Effect of Community-Based Group Exercise Interventions on Standing Balance and Strength in Independent Living Older Adults

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Abstract

Background and Purpose:

Many interventions to improve mobility in older adults often include exercises to address underlying impairments such as strength deficits. Task-oriented exercise interventions that focus more on walking and stepping tasks that may be encountered in the community have been considered for improving mobility in older adults. The main purpose was to examine the effect of task-oriented and impairment-based group exercise interventions on standing balance and lower extremity muscle strength.

Methods:

This is an ancillary study to a cluster-randomized clinical trial. Participants included 107 older adults. Participants were randomized by facility to 1 of 2 different interventions, or a waitlist control group. The On the Move (OTM) task-oriented intervention consisted of warm-up, timing and coordination (stepping and walking patterns), strengthening, and stretching exercises. The standard of care impairment-based exercise intervention (STD) consisted of warm-up, strength, endurance, and stretching exercises. Postural sway and balance measures were recorded before and after the 12-week interventions. An accelerometer was used to collect postural sway for 6 different standing balance conditions. A portable load cell was used to assess lower extremity muscle strength for 3 muscle groups.

Results and Discussion:

The OTM group had a significant reduction in sway acceleration during most of the balance conditions over the 12-week period, whereas the STD had smaller, nonsignificant reductions. Both exercise interventions had a significant reduction in sway compared with the waitlist control group in at least 1 balance condition. The OTM and STD groups had significant increases in hip abduction strength during the intervention and the STD group also had an increase in knee extension strength. The waitlist group had a significant reduction in strength in all muscle groups during the 12-week period. Strength changes in both exercise groups were significantly different from the waitlist group but not from each other.

Conclusion:

Both exercise intervention groups had an improvement in standing balance and lower extremity strength when compared with a waitlist group that did not receive exercise. Although the exercise groups did not significantly differ
from each other, the OTM exercise group showed a trend toward improvement in static standing balance conditions.