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Abstract

Correlation between fear of falling, eye-segmental coordination and dynamic balance in the elderly

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Falls are well documented as being a major cause of accidental injury and deaths worldwide, especially among the elderly, with a higher probability of occurrence in the population over 60 years of age (WHO, 2021). Falls are preventable, but the consequences of falls can lead to injuries and may result in loss of independence. Decreased overall motor skills of the elderly, such as muscle strength, power, flexibility, agility, and endurance, cause walking difficulty (Spirduzo et al., 2005; Jeon M-Y, Choe M, 2002; Salzman, 2010), nevertheless, physical activity and exercise can contribute to maintaining the quality of life, health, physical function and reducing falls among older people (Gillespie et al., 2012; Tricco et al., 2017). Thus, the present study aims to analyse the association between fear of falling, eye-segmental coordination and dynamic balance in participants in a physical exercise program for the elderly. The sample consisted of 103

individuals (22 men and 81 women) with a mean age of 71.3 (±5.9) years, participants of a gerontomotricity municipal program from 5 different locations in the central region of Portugal. Wall Drop Punt Kick and Catch test was used to assess eye-segmental coordination, the Foot Up and Go test was used to assess dynamic balance, and the Falls Efficacy Scale International questionnaire was used to assess the fear of falling. Results confirm that higher levels of eye-segmental coordination are correlated both with dynamic balance and the fear of falling ($r = -0.39$, $p < 0.001$ & $r = -0.28$, $p < 0.01$, respectively) and also that dynamic balance correlates with the fear of falling ($r = 0.46$, $p < 0.001$). It is interesting to note that age was not correlated with any of these 3 variables despite its amplitude ranging from 57 to 85 years old. Differences between sex were only observed for eye-segmental coordination (men = 9.36, women = 4.61; $p < 0.001$). The years of participation in this program ranged from 0.1 to 17.5, but it showed no correlation with any studied variable ($p > 0.05$). With this study, it could be confirmed that higher levels of fear of falling in the older population are related to lower levels of eye-segmental coordination and lower levels of dynamic balance, emphasising the need to maintain or adopt active lifestyles that promote the development or at least, avoid the decrease of human motor skills performance.

Keywords: Fear of Falling, Eye-Segmental Coordination, Dynamic Balance, Gerontomotricity, Elderly

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