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have significantly higher fall related mortality than younger people [1]. Decreased muscle strength could be one of the factors influencing the occurrence of falls. The purpose of the present study was to compare strength of the lower-limb and trunk muscles in older women with different self-reported fall history.

Eighty women aged between 70 and 94 (mean age: 82.7 ± 4.8 years; mean body mass: 70.4 ± 12.6 kg) took part in the study. Participants were on the base of their self-reported fall experience in the last 12 months divided in three groups: no fall experience (NF; $n = 56$), women who fell one time (OF; $n = 12$) and women who fell two or more times (MF; $n = 12$). There were no significant differences in age and body mass between groups. All subjects were nursing home residents and complied inclusion criteria (were able to stand independently for one minute).

The maximal strength was measured as isometric torque in the joint. The following tests were conducted: ankle plantar (PF) and dorsiflexion (DF), unilateral (right and left) knee extension (KE) (average of the both legs was used), trunk flexion (TF) and extension (TE) and trunk lateral flexion (LTF) and extension (LTE). The relations between the strength of plantar and dorsiflexors, asymmetry of the knee extensors and relations between trunk flexors and extensors and also of lateral flexors and extensors were calculated.

The variance analysis revealed that the groups differed in only few strength measures.

The KE torque of OF group (57.7 ± 20.5 Nm) was significantly ($p < 0.01$) greater of NF group (46.2 ± 17.5 Nm) and of MF group (46.3 ± 12.0 Nm) ($p < 0.05$), the OF group (68.0 ± 32.2 Nm) had significantly ($p < 0.001$) greater PF torque than NF group (45.6 ± 17.8 Nm) and than MF group (51.6 ± 14.5 Nm) ($p < 0.05$). The TF of OF group (18.6 ± 7.8 Nm) was also greater ($p < 0.01$) of NF group (13.8 ± 7.8 Nm) and of MF group (13.7 ± 7.1 Nm) ($p < 0.05$). There were no significant strength differences between NF and MF group. When the strength was normalized by body mass, the differences between the groups remained significant, except for the KN.

The results of this study do not show that older women with a fall history have lower strength compared to women who experienced no falls. There could be different explanations for that: strength is not an important risk factor of falls in older women; the circumstances of the fall (sudden trip or postural disturbance) were unexpected and quick reaction was more important than maximal strength; the strongest group (with one incidence of fall) was more active and willing to take more risk. Further study should investigate circumstances of falls and environmental hazard which could explain these conflicting results.

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1. Peden et al (2002). The injury chart book. Geneva: World Health Organization.

Keywords: Ageing, Strength

Aging 2-13 COMPARISON BETWEEN PHYSICAL ACTIVITY LEVELS IN RURAL AND CITY ELDERLY WITH MTI ACTIGRAPH.

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Introduction: The quantification of physical activity in the elderly has been assuming a relevant role in the attempts to minimise and control problems related to functional decline and sedentary habits. The physical activity (PA) recommendation of accumulating 30 min of moderate-to-vigorous physical activity (MVPA) is necessary to promote optimal health benefit. Since the pattern of physical activity is usually different between urban citizens and the rural workers throughout life, it is important to assess how different it remains after retirement. Research into daily PA patterns of older adults (8805;65 years) has primarily relied on self-report. This study used accelerometers, an objective measure of minute-by-minute movement, to assess PA volume and intensity performed by older adults in different regions. The main aim of this study is, therefore, to analyse the pattern of PA performed by the elderly from rural communities and by the elderly from urban communities in their daily routine, and to compare it with the recommendations pre-established by literature on the subject. **Methods:** The sample was divided into two different groups aged between 66-91 yr (average age= $77,52 \pm 6,5$ years old), 33 of them constitute the rural group (RG) and the remained 42 belong to the city one (CG). The Physical activity levels were directly measured for seven consecutive days using a MTI Actigraph accelerometer model 7164. The assessment of the level of physical activity performed by each individual has been carried out using the values suggested by Freedson et al. (1998). The habitual physical activity performed by the groups has been monitored and registered throughout a complete week, being, thus, obtained the results of their activity performed both on week days and weekend. The statistical procedures were the Descriptive Statistics (mean, standard deviation and frequency distribution) and a Student t-test was used to compare groups (rural, urban) on the physical activity (PA) performances. **Results:** The results provided are: (i) The mean PA at a week by hour was higher in the rural group ($p < 0,001$); (ii) Total mean of PA at a week by hour was higher in the rural group ($p < 0,01$); (iii) The average minutes of lower PA at a week was higher in the urban group ($p < 0,001$); (iv) The average minutes of lower PA at a week-end was higher in the urban group ($p < 0,001$); (v) no statistics significance between groups was found in moderate PA and in vigorous PA. **Conclusion:** We conclude that the groups has a different profile of performance in PA with distinct intensities: Urban perform better than rural when the PA is lower. There was no statistic significance when the intensity is moderate

or vigorous.

