscle power was examined by the hand grip test. Results: BMI and serum concentrations of total protein, albumin, and vitamin B1 were not changed among five groups of patients. Muscle mass, fat mass and lean body mass were also unchanged. However, muscle power was significantly impaired in the clinical stages of Moderate-severe AD and Severe AD. When we applied the cutoff points for sarcopenia from the EWGSOP, 69.2% and 72.9% of male and female AD patients had muscle weakness, respectively. FRI, an index to discriminate the elderly with functional decline, increased in patients with decreased muscle power. 25-hydroxyvitamin D (VD) is significantly reduced in the Mild AD, Moderate AD, Moderate-severe AD, and Severe AD. VD was significantly associated with impaired muscle power, FRI and basic ADL as well as previous history of falls in women. Conclusions: From Moderate-severe to severe stages of AD (MMSE<16), muscle power significantly decreased with functional decline. VD might play a critical role for the development of muscle weakness in women. Funding: This study is supported by the research fund for Longevity Sciences from the NCGG (25-5) and Health and Labour Sciences Research Grants (H21-choju-005, H25-Ninchisho-008)

**P139- ASSOCIATION BETWEEN ORAL HEALTH, ORAL HEALTH RELATED QUALITY OF LIFE AND INCIDENCE OF FRAILTY IN MEXICAN ELDERS.** R.C. Castrejón-Pérez[1], S.A. Borges-Yáñez[1], L.M. Gutiérrez-Robledo[1], E. Arrivé[1], J.F. Dartigues[2] *(1. Mexico City, Mexico; 2. Bordeaux, France)*

Association between oral incidence of frailty and oral health has not been explored. Objective: To identify if oral health and oral health related quality of life (OHRQoL) are predictors of frailty in home dwelling Mexican elders controlling by gender, age, schooling, marital and socioeconomic status, myocardial infarction, stroke, hypertension, diabetes, osteoporosis, arthritis, number of medications, urinary incontinence, smoking, falling, hospitalization, fractures and self-rate of general health. Method: Household survey in a representative sample of persons ≥70 years living in one district of Mexico City. Sample size was 1294, 1124 persons were interviewed, 838 were clinically evaluated. 594 non-frail were followed for 3 years. 228 completed the follow up. Dependent variable: incidence of frailty (having ≥3 of five components [weakness, slowness, fatigue, low

physical activity and weight loss]). Independent variables: utilization of dental services, self-rating of oral health, hygiene, daily utilization, utilization during night and functionality of removable dental prostheses (RDP); xerostomia, OHRQoL, number of teeth, and severe periodontitis (≥2 teeth with ≥5 mm attachment loss). Univariate analysis and a logistic regression model (LRM) were carried out. Results: Incidence of frailty=14.7%, those who developed frailty were older (80.4±6 years), and have less years of schooling (5.4±4). The LRM showed that each additional year of age, each medicament used and having osteoporosis increases 15% (OR=1.15; 95%CI 1.1-1.3), 38% (OR=1.38; 95%CI1.1-1.8) and 3 times (OR=1.15; 95%CI1.0-9.1) the risk for developing frailty respectively, while each additional tooth reduces 7% (OR=0.93; 95%CI 0.87-0.99) the risk. Conclusion: There is a reduced risk for developing frailty among those persons who have more teeth. Key words: Incidence of frailty, oral health, missing teeth, cohort.

**P140- BODY C OMPOSITION AND PHYSICAL FUNCTION IN HEALTHY COMMUNITY-DWELLING OLDER ADULTS IN SWEDEN, A CROSS-SECTIONAL STUDY.** A. Lindblad, S. Dahlin-Ivanoff, I. Bosaeus, E. Rothenberg *(Gothenburg, Sweden)*

Background: Limited data are available on body composition (BC) and physical function in healthy adults >80 y, potentially hampering development of reference values. We aimed to study 1) BC and physical function and 2) changes in hand-grip strength over a 4-year period in a community-dwelling elderly Swedish population. Methods: Apparently healthy, community-dwelling men (n=51) and women (n=51) aged >83y were measured by Sit to Stand-test, hand grip strength, body height, body weight and BC using a Bioimpedance Spectroscopy (Impedimed). The study was approved by the Regional Ethical Review Board in Gothenburg as an addition to previous study Elderly Persons in the Risk Zone (T176-12). Results: Mean age 86.5 y, no age difference between sexes. Men and women performed equally well at the Sit to Stand-test. Men were significantly stronger with a mean HGS of 34.1 kg compared to women of 19.5 kg. 15 % of total population had a BMI below 22 kg/m2. According to skeletal muscle index 64 % were assessed as having severe sarcopenia (Cruz-Jentoft et al 2010). Conclusion: In this healthy elderly population BC and physical function was well preserved compared to previous studies, although many were classified as sarcopenic according to current cut-offs. Results from this study can be used as reference values for healthy community-dwelling elderly in high age. Key words: Elderly, Body Composition, Bioelectrical Impedance. Funding: This scientific article was financially supported by the Swedish state under the ALF agreement.

**P141- SKELETAL MUSCLE FUNTION DEFICIT: A NEW TERMINOLOGY TO EMBRACE SARCOPENIA.** R. Correa-de-Araujo *(Bethesda, USA)*

Background: Considerable efforts have been taken to better characterize and define sarcopenia in an attempt to help identify patients who might benefit from available therapeutic or preventive interventions, and to support the development of new therapeutic approaches. With the evolving concepts of sarcopenia, a better terminology is needed to reflect not only sarcopenia's original definition (loss of muscle mass), but also to embrace the alterations in muscle strength and function that ultimately lead to mobility disability. Methods: Review of literature on the evolving concepts of sarcopenia, related terminology and nosology. Results: The work of numerous groups resulted in the addition of performance criteria to muscle mass alone or inclusion of both lean mass and gait speed as diagnostic criteria for sarcopenia. More recently, the Foundation for the National Institutes of Health (FNIH) Sarcopenia Phase I Project established criteria for clinically relevant low muscle mass and low muscle strength through the identification of strength and muscle mass cutpoints and the demonstration of the relationship between mobility limitation and these cutpoints. Conclusion: Skeletal Muscle Function Deficit (SFMD) is the proposed new terminology to embrace sarcopenia's evolving concepts and other age-related muscle dysfunctions. The rationale of how this proposed new terminology can provide a framework for the diagnosis and potential therapeutic approaches to age-related muscular dysfunctions will be presented. Funding: none.

**P142- WHAT THE ASSOCIATION BETWEEN SARCOPENIA AND SARCOPENIC OBESITY WITH DIABETES MELLITUS IN THE OLDER ADULTS?** M.A. Roediger[1], M.F.N. Marucci[1], D.R. Bueno[1], L.S. Ferreira[2], L.A. Gobbo[1], Y.A.O. Duarte[1], M.L. Lebrão[1] *(1. São Paulo, Brazil; 2. Rio de Janeiro, Brazil)*

Background: There is controversy in the scientific literature on which the association between sarcopenia and sarcopenic obesity with diabetes mellitus in the elderly population. This study verified the association between sarcopenia and sarcopenic obesity with diabetes mellitus in elderly in community-dwelling. Methods: Cross-sectional study, with 657 elderly (≥ 60 y, both genders), from SABE Survey (2010), in São Paulo city. Sarcopenia was identified considering three components: low performance in the sit and rise from a chair test - S&R (time ≥ 75th percentile according to sex); low handgrip strength - HS (≤ 25 percentile, according to body mass index and gender); and low muscle mass – MM (≤ 20th percentile, by sex), using the percentile of this study population; where diagnosed sarcopenic elderly who had both poor performance and low MM or, normal performance, but low HS and MM. It was considered to be Sarcopenic Obese - SO if the elderly, besides having the sarcopenia, showed a waist circumference ≥ 80 cm for women and ≥ 94 for men. Diabetes mellitus was referred (yes or no), according to gender and age group (69-74, 75-79 and ≥ 80). It was used the Rao & Scott test, for complex samples, multiple logistic regression ($p<0.05$) and statistical software Stata/SE 10.1. Results: Of the 657 elderly subjects analyzed were identified 14% with sarcopenia, 9% sarcopenic obese and 26% diabetics. Verified a positive association of diabetes mellitus with sarcopenia (OR = 2.16, p= 0.002 and CI = 1.32-3.54) and sarcopenic obesity (OR = 2.57, p= 0.001 and CI = 1.46-4.53), independently of gender and age groups. Conclusion: Our findings demonstrate that Brazilian elderly diabetics in community-dwelling have a higher risk of presenting sarcopenia and sarcopenic obesity. These results may contribute to physical disability and metabolic disorders in this population group. Funding: FAPESP - Foundation for Research Support of the State of São Paulo and CAPES - Coordination for the Improvement of Higher Level

**P143- DETERMINANTS OF FRAILTY IN OLD AGE.** M. Duarte [1,2], C. Paúl[1] *(1. Porto, Portugal; 2. Braga, Portugal)*

Background: The Phenotype of Frailty is a syndrome composed by five criteria: weight loss, endurance, physical activity, slowness and weakness (Fried et al., 2001). The elder is considered frail if has impairment in three of these domains. It is known that this condition enhances the risk of disability and death. Methods: This study includes a representative sample, stratified by age group, of elders living in the community (n=338). We developed a frailty protocol, which integrated the criteria of frailty and bio behavioral, geriatric, functionality, health and mental health self-perception indicators. Results: From the analysis of logistic regression models for different groups of variables we concluded that the demographic predictor are: gender (being a woman) (OR 1.7, 95% CI 1,0 - 2,8), age (more advanced) (OR 2.8, 95% CI 1.6 - 4.9) and educational level (no schooling) (OR 2.6, 95% CI 1.1 – 6.0). The bio behavioural variables and the low respiratory flow predict the condition of frailty (OR 3.3, 95% CI 1.9 – 6.0). Geriatric indicators as falls (OR 3.3, 95% CI 1.5 - 5.6), changes in sensory processes, vision and hearing (OR 2.1, 95% CI 1.2 -3. 8; OR 2.1, 95% CI 1.1 - 4.0 respectively) and the presence of at least one comorbidity (OR 1.8, 95% CI 1.0 - 3.2) are predictors of frailty. Impairment in ADL increases the risk of frailty (OR 2,1, 95% IC 1.2 -3.5). The presence of depressive symptomatology (OR 4.2, 95% IC 1.9-9.2) and cognitive deterioration (OR 2.9, 95% IC 1.6 -5.3) are equally predictive of this condition. Maintaining social relations (OR 0.3, 95% IC 0.1-0.5) and a good self-perception health are protective of the condition of frailty (OR 0.4, 95% IC 0.1-0.9). Conclusions: Frailty can be predicted through a set of psychosocial and geriatric factors. Other indicators such as social relations and subjective health act as protective factor of frailty.

**P144- EARLY DETECTION OF COGNITIVE IMPAIRMENT IN FRAIL ELDERLY USING FNIRS SIGNALS.** H. Endo, S. Satake, E. Hon, K. Toba, S. Kato *(Obu, Japan)*

New trial approach to early detection of cognitive impairment in the frail elderly with the use of fNIRS signals. We studied blood flow under scull using fNIRS which means functional near-infrared spectroscopy. Speech sound was analyzed by Two-phased Bayesian classifiers. Discriminating elderly individuals with three clinical group were normal cognitive ability, mild cognitive impairment and Alzheimer's disease. Classification assessment was examined. To screen the cognitive impairment in the elderly using speech prosody and fNIRS signal features. As a clinical database, managing bio-signals data with the clinical labels 18 males and 32 females between age of 64 to 92. excluding subjects which moderately-severe or profound AD patient (more than CDR 1 . In conclusion the accuracy rate of AD was 90.0% and the predictive rate of AD was 91.7%. This study may be effective to find MCI due to AD. We need further study, but fNIRS may be expected to detect early diagnosis of brain frail.

**P145- STRENGTH TRAINING AT HIGH VERSUS LOW EXTERNAL RESISTANCE IN OLDER ADULTS: LONG-TERM MUSCULAR ADAPTATIONS AND EXERCISE ADHERENCE.** E. Van Roie[1], I. Bautmans[2], W. Coudyzer[1], F. Boen[1], C. Delecluse[1] *(1. Leuven, Belgium; 2. Brussel, Belgium)*

Background: The long-term training benefits of high- and low-resistance exercise in older adults remain poorly understood. We therefore compared the long-term muscular and functional adaptations as well as the exercise adherence after high- and low-resistance exercise. The study was designed as a 24-week follow-up of a 12-week resistance training intervention. Methods: Fifty-six older adults were randomly assigned to leg press and leg extension training at either HIGH (2 x 10-15 repetitions at 80% of one repetition maximum (1RM)), LOW (1 x 80-100 repetitions at 20% of 1RM), or LOW+ (1 x 60 repetitions at 20% of 1RM, followed by 1 x 10-20 repetitions at 40% 1RM). The main outcome measures included muscle volume, 1RM, isometric and isokinetic strength, and functional performance. Results: At follow-up, muscle volume and isokinetic strength were no longer different from baseline in any of the groups. Post-intervention gains in isometric strength were partly preserved in all groups. For leg press 1RM, the gain from baseline to follow-up was lower in LOW (+12.6±7.2%) than in HIGH (+34.9±35.1%, p=0.044) and tended to be lower in LOW than in LOW+ (+26.4±19.7%, p=0.083). For leg extension 1RM, the residual gain was lower in LOW (+11.6±5.9%) than in LOW+ (+21.7±15.8%, p=0.009), but similar in HIGH (+16.3±9.0%) compared to LOW (p=0.252). Most functional performance tests exceeded baseline levels at follow-up, with no difference between groups. Long-term exercise adherence was similar in all groups: 16.7% of subjects in HIGH, 21.1% in LOW+ and 11.1% in LOW continued strength exercising after cessation of the intervention (p=0.716). Conclusions: Despite the beneficial 1RM gain of HIGH and LOW+ over LOW, this study suggests that high- and low-resistance exercise may be similarly effective for counteracting age-related declines in muscle volume, muscle strength and functionality in the long-term. Funding: The present study is supported by the Research Foundation Flanders, Belgium.

**P146- MULTIVARIATE ANALYSES OF ROTATOR CUFF MUSCLE LOSS IN THE SHOULDER.** J.F. Henseler, Y. Raz, J. Nagels, E.W. van Zwet, V. Raz, R.G.H.H. Nelissen *(Leiden, The Netherlands)*

Shoulder complaints are highly frequent in elderly, and are often caused by rotator cuff (RC) muscle loss. RC tearing can result in a decrease of the acromiohumeral (AH) distance, which is highly predictive for prognosis and complications. Therefore, predictors for decrease in AH could provide unbiased description for RC muscle function. Methods: We developed an imaging-based methodology to measure pathological changes in RC muscles and compared univariate and multivariate models to assess the contribution of muscle atrophy and fat infiltration to RC tearing. We present analysis of Magnetic Resonance Imaging with arthrography (MRA) from controls and RC patient groups. Results: We show that in univariate analysis the infraspinatus surface area and the absence of fat infiltration of the supraspinatus and infraspinatus has a positive effect on the AH distance. In a combined multivariate model only the infraspinatus atrophy has a positive effect on the AH distance. Conclusions: Biomechanics of the RC is concurrently coordinated by multiple muscles therefore we suggest the multivariate analysis as an important tool to identify significant changes in the RC muscles. Our results reveals a significant loss of RC muscles and that the AH distance and infraspinatus muscle loss were significantly associated, and suggest a prominent role for the infraspinatus to counter in a decrease of the AH distance. Funding: This study is funded by the Dutch Arthritis Association (DAA), grant number 2013-1-060.

**P147- DEFINING NORMATIVE VALUES FOR HAND GRIP STRENGTH AMONG OLDER SINGAPOREANS: A QUANTILE REGRESSION-BASED APPROACH.** J.S. Huang[1], R. Malhotra[1], J.C. Allen[1], N.C. Tan[1], A. Chan[1], T. Østbye[1], Y. Saito[2] *(1. Singapore; 2. Japan)*

Background. Hand grip strength (HGS) is utilized as a marker of physical frailty either on its own or in combination with other variables. For clinical interpretation and use in frailty indices, an individual's HGS value is compared to country-specific age- and gender-specific reference values. However, such reference values are not available for Singapore, a rapidly aging Southeast Asian nation. Use in Singapore of HGS reference values from other countries is not recommended as these values mostly pertain to Caucasian populations, which have occupational, environmental and anatomical differences relative to Asian populations. The study aims to generate age- and gender-specific HGS reference values for older Singaporeans. Methods. Data on 7,400 HGS measurements, measured using a Smedley-type spring dynamometer, among community-dwelling older (aged 60+) Singaporeans who participated in a recent national longitudinal survey is utilized. The mean and standard deviation of HGS in each strata defined by gender and age (60-64; 65-74; 75-84; >85) is assessed. Analysis of variance test is used to test for significant differences across age groups in the same gender and unpaired t-test to test for significant differences across gender in the same age group. Quantile regression is used to construct gender-specific HGS 5th and 50th percentile reference curves from age 60 onwards. Results: The mean and standard deviation of HGS in each strata defined by gender and age (60-64; 65-74; 75-84; >85) will be presented. Gender-specific HGS 5th and 50th percentile reference curves from age 60 onwards for older Singaporeans will be presented. Conclusions. The gender/age-strata specific mean HGS values, and the gender-specific HGS 5th and 50th percentile reference curves from age 60 onwards are useful for clinical interpretation of HGS among older Singaporeans, as well as for use in frailty indices in this population. Funding: The present study is supported by the Khoo Student Research Award (KSRA), awarded by the Khoo Foundation (Singapore).

