ORIGINAL ARTICLE

Evaluation of a Peer-Led Falls Prevention Program for Older Adults

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ABSTRACT. Waters DL, Hale LA, Robertson L, Hale BA, Herbison P. Evaluation of a peer-led falls prevention program for older adults. Arch Phys Med Rehabil 2011;92:1581-6.

Objective: To evaluate measures of strength and balance and falls incidence in participants attending fall prevention exercise classes taught by volunteer peer leaders, paid professional (Age Concern Otago group), or a comparison class (comparison group).

Design: Quasi-experimental evaluation with 12-month follow-up.

Setting: Community.

Participants: Older adults with increased fall risk (N=118; mean age, 75.5y; age range, 65–94y), with 23% drop out at 12 months.

Intervention: Peer-led group (n=52) and Age Concern Otago (n=41) weekly 1-hour strength and balance classes adapted from a home-based nurse/physical therapist–administered program and comparison group (n=25) 1-hour weekly seated exercise classes.

Main Outcome Measures: Timed Up and Go test, 30-second chair stand, functional reach, step touch, Single Leg Stand, and balance confidence at baseline, 10 weeks, and 6 and 12 months. Falls diaries collected monthly for 12 months. Continued exercise participation questionnaire at 6 and 12 months.

Results: At baseline, the peer-led group achieved normative standards on most tests and performed significantly better than the Age Concern Otago and comparison groups (overall $P<.05$). The Age Concern Otago group reached normative standards on most tests at 10 weeks. Functional improvements were similar in the peer-led group and Age Concern Otago groups from 10 weeks to 12 months, and all functional measures were significantly greater than in the comparison group (overall $P<.02$). Poisson regression showed a tendency for a 27% decrease in falls for the peer-led group compared with the comparison group (incidence rate ratio [IRR], .73; 95% confidence interval, .48–1.1; $P=.07$). Continued participation in strength and balance classes at 12 months was greater in the peer-led group and Age Concern Otago groups compared with the comparison group.

Conclusions: This peer-led model maintained measures of strength and balance and was superior to seated exercise. People in the Age Concern Otago group chose to continue these classes over other activities, whereas the comparison group had discontinued exercise classes by 12 months. Peer-led classes may decrease the fall incidence, although larger studies are needed to confirm this finding.

Key Words: Aging; Falls; Peer-led exercise; Rehabilitation; Strength and balance.

THE RISK FOR FALLING increases with age and is related to a number of factors, including gait and balance deficits, muscle weakness, low physical activity, history of falls, visual impairment, fear of falling, cognitive impairment, depression, number and type of medications, malnutrition, arthritis, home hazards, and footwear.[1,2] Recently, investigators using structural equation modeling reported that task-specific strength exercises and general mobility retraining were the most important components of an exercise program aimed at decreasing the fall incidence in older adults.[3] The Otago Exercise Program used such a strategy, and it was effective in improving strength and balance and decreasing falls in older frail adults.[4,5] However, the issue of maintaining motivation and adherence to this home-based program coupled with the high cost of delivery by a nurse or physical therapist raised questions about its utility, particularly in less frail people.[6,7] For at-risk but higher functioning people, exercising in a community group setting offers an appealing alternative.[8] The Centers for Disease Control and Prevention (CDC) states that "an effective falls prevention program should be offered by a trained healthcare professional and include education on falls and falls risk."[9(p12)] As recommended by the CDC, community-based classes often are led by hired professionals and held in venues such as senior centers or community halls. In New Zealand, Age Concern Otago, a charitable organization in Dunedin, along with the Accident Compensation Corp, adapted Otago Exercise Program to community-based classes with the structure as suggested by the CDC. It was named Steady as You Go. By 2003, Steady as You Go adopted a unique feature: during the 10-week classes led by a trained professional, a potential peer leader was identified. Physiotherapists in a university setting then trained chosen peer leaders in the safe delivery of the classes, including falls education and emergency procedures. After completing training, the peer leader would continue the once-weekly class in their community. Group members made decisions regarding

List of Abbreviations

ABC	Activity-Specific Balance Confidence (Scale)
CDC	Centers for Disease Control and Prevention
CI	confidence interval
IRR	incidence rate ratio
TUG	Timed Up & Go

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venue (often in local church halls or bowling clubs close to where the group lived), time, and class charges. The Age Concern Otago regularly visited the class and kept in contact with peer leaders. Annually, a refresher workshop was held by the Age Concern Otago for the peer leaders. During the past 7 years, 35 peer-led classes involving approximately 350 participants have developed across most suburbs in Dunedin. To date, only 1 peer class has discontinued. Funding for the initial 10-week Age Concern Otago classes is provided by government agencies, and the peer-led classes continue at a low cost with annual workshops and support provided by the Age Concern Otago. This is a unique model of delivery of a fall prevention program, and by all appearances, it is sustainable and inexpensive to deliver after it is converted to a peer-led class.

