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THE BENEFICIAL EFFECT OF 12 WEEKS OF RESISTANCE TRAINING ON MEMORY AND EXECUTIVE COGNITIVE FUNCTION OF MILD COGNITIVELY IMPAIRED OLDER ADULTS

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INTRODUCTION:

Promotion of healthy ageing is one of the major challenges for health care systems in current times. Mild Cognitive Impairment (MCI) prevalence increases with age with a risk to turn into dementia. Older adults with MCI are at a higher risk of developing impaired balance behavior because of impaired executive function integrity. Exercise training is likely to improve cognitive measures and balance [Wu J. et al, 2021]. Nevertheless, studies on the effects of physical exercise in older adults with MCI are still insufficient and vary in efficacy, exercise protocols, compliance, and interpretation of the results. This study we investigated the effects of therapeutic structured lower limb resistance training (RT) intended to improve memory, executive function, and posture in adults with MCI.

METHODS:

We assessed the effect of 12 weeks resistance training to cognitive function in older adults (age: 60–80 years (completed the intervention n=53)) with intact memory (n=35) and MCI (n=18). Participants either underwent two times weekly RT program which consisted of 4 lower limbs resistant exercises performed for 3 sets of 6–10 repetitions at 70–85% of 1 repetition maximum or served as the passive control group. Posturography, Purdue Pegboard Test (PPT), ANAM test battery and Montreal Cognitive Assessment (MoCA) were collected before and after the intervention.

RESULTS:

At Week 12, the MCI subjects in RT intervention group achieved significantly improved MoCA scores executive functions (before 3.96 ± 1.04 after 4.36 ± 0.95), and delayed recall (before 3.46 ± 1.37 after 4.25 ± 1.01) ($p \leq .005$). Participants in the control group also showed an increase in total MoCA score, but improvement was observed only in delayed recall ($p < .005$). Moreover, MCI subjects in the experimental group exhibited significant increases in the balance task (Sway velocity (mm/s) before 23.34 ± 8.95 versus after 19.97 ± 8.21), indicating that limb exercise training positively influenced their balance ($p < 0.05$). Performance on the ANAM test battery and PTT were not statistically different before and after the RT training intervention.

CONCLUSION:

The results conclude that twelve weeks of twice-weekly lower limb resistance training intervention can effectively improve executive function and memory in elderly with MCI. Since effective balance control requires attention, we propose that improved executive function may lead to better balance control in MCI. Tailored interventions might target physical performance to maintain cognitive state and to prevent dementia. Larger studies are required to examine the effects of exercise and the possible moderators. This project has received funding from the Research Council of Lithuania, grant No P-SEN-20-05.

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