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Physical fitness and body composition in elderly women

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Background
Aging is a physiological process that appears in every individual and results in a decline in all functions. It is also defined as all irreversible structural and functional changes that occur at the molecular, cellular, tissue, organ, and system levels. Physiological changes that occur with aging are accompanied by changes in body composition, which potentially influence the physical fitness of the elderly population. Therefore, the aim of this study was to analyze the relationship between physical fitness and body composition in elderly women.

Materials and methods
Thirty elderly women (age: 69.37 ± 3.66 years; body height: 162.58 ± 6.14 cm; body weight: 70.09 ± 8.39 years; body mass index: 26.54 ± 2.99) participated in the study. The parameters of body compositions, including fat mass (%) and muscle mass (%), were analyzed using bioelectrical impedance. The physical fitness (static balance, dynamic balance, lower limb strength, isometric handgrip strength) was tested for the Single-leg stance test, 8-foot-up-and-go test, 30-s Chair Stand test, and Handgrip test.

Results
The Pearson coefficient correlation shows the relationship between fat mass (%) and dynamic balance ($r = 0.392$, $p = 0.000$) and lower limb strength ($r = -0.377$, $p = 0.004$). Likewise, a relationship was found between muscle mass (%) and lower limb strength ($r = 0.508$, $p = 0.000$) and static balance ($r = 0.545$, $p = 0.002$). The results of this study indicate that body composition characteristics, including fat mass (%) and muscle mass (%), demonstrate no statistically significant relationship with isometric handgrip strength.

Conclusions
The parameters of body composition that include fat mass (%) and muscle mass (%) in elderly women have a relationship with physical fitness. Specifically, fat mass negatively correlated with dynamic balance, which means that elderly women with lower results in fat mass (%) achieved better results in test 8-foot up-and. The muscle mass (%) positively correlated with static balance and lower limb strength. Therefore, elderly women with greater muscle mass (%) achieved better results in Lower limb strength and dynamic balance. This study revealed that body composition parameters are related to physical fitness in elderly women.