**P148- SCREENING OF FRAILTY IN THE OLDER PATIENTS AFTER SURGERY.** A.N. Ilnitski[1], K.I. Prashchayeu[1,2], S.G. Gorelik[2], S.V. Bogat[3], D.V. Volkov[3], S.S. Sultanova[4] *(1. Belarus; 2. Moscow, Russia; 3. Belgorod, Russia; 4. St. Petersburg, Russia)*

Background: Frailty is the last sign of aging, leads to gradually reduction of functionality. Also it is main application point of rehabilitation and prevention measures at orderly patients. Thus frailty in the last years became the important sphere of interests of surgeons as well as geriatrics. Methods: Occurrence of geriatric syndromes and level of frailty studied at 234 old patients after surgery. Participants were from 60 to 90 years old, 137 women and 97 men. Thereat older patients were 145, senile age – 89. Average age was 68,7+3,4. The study managed by applying original software program «Geriatrics care optimization in terms of frailty status». It consists of 5 modules: «Functional mobility assessment in elderly patients» (Tinnetti M., 1986), «Mini nutritional assessment (MNA)», «Mini-mental state examination» (Folstein M.F., Folstein S.E., McHugh P.R., 1975), «Philadelphia geriatric morale scale» (Lawton M.P., 1975), measuring performance in activities of daily living (ADL) (Barthel index, 1965). Results: Frailty was defined at 51,0 % elderly patients and at 79,8 % of senile age patients after surgery (r=0,086, p<0,05). 13,8 % elderly patients and 6,7 % of senile age patients had no frailty (r=0,094, p<0,01). Pre-frailty registered at 35,2 % elderly patients and 13,5 % of senile age patients (r=0,093, p<0,05). Mild frailty registered at 26,2 % elderly patients and 26,9 % of senile age patients (r=0,096, p<0,01). Moderate frailty with long care need registered at 13,1 % elderly patients and 12,4 % of senile age patients (r=0,091, p<0,05). Severe frailty provided with special careful care registered at 4,8 % elderly patients and 15,7 % of senile age patients (r=0,086, p<0,01). Terminal frailty registered at 6,9 % elderly patients and 24,7 % of senile age patients (r=0,085, p<0,05). Studying of frailty status and its stages was quite to define fully satisfactory algorithm and rehabilitation measures for elderly and senile age patients after surgery. Also it helps and to develop appropriate rehabilitation program and improve functional disease outcomes to 24,7+2,3%. Conclusion: In summary high frequency of frailty syndrome at elderly and senile age patients shows that results of treatment depends not only of surgical but also at multiply associated diseases and frailty status. It testifies about frailty screening significance in surgery and rising up physical function of patients after discharge. Therefore, the further development of rehabilitation services for older patients, especially patients with senile age after surgery should be based on the implementation of methods and techniques, including the use of a specialized geriatric examinations, as well as definitions for each patient's clinical, medico-social and social rehabilitation with application of the method of learning the professional team involved in rehabilitation. Funding. The present study is supported by Belarusian Association of Gerontology and Geriatrics, Belarus and Researching Medical Centre, Moscow, Russia

**P149- STATE OF BONE, FAT AND MUSCLE TISSUE IN MEN WITH RHEUMATOID ARTHRITIS.** N.A. Shostak, A.A. Kondrashov, A.A. Muradyants, V.S. Shemenkova *(Moscow, Russia)*

Background: Reduction of bone mineral density (BMD) and muscle mass are significant predictors of fractures in men, which leads to the high importance of studying the state of BMD and body composition. Methods: the study involved 73 male patients with a documented diagnosis of RA at the middle age of 59 years. Depending on the reception of glucocorticosteroids (GC) was allocated two groups: first who are not receiving GC and second who are receiving. The study of BMD at the lumbar spine and femoral bone was measured by dual-energy x-ray absorbciometry. Assessment of body composition was carried out, using the «Whole body». Sarcopenia was diagnosided as a decrease in lean mass index of less than 7,26 kg/m2. Results: 63% of patients showed a reduction of BMD, OP was diagnosed in 18 (24,7%), and osteopenia - in 28 (38,4%). The most significant decrease in BMD was observed in the neck of the femur in the main group and subgroups. There was a negative correlation degree of activity of RA and indicators of BMD of the lumbar spine (r=-0,4, p<0,05) and proximal femur (r=-0,38, p<0,05). Assessment of body composition was significant decrease in the total lean mass (LM) of the body, and the trunk and limbs of LM (p<0,05) . Sarcopenia detected in 40 (55,8%). In 25 (67,6%) patients with sarcopenia decreased BMD to the level of osteopenia (35,2%) and OP (32,4%). Conclusion: 63% of men with RA, there was a decrease in BMD, the corresponding OP/osteopenia with a primary reduction of BMD at the femoral neck. Decrease BMD was significantly associated with a high degree of disease activity (r=-0,4, p< 0,05). Taking GC had no significant effect on BMD at the femoral neck. Analysis of body composition in 55% of patients showed a reduction in the level of LM limbs sarcopenia.

**P150- SARCOPENIA AND SARCOPENIC OBESITY IN POLIOMYELITIS PATIENTS.** J.H. Lee, J.-Y. Lim *(Seoul, Korea)*

Objectives: Sarcopenia results in a loss of muscle mass and strength. Obesity may synergistically increase their effect on physical disability. Mobility of poliomyelitis patients is poor, which makes them prone to have both sarcopenia and obesity. The objectives of this study are to evaluate the morbidity of obesity by different criteria (body mass index and percent body fat) and to compare the SPPB score between sarcopenic obesity group and non-sarcopenic obesity group in poliomyelitis patients. Participants: Total 80 patients was enrolled and 52 of them (n=52, F=35, M=17) completed examination. The patients visited outpatient department of rehabilitation medicine in Bundang Seoul National University Hospital. All of them had flaccid paralysis at unilateral or bilateral lower extremity and had no sphincter disturbance. Measurement: All patients completed a questionnaire including symptoms related to postpolio syndrome and other information. Fifty two among all participants visited our clinic for additional physical measurements and tests. Basic measurements include height, weight, circumference of chest and lower extremities, leg length discrepancy. Body composition test was done by dual X-ray absorptiometry. We evaluated body mass index, percent body fat, and skeletal muscle mass index. Short Physical Performance Battery (SPPB) was used as a patient's functional status evaluation. Result: Among 52 patients, 17 patients were male and 35 patients were female. Average age was 50.9 (37~80) years. According to BMI criteria, 40.4% (women 42.9%, men 35.3%) of poliomyelitis patients were classified as obesity. According to waist circumference, 51.9% (women 42.9%, men 70.6%) of patients were classified as obesity. When the patients were classified by %Fat criteria, 96.2% (women 94.3%, men 100%) of patients were classified as obesity. In the prevalence of sarcopenia, 96.2% (women 94.3%, men 100%) of the patients were classified as sarcopenia when classified by SMI. 61.5% (women 51.4%, men 82.4%) of the patients were classified as sarcopenia when classified by ASM/height squared criteria. In the prevalence of sarcopenic obesity, 94.2% (women 91.4%, men 100%) of the patients were classified as sarcopenic obesity when classified by SMI. 59.6% (women 48.6%, men 82.4%) of patients were classified as sarcopenic obesity when classified by ASM/height squared criteria. The prevalence of sarcopenia was higher by SMI than by ASM/ht2 criteria. Prevalence of Sarcopenic Obesity was higher in men than women. 80.8% of patients (women 82.9%, men 76.5%) had post-polio syndrome. In SPPB, sarcopenic obesity group revealed low score compared to non-obese group. Conclusion: Sarcopenia and sarcopenic obesity is highly prevalent in poliomyelitis patients. Men had higher prevalence of sarcopenic obesity than women in poliomyelitis patients. BMI may be inappropriate index to assess adiposity status in poliomyelitis patients. Sarcopenic obese patients showed significantly low level of function in SPPB score. It is necessary to be concerned in the potential harmful consequences of longstanding sarcopenic obesity in poliomyelitis survivors.

**P151- MUSCLE STRENGTH MEASURED BY JUMPING MECHANOGRAPHY IS ASSOCIATED WITH BONE MINERAL DENSITY OF HIP IN HEALTHY ELDERLY WOMEN.** E.Y. Lee, B.M. Song, S.W. Lee, H.S. Choi, C.O. Kim, H.C. Kim, Y. Youm, Y. Rhee *(Seoul, Korea)*

Background: A recent study showed high prevalence of sarcopenia and its significant relation to osteoporosis in women with a fragility fracture of hip. Although sarcopenia is associated with a decline not only in muscle mass but also in muscle function, many studies were based on muscle mass, but not muscle strength. The aim of this study was to investigate the association between muscle strength measured by various functional tests and osteoporosis of hip in healthy elderly women. Methods: We recruited 191 healthy community-dwelling women aged 64 to 85 years. Whole body composition and bone mineral density (BMD) at hip were measured using bioelectrical impedance analysis and dual X-ray absorptiometry, respectively. Muscle function was assessed by timed-up and go (TUG), chair rise test (CRT), grip strength (GS), and jumping mechanography (JM). Results: There were significant differences in age, body mass index (BMI), thigh circumference, vitamin D, skeletal muscle mass according to the category of femoral BMD. Functional tests except TUG showed decrease of muscle strength in osteoporotic group. In correlation analysis, thigh circumference and muscle mass had positive correlation with femoral BMD. All functional tests except TUG showed a significant correlation between muscle strength and femoral BMD. Multiple logistic regression results showed that muscle mass and strength measured by JM are significant predictors for osteoporosis of hip. Furthermore, odds ratios for osteoporosis of hip were 0.47 (95% CI, 0.234-0.965) with skeletal muscle index and 0.10 (95% CI, 0.015-0.705) with jump power, respectively. Conclusions. Muscle strength measured by JM may be a useful marker for osteoporosis of hip in healthy elderly women.

**P152- THE DIFFERENCE OF APOPTOTIC RESPONSES IN DENERVATED MUSCLE ATROPHY OF AGING RAT SKELETAL MUSCLES.** G. Lee, J.-Y. Lim *(Seoul, Korea)*

Introduction: Age-related change of skeletal muscle, which is called sarcopenia, has become a significant burden in our society. Most aged people are at risk of diseases related to denervated condition. The purpose of this study is to investigate the difference in multidimensional characteristics of muscle atrophy related to aging and severity of nerve injury. Methods: We examined muscle wet weight, MHC isoform composition in both gastrocnemius and soleus muscles of 15 young (3 months) and 15 aged (22 months) Sprague-Dawley rats. Cross-sectional area (CSA) and the apoptotic responses (including TUNEL, expression of Bcl-2 and BAX) in gastrocnemius of young and aged rats were also examined. Each age group was divided into 3 subgroups according to the severity of nerve injury (control, partial denervation and complete denervation). ANOVA was performed via R-program. Results: Among old rats, only 13 rats were alive till finishing all protocol. Serial Intervention effects were observed in all parameters ($P<0.05$) except MHC IIx of gastrocnemius ($P=0.05$). But some parameters did not show the difference from aging, such as MHC composition of soleus muscle, Bcl-2 expression. Only 2 parameters, muscle wet weight to body weight ratio (MBR) of gastrocnemius and CSA, had the interaction between 2 factors, positive and negative synergistic effects, respectively. Conclusions: We found that the level of apoptosis was elevated from aging, and additionally the serial changes were also found according to the severity of injury. But there was no definite synergistic effect between aging and denervation. Aging rats have more severe muscle condition of apoptosis but no higher vulnerability to further damage from denervation than young. Key words: Aging, Denervation, Apoptosis, Rat, Atrophy, Skeletal muscle

**P153- THERAPEUTIC SPACE WITH SMART SKIRTING BOARD: SARCOPENIA, NUTRITION, PHYSICAL EXERCISE AND RELAXATION.** M.G.M. Moutinho[1], V.M.S. Fernandes[2], J.P. Marujo[1] *(1. Almada, Portugal; 2. Malveira da Serra, Portugal; 3. Lisboa, Portugal)*

Background: From the demographic point of view, aging is increasing the number of years lived to the life cycle. However, this aging should be done with quality of life and dignity. Rosenberg was the first researcher to use the term Sarcopenia in 1989, describing it as a loss of skeletal muscle mass. In our days, Sarcopenia is generally clearcut as the degenerative loss of skeletal muscle mass, quality, and strength associated with aging. To avoid the development of Sarcopenia we used the smart skirting board environment to stimulate/improve the quality of life of three patients with Sarcopenia. Methods: The smart skirting board is composed by snoezelen system, a laser system, an in-built music system to hear the radio, a CD player for relaxation, CDS with voice instruction and music designed to promote reminiscence which is intended to stimulate memories and cognition. The snoezelen system improves memory, verbal skills, concentration, sociability, mood and well-being. In the therapeutic environment created with the smart skirting board, along with hypnosis, meditation, relaxation techniques and body wisdom process (parts therapy) we stimulate the appetite and improve the physical exercise performance in three patients with Sarcopenia. Results: Our qualitative results showed that all three participants with Sarcopenia have increased the appetite and consequently they gain weight and at the same time they have improved their performance in physical exercise, gaining muscle mass. Conclusions: With the therapeutic atmosphere created by the smart skirting board along with hypnosis and body wisdom process (parts therapy), the participants with Sarcopenia could have cognitive awareness of diet and physical exercise for a more active, healthy and positive.

**P154- ASSESSMENT OF SARCOPENIA IN COMMUNITY-DWELLING OLDER PEOPLE: EVALUATION OF THE EWGSOP CONSENSUS DEFINITION CRITERIA.** D.M. Mijnarends[1], R.J.G. Halfens[1], J.M.M. Meijers[1], Y.C. Luiking[2], S. Verlaan[2], J.M.G.A. Schols[1] *(1. Maastricht, The Netherlands; 2. Utrecht, The Netherlands)*

Background: Sarcopenia, the loss of muscle mass and function, negatively influences the quality of life of affected older people. Therefore its assessment is of clinical importance. The aim of this study was to identify sarcopenia in community-dwelling older people, according to the European Working Group on Sarcopenia in Older Persons (EWGSOP) algorithm and to evaluate the contribution of the individual criteria. Methods: This cross sectional Maastricht Sarcopenia Study (MaSS) is undertaken in Dutch community-dwelling older people (<65y). Participants were recruited from May 2013 via randomly selected addresses provided by the municipalities (response rate 15%). A subset of data (n=117) was analyzed. Sarcopenia was assessed according to the EWGSOP algorithm, including muscle mass (measured by bioelectrical impedance), muscle strength (by handheld dynamometry) and physical performance (by gait speed). Results: When using cut off values for severe sarcopenia (skeletal muscle index (SMI) <8.50 kg/m2 for men; <5.75 kg/m2 for women), 9 out of 117 participants (8%) were classified as having sarcopenia. In 5 sarcopenic participants, low SMI, poor grip strength (<30kg men; <20kg women) as well as slow gait speed (<0.8m/s) were present. In 1 sarcopenic participant low SMI and slow gait speed were present, while 3 participants had low SMI and poor grip strength. Of the participants not classified as having sarcopenia, 8 had low SMI (but no slow gait speed nor poor grip strength) and 35 had poor grip strength and/or slow gait speed, but no low muscle mass. The prevalence rate increases to 30% when using cut off values for moderate sarcopenia (SMI <6.75 kg/m2 (female); <10.75 kg/m2 (male)). Conclusions: The prevalence of sarcopenia is highly dependent on the chosen cut off values for SMI and the definition. The prognostic value of the single and a combination of criteria should be studied to enhance clinical applicability.

**P155- RELATIONSHIP OF FRAILTY, DISABILITY AND MULTIMORBIDITY: EVIDENCE OF SABE STUDY (ACRONYM FOR HEALTH, WELFARE AND AGING).** D.P. Nunes, T.R.P. Brito, L.P. Corona, Y.A.O. Duarte, M. Lebrão (*São Paulo, Brazil)*

Background: Disability, multimorbidity and frailty are conditions pertaining to geriatric syndromes. These conditions are quite prevalent and have important implications for the functionality and quality of life for seniors. The objective of this study was to describe the interrelationships of frailty, multimorbidity and disability among the oldest old. Methods: This study is part of the SABE Study (acronym for Health, Welfare and Aging), held in São Paulo, Brazil. It is a cross-section, with 433 elderly (≥ 75 years) in 2009. Frailty was measured using five components (weight loss, fatigue, reduced walking speed, low physical activity, decreased muscle strength). Considered frail elderly who had three or more components. Were considered disability, difficulty to perform one or more basic activity of daily living and multimorbidity, the presence of two or more chronic diseases (hypertension, diabetes, chronic obstructive pulmonary disease, cardiovascular disease, stroke, osteoporosis, and joint disease). We used the Rao-Scott test for association proportions. Results: We evaluated 320 elderly, 18.8% of these were fragile, 35.6% reported disability and 67.7% had multimorbidity. The presence of disability and multimorbidity were associated with frailty. Most of the patients had a frailty co - occurrences of these two conditions (61.3%), while 26.4 % showed co-occurrence with multimorbidity and the disability to 5.2%. Elderly patients over the three conditions were hospitalized and used the emergency services in the last year, 33.4% and 40.0%, respectively. A quarter of the frail elderly reported the use of emergency services. Conclusions: The oldest old fragile exhibit specific characteristics and that need to be known to the adequacy of welfare policies because of the demands required by this population. Funding: The present study is supported by Research Foundation of the State of São Paulo.

**P156- OXIDATIVE DNA DAMAGE AND MTDNA DELETIONS IN COPD PATIENT MUSCLE: EVIDENCE OF ACCELERATED AGING?** Y. Konokhova, S. Spendiff, T. Jagoe, S. Kapchinsky, R.T. Hepple, T. Taivassalo *(Montréal, Canada)*

Background: Chronic obstructive pulmonary disease (COPD) is an age-associated lung disease characterized by exercise intolerance and alterations in limb muscle including oxidative damage, fiber atrophy, and decreased muscle mitochondrial capacity. Interestingly, several of these cellular characteristics are also common features of healthy aging muscle, suggesting COPD may accelerate normal aging. A marker of age-related cellular impairment is damage to mitochondrial DNA (mtDNA), resulting in formation of mtDNA deletions. Accumulation of mtDNA deletions within a myofiber can directly impair cellular respiration. The prevalence of mtDNA deletions in COPD skeletal muscle has not been previously investigated. We hypothesized that higher levels of oxidative stress will result in greater prevalence of mtDNA deletions in COPD muscle compared to age-matched controls. Methods: Levels of oxidatively-damaged DNA were measured using ELISA, in 29 moderate-to-severe COPD patients (mean age 66±5yr, FEV1=48±15% predicted) and 19 age-matched controls (mean age 68±5yr). Presence of mtDNA deletions in muscle homogenates was detected using long-range PCR and gel-electrophoresis. Respiratory-deficient myofibers were identified by sequential staining for cytochrome oxidase (encoded by mtDNA) and succinate dehydrogenase (not encoded by mtDNA). Results: COPD patients had higher levels of oxidized DNA (387±41pg/mL) compared to controls (258±21pg/mL, $p=0.03$); higher prevalence of mtDNA deletions (74% of patients

vs 15% of controls, p<0.01) and respiratory-deficient myofibers (8.0±2.1%, and 1.5±0.42% in controls, p<0.05). Within COPD, patients with mtDNA deletions had higher levels of oxidized DNA (457 ± 46 pg/mL) than patients with no deletions (197 ± 29 pg/mL, p < 0.05). Conclusion: Consistent with our hypothesis, muscle of COPD patients exhibited greater oxidatively damaged DNA and higher levels of mtDNA deletions. As these are common traits in aging muscle, our results are consistent with the idea that the pathophysiology of COPD accelerates normal aging processes.

**P157- AGE-REGULATED TRENDS SIGNIFICANTLY DIFFER BETWEEN MUSCLES IN THE SHOULDER.** Y. Raz[1], J.F. Henseler[1], J. Nagels[1], P. van der Zwaal[2], R.G.H.H. Nelissen[1], V. Raz[1] *(1. Leiden, The Netherlands; 2. The Hague, The Netherlands)*

Background: Shoulder complaints increase with age and are highly frequent in elderly. Immobility of the shoulder is often caused by degeneration of the rotator cuff (RC) muscles. These four muscles coordinate three-dimensional arm mobility as a single unit. However, the trend of their muscle degeneration during aging is poorly understood. We investigated the trend of pathological changes in the RC muscles with age using a robust imaging-based procedure. Methods: Using imaging-based methodology with Magnetic Resonance with Arthrography (MRA) we measured surface area and fat infiltration in four RC muscles and the adjacent deltoid muscle from 413 subjects that were grouped into controls and RC tear patients. Results: We found that the trends of muscle atrophy and fat infiltration significantly differ between muscles. We show that in controls changes in supraspinatus and subscapularis are significantly age-associated and initiate after the growth period. In contrast, trends in infraspinatus, teres minor or deltoid are not age-associated. However, in RC tears all measured muscles, except for the teres minor, show an age-associated decline. Fat infiltration is prominent only in elderly and in RC tears, suggesting that changes in fat-infiltration are subsequent to muscle atrophy.Conclusions Muscle degeneration is highly affected during aging. Our results reveal that the rate of muscle atrophy highly differ between different muscles in the same anatomical structure. We suggest that initially muscle atrophy starts in the supraspinatus and to a lesser extent in the subscapularis and sequentially muscle size reduces in neighboring muscles, where an increase in fat infiltration is subsequent to muscle atrophy. These results shed light on the sequential mechanistic of muscle degeneration in the shoulder and its most affected components.

