

Comparison Between a Resistance Training and a Combined Functional and Dynamic Balance Training on Functional Fitness Performance in Older Adults

Antonino Scardina¹, Giovanni Angelo Navarra¹, Roberta Cottone^{1,2}, Floreana Lo Dico¹, Massimiliano Agnese¹, Juan C. Colado³, Garden Tabacchi¹, Yoshihiro Katsura⁴, Antonino Bianco¹, Marianna Bellafore¹

¹ Sport and Exercise Sciences Research Unit, Department of Psychology, Educational Science and Human Movement, University of Palermo, Palermo, Italy

² Department of Neurosciences, Biomedicine and Movement Sciences, University of Verona, Verona, Italy

³ Prevention and Health in Exercise and Sport, University of Valencia, Valencia, Spain

⁴ Division of Physical and Health Education, Center for Promotion of Higher Education, Kogakuin University, Tokyo, Japan

Purpose: The biological ageing process is linked to the decline in both structure and function across various physiological systems. These age-related changes can adversely affect daily activities and increase the fall risk in older adults. The aim of this study is to compare the effects of two different training protocols on functional fitness in adults over 65.

Methods: Sixty older adults (76.6% women), participating in the “Promotion of Physical Activity and Prevention of Household Accidents (PAP & DAP)” project, were randomly recruited and assigned to Resistance Group (RG; $n = 29$; 70.8 ± 6.54 years; 66.5 ± 10.96 kg weight; 159.7 ± 7.12 cm height; 25 ± 5.78 kg/m² body mass index) and combined Functional and Balance Group (FBG; $n = 31$; 72.2 ± 5.19 years; 68.5 ± 11.58 kg weight; 159.8 ± 7.51 cm height; 26.8 ± 3.89 kg/m² body mass index). RG and FBG respectively performed resistance training with elastic bands and combined functional and dynamic balance training twice a week (4 hours) for six weeks. Functional fitness was evaluated with the Senior Fitness Test (SFT) battery, which assesses leg strength and endurance (Chair Stand Test), arm strength (Arm Curl Test), back muscle flexibility (Sit and Reach Test), dynamic balance and walking ability (Timed Up and Go Test), and aerobic endurance (Two-Minute Step Test). Data normality was assessed with the Shapiro–Wilk test. According to data distribution, intra-group differences were analysed with the Student’s paired samples t -test or the Wilcoxon test, while differences between groups with the independent samples t -test or the Mann–Whitney U test. Statistical significance was set at $p < 0.05$.

Results: Significantly higher levels of performance were observed in both groups for all tests of the SFT after the training protocols. RG showed an increase in leg strength and endurance compared with FBG ($p = 0.008$), who instead had more improvement in aerobic endurance compared with RG ($p = 0.003$).

Conclusion: Both training protocols are effective to improve functional fitness in older adults. The different effects observed between the protocols might be related with exercise mode, intensity, and volume.