There are few published studies evaluating the long-term impact of peer-led classes on gait, balance, falls, and adherence. Sze et al[10] reported a model similar to Steady as You Go that used a fall prevention clinic followed by a 9-month series of community-based exercise classes. The primary differences between this program and Steady as You Go was that the falls clinic was delivered by physicians and occupational therapists and the community program was delivered by trained professionals and volunteers and was not peer led. The community intervention ended after 9 months and resulted in a significant decrease in falls.[10] Hickey et al[11] reported that people maintained mobility improvements from peer-led classes at 18 weeks postintervention. Peer-led exercise programs also were reported to be as effective as those led by a professional instructor.[11-13] The Steady as You Go peer-led classes have not been assessed for their impact on strength, balance and gait, decreasing fall risk, and exercise adherence. A programmatic evaluation was undertaken to assess whether peer-led Steady as You Go met the objectives of increasing strength and balance and decreasing fall risk and led to continuing exercise participation in this target population.

METHODS

Recruitment and Sampling

Five peer-led classes (peer-led group) that had been meeting for a mean of 3±1.2 years and 5 new 10-week Age Concern Otago classes (recruited through local advertisements in newspapers and physician's offices; Age Concern Otago group) were invited simultaneously to participate in the research. Three men in 1 peer-led class declined to participate, and all others who were approached agreed to participate (5 in the peer-led group;, n=52; 5 Age Concern Otago, n=41). Two comparison (comparison) groups were recruited in towns outside Dunedin to ensure that participants were research naive and had no local strength and balance classes available to attend. The comparison group was recruited similarly to the Age Concern Otago group. Thirty-seven people were screened over the telephone, and 12 did not meet eligibility criteria or declined participation (comparison group, n=25).

Inclusion criteria were older than 65 years (≥55 years for Māori [the indigenous people of New Zealand] or Pacific people), at risk for falling as assessed by using the Falls Risk Assessment Tool, or having had at least 1 fall in the past 12 months.[14,15] Exclusion criteria consisted of inability to ambulate independently, having a chronic medical condition limiting participation in low-moderate exercise, having severe cognitive limitations, and participation in an exercise program aimed at improving gait and balance in the past 6 months (last criteria applied to the Age Concern Otago and comparison groups only).

This study was approved by the University of Otago Ethics Committee and complied with ethical rules for human experimentation stated in the Declaration of Helsinki. Participants in all classes had a general practitioner's medical clearance to participate. When eligibility was confirmed, informed written consent was obtained.

Intervention: Exercise Classes

One-hour classes were held weekly for 10 weeks for the Age Concern Otago and comparison groups. Both groups were given the option to continue following the 10-week assessment as part of the evaluation to determine the number of participants at 12 months choosing to continue these exercise classes. Peer-led group classes also were held once weekly for an hour, with the expectation that these groups would continue meeting after the 10-week assessment. As stated, peer-led group and Age Concern Otago group exercises were adapted from the Otago Exercise Program and delivered in a standardized and progressive manner by the peer and professional instructors, respectively. The comparison group classes included were composed of seated flexibility, range of motion, and seated aerobic exercises taught by a trained instructor who followed a standardized, progressive exercise program from a manual and DVD.

Outcome Measures

Outcome measures were performed at baseline, 10 weeks, and 6 and 12 months. The primary outcomes measures were the Timed Up & Go (TUG) test, a measure of dynamic balance by standing from a seated position, walking 3m, turning around a cone, and returning to a seated position as quickly as possible[16]; Single Leg Stand, a measure of static balance in which the participant stands on 1 leg for a maximum of 30 seconds[16,17]; Step Touch Test, a measure of dynamic balance in which the participant stands 3cm in front of a 7-cm tall box, 1 foot at a time is placed on the box as quickly as possible for 15 seconds, then repeated with the contralateral leg[17]; 30-second Chair Stand Test, a measure of lower-body strength and endurance in which the participant is seated in a standard-height chair with arms crossed over the chest, then stands and sits as many times as possible in 30 seconds[18]; and Functional Reach Test, a measure of dynamic balance with a tape measure on the wall and the participant leaning forward as far as possible from the waist without losing their balance.[18-21] A standardized questionnaire asking specific questions about participation in other exercise options available in the area (Tai Chi, Otago Exercise Program, aqua aerobics, gym workout) was used to assess continuing physical activity at 6 and 12 months. The Rapid Assessment of Physical Activity was used to assess current physical activity.[22] Balance confidence was measured by using the Activity-Specific Balance Confidence (ABC) Scale.[23] Falls were assessed by using falls calendars returned monthly by mail throughout the 12-month follow-up. Falls were defined by using the Prevention of Falls Network Europe group definition of "an unexpected event in which the participant comes to rest on the ground, floor, or lower level".[24(p1620)] Participants who failed to return a monthly calendar were contacted by telephone, and those who reported a fall also were contacted by telephone to ascertain the nature and severity of the fall by using a structured questionnaire. Medical conditions, medications, and other health demographic information were collected at each assessment visit by using a standardized questionnaire containing open-ended questions. Trained research assistants collected all outcome measures at venue sites. Refresher training before each data collection visit reduced