**P158- A NOVEL FEED-FORWARD LOOP BETWEEN PROTEIN HOMEOSTASIS AND RNA METABOLISM REGULATES MUSCLE AGING.** V. Raz *(Leiden, The Netherlands)*

RNA metabolism is regulated by PABPN1. PABPN1 levels regulate poly(A) tail length and poly adenylation site usage at the 3' – UTR of mRNAs. We found that levels of PABPN1 are significantly decline during aging, specifically in age-affected skeletal muscles. PABPN1-down-regulation induced aging pathology of skeletal muscle cultures. Levels of PABPN1 significantly affects the expression of gene families that are known to regulates muscle aging. Age-regulated muscle degeneration is also found in oculopharyngeal muscular dystrophy (OPMD). OPMD is caused by alanine-expansion mutations in PABPN1. Mutated PABPN1 is sequestered in insoluble nuclear aggregates causing reduced levels of soluble and functional PABPN1. In addition, in OPMD PABPN1 levels further reduced over age-matching control group. We show that PABPN1 mRNA binds to PABPN1 protein and therefore can self-regulates its expression levels. We suggest that PABPN1 levels are regulated in a feed-forward loop between mRNA and protein homeostasis, as aging is progressed this loop is dysregulated making PABPN1 as a key regulator of RNA metabolism in aging muscles.

**P159- FASTING GHRELIN LEVELS ARE RELATED WITH SARCOPENIA IN ELDERLY SUBJECTS.** M. Serra-Prat, M. Papiol, R. Monteis, E. Palomera, M. Roca, E. Mans *(Spain)*

Introduction: Understanding the mechanisms that cause sarcopenia is essential to design effective strategies to prevent functional decline and frailty. Changes in nutritional status, in anabolic hormones and inflammatory patterns come with age. Ghrelin is a peptide that acts at the level of these three areas, increasing appetite and food intake, regulating energy balance, stimulating the anabolic axis GH/IGF-1 and inhibiting different pro-inflammatory cytokines. Objective: To assess the relationship between fasting ghrelin and sarcopenia and frailty in the elderly population. Methodology: An observational, cross-sectional study was designed in which two groups were compared: a) ≥70 years old subjects and, b) young adults (≤ 65 years old). Frailty among elderly subjects was considered according to L Fried criteria and sarcopenia was diagnosed according EWGSOP criteria. Sever sarcopenia was considered when low muscle mass was accompanied by low muscle strength and low walking speed. Main study characteristics were fasting ghrelin levels, body composition by bioimpedance, hand grip, and functional capacity (by Barthel score). Results: 55 elderly subjects and 33 young adults were recruited. In both age groups mean ghrelin leves were significantly higher in women than in men. No difference was observed in mean ghrelin levels between young and elderly men (752 vs 716; p=0.763) and women (995 vs 859; p=0.190). Among elderly subjects, those with sarcopenia had lower ghrelin levels in comparison to those without sarcopenia (650 vs 899; p=0.036), but no difference in ghrelin levels were observed between frail and non-frail subjects (718 vs 816; p=0.846). Elderly subjects without sarcopenia had exactly the same ghrelin levels as young adults (899.3 vs 899.6). In young women, ghrelin levels were correlated with fat free mass (rs=0.58; p=0.007) and muscular mass (rs=0.54; p=0.015), but these correlations were not observed in young men and disappeared in elderly women. Conclusions: Low ghrelin levels can contribute to sarcopenia in the elderly, especially in women, but new prospective studies are needed to confirm this hypothesis.

**P160- POSITIVE ASSOCIATION BETWEEN COGNITIVE FUNCTION AND INDICES OF FITNESS IN THE VERY OLD: LESSONS FROM THE ELITE MASTERS ATHLETE.** S. Taran[1], M.E. Filion[1], N. MacMillan[1], C.M. Sabiston[2], R.T. Hepple[1], T. Taivassalo[1] *(1. Montréal, Canada, 2. Toronto, Canada)*

Background: Cognitive decline and deteriorating physical abilities are typical features of aging, with the biggest impact at 75 years and older. Recent evidence finds declines in muscular strength and function parallel cognitive declines with aging, whereas cognitive decline is lower in those who better maintain strength and/or aerobic fitness with aging. We hypothesized that elite elderly (≥75yr) Masters Athletes (MA) represent a population with preserved cognitive function relative to non-athlete controls (NAC). Methods: Fifteen elite track and field MA of both sexes (top 3 in their events internationally) and 14 age-and sex-matched NAC participated in cognitive tasks assessing global cognitive function (Mini Mental State Exam), verbal learning and memory (Rey Auditory Verbal Learning Test), problem solving (Modified Wisconsin Card Sorting Test), attention and processing speed (Trail Making Test), and verbal working memory (Digits Forward and Backward test); magnetic resonance imaging to measure thigh muscle cross sectional area; Biodex testing to assess maximal voluntary isometric strength; incremental cycle ergometry to assess aerobic fitness; and clinically relevant functional measures of strength (gait speed, balance, and chair stands). Results: Based on Pearson correlation coefficients, aerobic fitness was associated with verbal learning and memory, and global cognitive function (r=.37 to .51, p<.05). Strength was associated with verbal learning and memory (r=.34 to .44, p<.05). Consistent with our hypothesis, MA had significantly better scores on measures of muscle strength and aerobic fitness, and on global cognitive function, verbal learning and memory, and processing speed tasks. Conclusions: Our results demonstrate that elite track and field MA have superior cognitive function relative to age-sex matched NAC. Given the significance of neurodegeneration to the decline in muscle mass and decline in cognitive function with aging, we speculate that MA may generally exhibit superior neuroprotection and thus provide a unique population in which to identify mechanisms of healthy aging. Funding: The present study is supported by the Canadian Institutes of Health Research (CIHR)

**P161- EFFECTS OF A MULTICOMPONENT EXERCISE PROGRAMME ON PHYSICAL AND COGNITIVE FUNCTIONS OF INSTITUTIONALISED PATIENTS WITH ALZHEIMER´S DISEASE.** S. Sampaio, E. Marques, J. Carvalho, J. Mota *(Porto, Portugal) )*

Means and strategies to preserve and prolong the cognitive and physical functions of older adults with Alzheimer's Disease (AD) have gained importance, as the world's population ages at an exponential rate and the prevalence of dementia steadily increases. The aim of this study was to investigate the effect of a multimodal exercise intervention on cognitive functions, anthropometric variables and physical fitness in patients with AD. The subjects consisted of 32 institutionalised older adults clinically diagnosed with AD,( 84.34yrs ⌖5.9) old with mild to moderate dementia, who were divided into two groups: the experimental group (EG, n= 16) and the control group (CG, n=16). The EG participated in a supervised multicomponent exercise programme 1h/day, twice a week, for six months. Participants in the CG maintained their regular daily activities during the same period. cognitive function,anthropometric variables,and physical fitness, were assessed beforehand (M1), after 3 months (M2) and after 6 months (M3) of exercise training. No significant group differences were found at the baseline for any variable. A two-way (group and time) factorial ANOVA, with repeated measurements ,revealed significant group and time interactions on cognitive functions, waist circumference, and chair stand, arm curl, 8-ft up-&-go, 2-min step, chair sit-&-reach and back scratch tests. Accordingly, a different response in each group was evident over time for those variables, supported by a significant decrease in waist circumference, an increase in physical fitness tests from M1 to M3, and a significant increase in MMSE from M1 to M2 in EG. Cognitive function and the performance in the arm curl test, chair sit-&-reach test significantly decreased over time (M1 vs M3) in the CG. These results allowed us to verify that multicomponent exercise can be a significant element in the promotion and maintenance of health, allowing higher cognitive and fitness functions compared to inactive subjects.

**P162- POSITIVE EFFECT OF ENDURANCE EXERCISE COMBINED WITH IGF-1 TREATMENT ON ANABOLIC AND CATABOLIC MEDIATORS INVOLVED IN AGE-RELATED MUSCLE ATROPHY.** M. Mosaferi Ziaaldini, Z.S. Radak (*Budapest, Hungary)*

Background: The proportion of elderly people in the World is increasing steadily. The result of the ageing process is a decline in organ function and skeletal muscle is no exception to this. Besides impaired balance due to muscle weakness, slowing of the muscle may limit the ability to prevent falls thus contributing to the increased incidence of fall-related injuries in old age [1]. Age-related muscle loss is a result of reduc tions in the size and number of muscle fibers possibly due to a multifactorial process that involves physical activity, nutritional intake, oxidative stress, and hormonal changes. Myostatin, Murf1 and Murf2 as a catabolic and Follistatin, Akt and mTOR as an anabolic factors were considered in previous studies [2]. Methods: Twelve young (3 months old) and 12 old (26 months old) male Wistar rats were used in the study and grouped into young control (YC), young exercised (YE), young exercised IGF-1-treated (YEI), old control (OC), old exercised (OE), and old exercised IGF-1-treated (OEI). Training protocol was 2 weeks of insulin-like growth factor-1 (IGF-1) supplementation (5mg/kg per day) and 6 weeks of exercise

training (60% of the maximal oxygen consumption [VO2max]). Results: Myostatin and Murf2 levels significantly decreased in both OEI and YEI groups ($p<0.05$) whereas Murf1 had significant decrease only in OEI group ($p=0.00$). A significant increase in Follistain, mTOR and pmTOR observed in just OE and OEI groups ($p<0.05$). Exercise also increased pmTOR in YE group ($p<0.05$). Conclusions: Our finding demonstrates that activation of catabolic signaling pathways probably has more important role than impaired anabolic ones in muscle atrophy with aging. Data shows combination of endurance exercise and IGF-1 treatment can be an effective strategy for prevention of muscle damages induced by Sarcopenia. 1. Degens, H., Age-related skeletal muscle dysfunction: causes and mechanisms. J Musculoskelet Neuronal Interact, 2007. 7(3): p. 246-52. 2. Sakuma, K. and A. Yamaguchi, Sarcopenia and age-related endocrine function. Int J Endocrinol, 2012. 2012: p. 127362.

**P163- IMPROVEMENT OF ADL AND WALKING DISTANCE USING COMBINATION UPPER AND LOWER EXTREMITY EXERCISE FOR ELDERLY WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE.** I. Kurniawati, I.R. Defi, E. Hermiyati Pranggono *(Bandung, Indonesia)*

Background: Chronic Obstructive Pulmonary Disease (COPD) is uninfectious disease which is preventable and treatable, most likely happened in elderly have history of cigarette smoking. COPD caused systemic response that influence skeletal muscle endurance. COPD patient get tired easily and short of breath which caused by decreasing lung functional capacity, then they do Activity Daily Living (ADL) in longer time-duration and walked with short distance. Combination between upper and lower extremity exercise increase upper extremity muscle endurance and lung functional capacity, then we hypothesis it will improve ability to do ADL and walking distance. Method: Cross sectional study using thirty patient moderate and severe COPD (FEV1 30-80,FEV1/FVC <70) aged 60-75 years were randomly assigned to the two groups, intervention and control. The intervention group received standard pulmonary rehabilitation, unsupported upper extremity exercise and treadmill exercise 3 times a week for 6 week, while control group received standard pulmonary rehabilitation and treadmill only. The main outcome measure are decrease ADL-time using Glittre ADL test and walking distance using 6 minutes walking test (MWT). Results: After 6 weeks, patients in the intervention group improved in the ability to do ADL with reduce ADL-time to do Glittre ADL test compared with those patients in the control group ($p <0,05$) also they could increase the walking distance from Minimal Important Difference. Conclusion: Our study suggest that the combination upper and lower extremity exercise improve ability to do ADL and walking distance in elderly with moderate and severe COPD better than the lower extremity exercise only.

**P164-AN OPERATIONAL FRAMEWORK FOR HEALTHY AGEING.** J.T. Boylan *(Adelaide, South Australia)*

Background: The Australian residential aged care (RAC) sector has a long history of managing services for the frail older population. For the most part, service delivery to this group has been influenced by biomedical representation with inattention to health promoting and rehabilitative interventions to address physical and social decline. This presentation describes an operational framework for healthy ageing implemented into a RAC home (n=126) to shape a more health promoting environment incorporating the physical and social enablers; onsite gym and fitness programs, integrated systems, procedures, practices and positive mindsets. This presentation aims to explain how a systematic, unified and theoretical approach can increase the healthy life expectancy of this frail older group and compress the stage of their decline. Methods: The framework incorporates ecological theory, healthy ageing theory and research from the Five Standards for Health Promotion, Science of Wellbeing and Positive Psychology. Staff received extensive training in systems thinking, screening techniques to identify physical and social decline in residents and early interventions to manage the impact of physiological symptoms and promote recovery. Education and Professional development focussed on leadership skills to advance a mindset for healthy ageing and implement the framework. Pre and post WHOQOL-BREF's were used to measure resident's quality of life and deceased resident's trajectories of frailty and disability were audited at the end of life. Results: WHOQOL-BREF data revealed an improved quality of life for 73% of respondents from 2009-2012 (n=27), and the audit of deceased residents trajectories revealed 90% of residents in 2012 (n=30, mean age 91.9) remained able to "walk until they died". Conclusion: With a systematic approach to integrating the physical and social enablers for healthy ageing in RAC, Australia's oldest living have the ability to increase their healthy life expectancy, compress their stage of their decline and improve their quality of life.

**P165- CHONIC APELIN SUPPLY REVERSES AGED-INDUCED SKELETAL MUSCLE DYSFUNCTIONS IN MICE.** C. Vinel, S. Deleruyelle, A. Batut, M. Cesari, S. Guyonnet, B. Vellas, P. Valet, C. Dray *(Toulouse, France)*

Background: Metabolic alterations and mitochondrial dysfunctions are known to be involved in many aging associated diseases such as skeletal muscle weakness. Apelin is a circulating peptide recently identified as a stimulator of mitochondrial biogenesis and function in young mice. In order to decipher the role of apelin during age-associated muscle frailty, we studied the relationship between skeletal muscle and apelin i) by measuring apelin evolution in plasma as well as in skeletal muscle during the set up of frailty, ii) by studying the impact of apelin deletion in aged mice and iii) by evaluating the effects of chronic apelin supply in aged mice muscles. Methods: Apelin plasma level has been measured in human and mice during aging. Moreover, daily intra-peritoneal injections of apelin have been performed on wild-type mice (3 and 12 months) and apelin knock-out mice (12 months) during 28 days. Then, muscle physiology was evaluated by resistance, strength and endurance tests. At the end of the treatment, muscle structure was studied by cross sectional area, fiber typology and mitochondria biogenesis experiments. Results: Preliminaries results show that plasma apelin is decreased in human and mouse in association with muscular frailty. Apelin knock-out mice presented premature muscular weakness suggesting a significant role of the peptide in muscular aging. Furthermore, in wild type as well as in apelin knock-out mice, chronic apelin treatment restores aged-induced skeletal muscle dysfunction by targeting mitochondrial and trophic pathways in an AMPK-dependent manner. Conclusion: All together these results suggest that apelin could be a potential biomarker of muscular weakness and open a new therapeutic or preventive perspective in frailty field.

**P166- MUSCLE MASS HANDGRIP STRENGTH AND ASSOCIATED FACTORS IN CHINESE ELDERLY POPULATION.** J. Sun, H. Bai, M. Chen, H. Xie, D. Xu, Y. Wang *(Shanghai, China)*

Background: Sarcopenia is a syndrome characterised by progressive and generalised loss of skeletal muscle mass and strength with a risk of adverse outcomes, a better understanding of the relationship between muscle strength and muscle mass with aging will be useful in interpreting outcomes of physical/training interventions. Objective: To explore the trend and relationship of muscle mass and muscle function (strength or performance)with aging and gender in Chinese elderly. Methods: It was a cross section study conducted in Shanghai. 272 old participants (138males, 134 females) with mean age 71.3±7.9 years recruited from hospital outpatient clinics, physical check up centers and communities. skeletal muscle mass (SMM) and other body compositions were measured by bioelectrical impedance (Biaspace Inbody 720, Korea) , Skeletal muscle mass index (SMI) was calculated by appendicular skeletal muscle mass/height2. Muscle fuction was interpreted by gait speed test (4m) and HGS by electronic hand dynamometer (CAMRY EH101, GD, China). Anthropometric data was collected by regular methods. Statistical analysis was performed by SPSS 16.0. Results: Muscle strength and muscle mass in men was higher than in women, HGS 35.40±8.04kg vs 28.08±4.00kg, SMM 27.51±3.14 vs 19.74±2.73kg, SMI 7.46±0.72kg/m2 vs 5.98± 0.65 kg/m2 for men and women respectively, and these figures were significantly declining with age. SMM, soft lean mass, calf circumference and BMI were positively associated with HGS. Age, body fat mass, right tricepsskin fold thicknessh and gait speed had a negative association with HGS($p < 0.05$). Conclusions: Muscle mass was postively associated with HGS and negatively correlated with gait speed in Chinese elderly. Funding: Danone Dietary Research Funding

**P167- IMPACT OF NUTRITIONAL SUPPLEMENTATION AND NORDIC WALKING IN FRAIL OLDER PATIENTS: A PRELIMINARY REPORT.** H. Singh, M. Tyagi, P. Kumar, R. Kandel, P. Chatterjee, K. Singh, A. Mohan, A.B. Dey *(New-Delhi, India)*

Background: Frailty, an important "Geriatric Syndrome", is emerging major public health issue. With increase in number of frail patients; their care could be difficult in resource constrained settings. The objective of the study was to assess the impact of appropriate dietary supplementation or/and Nordic walking training on overall improvement in the frailty parameters. Methods: Consenting participants defined as "frail" as per criteria established by Fried et al were recruited in the study from Geriatric Medicine OPD and subsequently randomised into three groups A, B and C. Group A received dietary intervention. Group B received dietary intervention and Nordic walking training whereas group C received dietary counselling only as the control group. Baseline characteristics were recorded and intervention was provided for a period of 12 weeks. Subjects were assessed at the end of intervention with regards to the frailty status. Results: 45 participants were randomized equally in three groups. The mean age of the subjects was 72.3 (70-90yrs). 52.5% of them were underweight, 56.31% were malnourished and 24.39% were at risk of malnutrition. Pre and post intervention changes in mean BMI in group A, B and C were 1.2 ($p=0.042$), 1.1($P=0.028$) and -0.3($p=0.46$) respectively. Mean frailty score changed from 5 to 3($p=0.131$), from 4.67 to 2.67($p=0.034$), and from 4.4 to 4($p=0.157$) in groups A,B and C respectively. Conclusion: This preliminary report demonstrated high prevalence of under-nutrition among frail patient. A combination of nutrition supplementation and Nordic walking appears better than nutrition supplementation alone in managing frailty. Funding: National Program for Health Care of the Elderly, Ministry of Health and Family Welfare, Government of India.

