22. Association between functional mobility and osteopenia of the lower limbs in active postmenopausal women

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Background: Functional mobility of lower limbs is directly related to independence and quality of life in elderly (Cruz-Jimenez, 2017). However, research is not conclusive regarding the association of bone fragility with functional mobility, with some studies indicating inverse association (Burke et al., 2010) and others lack of relationship (Liu-Ambrose et al., 2003). Moreover, studies considering bone fragility in different body zones are still scarce.

Objective: To verify the influence of osteopenia in the functional mobility of lower limbs in active postmenopausal women.

Methods: The sample was composed by twenty-eight non-sedentary postmenopausal women, aged 65.9 ± 4.9 years and divided into two groups: with osteopenia (12) and without this condition (16). Osteopenia criterion for lower limbs was calculated from values of 33 young women, aged 24.4 ± 2.9 years, of similar characteristics, according to the World Health Organization (WHO) procedure to define osteopenia (WHO, 1994). Bone body mass and body composition was assessed by dual energy X-ray absorptiometry (DXA). Functional mobility of lower limbs was performed using the sitting and standing, get up and walk and walking 6 minutes tests (Rikli, 2000). Multivariate analyses of variance were performed for characterization data and functional mobility. Differences in the variables of individual interest between groups were detected from the univariate analyses of variance.
Results: There was significant difference between groups for body mass ($p = 0.03$), lean body mass ($p = 0.01$) and bone body mass of lower limbs ($p < 0.001$), with the osteopenic group presenting lower values. There was no difference in the functional mobility of the lower limbs with and without the presence of osteopenia.

Conclusions: Our results showed that active postmenopausal women obtained the same scores of functional mobility, regardless of bone mass. It is important to emphasize that several structural alterations, which are also essential for the mechanical strength of bone, cannot be detected by the DXA measurements (Huuskonen et al., 2001). The small number of observations and the evaluation of the level of physical activity by an indirect method may have influenced these results. Another study with a larger sample number, the inclusion of a sedentary group and an experimental group with a greater bone mass loss (osteoporosis) would be necessary to confirm these findings.

Practical application: In active postmenopausal women the reduction of lower limb bone mineral density does not seem to be a limiting factor of functional mobility.

References


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