

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: SARCOPIENIA, NUTRITION, PHYSICAL EXERCISE AND RELAXATION. M.G.M. Moutinho¹, V.M.S. Fernandes², J.P. Marujo¹ (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 SARCOPIENIA IN COMMUNITY-DWELLING OLDER PEOPLE: EVALUATION OF THE EWG SOP CONSENSUS DEFINITION CRITERIA. D.M. Mijnders¹, R.J.G. Halfens¹, J.M.M. Meijers¹, Y.C. Luiking², S. Verlaan², J.M.G.A. Schols¹ (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 (EWG SOP) 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 EWG SOP 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 SABA 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 SABA 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