**P168- PREDIABETES IN THE OLDEST OLD: THE OCTABAIX-STUDY.** A. Ferrer, F. Formiga, G. Padrós, O. Cunillera, Octabaix Study Group *(Barcelona, Spain)*

Background: The leading risk factor for diabetes (DM), prediabetes, is increasing the prevalence. Interventions in the prediabetic individuals showed potential benefits for DM prevention. This is particularly true among older adults, however to targeted this efforts a lack exists in prediabetes in the oldest old. Methods: Objectives: To describe the rate of preDM among community-dwelling 85-year-olds and to study the factors associated. Design: A cross-sectional study. Setting: Community-based survey study of seven primary healthcare centres. Participants: baseline assessment data on cardiovscular risk factors, functional status, comorbidities and laboratory data were included. Participants were divided in three groups: normoglycemic (serum glucose < 5.6 mmol/L or HbA1c was <6.4%), pre-diabetes (glucose 5.6-6.9 mmol/L or HbA1c 5.7-6.4%) or DM (glucose ≥ 7 mmol/L or HbA1c ≥6.5% or clinical reports or use of antidiabetics). A comparative

analysis was performed between 3 groups. Results: Of the total sample, 321 individuals from whom fasting serum glucose measurement was available were finally included. Of them 197 were women (61.4%), 86 (26,8%) individuals were classified as DM, 56(17,4%) as pre-DM and 179(55,8%) as normoglycemic.Multiple stepwise logistic regression analysis showed differences between preDM subjects and DM 2 subjects, in treatment with angiotensin-converting enzyme inhibitors (ACE) (p=0.001, OR 0.15, 95% IC 0.05-0.44), angiotensin-receptor blockers (p=0.001, OR 0.13, 95% IC 0.04-0.45) and diuretic drugs (p=0.031, OR 2.69, 95% IC 1.09-6.62). Conclusio:, the present study found that a 17% of the octogenarians studied had prediabtes. The analyses show that hypertension, LDLc cholesterol level and ACE treatments were associate ed risk factors for prediabetes and would suggest that pharmacotherapy interventions based on non-antidiabetic drugs, as diuretics and ACE may be required, to diminished the risk of this intermediate hiperglicemic state, among these community-dwelling.

**P169- SEROLOGICAL PEPTIDE BIOMARKERS DERIVED FROM INTRAMUSCULAR CONNECTIVE TISSUE COLLAGENS ARE BIOMARKERS OF MUSCLE MASS.** A. Nedergaard[1], U. Dalgas[2], H. Primdahl[2], J. Johansen[3], J . Overgaard[2], K. Overgaard[2], K . Henriksen[1], S. Lønbro[1] *(1. Copenhagen, Denmark; 2. Aarhus, Denmark; 3. Odense, Denmark)*

Background: Cancer or iatrogenic cachexia are important clinical complications in clinical practice and improved biomarkers are needed to monitor and predict muscle loss. Our group has previously shown that the collagen fragment biomarkers ProC3 and IC6 are markers of muscle mass in young men and that the biomarker C6M is an indicator of anabolic response to reloading following unloading in the same group. Furthermore we found that the IC6/C6M ratio may also be related to muscle mass. In this study we set out to validate and expand our previous findings to recovering cancer patients and an age and gender matched control group. Methods: Recovering head and neck cancer subjects from the DAHANCA25B cohort and age- and gender-matched controls were included in the study. Subjects in the DAHANCA cohort were randomized to resistance training either in the first or last 3 months (out of 6) after coming out of therapy and being habitually physically active in the remaining period. Subjects had blood drawn and muscle mass measured at baseline and the intervention subjects were also sampled at 3 and 6 months. Results: We found that the biomarkers ProC3, IC6 and the IC6/C6M biomarker ratio all correlated significantly with muscle mass in the control group only. We also found that the C6M biomarker was not related to change in muscle mass in the intervention groups. Conclusions: We have confirmed that the serological peptide biomarkers ProC3, IC6 and the IC6/C6M ratio are significantly correlated with muscle mass in healthy adults of both genders, but not in recovering head and neck cancer patients. Unfortunately, we were unable to extend our previous results where C6M was correlated to change in muscle mass to this cohort. The reason that these correlations are absent in the patient population is likely due to pathology-induced extra-muscular biomarker production. Funding: Financial support of the work was kindly provided by The Danish Advanced Technology Foundation, the Danish Head and Neck Cancer Group (DAHANCA), The Lundbeck Foundation Centre for Interventional Research in Radiation Oncology (CIRRO), The Danish Cancer Society, Dansk Kræftforskningsfond, Becket Fonden, Arvid Nilssons Fond and Andersen-Isted Fonden

**P170- EFFICACY OF LOW-MAGNITUDE HIGH-FREQUENCY VIBRATION TREATMENT ON PREVENTING MUSCLE LOSS IN COMMUNITY ELDERLY.** C.Y. Li, K.S. Leung, W.H. Cheung *(Hong Kong)*

Background: Sarcopenia is an age-induced progressive loss of muscle mass and strength, and associated with functional impairment in elderly. Low-magnitude High-frequency vibration (LMHFV) treatment was previously shown to improve balancing ability and muscle strength. This study was to investigate the effectiveness of LMHFV at different magnitudes on preventing loss of muscle strength and mass. Methods: 90 female subjects aged 60 or above were recruited and randomized into control, 0.3g or 0.6g vibration groups. Vibration group subjects received LMHFV treatment (35Hz, 0.3 or 0.6g; g=gravitational acceleration) 20min/day, 5days/week for 9 months, while control group remained sedentary. Muscle strength, balancing ability, muscle mass, lower extremity functional scale and bone mineral density (BMD) of hip and spine were assessed at baseline and end-point (9-month). Results: 85 subjects completed the study. The muscle strength of dominant and non-dominant legs of both 0.3g and 0.6g vibration groups were significantly improved compared with controls. In the chair rising test for balance, 0.3g vibration group showed significantly shorter time needed for sit-to-stand cycles than the control. Significant increase in the lower extremity functional scale was also observed in the 0.3g vibration group. Conclusion: Both 0.3g and 0.6g vibrations were effective in improving the quadriceps strength. The effect of 0.3g vibration on muscle was more significant in increasing the muscle power and function of lower extremity than 0.6g vibration. LMHFV treatment was well tolerated by elderly as a daily exercise with no adverse effects. The results support the use of LMHFV for lower extremity strengthening in elderly. Funding: General Research Fund (Ref: 469508), University Grant Council, Hong Kong SAR government

**P171- ADIPOSITY, SEDENTARY BEHAVIOR, AND ACTIVITY AS PREDICTORS OF DIABETES IN OLDER ADULTS.** M.D. Peterson[1], J.A. Serra[2], S. Al Snih[3] *(1. Ann Arbor, USA; 2. Madrid, Spain; 3. Galveston, USA)*

Background: Physical inactivity and excess adiposity are thought to be interdependent "lifestyle" factors and thus, many older adults are at exaggerated risk for preventable diseases and early mortality. The purpose of this study was to compare the extent to which different combinations of objectively measured sedentary behavior (SB) and physical activity contribute to cardiometabolic health in later adulthood. Methods: A population representative sample of 2,516 individuals, aged 50-85 years, was included from the combined 2003-2006 NHANES datasets. Activity categories were created on the combined basis of objectively measured SB and moderate-to-vigorous physical activity (MVPA) tertiles. Cardiometabolic abnormalities included elevated blood pressure, levels of triglycerides, fasting plasma glucose, C-reactive protein, homeostasis model assessment (HOMA) of insulin resistance value, glycohemoglobin, and low HDL-cholesterol level. BMI, and DXA-derived percent body fat (% BF) and android adiposity were also compared across groups. Predictors of cardiometabolic abnormalities and diabetes prevalence were determined. Results: Adults with the least SB and greatest MVPA exhibited the healthiest cardiometabolic profiles, whereas adults with the greatest SB and lowest MVPA were the oldest and had highest risk. Time spent in SB was not a predictor of cardiometabolic abnormalities or diabetes when all activity was accounted for. Adults with the highest MVPA across SB tertiles did not differ markedly in prevalence of obesity, adiposity, and/or serum cardiometabolic risk factors; however, less MVPA was associated with substantial elevations of obesity and cardiometabolic risk. Android adiposity (per kilogram) was independently associated with diabetes in both men and women (p<0.001). Among men, less MVPA was independently associated with the diabetes; whereas among women, only less lifestyle moderate activity was associated with diabetes. Conclusions: Android adiposity, and low moderate and vigorous PA are strong predictors of cardiometabolic health risk among older adults, independent of time spent in SB. Funding: This study was fun.ded by the National Institutes of Health: R24 HD065702-03 (M. Peterson & S. Al Snih). Dr. Peterson is funded by the National Institutes of Health (1KO1 HD074706).

**P172- PREDICTIVE VALUE OF THE EXISTED CUTOFF POINT OF GAIT SPEED FOR FALL IN NEXT YEAR: IS IT EFFECTIVE AMONG MALE AGED 80 YEARS AND OLDER?** C.-K. Liang, M.-Y. Chou, M.-C. Liao, Y.-T. Lin, L.-K. Chen, Y.-K. Lo *(Taipei, Taiwan)*

Aim: To evaluate whether gait speed predicts falls in 12-month period among older males aged 80 years and older in the Veterans retirement community in Southern Taiwan. Methods: This prospective observational study recruited 272 subjects who aged 80 years and older with ability to walk in 2012. In addition to demographic characteristics and history of falls, all subjects were measured for body mass index, EQ5D Visual analogue scale, Activities of Daily Living (Barthel Index), gait speed (6-meter), handgrip strength, Mini-Mental State Examination (MMSE), Geriatric Depression Scale-15 (GDS-15), Mini-nutritional assessment-short form (MNA-SF), and Charlson Comorbidity Index. To investigate the predictive values of the gait speed, the time of 6 meter walk test and using the cutoff point of <0.8meter/second was defined as slow walking speed. Results: Among the 272 subjects (mean age 85.7±4.0 years), 25.7% (70/272) of them reported falls during the 12-month follow-up. Univariate analysis showed that urine incontinence, history of fall in past year, symptoms of pain, poor quality of life base on EQ5D Visual analogue scale, and depressive mood based on the GDS-15 were associated with falling. However, only the time of 6 meter walk test, but not slow gait speed was associated with the occurrence of falls. Multivariate logistic regression showed that the history of falls (adjusted OR: 3.41; 95% CI: 1.69-6.91; P=0.001) and symptoms of pain (adjusted OR: 2.57; 95% CI: 1.27-5.18; P=0.09), and the time of 6 meter walk test (adjusted OR: 1.08; 95% CI: 1.02-1.15; P=0.007) were all independently predictive factors for falls during 12-month follow-up in this study. Conclusions: Among men aged 80 years and older, controlled for pain and previous history of falls, time of 6-meter walk test was the only independent predictive for subsequent falls in 12-month follow-up, but not slow gait speed (defined by < 0.8 m./s), which implied the necessity to re-examine the appropriate cut-off for slow gait speed in this study group. Keywords: gait speed, fall, oldest old, men, frail.

**P173- NUTRIENT-RICH DAIRY PROTEINS ATTENUATE THE LOSS OF SKELETAL MUSCLE, AND FUNCTIONALITY IN OLDER SUBJECTS: A DOUBLE-BLIND RANDOMIZED CLINICAL TRIAL.** H. Alemán-Mateo, V. Ramírez Carreón, L. Macías Muñoz, H. Astiazaran-García, A.C. Gallegos Aguilar, J.R. Ramos Enríquez *(Sonora, México)*

Background: At present, it is unknown whether the use of nutrient-rich dairy proteins improves the markers of sarcopenia syndrome. Therefore, our proposal was to investigate whether adding 210 g of ricotta cheese improves skeletal muscle mass, handgrip strength and physical performance in non-sarcopenic older subjects. Methods: This is a double-blind randomized clinical trial, which included two homogeneous, randomized groups of men and women over 60 years of age. The intervention group received 210 g/day of ricotta cheese, which was added to their habitual diet (RCH+HD), while the control group followed only their habitual diet (CG/HD). Basal and 12-week follow-up measurements included appendicular skeletal muscle mass (ASM) by dual-energy X-ray absorptiometry, handgrip strength by a handheld dynamometer, and physical performance using the short physical performance battery (SPPB) and the stair climb power test (SCPT). The main outcomes were the percentages of relative change in ASM, strength, SPPB and SCPT. Results: ASM increased slightly in the RCH+HD group, but decreased in CG/HD. The % of relative change was statistically significant between groups. The % of relative change in strength in both groups was negative, but the loss of muscle strength was more pronounced in CG/HD. In this regard, statistical analysis found only a tendency (p=0.08). The % of relative change in the balance test scores was positive for the RCH+HD group, while in CG/HD it was negative, as those individuals had poorer balance. The % of relative change

between groups did reach statistical significance. Conclusion: The addition of 210 g of ricotta cheese attenuate the loss of appendicular skeletal muscle mass, balance test scores, and the loss of muscle strength. These results suggest that the addition of ricotta cheese to the habitual diet is a promising dietetic strategy that may improve the markers of sarcopenia in subjects without a pronounced loss of ASM or sarcopenia. Project funded by CONACYT (S0008-2010-1-140157) and INSK, 2009

**P174- MELATONIN TREATMENT DOWNREGULATES AUTOPHAGY IN THE LIVER OF OB/OB MICE**. B. Luxán-Delgado, B. Caballero, Y. Potes, A. Rubio-González, I. Rodríguez, J. Gutiérrez-Rodríguez, J.J. Solano, A. Coto-Montes *(Oviedo, Spain)*

Background: Despite efforts to curb the incidence of obesity and its comorbidities, this condition remains the fifth leading cause of death worldwide. Autophagy is closely associated with adipogenesis, therefore, in order to identify ways to reduce this global effect, we investigated the actions of daily melatonin administration on autophagic processes in liver, as a possible treatment of obesity in obese (ob/ob) mice. Methods: Eight six-week-old male leptin-deficient ob/ob (B6.V-Lepob/J) mice (Charles River Laboratories España SA, Spain) were housed under 12:12 h dark-light cycle with tap water and a standard chow diet ad libitum. Half of the animals was treated with 500µg/kg melatonin for two weeks, and the remaining four were maintained as a control group. Measurements in the liver mice of main autophagy markers: Beclin 1 (sc-10086, Santa Cruz Biotechnology, USA), microtubule-associated protein 1 light chain 3 (LC3) (PD014, Medical & Biological Laboratories CO., Japan) and p62 (H00008878-M01, Abnova, USA), were conducted by western blot. Statistical analysis was performed using SPSS vs. 15.0 (SPSS Inc., USA). Differences were considered statistically significant when $p < 0.05$. Results: The immunoblot analysis showed a significant decrease in Beclin 1 protein expression in the melatonin-treated group compared with the control group ($p<0.01$). No significant differences were observed between either group, for LC3-I and LC3-II. Nevertheless, a significant increase in the LC3-II/LC3-I ratio and p62 protein expression was showed in the melatonin-treated group compared with the control group ($p<0.01$). Conclusions: Increased LC3-II/LC3-I ratio after melatonin treatment could be due to an increased conversion of LC3-I into LC3-II or reduced degradation of this protein through the inhibition of autophagic activity. p62 data seem to support the decreased autophagic activity after treatment with melatonin, as well as reduced levels of Beclin 1. Taken together, these results suggest that melatonin treatment downregulates autophagy in the livers of ob/ob mice. The present study is supported by Ministerio de Economía y Competitividad del Gobierno de España (BFU2010-20919), Instituto de Salud Carlos III (FISS-06-RD06/0013/0011 and FISS-06-RD06/0013/0028) and B.dL-D is a Severo Ochoa (Principado de Asturias) predoctoral fellow (BP11-135).`

**P175- COMPARISON OF TWO CLINICAL MODELS OF IMMOBILIZATION ON LEAN BODY MASS OUTCOMES IN HEALTHY ADULTS: BED REST VS. LIMB-CASTING.** M. Tian, S.L. Pereira *(Columbus, USA)*

Background: Immobilization-related lean body mass (LBM) loss is of particular clinical relevance, and both bed-rest and limb-casting are commonly used models. The purpose of this work is to summarize existing literature to compare the following aspects of each model: 1) The extent of muscle loss, 2) Age related differences in muscle loss; 3) Regional differences in muscle loss. Methods: Studies with healthy young or old subjects were selected only if the primary outcomes were LBM or lean leg mass, which were measured by DXA, MRI or CT. Eight bed-rest studies and four limb-casting studies were included and tabulated in terms of age category, gender, sample size, immobilization duration, LBM measurement tool, and LBM outcomes. Results: In old subjects, 10 day-bed rest caused approximately 1 kg (4.1%-7.9%) lean leg mass loss, and there appeared to be high individual variation. In young men, 28 day bed-rest caused around 0.4 kg (2%) lean leg mass loss, while 14 day leg casting caused lean leg mass loss of 1.4%-4.7%. A study of 14-day leg casting demonstrated that loss of quadriceps volume was higher in old than young subjects (8.9% vs. 5.2%). Two bed-rest studies of young men suggested higher loss of thigh than calf volume, while no leg casting studies have compared regional muscle losses. Conclusion: Both immobilization models caused higher muscle loss in old than young adults. However, variation in duration, measurement tools, and muscle regions do not permit direct comparisons of the two models. The high individual variation warrants further exploration to understand why certain populations are more susceptible to muscle loss. More studies are needed to study immobilization over shorter duration (e.g. 3-5 days), which is relevant to hospital stay. Difference in regional muscle loss and its relevance to functional outcomes are key questions to be addressed in future clinical studies. Funding: Supported by Abbott Nutrition

**P176- EFFECT OF COMBINED EXERCISE TRAINING ON SARC-F DEFINED SARCOPENIA IN CHINESE OLDER PEOPLE-A RANDOMIZED CONTROLLED TRIAL.** L. Cao, J.J. Jiang, Y. Yu, J.R. Yue, A. Yang, S.P. Chen, X.Q. Ren, B.R. Dong *(Chengdu City, China)*

Background Sarcopenia with limited mobility is an important problem which lowers the quality of life in elderly. SARC-F questionnaire is a newly developed tool for evaluating risk of sarcopenia and limited mobility in elderly. Resistance exercise has been shown improving muscle function of elderly. However, multi-component exercise training approaches are needed to be verified since physical functions are affected by multiple factors in elderly. Methods This is a parallel randomised controlled clinical trial. A total sample of 100 eligible participants were old Chinese (≥ 70 years) living in nursing home, with SARC-F score ranging from 1 to 10. All participants were randomly allocated to exercise group (EG) or control group (CG). The exercise intervention contains resistance walking and leg lifting with sandbag in calfs, balance training and grip exercise for 10 weeks, 3 times per week. Walking speed, Timed up and go test (TUG), Short Physical Performance Battery (SPPB), were grip strength, were assessed at baseline, 5 weeks and 10 weeks after the exercise training. The falls efficacy scale (FES-I) and health-related quality of life (SF-12) were assessed before and after the intervention. The impact of SARC-F score on the effect of exercise were analyzed. Results The intervention has been undergone for 5 weeks so far. The preliminary analysis of 5 weeks assessment showed the walking speed, performance in TUG and SPPB increased significantly in EG. Conclusions Our findings are expected to demonstrate that the present multi- component exercise approach could improve the physical functions and health-related quality of life in nursing home dwelling elderly in China. Funding: The present study is supported by Cadres health care committee of Sichuan Province Health Department. The project number is 临研2012-109.

