

## Effect of Resistance Training on BDNF and Inflammatory Markers in Healthy Older Adults

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**Abstract :** Background: The global increase in the elderly population is anticipated to reach significant levels by 2050, presenting extensive economic, social, and healthcare challenges. Age-related cognitive decline, alterations in brain anatomy, and systemic inflammation are profound concerns that diminish the quality of life and increase susceptibility to diseases like Alzheimer's and cardiovascular diseases. Resistance training is presently studied for its potential neuroprotective and anti-inflammatory benefits in older adults. Objectives: This study aimed to explore the effects of different resistance training modalities on neurotrophic factors, inflammatory markers, and cognitive functions in the elderly. Methods: A controlled trial was conducted with 60 male participants aged 60-75, assigned to either 12 weeks of high-intensity blood flow restriction training (BFRT), muscle damaging resistance training (MDRT), or a non-exercising control group. Cognitive function, neurotrophic factors such as BDNF, and inflammatory markers including IL-6 and TNF were measured before and after the intervention period. Setting: Participants were recruited from Kaunas, Lithuania, with sessions facilitated at the Lithuanian Sports University and health assessments conducted at the Lithuanian University of Health Sciences. Results: Preliminary data suggested did not show significant improvements in BDNF levels and cognitive functions in the BFRT and MDRT groups compared to controls. However, there was a notable reduction in inflammatory markers, indicating potential health benefits beyond cognitive enhancement. Conclusion: The incorporation of resistance training can be a strategic intervention to mitigate age-associated cognitive decline and systemic inflammation, thereby enhancing overall health and quality of life in older adults. The results advocate for wider adoption and further study of resistance training as a preventive measure in ageing populations. Funding: The Lithuanian Sports University, the Research Council of Lithuania and the Lithuanian University of Health Sciences.

**Keywords :** ageing, resistance training, BDNF, cognitive function

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