

The effects of a supervised multimodal exercise program on anterior and lateral abdominal muscles size and functional ability in older adults: A randomized controlled trial

Background: Age-related decline in the size of anterior and lateral abdominal muscles [1] are associated with reduced balance and increased falls risk [2]. The effectiveness of training the peripheral musculature for falls prevention in older adults is well-established [3]. However, little is known about the effect of exercise programs targeting lower trunk musculature particularly anterior and lateral abdominal muscles on functional ability in older adults. **Objectives:** To explore the effectiveness of including trunk strengthening/motor control exercises into a 12-week supervised exercise program comprising walking and balance exercises, on anterior and lateral abdominal muscles size, and functional ability in healthy older adults. **Methods:** This study involved a single-blinded parallel group randomized controlled trial. Sixty-four older adults (mean (SD) age: 69.8 (7.5) years; 59.4% female) were randomized to receive a 12-week supervised multimodal exercise program comprising walking and balance exercises with or without trunk strengthening/motor control exercises. Lateral abdominal muscles thickness and Rectus abdominis cross-sectional area (CSA), were assessed using ultrasound imaging. Functional and balance outcomes were assessed using 30-second Chair Stand Test, Sitting and Rising Test, Berg Balance Scale, and Multi-Directional Reach Test. Consistent with the intention-to-treat principle, all data was analyzed using a linear mixed model. **Results:** After 12 weeks of the exercise program, the trunk strengthening exercise group experienced larger increases (mean difference[95% CI]) in the thickness of total lateral abdominal muscles (0.63[0.40 to 0.85] cm) and the CSA of rectus abdominis muscle (2.08 [1.28 to 2.89] cm²) as well as 30-Second Chair Stand Test (5.9[3.3, 8.4] repetitions), Sitting and Rising Test (1.2 [0.22, 2.2] points), Forward Reach Test (4.2 [1.8, 6.6] cm), and Backward Reach Test (2.4 [0.22, 4.5] cm) outcomes, compared to the walking-balance exercise group. **Conclusion:** These findings support the inclusion of trunk strengthening/motor control exercises as part of a multimodal exercise program in older adults.

References:

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