**P177- FRAILTY AMONG MEXICAN COMMUNITY-DWELLING ELDERLY: A STORY TOLD 11 YEARS LATER. MEXICAN HEALTH AND AGING STUDY.** S.G. Aguilar-Navarro[1], H. Amieva[2], L.M. Gutiérrez-Robledo[1], J.A. Avila-Funes[1,2] *(1. Mexico City, Mexico; 2. Bordeaux, France)*

Objective. To describe the characteristics and prognosis of subjects classified as frail in a large sample of Mexican community-dwelling elderly. Material and methods. An eleven-year longitudinal study of 5,644 community-dwelling persons aged 60 and older, participating in the Mexican Health and Aging Study. Frailty was defined by meeting at least three of the following criteria: weight loss, weakness, exhaustion, slow walking speed and low physical activity. The main outcomes were incident disability and death. Multiple covariates were used to test the prognostic value of frailty on these outcomes. Results. Thirty-seven percent of participants (n=2,102) met the frailty criteria. Frail participants were significantly older, more likely to be female, less educated, with more chronic disease, lower income, and poorer self-reported health status, in comparison with their non-frail counterparts. After adjusting for potential confounding factors, frailty was a predictor both for disability activities of daily living and for mortality. Conclusion. After a follow-up of more than ten years, the phenotype of frailty was a predictor for adverse health-related outcomes, including ADL disability and death. Key words: Frailty, Disability, Mortality, Elderly

**P178- FUNCTIONAL CHANGES DURING HOSPITALIZATION IN OLDER PATIENTS ADMITTED TO AN ACUTE CARE WARD: RESULTS FROM THE CRIME STUDY.** S.L. De Buyser[1], M. Petrovic[1], Y.E. Taes[1], D.L. Vetrano[2], A. Corsonello[3], S. Volpato[4], G. Onder[2] *(1. Ghent, Belgium; 2. Rome, Italy; 3. Cosenza, Italy; 4. Ferrara, Italy)*

Background. Impact of hospital stay on changes in physical performance has rarely been evaluated. In this study, we examined functional changes during hospital stay by assessing both physical performance and activities of daily living. Additionally, we investigated characteristics of older patients associated with meaningful in-hospital improvement in physical performance. Methods. Data are from the CRiteria to assess appropriate Medication use among Elderly complex patients project. This was a multicentre, observational study of 1123 older patients, consecutively admitted to geriatric and internal medicine acute care wards of seven Italian hospitals. We analyzed data from 639 participants with a Mini Mental State Examination score ≥18/30. Physical performance was assessed by walking speed and grip strength, and functional status by activities of daily living at hospital admission and at discharge. Meaningful improvement was defined as ≥1 standard deviation of in-hospital change of the examined measurement. Multivariate logistic regression models predicting meaningful improvement included age, gender, type of admission, and physical performance at admission. Results. The mean age of the study participants was 79 years, 52% were female. Overall, mean walking speed and grip strength performance improved during hospital stay (walking speed improvement: 0.04±0.20 m/s, $p<0.001$; grip strength improvement: 0.43±5.66 kg, $p=0.001$), no significant change was observed in activities of daily living. Patients with poor physical performance at admission had higher odds for in-hospital improvement. Conclusions. Our findings demonstrate that overall physical performance measurements show an improvement during hospital stay. The margin for meaningful functional improvement is larger in patients with poor physical function at admission. Nevertheless, most of these patients remain to have poor performance at discharge. Funding: The present study is supported by a grant of the Italian Ministry of Labour, Health and Social Policy (Bando Giovani Ricercatori 2007, convenzione no. 4).

**P179- LONGITUDINAL ANALYSIS OF THE RELATIONSHIP BETWEEN PHYSICAL FUNTION AND MORTALITY IN AMBULATORY OLDER MEN**. S.L. De Buyser, M. Petrovic, Y.E. Taes, K.R.C. Toye, J.M. Kaufman, S. Goemaere *(Ghent, Belgium)*

Background: Low physical performance is an important characteristic of frailty and sarcopenia. In this study, we wanted to assess and compare the predictive value of physical function measurements for all-cause mortality in older men. Methods: Data are from a longitudinal study of a population-based sample of 352 ambulatory older men aged 71 to 86 at study baseline. The Rapid disability rating scale-2, 36-Item short form health survey, Hand grip strength, Five times sit-to-stand test, Standing balance, and Timed Up and Go test were determined at baseline. Associations with all-cause mortality were assessed using

Cox proportional hazard analyses. Age, BMI, smoking status, education, physical activity, and cognitive status were included as confounders. Follow-up exceeded 15 years. Results: The mean age of participants was 76 ± 4.2 years. Average follow-up duration was 184 ± 2 months. Seventy-eight percent (273) of the 352 men died during follow-up, with a median survival time of 110 months. All examined physical function measurements were associated with all-cause mortality. The Timed Up and Go test was the best predictor (adjusted HR per SD increase = 1.58, 95% CI = 1.40-1.79, P < 0.001) for global mortality. Conclusions. Our findings demonstrate that physical function measurements are important in the evaluation of older persons. We encourage the use of the Timed Up and Go test as a reliable, quick and feasible screening tool in clinical settings. Funding: The present study is supported by grants from 'Fonds voor Wetenschappelijk Onderzoek - Vlaanderen (FWO; Research Foundation - Flanders)' and by an unrestricted grant of Novartis Belgium.

**P180- THE COGNITIVE IMPAIRMENT OF FRAIL ELDERLY IN NURSING HOMES OF UBAN JAKARTA, INDONESIA.** Y.S. Handajani, Y. Turana *(Jakarta, Indonesia)*

Background :Aging process causes the decline of functional at cell, tissue and organ level.3 The decline leads to the health problem to elderly and one of the health problem is frailty.Frailty is a geriatric syndrome marked by weaknesses, weight loss, and low activity related to adverse health outcome.3 Frailty was associated with older age, female gender, lower education, lower income, health status and more chronic diseases.8 Methods : this research is a cross sectional study with 120 respondents. The study was conducted in nursing homes and based on the calculation of the sample, it ‘s obtained the minimum amount of sample was 120 respondents . Measurement of cognitive impairment using the MMSE and CDT and measurement of frailty using instrument Survey of Health, Aging and Retirement in Europe (SHARE). For analyzing data, we use Chi Square test, and Dependent T-test. In the analysis of the relationship between two variables, determined the 0.05 level of significance. Results: Based on socio-demographic characteristics of respondents, those who have higher education and men showed a smaller percentage of cognitive impairment. Furthermore, respondents who have frailty will experience cognitive impairment 5.4 times greater and based on sub domains of cognitive function , time orientation was the greatest influenced.Conclusions: Based on the findings of this study, that frailty influence ccognitive impairment on elderly person who live in nursing homes and time orientation sub domains was the greatest influenced ; Funding : The study is supported by Atmajaya Catholic University

**P181- SARCOPENIA AND HOSPITALIZATION COSTS.** A.C. Antunes[1,2], M.T. Veríssimo[1], T.F. Amaral[3] *(1. Coimbra, Portugal; 2. Póvoa e Vila do Conde, Portugal; 3. Porto, Portugal)*

Background: Although sarcopenia has been under intense investigation, little is known about the association between sarcopenia and their costs among hospitalized patients. The aim of the present study was to evaluate the frequency of patients with sarcopenia and to quantify the association between sarcopenia and hospital costs. Methods: A longitudinal study was conducted among 201 hospitalized older adults in a general hospital. Nutritional status was evaluated by MNA-SF, cognitive ability by Abbreviated Mental Test and physical performance by the Timed Get-up-and-go Test. Sarcopenia was identified according to criteria set by the European Working Group on Sarcopenia in Older. People. Results: We found that 10.4% patients were sarcopenic, while 43.8% were at nutritional risk and 14.9% were undernourished. There was a significant association between low muscle strength and increased hospital costs (OR = 2.41, 95% CI 1.12-5.17) as well as between sarcopenia and increased hospital costs (OR = 5.41 95% CI 1.48-19.74). Conclusion: In this hospital 10.4% of patients were sarcopenic and most were undernourished or at nutritional risk. Sarcopenia and low muscle strength are independent predictors of increased hospital costs.

**P182- WHEAT PROTEIN ENZYMATICALY HYDROLYSATE SUPPLEMENTATION DURING EXERCISE TRAINING PREVENTS A DECREASE IN MUSCLE MASS IN MIDDLE AGED AND ELDERLY INDIVIDUALS.** J. Yamauchi, Y. Shimmura, N. Yahata *(Tokyo, Japan)*

Introduction: Aging is associated with muscle loss, due to imbalance of protein turnover. While, it has been suggested that increase in protein intake enhances the synthesis rate of muscle proteins in older individuals. Glutamine is known as an increase in the secretion of anabolic hormones, and large amounts of glutamine are contained in wheat protein known as gluten. However, there is little known about the influence of exercise training with wheat gluten hydrolysate (WGH) supplementation in human. Therefore, the purpose of this study was to investigate the effects of exercise training with WGH supplementation on muscle strength and mass in middle aged and elderly individuals. Methods: Twenty-five healthy middle-aged and elderly individuals completed the exercise training program for 3 months. They were randomly assigned to the exercise training with WGH supplementation group and the exercise training only group (EXE). Before and after the exercise training period, body composition, maximum isometric force of knee extension and knee-hip extension movements were measured, respectively. EXE was administered total 1.5g containing sugar (77.3%) as a placebo, while WGH was administered total 1.5g containing wheat gluten hydrolysate (66.1%), chondroitin sulfate (10.4%), and vitamin B (0.7%). Results: Both WGH and EXE groups resulted in significant decreases in body weight and body fat, and increases in knee extension and leg extension force generating capacity. EXE group showed a decrease in muscle mass, but WGH groups did not. Conclusion: Our results suggest that it is possible to gain muscle strength without muscle loss after 3 months of exercise training with WGH supplementation. WGH supplementation may be of a potential supplement to modulate muscle protein metabolism and to maintain muscle mass.

**P183- DESIGN AND BASELINE RESULTS OF A NUTRITIONAL INTERVENTION STUDY IN THE FIELD OF FRAILTY AND SARCOPENIA.** S. Verlaan[1], S.L.J. Wijers[1], J.M. Bauer[2], T. Cederholm[3], C.C. Sieber[4], for the PROVIDE study group *(1. Utrecht, The Netherlands; 2. Oldenburg, Germany; 3. Uppsala, Sweden; 4. Nürnberg, Germany)*

Background: Muscle mass, strength and function decline considerably with ageing. It has been hypothesized that a decreased ability of the muscle to respond to anabolic stimuli like a mixed meal is part of the underlying mechanism. Therefore, a targeted nutritional intervention could influence this decline. This study was aimed at increasing muscle mass, strength and function in a group of mobility limited older people. Methods: 380 elderly subjects with limited mobility (SPPB 4-9) have been included in this 3 months randomized controlled trial. Among others, outcome parameters are muscle function (SPPB, gait speed, chair stand, balance), muscle strength (hand grip strength) and muscle mass (DXA). Results: The mean age of the participants was 77.7 ± 6.8y. 87% was living independently. 71% had a low hand grip strength (<20kg for females, <30kg for males), 88% a low gait speed (<1.0 m/s). The average SPPB was 7.5 ± 2.0. The average Barthel index was 100 (IQR: 95-100]. Skeletal muscle index was 6.6 ± 1.0 kg/m2. Conclusions: In this study we targeted as planned a group with limited mobility, whereas they were still living independently at home, fully ADL independently. Funding: The present study is supported by Nutricia Research

**P184- IS MOUSE AN APPROPRIATE MODEL FOR SARCOPENIC OBESITY?** N. Guelzim[1], C. Chaumontet[1], D. Azzout[1], A.S. Foucault[2], W. Dioh[2], G. Fromentin[1], D. Tomé[1], C. Gaudichon[1] *(1. Paris, France; 2. Romainville, France)*

Background: This study aimed to develop a mice model of sarcopenic obesity that would help understand the physiopathology of the disease and serve as a screening tool for putative treatments. Methods: We led two studies on C57BL/6J mice (n=8/group). Study 1: 19 month-old mice were fed for 3 months either a standard (C), a high fat (HF) or a high fat low protein (HFLP) diet. Study 2: 4 (young) or 15 (aged) old-month mice were fed for 6 months a HF diet. Body weight and composition using DEXA, grip strength and locomotor activity were recorded throughout the study. After sacrifice, muscle histological measurements (fiber morphology, lipid accumulation, fibrosis, central nuclei) were performed. Results: In both studies mice did not significantly lose muscle mass whatever the diet. In study 2, aged mice had higher body weight, muscle or fat mass than young mice. Aged mice displayed reduced extensor digitorum longum and quadriceps muscle mass and reduced grip strength relative to lean mass. Despite similar muscle fiber morphology and lack of fibrosis in both groups, the number of central nuclei was higher in aged mice as well as lipid accumulation. Conclusions: In our experimental conditions, mild signs of muscle alteration were observed in 21-22 month-old mice. Moreover HF diet did not enhance deleterious effect on muscle mass. Funding: The present study is funded by FUI-BPI (Sarcob project)

**P185- SARCOPENIC OBESITY DRUG CANDIDATE IDENTIFICATION THROUGH A SCREENING CASCADE IN C2C12 MYOBLAST CELL LINE.** S. Raynal[1,2], V. Autier[2], S. Ben Massoud[1,2], W. Dioh[1], J.D. Durand[2], F. Lepifre[2], R. Lafont[1,3], S. Veillet[1] *(1. Romainville, France; 2. Chilly-Mazarin, France; 3. Paris, France)*

Background: Sarcopenia is an age-related loss of skeletal mass and strength mainly due to an imbalance between protein synthesis and protein breakdown. Although several potential targets have already been identified, no effective treatment counteracting muscle waste is clinically available yet. Phytoecdysteroids (analogues of insect molting hormones) present in several medicinal plants display protein synthesis stimulatory effects on mammals and their potential for treating sarcopenia has been investigated. Methods: We developed a screening cascade using a mouse myoblast cell line (C2C12) to select compounds able to stimulate protein synthesis and/or reduce proteolysis. Focusing on sarcopenia molecular targets, we evaluated the effect of natural or synthetic ecdysteroids on various markers of protein synthesis. 20-Hydroxyecdysone (20E) and IGF-1 were used as positive controls. Results: A large set of hemisynthetic ecdysteroid derivatives was produced for Structure-Activity Relationships (SAR) studies. 20E indeed increased protein synthesis ([3H]-leucine incorporation), stimulated S6K phosphorylation and inhibited myostatin gene expression. A set of natural or synthetic molecules was run in the bioassay, which allowed to establish structure activity relationships and to identify potential lead compounds. Conclusion: A set of new bioactive compounds have been identified, and the next step will be their assay in suitable animal models. Funding: The work presented here was co-funded by the FUI (French State Fund), Ile de France Region, Essonne and Seine Saint-Denis General Councils.

**P186- THE SARCOB PROGRAM : A FRENCH CONSORTIUM FOR DEVELOPING DRUG CANDIDATE AND NUTRACEUTICAL TARGETING SARCOPENIC OBESITY.** W. Dioh[1], V. Autier[2], R. Lafont[1,3], C. Gaudichon[4], G. Butler-Browne[5], S. Walrand[6], K. Cement[7], S. Veillet *(1. Romainville, France; 2. Chilly-Mazarin, France; 3. Paris, France; 4. Clermont-Ferrand, France)*

Background: Sarcopenia, the age-related muscle mass and strength loss may occur together with a fat mass increase, leading to sarcopenic obesity (SO). SO patients have

increased cardiometabolic risk. Our objective was to set up a "SARCOB" consortium associating two companies and five academic laboratories to develop a drug candidate and a nutraceutical formulation for treating SO. Phytoecdysones are plant secondary metabolites related to insect molting hormones. The most common phytoecdysone, 20-hydroxyecdysone (20E), is pharmacologically active on mammals. It increases muscle mass and strength and prevents adipose tissue development. Phytoecdysones therefore represent attractive candidates for developing SO treatments. Methods: The SARCOB program comprises three main workpackages: The WPA goal is to set up cellular assays (myocytes and adipocytes+myocytes) and rodent models of SO to elucidate the molecular basis of phytoecdysones action. The WPB goal is to investigate 20E effects on muscle function in a suitable rodent model and to develop a nutraceutical. The WPC goal is to test natural phytoecdysones and synthetic 20E derivatives through a screening cascade based on proteosynthesis stimulation in C2C12 cells and to identify drug candidates (Poster: Raynal et al.). Results: Unravelling the mechanisms of action of phytoecdysones on C2C12 is ongoing with the identification of candidate(s) receptor(s). The pharmacokinetics of 20E and analogs was studied in rodents and humans. Previously described 20E anabolic and metabolic effects in young rodents were confirmed and an original nutraceutical formulation developed. However, the development of rodent model of SO has been challenging. Only mild signs of muscle alteration were observed in aged mice (Poster: Guelzim et al.). GK and aged Wistar rats showed lean mass reduction. GK rats also depicted precocious reduced muscle weight and muscular lipid accumulation (Poster: Mouveaux et al.). Conclusions: SARCOB consortium successfully identified a drug candidate and a new nutraceutical ready to go for further development. Funding: The work presented here was co-funded by the BPI ; FUI (French State Fund), Ile de France Region and Essonne and Seine Saint Denis General Councils.

**P187- 20-HYDROXYECDYSONE INCREASES ANDROID FAT MASS LOSS WITH NO SIGNIFICANT EFFECT ON MUSCLE MASS LOSS DURING A WEIGHT LOSS PROGRAM IN OBESE AND OVERWEIGHT SUBJECTS.** A.S. Foucault[1], W. Dioh[1], R. Lafont[1,2], S. Veillet[1], D. Tome[2], A. Quignard-Boulange[2], K. Clement[2], S. Rizkalla[2] *(1. Romainville, France; 2. Paris, France)*

Background: Sarcopenic obesity (SO) is an emerging blasting disease, defined by the loss of muscle mass and quality due to aging of obese. Unsuccessful repeated hypocaloric weight loss programs during lifetime may increase the risk of SO. 20-hydroxyecdysone (20E) is a polyhydroxylated sterol found in plants pharmacologically active on mammals. 20E increases lean mass and prevents adipose tissue development in animal model of obesity. 20E prevent lean mass loss due to intense physical training in sportsmen. Phytoecdysones therefore represent attractive candidates for treating obesity in combination with hypocaloric dieting. Methods: The objectives of our randomized double-blind controlled study were to evaluate whether 20E could prevent fat mass regain and lean mass loss in obese subjects during a weight loss dietary program. Fifty-eight overweight or obese participants were randomized to take 40 mg/day of 20E or placebo during a 6-week weight loss dietary intervention (WL) followed by a 6-week weight loss maintenance phase (WLM). Results: Loss of android fat mass and reduction of adipocyte diameter were significantly higher in 20E group compared to placebo. Insulin sensitivity has been improved in 20E compared to placebo. Loss of body weight or lean mass during WL phase was not significantly different between groups. Conclusions: 20E could be a good candidate to increase fat mass loss and insulin sensitivity when combined with a dieting program. 20E should be evaluated in SO patients in combination with physical exercise and eventually high protein/low caloric dieting.

**P188- CHANGES OF ANGIOGENIC FACTORS AND PROLIFERATIVE OF DERMAL FIBROBLASTS DURING ONTOGENESIS.** O.V. Vasilieva, N.N. Golubtsova, V.V. Petrov, A.G. Gunin *(Cheboksary, Russia)*

Background : Skin aging is an extremely important medical and social problem in modern world. Methods : Skin specimens from frontal surface of lower part of the neck (from upper corner of standard autopsy skin incision) from human fetuses died antenatally from 20 to 40 weeks of pregnancy and humans died from different causes from 1 day to 85 years of life were obtained at autopsy. Results : Fibroblast number was estimated in preparations stained with hematoxylin and eosin. Dermis of fetuses contains numerous fibroblast-like cells and low amount of extracellular matrix. The number of fibroblast-like cells in dermis is gradually decreased with age. And dermis of old participants has low density of fibroblasts. Proliferating cells nuclear antigen (PCNA), were detected using routine indirect immunohistochemical staining. Dermis of fetuses or young men has numerous PCNA positive fibroblast-like cells. The number of these cells constantly decreases with age. Blood vessels were detected using routine indirect immunohistochemical staining. The numbers of vessels positively stained with vWF antigen are decreased through age. CD31 antigen detected in endothelial cells. The vessels positively stained with CD31 antigen detected in all age periods. Conclusions : Revealed patterns reducing the expression of angiogenic factors, cell proliferative activity and the number of fibroblasts in the dermis of human skin are morphological evidence age involution and reduce the potential for connective tissue structures to physiological and reparative regeneration of aging skin. Funding: The present study is supported by Russian Foundation for Basic Researches (12-04-00005,12-04-31605, 13-04-97112), Ministry of Education and Science of Russian Federation (project no. 4.1166.2011), Federal Target Program “Scientific and Pedagogical Professionals of Innovative Russia” (project no. 2012-1.3.2-12-000-1002-023).

