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 ± 8.21 years) volunteered to participate on this research. The peak torque (PT) at 60º.s⁻¹ (3 rep) and 180º.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 180º.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 60º.s⁻¹ in knee extension and flexion and PT at 180º.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 60º.s⁻¹ and PT 180º.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

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