

# 50. ISOKINETICS STRENGTH RELATION WITH FEAR OF FALL, FALLS AND PHYSICAL ACTIVITY LEVEL IN ELDERLY WOMEN

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## Introduction

Low levels of physical activity (PA) in elderly has been related with the decline in physical and psychological functions, affecting the ability in the performance of activities of daily living (ADLs) and contributing to the occurrence of walking-related fall (Metz, Lee, Sui, Powell, Blair, 2010). The purpose of this study was to relate strength levels with fear of fall (FF), falls occurrence as well as with PA level on elderly women.

## Methods

One hundred not institutionalized post-menopausal women (aged  $66.17 \pm 8.21$  years) volunteered to participate on this research. The peak torque (PT) at  $60^\circ.s^{-1}$  (3 rep) and  $180^\circ.s^{-1}$  (20 rep) angular speeds in knee extension and flexion concentric actions were measured using an isokinetic dynamometer (Biodex System 3). Muscular fatigue was also estimated at  $180^\circ.s^{-1}$ . To achieve the occurrence of falls during last year as well FF score, we applied a standardized Questionnaire that included socio-demographic, health and falls parameters. PA level was accessed by interview with Yale Physical Activity Questionnaire.

Descriptive statistics was performed using means and standard deviations. The Spearman correlation coefficient was used to investigate associations among quantitative independent variables.

## Results

PT at  $60^\circ.s^{-1}$  in knee extension and flexion and PT at  $180^\circ.s^{-1}$  in knee flexion showed a positive association with vigorous index ( $r=,205$   $p=,041$ ;  $r=,249$   $p=,013$ ;  $r=,218$   $p=,029$  respectively). Standing index presented also a positive correlation with PT at  $60^\circ.s^{-1}$  and PT  $180^\circ.s^{-1}$  in knee extension ( $r=,205$   $p=,041$  and  $r=,314$   $p=,004$ ). FF registered a positive association with body mass (BM) and body mass index (BMI) ( $r=,205$   $p=,041$  and  $r=,201$   $p=,045$ ), and a negative association with PT in extension action on both angular velocities ( $r=-,241$   $p=,016$  and  $r=-,203$   $p=,043$ ). Muscular fatigue showed a positive correlation with the number of falls during the last year ( $r=,201$   $p=,036$ ).

## Conclusions

Decreases of strength on lower limb is an important factor that contributes to falls occurrence once we registered a negative relation between PT on extension action and the FF.

Our data related higher values of BM and BMI with higher fear of falling confirming that overweight are common associated to disturb on gait function and mobility that represents also a risk factor for falls.

Present results suggest that more time of PA is needed to increase lower limb strength in the elderly.

## References

Metz KJ, Lee DC, Sui X, Powell KE, Blair SN (2010) Falls among adults: the association of cardiorespiratory fitness and physical activity with walking-related falls. American Journal of Preventive Medicine 39(1):15-24

**Keywords:** Elderly women; Isokinetics strength; Fear fall; Physical activity level.