**P189- ACUTE EFFECTS OF ANTAGONIST STRETCHING EXERCISE ON THE JOINT FLEXIBILITY AND BALANCE ABILITY IN THE ELDERLY PEOPLE.** T. Saiki, K. Tsuji, T. Kurihara, T. Isaka, T. Hamaoka *(Shiga, Japan)*

Background: It is important for elderly to maintain their muscle strengths and range of motions (ROM) of the joints in order to keep up their quality of life. Antagonist stretching was performed to improve their ROM though the relaxation of muscle tone caused by reciprocal inhibition.（Ryan.2010） We developed the antagonist stretching exercises (ASE) using the extensible band, and it was used to feedback an extension sensibility by the stretching. This study examined the acute effects of ASE on the flexibility and balance ability in the elderly people. Methods: A total of 22 males aging 68.5±3.9 years were participated in this study. They all were healthy with no history of musculoskeletal and neurological diseases. The examinees were asked to carry out ASE for 10 minutes in the recumbent position. They performed a total of six kinds of procedures for combined the joint movement of the whole body during the 10 minutes, they performed each procedure three times for five seconds with a five second rest between each procedure. We used an extensible band to emphasize stretching effect. Before and after the ASE, we measured the trunk and hip ROM, and spinal mobility using spinal mouse (Idiag AG、Switzerland), one leg standing time and functional reach test(FRT) for assessing the balance ability, and time up and go test(TUG) for mobility of each examinee. Result : We observed a significant increase both in Trunk ROM（flexion from 35.0±8.3° to 38.6±9.2° p=0.001） and hip ROM(flexion from 120±12.4° to 122±7.9° p=0.04, extension from 19.7±6.7° to 24.1±7.3° p=0.01) and a significant decrease in TUG (time from 5.1±0.6s to 4.8±0.6s p=0.001) after the ASE. Conclusions : ASE using extensible band contributes to the improvement of the flexibility and mobility of elderly while maintaining the ability to balance of their bodies.

**P190- FRAILTY IN AN ELDERLY NON-HOSPITALIZED POPULATION FROM IAŞI, ROMANIA.** R. Onuţu, I. Crăcană, O. Alexa, A. Dronic, V. Cepoi, I.D. Alexa *(Iași, Romania)*

Background: This study aimed to estimate the prevalence of frailty in an elderly, non-hospitalized population from Iasi, Romania and its influence on Quality of Life. Methods: A number of 60 participants age over 65, were included in this study. The frailty syndrome was evaluated based on the Clinical Frailty Scale and Groningen Frailty Index. The interview conducted by geriatric and internal medicine doctors and psychologists included ADL, IADL, Mini-Cog (Short Term Memory and The Clock Test) and Geriatric depression Scale with 4 items. The handgrip strength was measured with an analog hand dynamometer and correlated with gender and age. Quality of life was evaluated using McGill quality of life questionnaire. Results: Factors associated with frailty were age, gender, number of chronic diseases, functional variables that included low scores in ADL and IADL, and low scores in Depression Scale and cognitive impairment. Frailty was found to have a negative impact on Quality of life in a significant number of participants. Conclusion: The prevalence of frailty in elder population is high, emphasizing the necessity of a screening tool and a protocol for measures to reverse it. The multidisciplinary approach in treating frailty has a significant impact on improving quality of life. Key words: frailty, elderly, multidisciplinary approach, quality of life. Founding: This study was done by volunteer work.

**P191- NUTRITIONAL STATUS IN PATIENTS WITH DIABETES MELLITUS.** I.D. Alexa, L. Panaghiu, I. Crăcană, R. Onuţu, A. Ilie, A. Moroșanu *(Iași, Romania)*

Background: Elder patients face changes in nutritional necessities due to low energy requirements and low appetite. One of the main concerns of clinicians is minimizing lean muscle loss and occurrence of sarcopenia. Diabetes mellitus is one of the most prevalent endocrine pathologies, especially in elderly, with great risk of malnutrition or obesity. The aim of this study was to evaluate the nutritional status in patients with diabetes admitted in an acute geriatric clinic from Iași, Romania. Methods: We conducted a prospective study on 98 patients with age over 65 and diabetes, admitted in an acute geriatric clinic from Iași between September 2013 and January 2014. The nutritional evaluation included protein levels, lipid profile, Body Mass Index (BMI), Mini Nutritional Assessment (MNA) and The Short Physical Performance Battery (SPPB). For the evaluation of diabetes we used blood tests (glycosilated hemoglobin test), urine samples and the presence of complications. Results: The factors associated with malnutrition were age and the presence of diabetic complications. Correlations between MNA and low protein levels were found. Negative correlations between age and MNA scores were found, independent of BMI. Conclusion: High prevalence of malnutrition (sarcopenic obesity, cachexia) demonstrates the importance of performing a nutritional evaluation in elderly diabetic patients. An early intervention could lead to a better evolution of diabetes and adjusted medical treatment all in favor of better quality of life. Key words: elderly, nutritional status, diabetes, malnutrition, sarcopenia. Founding: This study is supported by Dr. C.I. Parhon” Hospital, Iași, Romania

**P192- THE RELATIONSHIP BETWEEN NUTRTIONAL STATUS AND FRAILTY SYNDROME IN ELDERLY PATIENTS ADMITTED IN THE ACUTE GERIATRIC CARE CLINIC IN IASI, ROMANIA.** I. Crăcană, R. Onuţu, O. Gavrilovici, G. Prada, I.D. Alexa *( Iași, Romania)*

Background: Frailty has a major impact on medical and psychological evolution of elderly patients, especially influencing balance, falls and fractures, as well as the

therapeutic response to acute events. We tried to explore the relationship between the nutritional status and frailty in elderly patients that were admitted in an acute geriatric care clinic. Methods: We conducted a prospective study on 200 patients admitted in an acute geriatric clinic from Iaşi between September 2013 and January 2014. We assessed the nutritional status using the Mini Nutritional Assessment (MNA), Body Mass Index (BMI), protein and glucose blood levels upon admission. Frailty was assessed using the Fried phenotype with 5 items. We made correlations between the nutritional status of the patient, frailty and if they influenced disease progression. Results: We found correlations between malnutrition (expressed by BMI), MNA and low protein levels. Frailty was associated with modest response to therapy. Malnutrition and obesity were both considered to have an impact on the degree of frailty with higher risk of disability. Conclusion: Interventions to set a correct diet and exercise program to maintain a balanced nutritional state are important in reversing frailty status, improving prognosis in elderly patients with acute events and also maintain a high level of quality of life. Key words: frailty, nutritional status, malnutrition, acute events. Founding: This study is supported by "Dr.C.I.Parhon" Hospital, Iaşi, Romania

**P193- THE USE OF THE EUROPEAN WORKING GROUP ON SARCOPENIA IN OLDER PEOPLE (EWGSOP) ALGORYTHM TO DETECT SARCOPENIA IN PRIMARY CARE.** X. Rojano-I-Luque, R. Monteserín, B. Ichazo, A. Salvà *(Barcelona, Spain)*

Background: Sarcopenia has a negative impact in the health of elderly people. Despite this there is no gold standard to define it. The purpose of this study is to assess the performance of the algorithm to diagnose Sarcopenia proposed by the EWGSOP in a primary care setting. Methods: In a stratified sample of community dwelling elderly we assessed body composition with Bioimpedance analysis (BIA), gip strength with a digital strain gauged dynamometer and gait speed using the SPPB. Muscular mass was computed using Jensen equation and created the skeletal muscle index (SMI) adjusting by height. 10 out 435 persons with BIA were excluded due to likely errors in BIA measure. For low muscular mass we set 3 cutt-offs points published elsewhere LMM1 (≤ 8,50 kg/m² ♂; 5,75 kg/m² ♀); LMM2 (≤ 10,75 and 6,75 kg/m²); LMM3(≤ 8,25 and 6,68 kg/m²) .For grip strength we set 30kg for men and 20 for women and for gait speed 0.8 m/s for all. Results: The mean age of participants was 75 years and a BMI of 28.1 kg/m2, 61% were women. 5 men and 11 women did not have enough data to assess their status. From the remainder a 5% (5%♂;6%♀ ); 33% (43%♂;27%♀ ) and 17% (3%♂;26%♀ ) respectively met sarcopenia criteria using the cut-offs points of LMM1; LMM2 and LMM3. Using LMM1 criteria, 2% had low muscle mass isolated; 3% with a reduction of strength or performance, and 2% of both. The respective figures were 14%; 20% and 14% for LMM2 and 4%; 9% and 7% for LMM3. Cut-off criteria have a different impact in men and women. Conclusions: The cut-off criteria have an important effect (which is different for men and women) in the prevalence of sarcopenia. High cut-off points increase the detection of persons without functional changes. Funding: This study have received a grant from the European Regional Development Fund (ERDF) FIS PI11/02001.

**P194- CROSS-SECTIONAL VALIDATION STUDY OF BIA-DERIVED EQUATIONS FOR ESTIMATING APPENDICULAR SKELETAL MUSCLE MASS IN ELDERLY PEOPLE FROM A REGION IN CENTRAL MEXICO.** P.D. Rangel[1], H. Alemán-Mateo[2] *(1. México, Mexico; 2. Sonora, México)*

Background: Appendicular skeletal muscle mass (ASM) is an important body composition component since it is involved in physical activity, ambulation, and is a component of sarcopenia syndrome. Bioelectrical impedance analysis (BIA) is an alternative and accurate technique to estimate skeletal muscle mass. At present, there are a few published BIA equations which estimate ASM but not in Latin Americans. This study aimed to develop and validate equations using BIA in order to estimate ASM using dual energy X ray absorptiometry (DXA) as the reference method, and to validate a published equation developed in Caucasians. Methods. This is a cross-sectional study, which included older men and women (>60y), physically independent and apparently healthy. All subjects underwent BIA and DXA measurements. Anthropometry and other independent predicted variables were assessed. The total sample was randomized and split in two subsamples: one group for the development of BIA-equations and the other for its validation. BIA ASM equations were derived by step-wise regression analysis, considering the highest coefficient of determination (r2) and lowest standard error of estimate (SEE). In the validation sample and in the published equation, accuracy was tested with the pure error (PE), bias with Bland and Altman analysis, paired t-test and simple regression analysis. Results. A sample of 213 subjects was included. No differences were found between variables in the two randomized subsamples. Three models were chosen as the best fit models and fulfilled all regression assumptions. The new BIA equations included height2/resistance, sex, resistance, body weight and wrist circumference. The performance of the new BIA equations in the validation sample showed PE values close to the SEE, and no significant bias. Importantly, the published BIA equation tested in this sample was inaccurate. Conclusions: New BIA equations were precise and accurate. The few published BIA equations to estimate ASM can produce bias. Funding: The present study was partially supported by Querétaro´s Ministry of Health

**P195- THE EVALUATION OF DRUG APPROPRIACY USING STOPP/START CRITERIA FOR ELDERLY OUT PATIENTS AT A UNIVERSITY HOSPITAL IN SEOUL.** S.Y. Kim, J.Y. Ahn, C.W. Won, Y.J. Choi *(Seoul, Korea)*

Background : The STOPP-START criteria has been formulated to complement the limitation of the Beer's criteria. This study aims at identifying PIMs (potentially inappropriate medicines) and PPOs (potential prescribing omissions) according to the STOPP-START criteria at a university hospital in Seoul. Method: The study included 240 outpatients 65 year of age or over who visited a university hospital in Seoul between January 2011 and December 2011. The medical records and electronic data were collected and reviewed. The STOPP-START criteria was applied to the medication information to find out whether medicines were properly applied. Result: The medical records showed that 162 (67.5%) out of 240 patients took more than 5 medications. Among the participants, 19 patients (7.9%) were using inappropriate drugs according to the STOPP criteria. 21.7% of the patients took medications which have similar effects and 17.4% was prescribed with calcium channel blocker and tricyclic antidepressant simultaneously. The application of the START criteria showed that 111 participants (46.3%) were not taking medications they needed. The most commonly omitted drug was antidyslipidemic drug in patients with their life expectancy more than 5 years after the diagnosis of cardiovascular, cerebrovascular or peripheral vessel disease (34.6%). Secondly, β-antagonists were not prescribed patients with chronic stable angina (14.7%). Conclusion: The application of STOPP-START criteria is expected to help reduce the side effects and complications that may come from inappropriately prescribed medications. It could also help clinicians to provide elderly patients with more efficient and safer drug therapies.

**P196- RELATIONSHIP BETWEEN FRAILTY AND COGNITIVE DECLINE IN OLDER KOREANS.** C. Yoonjung *(Seoul, Korea)*

Background: The purpose is detecting association between frailty and decline in cognitive function in Korean elderly. Methods: Data were derived from the Living Profiles of Older People Survey (LPOPS) between 2008 and 2010, comprising 10003 elderly participants in the community of South Korea. Frailty was defined using Fried's criteria included unintentional weight loss, exhaustion, weakness, low physical activity, and slow walking speed. Cognitive function was assessed by the Mini-Mental State Examination.Results: Of the 5741 subjects, 2637(45.9%), were not-frail, 2707(47.1%) were pre-frail, and 397(6.9%) were frail from 2008 to 2010. We found that frail subjects had greater cognitive decline over 3-years compared with nonfrail subjects. Conclusion: Frail status is inversely associated with cognitive function.

**P197- PHYSICAL PERFORMANCE AND ITS ASSOCIATION WITH PLASMA LEVELS OF VITAMIN D IN CHILEAN OLDER PEOPLE.** H. Sánchez, B. Angel, L. Lera, C. Márquez, C. Albala *(Chile)*

Background: The vitamin D (25OH-D) deficiency is a worldwide public health problem. Older people are especially vulnerable because the decreased ability to synthetize 25OH-D. The autonomy in the older people is sustained in the good physical and cognitive´s performance. The 25OH-D plays a role in the good physical function. The objective of this study was to evaluate the association of 25OH-D deficiency with physical performance in Chilean older people. Methods: Cross-sectional study corresponding to the baseline of a RCT aimed to determine optimal levels of fortification with 25OH-D and B12 of a milk drink provided by the Chilean ministry of health`s beneficiaries ≥70y. Participants arise from primary care centers from three cities located in different latitudes of the country. Weight, height, 25OH-D and Short Physical Performance Battery test (SPPB) were measured. Physical performance deficit was defined as Percentil 25 of SPPB. 25OH-D deficit was defined as <50 nmol/L of 25OH-D. Crude and sex and age adjusted logistic regression models were performed to test the association of physical performance and 25OH-D deficiency. Results: 815 older people, mean age 77.3(SD: 5.2), 61.5% women. The mean 25OH-D was 60.3 (SD:38.2) nmol/L. The mean the 25OH-D in men was 67.1 nmol/L(SD:39.6) and women 55.6 nmol/L(SD:36.1) (p<0.05). 25OH-D deficit was 45.3% (CI95%:40.8-49.8). When analyzing the association between different levels of 25OH-D and physical performance (reference vitamin D>75 nmol/L), the older people with 25OH-D <25 nmol/L had OR of 2.0(95%CI: 1.16-3.58) and with 25OH-D 50-25 nmol/L 1.26 (95%CI:0.71-2.23) of being at p25 of SSPB. Conclusions: The results support the independent role of vitamin D in physical performance of older people. Project funded by FONDEF D10I1091

**P198- BODY COMPOSITION AND ENERGY EXPENDITURE IN DUCHENNE MUSCOLAR DISTROPHY (DMD) PATIENTS: COULD IT BE A MODEL FOR SARCOPENIA IN AGING?** L. Berton, E. Ruggiero, S. Sarti, L. Bello, A. Barp, E. Pegoraro, G. Sergi, A. Coin *(Padova, Italy)*

Background: DMD is characterised by decreased fat-free mass (FFM) and increased fat mass (FM). Moreover DMD patients tend to became obese. Skeletal muscle metabolism is a major determinant of resting energy expenditure (REE), so a reduction of REE is hypothetical in DMD subjects. A reduction in muscle mass and strenght (sarcopenia), in combination with fat mass increase, is also observed in elderly patients. The implications of muscle damage seem to be similar in sarcopenia and DMD, in particularly the mithocondrial dysfunction and the role of fibrosis. Methods: we studied 11 subjects with DMD (11±3 years). The body composition was measured using DEXA; REE was assessed by indirect calorimetry; dietary energy intake was also investigated. Results: the subjects were divided in normal (8) and obese (3) according to Italian BMI growth norms table. In obeses, not only total and appendicular FM but also FFM mean values, were greater than in normal weight subjects (30.8±1.8 vs 23.7±6.0 kg; p<0.05). Mean REE values were smaller in normal weight subject (1572.7±149.9 vs 1243.4±316.3 kcal/day p<0.05) but similar when adjusted for kg/FFM (49.0±3.3 vs 52.3±6.2 kcal/kg, p=n.s.). Conclusion: there were important differences in FFM and FM between obese and normal DMD patients. The REE was significantly lower in normal weight than in obese subjects even similar when adjusted for FFM. The REE/kg of FFM appears lower than the mean value of healthy children of

the same age suggesting the presence of hypometabolism due to muscle mass reduction. In this regard, the DMD could be a model for sarcopenia which is a syndrome characterized by a gradual, generalized loss of muscle mass and strength. In sarcopenia, as well as in DMD, there are two different adiposities phenotypes and they are both characterized by sub-inflammation state. Longitudinal data are needed for better understanding possible links.

**P199- APPETITE-REGULATING HORMONES AND PHYSICAL FUNCTION IN COMMUNITY LIVING OLDER PERSONS**. R. Diekmann[1], B. Hofner[2], V. Schusdziarra[3], M.J Kaiser[2], K. Vidal[4], C.C. Sieber[2], J.M. Bauer[1] *(1. Oldenburg, Germany; 2. Nürnberg, Germany; 3. München, Germany; 4. Lausanne, Switzerland)*

Background: Age-associated alterations of the secretion of appetite-regulating hormones have been linked to the so-called `anorexia of aging´. Beyond being relevant in the pathogenesis of malnutrition it was of interest whether or not these hormones were associated with physical performance in older age. Aim : To analyse the association of appetite-stimulating hormones with physical function in community-living older persons. Methods: Frailty assessment according to Fried, the Short Physical Performance Battery (SPPB), gait speed (4,5m) and the timed up and go test (TUG) were performed in community-dwelling elderly above age 75. Malnutrition (MN) was identified by Mini Nutritional Assessment (MNA). Baseline fasting and 90 min. postprandial blood samples (after a standardized breakfast) were drawn and ghrelin (GhreF; GhrePP), activated ghrelin (aGhreF; aGhrePP) and leptin (only LepF) were analyzed. Spearman's partial correlation, adjusted for the confounders BMI, age, and sex, was used to describe the association between hormones and function, p-values ≤0.05 (*) are considered to be significant, ≤0.001 (**) highly significant. Results: 182 subjects, 65% (n=118) female, age 81.8 (±4.2) years and BMI 27.7 (±3.5) kg/m2 (mean ±SD) were included. 50% (n=91) were robust, 42% (n=76) pre-frail and 8% (n=15) frail. No subject suffered from MN according to MNA. Regarding functionality, subjects showed the following results (median and IQR): SPPB 11 (9-12) points, gait speed 4 (4-5) sec, TUG 9 (7-11) sec. GhreF was significantly associated with SPPB (-0.158*), aGhreF with frailty (-0.181*) and TUG (-0.168*) and LepF with frailty (0.178*), SPPB (-0.236**) and gait speed (0.150*). AGhrPP was associated with all functional measurements (frailty -0.299**, SPPB 0.190*, TUG -0.229** and gaitspeed -0.197*). Conclusion: Ghrelin, activated ghrelin (fasting and postprandial) and leptin were associated with physical function in community-dwelling older people, which was independent of malnutrition according to MNA. The biological relevance of this correlation needs to be explored in further studies. Funding: This study was supported by a Nestlé research grant.

