Effects of a step training program in community-dwelling older adults with dementia: an age, walking ability, and cognitive function subgroup analysis

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Abstract

Objective: To evaluate the effects of a step training program in community-dwelling older adults with dementia in different age, walking ability, and cognitive function subgroups.

Materials and Methods: This study is a pilot quasi-experimental, wait-list controlled trial. Older adults who had a diagnosis of dementia and were able to walk 10 m were recruited. The step training program consisted of two 40-minute weekly exercise sessions and lasted for 12 weeks. Participants' stepping performance and physical and cognitive function were assessed at the baseline and at 12 weeks. Participants were divided into different subgroups based on their age (<80 vs ≥80 years), walking ability (walking independently vs using a walking stick), and cognitive function (mild dementia vs moderate dementia), and the effects of the step training program were evaluated separately.

Results: Participants below 80 years old significantly improved their choice stepping, step length, alternate stepping speed, and global cognition ($p \leq .026$), while those aged 80 or above showed no significant improvement. Participants who walked independently significantly improved choice stepping, step length, and alternate stepping speed ($p \leq .049$). In contrast, those who walked with a walking stick showed no significant improvement. Participants with mild dementia significantly improved their step length ($p = .002$), while
those with moderate dementia had significant improvements in choice stepping, alternate stepping speed, and walking speed ($p \leq .024$).

Conclusion: Older adults with dementia who are younger, can walk independently, and are more cognitively impaired are more likely to benefit from the step training program.

Keywords: stepping, dementia, exercise, fall