Keywords: Ageing, Physical Activity

Aging 2-14

ALTERATION OF BRAIN AGING BY EXERCISE AND IGF-1

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Aging is associated with decline in physiological function of brain, skeletal muscle and other organ function as well. **PURPOSE:** Exercise and the administration of IGF-1 could interfere with brain function and alter age-associated decline. **METHODS:** Therefore, we administered IGF-1, via Alzet pumps during the last two weeks of the six weeks treadmill running exercise protocol to young (2 mo) and 24 (mo) old Wistar rats. In addition, BrdU was also injected to be able to follow the possible neurogenesis induced by exercise and/or IGF-1 treatment. **RESULTS:** We have observed that exercise training without IGF-1 treatment improved brain function measured by Morris maze test, and the age-associated decline was prevented by exercise training. On the other hand, IGF-1 administration eliminated the beneficial effects of exercise training. Exercise with the administration of IGF-1 resulted in neurogenesis at the old group, and exercise alone resulted the same at the young group. On the other hand, the concentration of free radicals, assessed by electron spin resonance, was not affected by age and/or exercise in the cerebellum of the animals. **CONCLUSION:** It appears that exercise improves brain function and with the administration of IGF-1 it can result neurogenesis. Moreover, it appears, that age and physical activity are not influencing the concentration of free radicals in the cerebellum.

Keywords: Ageing, Memory, Physical Activity

Aging 2-15

FUNCTIONAL CAPACITY AND PSYCHOLOGICAL PROFILE OF INSTITUTIONALIZED FRAIL ELDER: VARIATION ASSOCIATED TO EXERCISE INTERRUPTION

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Introduction: The ageing of the population is a phenomenon felt mainly in the last two decades in developed countries¹. Elderly people have difficulties in accomplish tasks of daily living². Regular physical activity, adjusted to individuals capabilities, have a delaying effect on the ageing effect, not only on health related fitness, but on health itself, particularly on cardiovascular, respiratory, motor and neurological systems³. The aim of this study was to understand the effect of an exercise program interruption on functional and cognitive capacity and on depression levels and chronic pain in institutionalized frail elder.

Methods: We observed the functional and cognitive capacity and de depressive state and chronic pain of about 31 frail elder from both genders, institutionalized in a rest-house both at the end of the recreational exercise program and one year after. Subjects were divided in two groups: group 1 (n=17) included subjects (61 to 96 years) that were engaged in a recreational exercise program for over 1 year; group 2 (n=14) included the subjects (56 to 94 years) who were not engaged in any exercise program. We used the Physical Autonomy Scale and Instrumental Autonomy Scale for functional capacity; Mini-Mental State Exam for cognitive capacity; Hamilton Scale for depressive state and Visual Analog Scale for chronic pain. We performed Mann-Whitney tests to compare results between groups, and wilcoxon tests to compare results within groups (end of the program vs one year after program interruption). The level of significance was set at $P < 0,05$.

Results: The groups in our study weren't different from each other in all observed variables but chronic pain. In the first observation group 1 showed significant lower levels of chronic pain than group 2.

We found significant differences within groups in their functional capacity. In group 1 functional capacity decreased after one year of interruption of the recreational exercise program ($p < 0,01$). The opposite occurred in the group who were not engaged in any exercise program ($p < 0,01$).

There were no differences either between or within groups in their cognitive capacity considering both moments of observation.

Group 2 showed a slight decrease ($p < 0,05$) on the depressive state from the first to the second observation.

Conclusion: In conclusion, these results show that the interruption of a recreational exercise program for elders may have a detrimental effect on their functional capacity as well as remove the possible positive effect on chronic pain reduction in institutionalized frail elder.

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Keywords: Exercise and Health, Disuse, Elderly

Aging 2-16

LOCAL EFFECTS OF STRENGTH TRAINING IN FRAIL ELDERLY WOMAN

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Aging is accompanied with loss of muscle mass and