**P200- VASCULAR MILD COGNITIVE IMPAIRMENT AND FRAILTY IN MEXICAN ELDERLY IN A MEMORY CLINIC.** S.G. Aguilar Navarro, A. Mimenza Alvarado, S. Juárez Arellano, C. Bernal López, A. Samudio, A. Reyes Martínez, J.A. Ávila Funes *(México City, Mexico)*

Background: Studies have shown an association between physical frailty and cognitive function. In addition, they have suggested that in some elderly, physical frailty associated with development of dementia. However, little is known about the relationship between mild cognitive impairment (MCI) and frailty. The aim of our study was to determine the factors associated with the vascular MCI and physical frailty. Methods: Cross- sectional study, 140 outpatients were evaluated by a geriatrician and a neurologist for diagnosis of MCI and Frailty. Each patient sociodemographic characteristics and risk factors were obtained. Patients with MCI underwent neuropsychological evaluation to establish vascular cognitive profile. Frailty criteria developed by the Cardiovascular Health Study, we considered to be characterized by limitations in 3 or more of the following 5 domains: mobility, strength, endurance, physical activity, and nutrition. All patients who met criteria underwent cranial MRI. Results: There were 97 (69.3 %) females, 106 (75.7 %) participants had less than 12 years of education. 42 (30 %) was pre-frail, 22 (15.7 %) frailty, 14 (10%) combined: Va MCI and frailty criteria. Increasing associated with cognitive impairment (MCI and frailty (p = .020). MCI was significantly associated with a lower education level (p = .036). The presence of vascular risk factors (n = 140) ranged from 66.4 % (hypertension) to 14.3 % (diabetes). Subjective memory complaints Were Significantly Associated with cognitive impairment (p = .001), except for the use of the telephone (p = .225) and the television (p = .08) , impairment in all domains of instrumental activities of daily living were significantly associated with a frailty and Va-MCI criteria. Conclusion: The study showed that was associated with cognitive impairment increase increasing age and low education levels. The Presence of vascular risk factors places this population at risk for future cognitive decline and frailty.

**P201- COMPARISON OF CLASS-STYLE SUPERVISED INTERVENTION VERSUS HOME-BASED UNSUPERVISED INTERVENTION IN PREVENTING SARCOPENIA.** Y. Watanabe, Y. Yamada, T. Yoshida, K. Yokoyama, M. Miyake, E. Yamagata, M. Kimura *(Kyoto, Japan)*

Background: Preventing sarcopenia has been considered important to maintain the quality of life of older individuals. In this study, we compared the effects of class-style supervised intervention (CS) versus home-based unsupervised intervention (HB) on improving muscle mass and physical function in older adults. Methods: A total of 288 older adults (65–87 years) living independently participated in this cluster-randomized trial. They were assigned to one of two groups (CS and HB) and instructed on a resistance exercise program in two lectures. Also, all participants were provided with exercise materials (ankle weight, Thera-Band, triaxial-accelerometer/pedometer and exercise log), and then encouraged to perform resistance exercise and increase the average daily activity level. In CS intervention, the participants conducted the resistance exercise program at weekly class-style sessions. On other days, they performed the program independently. In HB intervention, the participants were only given instruction and practice about exercise. All participants were also encouraged to increase 2,000 steps per day. Results: Lower limb muscle mass (both front thigh muscle thickness and lower limb intracellular volume) and knee extension strength were significantly increased in both groups. A significant increase in the upper limb intracellular volume was observed only in the CS group. There were significant improvements in physical function (maximal gait velocity and chair-stand time) in both groups. Additionally, the mean number of daily steps significantly increased in both groups. None of these variables showed a significant difference between groups. Conclusions: These results indicated that low intensity resistance training with an increase in daily walking steps can induce muscle hypertrophy, strength gain, and improvement of physical function. Particularly, it is important that there was no significant difference in the training effects on the lower limb muscle and physical function between CS and HB interventions. Thus, HB intervention is considered a cost-effective method to prevent sarcopenia.

**P202- PREVALENCE OF SARCOPENIA AMONG HOSPITALIZED PATIENTS.** A.S. Sousa, R.S. Guerra, I. Fonseca, F. Pichel, T.F. Amaral *(Porto, Portugal)*

Background: Sarcopenia has been indicated as a reliable marker of poor prognosis, with worse clinical outcomes. There are few data on the prevalence of sarcopenia among hospitalized patients and information for use in clinical practice is still lacking. The aim of this study was to evaluate the prevalence of sarcopenia in hospitalized patients. Methods: A cross-sectional study was conducted in a university hospital. Sarcopenia was defined, according to the European Working Group on Sarcopenia in Older People criteria, as the presence of both low muscle mass and low muscle function. Bioelectric Impedance Analysis was used to access muscle mass and muscle function was evaluated through hand grip strength. Results: 608 adult inpatients (45.7% women) compose the study sample. For participants <65 years, prevalence of sarcopenia was 23.9% for men and 15.2% for women. Between 65-79 years, prevalence of sarcopenia was 39.6% for men and 28.1% for women. The greatest prevalence of sarcopenia was found for ≥80 years (54.5% men and 47.1% women). Conclusions: Prevalence of sarcopenia is very high, is more frequent in men than in women and increases with age, affecting half of patients aged ≥80 years. Our results also suggest that the prevalence of sarcopenia among adult men and women (<65 years) is relatively high. This finding corroborates that sarcopenia can occur in hospitalized adult patients and more research is needed concerning this age group.

**P203- FRAILTY: COMMON END POINT, DIFFERENT PATHWAYS.** J.M. Jacobs, Y. Rottenberg, S. Jochanan *(Jerusalem, Israel)*

Background: Fried's definition of frailty requires 3/5 of the commonly observed clinical states of weight-loss, weakness, self-reported exhaustion, slowness, and low level of physical-activity, with pre-frailty defined as 2/5 conditions. Numerous combinations exist, and the aim of this study was to characterize the common clusters of symptoms, within the definitions of pre-frailty and frailty. Methods: The study was based upon cross-sectional data from subjects aged 85 years old, enrolled in the Jerusalem Longitudinal Study, which follows a representative sample of community-dwelling people born 1920-1921. Subjects underwent comprehensive geriatric assessment at home. K means, an iterative distance-based clustering method, was applied to construct the five most common clusters of frailty symptoms using Fried's parameters. Results: Among the study population (n=840), prevalence of frailty, pre-frailty and non-frailty was 56% (n=470), 19.5% (n=164), and 24.5% (n=206) respectively. Five common clusters of symptoms were identified, each group according to a predominance of: 1) "exhaustion" (n=303, 36.1%), 2) "minimal/absence of symptoms" (n=269, 32%), 3) "weakness" (n=91, 10.8%), 4) "maximal number of symptoms" (n=90), and 5) "weight loss" (n=87). The majority of pre-frail subjects were from the "exhausted" (65%) and "minimal limitation" group (13%), with few from the weight loss (9.8%) or weakness groups (9.4%). The "exhausted" group was characterized by absence of other symptoms except for low-physical activity in about one fifth of the study population. Subjects defined as frail were observed in the "maximal symptom" (46%), "weakness" (29%), and "weight loss" groups (25%), and absent from the "exhaustion" cluster. Subjects within the "weight loss" and the "weakness" clusters were divided equally between pre-frail and frail subjects. Conclusion: We suggest that the spectrum of frailty and pre-frailty is composed of five dominant clusters of symptoms. Better characterizing of these clusters may improve the understanding of frailty's pathogenesis. Funding: This work was supported by funds from the Ministry of Senior Citizens of the State of Israel, and Eshel- the Association for the Planning and Development of Services for the Aged in Israel.

**P204- SONOGRAPHIC ESTIMATES OF MUSCLE QUALITY: RELIABILITY OF 3 DIFFERENT METHODS OF GRAYSCALE ANALYSIS.** C. Ismail, H.J. Hernandez, B. Adams, J. Zabal, H. Manning, M.O. Harris-Love *(Washington, USA)*

Background: Grayscale analysis of ultrasound images has been proposed as a method to estimate muscle quality related to sarcopenia. However, distinguishing parenchymal abnormalities by grayscale analysis is reported to be operator-dependent. The purpose of this study was to examine the interrater reliability of grayscale analysis by defining regions of interest (ROI) in 3 different ways: 1) full image (FI), 2) single muscle (SM), and 3) peak echogenicity of 1 cm2 within a muscle (SQ). Methods: Four investigators completed a total of 120 grayscale estimates from 10 longitudinal images randomly selected from a database

that included the trapezius, pectoralis major, deltoid, brachioradialis, rectus femoris, and tibialis anterior muscles. Scans performed by a single examiner using a 13-6 MHz linear array transducer with no alteration of the machine's default settings were obtained from healthy participants (25.1 ±1.5 yrs). Adobe Photoshop was used to obtain grayscale histogram mean values for each ROI. Reliability of the 3 methods was assessed using intraclass correlation coefficients (ICC 2, k) and standard error of the measurement (SEM). Results: The grayscale mean values obtained by the 4 investigators ranged from 61.4-61.8 for FI, 46.2-47.4 for SM, and 66.4-97.7 for SQ. Investigators demonstrated excellent interrater reliability with the FI and SM methods yielding an ICC 2, k of .99 (95% C.I. = .96-.99, p<.001; SEM = 1.3-1.6), whereas the SQ method demonstrated poor reliability (ICC 2, k =.53, 95% C.I. = .18-.83, p<.001; SEM = 17.1). Conclusions: Our findings demonstrate that the FI and SM techniques were the most reliable of our 3 grayscale assessment methods and displayed comparable results. Given that the SM method captures only the muscle of interest, this approach to grayscale estimation may be considered the preferred technique. Funding: This study was supported by funding from the Department of Exercise Science, The George Washington University, and the U.S. Department of Veterans Affairs Office of Academic Affairs (H.J.H.).

**P205- PATTERNS OF CIRCULATING INFLAMMATORY CYTOKINES IN COMMUNITY-LIVING OLDER PERSONS WITH HIGH AND LOW PHYSICAL PERFORMANCE.** R. Calvani[1], F. Landi[2], D.L. Vetrano[2], A.M. Martone[2], F. Marini[2], C. Leeuwenburgh[3], R. Bernabei[2], E. Marzetti[2] *(1. Bari, Italy; 2. Rome, Italy; 3. Gainesville, USA)*

Background. Studies have shown inverse correlations between individual inflammatory biomarkers and physical performance in older inviduals. However, given the complexity of the inflammatory response, it is likely that the simultaneous analysis of an array of cytokines may provide more insights into the relationship between inflammation and age-related physical function decline. Methods. Community-dwelling older adults were categorized into high-functioning (HF; n = 24) or low-functioning (LF; n = 13) groups according to their short physical performance battery (SPPB) summary score. A panel of 14 serum cytokines was assessed by multiplex analysis. Partial Least Squares Discriminant Analysis (PLS-DA) was used to identify clusters of cytokines associated with the level of physical performance. Results. The optimal complexity of the PLS-DA model was found to be four latent variables. The proportion of correct classification was 87.5% for HF subjects (79.2% in cross-validation) and 92.3% for LF individuals (61.5% in cross-validation). Discriminant cytokines in the model were interleukin 8, interleukin 12, myeloperoxidase (all higher in the LF group), and P-Selectin (higher in the HF group). Conclusions. A distinct pattern of circulating pro-inflammatory cytokines characterize older subjects with high and low level of physical performance. The dissection of these patterns may provide significant insights into the role played by inflammation in the disability cascade.

**P206- FUNCTIONAL DECLINE ONE YEAR AFTER A HIP FRACTURE IN ELDERLY OVER 75 YEARS.** S. Drevet, B.J. Chedal Bornu, C. Bioteau, S. Mazière, J. Tonetti, G. Gavazzi *(Grenoble, France)*

Background: 1% of falls in over-75 year-olds causes proximal femoral fracture (PFF). PFF is associated with high morbidity and functional decline (FD). The principal objective was to determine the prevalence of FD one year after PFF. Secondary objectives were to identify factors associated with FD. Methods: A prospective observational epidemiological study included 117 patients aged over 75 years and admitted in orthopedic unit of Grenoble University Hospital. Assessment of functional status were performed before admission, at discharge and one year after the hip fracture. FD one year after PFF was defined by a decrease between activities in daily living (ADL) before the fracture and one year after. Scores were compared on quantitative tests (Student t) with the significance threshold set at p<0.05. Factors associated with functional decline were collected: ADL, IADL, CIRS G, MNA, MMSE. Results: Mean age was 87,08 years and the mortality rate one year after PFF was 35,6% (42/117). Among survival cohort whole data were available for 51 patients. Prevalence of FD was 41,2% with an average of 0,81 point (minimum 0,0; maximum 5,5). The unique factor associated with FD was ADL at the time of discharge from orthopedic unit (p=0,027). The average mini nutritional assessment was 21/30 but was not associated with FD. Patient admitted in long care facilities increased from 17,6 at 25,5%. Conclusions: One year-mortality rate is high and the one-year FD after PFF is associated with ADL at discharge from hospital and not ADL before the PFF. Yet, early interdisciplinary intervention may help to improve outcomes and orthogeriatric models should be relevant. Given the present economic stakes relating to geriatric trauma patient, it is essential to find other preventable factors that lead to increase functional recovery. Interventional+ studies+ are+ needed+to+determine+whether+early+management+may+improve+long+term+outcomes. +

**P207- PREVALENCE OF SARCOPENIA IN ANDALUSIAN PATIENTS IMMEDIATELY AFTER A HIP FRACTURE.** M.J. Montoya, M. Giner, M.A. Vázquez, R. Pérez-Cano *(Seville, Spain)*

Sarcopenia-related falls and fractures are becoming an emerging problem as a result of rapid aging worldwide. We aimed to investigate the prevalence of sarcopenia by estimating the muscle mass of the arms and legs of patients with hip fracture. M&M This cross-sectional study examined 84 patients immediately after a hip fracture. We carried out whole-body dual energy X-ray absorptiometry to analyze skeletal muscle mass (MM), total fat (TF), skeletal muscle mass index (SMI), appendicular skeletal muscle mass index (appendicular SMI), bone mineral density, neck BMD and hip BMD. Sarcopenia was defined according to the criteria reported by Baumgartner: appendicular SMI below 7.26 kg / m2 in men and below 5.45 kg/m2 in women. Statistical analysis of the results was conducted using the T-student test (SPSS 21.0) Results: The age, TF, SMI, appendicular SMI and neck BMD was similar in both goups. The woman showed higher BMI (body mass index),(28.5 ± 5.5 vs 25.6 ± 4.8 kg/m2), lower MM (37,3 ± 5,2 vs 44.1 ± 5,7 kg) and worst hip BMD value (0,73 ± 0,11 vs 0,80 ± 0,14 gHA/cm2) than men, in all cases p< 0.05. The prevalence of sarcopenia in men was higher, 70.6 % (12/17), than in women 16.4% (11/67), OR = 4.3, (95% CI 2.31 to 8), p = 0.0001. Sarcopenia risk increased with age in men (62.5% in <80 years old and 77.8% in > 80 years old), while it decreased in women (21.7 % vs 13.6%). The frequency of falls was not related with SMI and appendicular SMI. We observed a positive correlation between hip BMD and TF (r = 0.271; p = 0.019), MM (r = 0.412; p = 0.0001) and SMI ( r = 0.231; p = 0.048). Conclusions: The prevalence of sarcopenia in hip fracture patients is higher in men than in women, mainly above 80 years old. Both tissues, fat and muscle, influence in bone mass values. The present study is supported by ISCIII (FIS2014)

**P208- NUTRITIONAL STATUS AND PHYSICAL PERFORMANCE OF UNIVERSITY OF THE THIRD AGE STUDENTS FROM MAŁOPOLSKA REGION ( POLAND) – PRELIMINARY RESULTS.** B. Piórecka, D. Twardzik, P. Jagielski *(Kraków, Poland)*

Background: The aim of the study is to analyze the relationship between nutritional status and physical performance of elderly people in respect to the diagnosis of sarcopenia. Material and Methods : The study involved 101 subjects (88 women and 13 men), aged over 60 years, physically fit, mostly with secondary and higher education. The mean age of the total group was 66.56 ± 5.19 years. Nutritional status was assessed on the basis of body composition analysis by BIA (Tanita BC- 418MA). The assessment of physical performance was tested with SPPB. The dominant limb muscle strength was measured using hand dynamometry (Smedley Hand Dynamometer). The study was approved by the Bioethics Committee of the Jagiellonian University No.: KBET/234/B/2012 of 27 June 2012. Results : According to WHO criteria concerning the BMI, only 26.7 % of the subjects were of normal weight, 48.5% were overweight, while the remaining ones were obese. Based on BMI and HGST measurements as proposed by Fried et al., a significant risk of sarcopenic obesity was found in 10 women (9.9%). Those women had a significantly higher BMI, waist circumference and hip circumference, BF [%] and FM [kg], while there were no differences in FFM [kg]. In all of those women central obesity was diagnosed (WC > 88 cm). However, according to SPPB assessment, sarcopenia was diagnosed in 4 persons (1 male and 3 female) aged 70 years or more. We are still working out the results concerning identification of indicators of low muscle mass in relation to the proposed cut-off points for the Polish population (Krzymi-ka-Siemaszko et al 2013). Conclusions : The study group has good nutritional status and high physical performance level. The present study is supported by the Polish Committee for Scientific Research No K/ZDS/003684.

**P209- IS GLUTAMINE A LIMITING FACTOR OF SARCOPENIA IN VERY OLD INDIVIDUALS?** D. Meynial-Denis *(Clemont-Ferrand, France)*

Background and purpose : Glutamine is the most abundant free amino acid in the body and has its primary source in skeletal muscle, from where it is released into the bloodstream and transported to a variety of tissues such the gut. The size of muscle glutamine pool may be related to lean body mass and so, to the sarcopenia. Because of glutamine is known to have a specific role in very old rats (up to 25 months of age), the aim of this study is to demonstrate if glutamine is a limiting factor of sarcopenia with advanced age. Chosen model is very old female Wistar rats (27 months). Methods : We have orally supplemented female rats with glutamine (20% of diet protein) intermittently, before animals became very old (long-term treatment with glutamine). Rats were studied after the last glutamine cure. Results : Muscle mass decreased by ~ 20 % with advanced age. No difference was observed in skeletal muscle mass with glutamine supplementation. However, glutamine synthesis was enhanced in skeletal muscle from very old female rat as previously reported. Glutamine played a role in mass of splanchnic tissues. Total intestine mass was significantly higher in glutamine supplemented very old rats than in controls (~15%). Discussion : Long-term treatment with glutamine had positive effects on very old rats: 1) it prevented the loss of body weight, but, 2) it did not prevent from the inevitable sarcopenia because of its inefficiency to modify the rates of muscle protein turnover and, 3) it maintained the gut mass. Long-term treatment with glutamine essentially played a role in maintaining intestine integrity and intestinal immune function. Consequently, the observed increase in glutamine requirements can be explained by the increased use of glutamine by the gut. Conclusion : Glutamine is not a limiting factor of sarcopenia in very old individuals even if a very high synthesis capacity is maintained in aging atrophied-muscle. Funding: The present study is supported by grants from INRA.

**P210- IS THE GOTO-KAKIZAKI (GK) RAT A SUITABLE MODEL OF SARCOPENIC OBESITY?** F. Mouveaux, S. Raynal, S. Ben Massoud, A. Audet, M. Kergoat *(Chilly-Mazarin, France)*

Background: Sarcopenic obesity (SO) is an age-related reduction of muscle quality in an obesity context. Most of concerned people also suffer from type 2 diabetes, which may also contribute to the pathology. The Goto-Kakizaki (GK) rat is a spontaneous type 2 diabetes model widely used for laboratory studies, and we wondered whether it could represent a suitable model of SO. Methods: We calibrated a potential animal model to

study sarcopenic obesity consisting of GK rat fed a high fat diet (HF) for 5 months from weaning (4wks). We analyzed the possible effect of this treatment on the early appearance of SO markers in 6 month-old rats. Results: HF GK rats exhibited an increased body weight gain and an increased fat mass compared to standard diet-fed (SD) GK rats. Focusing on clinical features and molecular events of the pathology, HF GK rat exhibited significant increase in triglyceride levels in EDL muscles and of 3-methylhistidine (a marker of myosin degradation) excretion. Compared to SD, the HF in GK rat induced a decrease in total lean mass and in several muscle weight as well as an increased number of muscle fibers containing lipid vacuoles. The expression of muscle genes associated with inflammation (IL-1b and IL-6) was increased as well as that of proteasome markers (atrogin and MURF-1). Conclusion: These HF GK rats results are very promising and could make this model suitable to study early sarcopenic-obesity. Funding : The work presented here was co-funded by the FUI (French State Fund), Ile de France Region and Essonne General Council

**P211- FRAILTY SYNDROME AS A PREDICTIVE FACTOR OF LATE COMPLICATIONS IN SURGICAL PATIENTS ADMINISTERED FOR ELECTIVE SURGERY.** P. Matras, K. Żuchowska, M. Matuszek, A.M. Szpetnar, J. Furmaga, K. Wojewoda, S. Rudzki *(Lublin, Poland)*

Rationale: Preoperative risk assessment is esencial. In elder patiants it may reqire modifications and assessment of physiological reserves. This study is scheduled to show the value of frailty syndrome as a predictive factor of surgical complications. Additionaly elements of this syndrome are analysed to show those which can be modifiead in preoperative care. Methods: Study included 77 patients- 32 women and 45 men. Patients where diagnosed as frail or pre- frail according to modified Fried Criteria. Additionaly nutritional status assessment- NRS 2000, psychosomatic status assessment- GDS and laboratory tests where perfomed - glucose, insulin and igf levels and were compared between groups. Surgical and nonsurgical complications occurring in 14 days after surgery were taken into considerations and categorized as minor and major dependingon severity. Results: 13 patients presented frailty syndrome (16,88%), and 13 patiants were qualified as as pre- frail 16,88%. – 33,76% of patients presented features of frailty. Most characteristic features of frailty was decreased walk speed- time to walk 4 meters was statisticali longer in the frailty group. (U = 303,50; p = 0,037). Mean BMI in frailty group was was 29.04 and 26,9 in the group free from frailty syndrome.Quality of life was higher in the group without frailty syndrome. (U = 457,00; p = 0,076). Conclusion: Identification of patients with frailty syndrome for elective surgery can focus on possibility of surgical and non surgical complications.

**P212- HYPERINSULINEMIA IS ASSOCIATED WITH THE LOSS OF APPENDICULAR SKELETAL MUSCLE MASS IN OLDER PEOPLE WITHOUT DIABETES.** M.T. López Teros, C.F.A. Ramírez, H. Alemán-Mateo *(Sonora, México)*

Background: Hyperinsulinemia defined as two clinical and two empirical measures of insulin resistance has been involved in some clinical disorders. To our knowledge there are no longitudinal evidences on the association between hyperinsulinemia using fasting insulin with the skeletal muscle loss. This study aimed to investigate whether fasting insulin concentration at baseline and 4.6 year follow-up is associated with appendicular skeletal muscle mass (ASM) in older people. Methods: This is a cohort study, which includes 147 men and women subjects over 60 years. ASM was measured by dual-energy x-ray absorptiometry at baseline and follow-up. Hyperinsulinemia was defined using the cut-off corresponding to third tertile of fasting insulin levels distribution of the cohort. Logistic regression calculated odds ratios and 95% confidence intervals for the association of ASM, adjusted for several covariates. Results: The results of the statistical analysis at baseline shows that ASM does not increased according to the distribution of the values of fasting insulin. Also, the unadjusted regression analysis was not significant but after adjustment for some baseline covariate, the association was positive and significant (model 1, β =0.12, 95% CI -0.03-(-0.20), p=0.00). Importantly, the results at follow-up analysis shows that both unadjusted and adjusted models indicates a significant and negative association between higher fasting insulin values (>8.4 μU/ml) and ASM variable (β= -0.28, 95% CI-0.57-.009, p=0.05) compared with reference group (<8.4 μU/ml). Discussion: In conclusion the result of this cohort study suggest that high levels of fasting insulin are associated with loss of appendicular skeletal muscle mass in men and women elderly subjects at 4.6-years of follow-up. Elevated level of fasting insulin may precede the loss of ASM and can be an early marker of the loss of ASM and possibly of sarcopenia due that low skeletal muscle is an important component of sarcopenia syndrome.

**P213- PREVALENCE OF SARCOPENIA AMONG COMMUNITY OLDER ADULTS IN PORTUGAL.** S.S. Bernardo, T.F. Amaral *(Porto, Portugal)*

Background: Although it has been shown that sarcopenia is highly prevalent, data on Portuguese community older adults is absent. The objective of this study is to know the burden of sarcopenia in older adults living in the community on the North of Portugal. Methods: A cross-sectional study was performed in all day centres and conviviality centres of Paços de Ferreira, North of Portugal. The sarcopenic elderly were identified according to criteria of the European Consensus on Definition and Diagnosis of Sarcopenia of 2010. Nutritional status was evaluated with Mini Nutritional Assessment. Results: We assessed 337 older adults, representing 80% of the total registered. Thought Mini Nutritional Assessment it was found that 7 (2.1%) were undernourished and 107 (31.8%) at risk for undernutrition. According to the criteria used, 15.1% of the older adults had sarcopenia. Conclusions: Sarcopenia and undernutrition are highly prevalent in older adults in day centers of Paços de Ferreira, North of Portugal.

**P214- RELATIONSHIP BETWEEN BONE MINERAL DENSITY, CORONARY RISK FACTORS, C- REACTIVE PROTEIN, AND INSULIN GROWTH FACTOR IN FRAIL ELDERLY.** M.S. Amer, T.M. Farid, H.M. Farid, R.A. Mabrouk, H.G. Saber *(Cairo, Egypt)*

Background: This study aimed to explore the relation between bone mineral density (BMD), inflammation, coronary risk factors, and Insulin growth factor (IGF) in frail elderly. Methods: A case-control study. Setting: Ain Shams University Hospital Cairo, Egypt. Participants: Ninety aged 60 years and above; sixty frail (30 males and 30 females; mean age 70.03 ± 8.10) and thirty matched controls (15 males and 15 females; mean age 69.07 ± 5.93). Measurements: History, examination, comprehensive geriatric assessment, measurement of BMD, and laboratory investigations including; high sensitivity C-reactive protein (hs-CRP) glycated haemoglobin, IGF, low-density lipoprotein (LDL), high-density lipoprotein, total cholesterol, and triglycerides. Results: The frail group had significantly lower levels of triglycerides and LDL, hs-CRP and glycated haemoglobin levels were significantly higher ($P < 0.001$), and BMD and IGF levels were significantly lower when compared with the control group ($p < 0.00^*$, $p = 0.05$) respectively. We also found that BMD had a significant positive linear correlation with IGF and negative correlation with age. Conclusion: Frailty was associated with low BMD, lower triglycerides & LDL levels, and higher hs-CRP levels. A borderline significance was found between IGF levels and frailty. A positive correlation was found between BMD and IGF in frail. Funding: The present study is supported by Ain Shams University, Cairo, Egypt.

**P215- LOW MUSCLE MASS IS AN INDEPENDENT PREDICTOR OF HOSPITALIZATION IN COMMUNITY-DWELLING OLDER ADULTS: DATA FROM MED&SANO STUDY.** M. Maggio, F. Lauretani, F. De Vita, C. Costantino, R. Brianti, M. Fabi, G. Gelmini, G.P. Ceda *(Parma, Italy)*

Background.Sarcopenia is a geriatric syndrome recently defined by the presence of both low muscle mass+low muscle function (strength or performance).The platform University-Hospital-Territory may share methodology and expertise for an early diagnosis and to start therapeutic and preventive strategies.We investigate the role of muscle mass and physical performance as predictors of 1-year hospitalization in Italian community-dwelling older persons. Methods.667 non-disabled adults ≥64years were contacted and screened from the team of the School of Geriatrics and Physiatry of the University-Hospital of Parma after initial evaluation of GPs(Territory, Azienda USL,Parma).A comprehensive geriatric assessment including objective measures of physical function (10 meter gait speed,SPPB and 6MWT),ability in activities of daily living (Barthel Index) and cognitive function (Mini Mental State Examination,MMSE) was conducted in 141 subjects.Skeletal muscle mass was estimated from bioimpedance analysis measurements and expressed as skeletal muscle mass index (SMI=skeletal muscle mass/body mass x 100).Class I and II sarcopenia were identified by SMI within -one to-two SD and below -two SD of young adults, respectively.The final analysis was conducted in 118 physical subjects with SPPB between 4 and 9.Hospitalization and deaths were recorded during 1-year of follow-up.The relationship between physical function and 1-year hospital admission was tested by logistic regression models adjusted for age,sex and BMI (model 1) and in multivariate models further adjusted for Barthel Index, MMSE, number of diseases and medications. Results.The mean age (±SD) was 80.7±4.8 years.27/118 (23.1%) were hospitalized during 1-year follow-up. The mean muscle mass was 22.23±5.86 Kg. In Model 1,SPPB (OR 0.692,CI 0.534-0.896,p=0.005)and muscle mass (OR 0.842,CI 0.721-0.983,p=0.02) were significant predictors of hospitalization. In the multivariate models only low muscle mass was independent predictor of hospital admission (OR 0.847,CI 0.722-0.994,p=0.04). Conclusion.Low muscle mass is an independent predictor of 1-year hospitalization in community-dwelling older persons suggesting the importance of the platform University-Hospital-Territory to detect sarcopenia and physical frailty.

**P216- LYMPHOPENIA AND POOR PERFORMANCE STATUS AS MAJOR PREDICTORS FOR INFECTIONS AMONG RESIDENTS IN LONG-TERM CARE FACILITIES (LTCFS): A PROSPECTIVE COHORT STUDY.** C.J. Chang, L.Y. Chen, L.K. Liu, M.H. Lin, L.N. Peng, L.K. Chen *(Taipei, Taiwan)*

Background: Residents living in LTCFs are at a high risk of infection due to various factors. The main aim of this study was to investigate the risk factors and consequence of LTCFs-acquired infections in Taiwan through a 16-month follow-up. Methods: This prospective cohort study invited residents of 10 private LTCFs in Taipei for study. For each participant, Karnofsky Performance Scale (KPS), use of feeding tube and/or urinary catheters, serum levels of albumin, total cholesterol, complete blood count, occurrence of LTCF-acquired infections, all-cause mortality were recorded. Results: Overall, a total of 198 LTCF residents entered the study for a total of 67,395 resident-days, and 156 participants (79.8±9.7 years, 51.3% males) complete the follow-up with a total of 67,395 resident-days. During the study period, 360 LTCF-acquired infections occurred, and the incidence was estimated to be 5.34 episodes per 1000 resident-days. Subjects with LTCF-acquired infections were more likely to die than those without infections. Besides, subjects with lymphopenia and long-term use of feeding tube and/or urinary catheters were significant risk factors for LTCF-acquired infections. However, poorer functional status and occurrence of lower respiratory tract infections were significant predictive factors for all-cause mortality. Conclusions: In conclusion, the period prevalence of LTCF-acquired infections was higher in Taiwan than previous reports, but the incidence was similar. In addition to traditional risk factors, lymphopenia, a surrogate indicator for immunosenescence, was a significant risk factor for LTCF-acquired infections

**P217- SENESCENCE-ACCELERATED MOUSE P8 (SAMP8) PROVIDES AN ACCELERATED MODEL OF MUSCULOSKELETAL SYSTEM SENESCENCE FOR SARCOPENIA RESEARCH.** A.Y. Guo, W.H. Cheung, D. Dai, K.S. Leung *(Hong Kong)*

Background: Sarcopenia is an age-related systemic syndrome with a progressive loss of skeletal muscle mass and muscle force combined with poor physical performance. Previous studies also suggested that sarcopenia might be associated with low bone mineral density (BMD). A good animal model is needed to explore the mechanism of sarcopenia and its relationship with low BMD.Methods. The Senescence-accelerated mouse P8 (SAMP8) was selected as the animal model and the target muscle was gastrocnemius. Parameters were investigated at 6, 7, 8, 9, 10-month old (6 mice per time point). Functional outcomes were measured with in vitro muscle functional test system (800A, Aurora Scientific Inc.). H&E staining was performed for fiber cross-sectional area evaluation and ATPase staining for muscle fiber typing. BMD of L5 was measured with viva CT. Data analysis was done with one –way ANOVA followed by Tukey post-hoc test. Results: The peak of muscle mass (MM) appeared in 7-month group and significant decrease was observed in 10-month group (-12.41%, $p<0.01$). Compared with 10-month group, the 8-month group showed the largest specific twitch force (11.54%, $p<0.01$) and muscle cross-sectional area (6.4%), while the peak of specific tetanic force (13.23%, $p<0.05$) appeared in 7-month group with the largest fatigue rate (34.5%, $p<0.05$). From 6-month, BMD of L5 showed a continuous decreasing trend (-10.39%). Conclusions: Sarcopenia is defined by decrease of muscle mass and muscle force and is divided into pre-sarcopenia, sarcopenia and severe sarcopenia stages by the onset of decreased muscle mass, muscle force and quality of life. Based on these criteria, our results suggested that sarcopenia started between 7 and 8-month in SAMP8 animals and the 8-month animals were at pre-sarcopenia stage and 10-month animals were at sarcopenia stage. The result also indicated that the bone loss occurred earlier than the reduction of skeletal muscle mass and muscle force. Funding: The present study is supported by General Research Fund (Ref: 469911), Research Grant Council, Hong Kong.

**P218- THE EFFECT OF ALFACALIDOL SUPPLEMENTATION ON MUSCLE STRENGTH AND MOBILITY AMONG COMMUNITY DWELLING EGYPTIAN ELDERLY MALES.** M.K. Mortagy, W.W. Aly, M.S. Khater, S.M. Mousa *(Cairo, Egypt)*

Background: Ageing is associated with decline in muscle mass and strength. Vitamin D has an important role in physical and muscle function among elderly individuals. Few studies had investigated the effect of alfacalcidol (a synthetic vitamin D analog) on muscle strength and performance among elderly males. Objective: To determine the effect of oral alfacalcidol supplementation on muscle strength and performance among community dwelling elderly Egyptian males. Methods: A double blind randomized controlled study was conducted in Ain Shams University hospital. Three hundred twenty men, ages 60 years and older, were randomized to receive oral one microgram alfacalcidol (1α-hydroxyvitamin D3) per day (n =180) or placebo (n=180) over 6 months. Both groups were matched as regards the age and the BMI. Main outcome measures were the changes in the hand grip strength; timed up-and-go test (TUG) and 4 meters walk test that were measured at baseline and at 6 months follow-up. Results: Baseline characteristics of both groups showed that there were no differences between both groups as regard the Hand grip, TUG times and the 4-meters walk test. After 6 months; the supplemented group showed a significant improvement in both TUG times (0.32 + 0.1 seconds) and the 4-meters walk test (1.05 + 0.2 seconds), however the hand grip did not improve. In the mean while no significant improvement occurred in the placebo group. Conclusion: Six month supplementation with oral one microgram alfacalcidol had significantly improved lower limb strength and performance measured by 4-meters walk and TUG tests than upper limb hand grip in a community dwelling Egyptian elderly men. Funding: The present study is supported by Ain Shams University.

**P219- IDIOPATHIC SYSTEMIC CAPILLARY LEAK SYNDROME: A CASE REPORT WITH CARDIAC INVOLVEMENT.** A. Rezgui, J. Anoun, A. Mzabi, M. Karmani, F. Ben Fredj, C. Laouani *(Sousse, Tunisie)*

The systemic capillary leak syndrome (SCLS), also known as Clarkson's disease, is a rare disorder characterized by paroxysmal capillary hyperpermeability with a shift of plasma fluid from the intravascular to the interstitial space. We report a new case with cardiac involvement. A 51-year-old previously healthy man was admitted with rapidly developing hypovolemic shock syndrome, rhabdomyolysis, and diffuse edema. Laboratory analysis revealed a severe hemoconcentration, renal insufficiency, and paradoxal hypoprotidemia. The clinical presentation was consistent with the diagnosis of SCLS associated with cardiac involvement. This report should enhance physician's awareness of SCLS, which is a rare and severe disease, and its cardiac involvement.

**P220- USE OF ELECTRONIC RESIDENT RECORD FOR EARLY SURVEILLANCE AND PREVENTION OF HEALTH EVENT IN NURSING HOME.** D. Kaddouri, L. Josseran *(Paris, France)*

Driving question : what research exists worldwide on surveillance systems in nursing homes, which addresses early detection of illnesses and syndromes? Methods: Inclusion criteria allows articles published in peer reviewed journals, and whose subject at least loosely matched our question. Any article which was not peer-reviewed, whose subject was too far from our question of interest, or was published before 2008 was excluded. The selection strategy involved 4 stages. (1) a web search was conducted based on 16 groups of keywords : found citations were screened and selected on the basis of an explicit and coherent title, and a date prior to 2008.(2) Reading of the corresponding paper. (3) New exclusion of articles, which content was not appropriate. (4) Metadata where taken from finally selected articles in order to classify the documents in a database and have a short quantitative description of each. Results & Discussion: Twenty-one articles were selected from 134 potential citations identified. Selected articles originated from nine countries. These included a majority of qualitative study design. Study samples varied from a few people to 26,165 subjects. Research focused on 4 emerging themes: (1) understanding use of electronic records and surveillance (2) improvement of quality indicators and (3) frailty indicator (4) issues related to drug prescription. The review brought up some relevant ideas for the creation of a nursing home surveillance system: (1) Quality indicators can be set up at an early stage in the creation of the surveillance system, even if their design is simple; these can then be strengthened over time to gain accuracy. (2) Frailty indicators are a promising strategy to detect early signs of elderly worsening health; this path could be explored to improve the assessment of complex health status in a sensitive manner. (3) Lastly, drug prescription indicators needs to be explored further.

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