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Effect of a Fall Prevention Program on Balance Maintenance Using a Quasi-experimental Design in Real-World Settings

Yvonne Robitaille, PhD¹, Michel Fournier, MA², Sophie Laforest, PhD³, Lise Gauvin, PhD⁴, Johanne Filiatrault, PhD⁵, and Hélène Corriveau, PhD⁶

Abstract

Objectives: To examine the effect of a fall prevention program offered under real-world conditions on balance maintenance several months after the program. To explore the program’s impact on falls. Method: A quasi-experimental study was conducted among community-dwelling seniors, with pre- and postintervention measures of balance performance and self-reported falls. Ten community-based organizations offered the intervention (98 participants) and 7 recruited participants to the study’s control arm

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(102 participants). An earlier study examined balance immediately after the 12-week program. The present study focuses on the 12-month effect. Linear regression (balance) and negative binomial regression (falls) procedures were performed. **Results:** During the 12-month study period, experimental participants improved and maintained their balance as reflected by their scores on three performance tests. There was no evidence of an effect on falls. **Discussion:** Structured group exercise programs offered in community-based settings can maintain selected components of balance for several months after the program's end.

**Keywords**

exercise, falls, injuries, physical activity, program evaluation

Fall prevention interventions for independent older adults have developed rapidly over the past 15 years (Close, 2005). Exercise programs individually delivered by health professionals were among the first strategies shown to effectively reduce falls (Campbell et al., 1997) whereas group-delivered exercise interventions were initially considered as **Interventions of unknown effectiveness** (Gillespie et al., 2003). A recent systematic review added group exercise programs targeting a combination of strength, balance, or endurance among the interventions that are considered effective in reducing falls (Gillespie et al., 2009). This addition to the list of effective interventions is significant because exercise programs can reach groups of individuals at lower costs than personalized interventions (Petridou, Manti, Ntinapogias, Negri, & Szczerbinska, 2009).

Although randomized controlled trials support the efficacy of group exercise interventions, little is known about the effect of such interventions when they are delivered under the conditions of “real-world” settings (Gates, Fisher, Cooke, Carter, & Lamb, 2008; Glasgow, Lichtenstein, & Marcus, 2003). The challenge of transferring an intervention from experimental to real-world settings lies in reconciling the intensity required for its efficacy to reduce falls with the feasibility of delivering the intervention in settings that can sustain them across time. Organizations involved in program delivery must recruit people who can benefit from the intervention—persons who are “not too fit, not too frail” (as per Gardner, Robertson, & Campbell, 2000)—and hire professionals who can effectively lead group sessions. **Stand Up!** (Trickey, Parisien, Laforest, Genest, & Robitaille, 2003), a program initiated in Montreal (Canada) 10 years ago (Filiatrault et al., 2007) addressed this challenge. In an earlier study conducted under the natural conditions of
community-based organizations, we found that this intervention was successful in improving balance among older adults in the short term (Robitaille et al., 2005). However, programs delivered in natural settings such as Stand Up! have rarely examined if gains were maintained after program completion. This issue is crucial because a program’s intended effect on falls is predicated mostly on maintenance of gains in balance.

The objectives of this study are therefore (a) to examine the extent to which a group-delivered fall prevention program offered under real-world conditions has an effect on the maintenance of balance among community-dwelling seniors; and (b) to explore the program’s effect on falls.

Method

Intervention

Stand Up! is a community-based fall prevention program aimed primarily at improving balance and strength. It also promotes physical activity, home safety, and fall-safe behaviors among community-dwelling seniors. The 12-week program includes biweekly group exercise sessions led by a fitness or rehabilitation professional; weekly home exercise modules; and weekly educational sessions on fall prevention. The intervention is based on theoretical models pertaining to (a) physiological components of balance and the multifactorial nature of falls (Duncan, Chandler, Studenski, Hughes, & Prescott, 1993; Tinetti, 2003); (b) essential components of exercise programs such as exercise specificity, overload, and gradation (American College of Sports Medicine, 1998); and (c) factors associated with behavior change (Bandura, 1986).

The intervention is designed to be delivered by community-based organizations, such as senior community centers and community health centers. The intervention’s logic model states that these organizations must offer the program to people who are concerned about their balance or worried about falling, to reach its objectives. The model also requires that participants be genuinely exposed to the intervention. The components of Stand Up!’s logic model have been extensively described (Filiatrault et al., 2007).

Design

This 12-month quasi-experimental study involved data collection at four points in time (Figure 1): baseline (preintervention); immediately after the 12-week program (first follow-up); 3 months later (second follow-up); and 6 months after the second follow-up (final follow-up, 1 full year after baseline).
Balance measures at posttest (first follow-up) were the main outcomes and results were reported elsewhere (Robitaille et al., 2005). The final follow-up measures are also of interest because they allowed for examining the longer term effects (Lamb, Jørstad-Stein, Hauer, & Becker, 2005). Figure 1 depicts the study design and participants’ flow throughout the study. The ethics committee of Montreal’s Regional Health and Social Services Board approved the study protocol.

### Participants and Recruitment

Following an invitation from the regional public health department, several community organizations in the Montreal metropolitan area either implemented the program in their respective communities (10 experimental organizations) or agreed to recruit control participants for the study and wait 12 months before offering the program (7 control organizations). All organizations

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**Figure 1.** Study design and participants flow throughout the study

Note: The French name of the *Stand Up!* program is PIED, for Programme intégré d’équilibre dynamique. \( n^* \) = number of persons; \( n^a \) = participants who completed the questionnaire on falls; \( n^b \) = participants who were present at the assessment of balance performance.

Source: Adapted and reprinted (Robitaille et al., 2005) with permission from the American Public Health Association.
were asked to target the population for which the program was developed, namely, older adults who had fallen during the previous year or were worried about their balance or falling. A minimum age of 60 years was required to participate. Professionals hired by experimental organizations to lead the program were mostly physical therapists, physical rehabilitation technicians, and physical educators. Group leaders were not involved in study data collection. However, they were asked to monitor participants’ attendance to exercise classes.

Data Collection

Face-to-face structured interviews and balance performance tests were conducted at four points in time (Figure 1). Data collection instruments and procedures were identical for participants in the experimental and control groups. Interviewers and physical therapists were trained and blinded to group membership. At the 12-month follow-up, a small percentage of interviews (7%) were conducted by phone because some participants were unable to attend to the assessment session. Although balance measurement tests could not be administered in these cases, falls could nonetheless be recorded by interviewers. This explains the fact that the number of persons involved at the 12-month follow-up is higher for falls than for balance.

Outcome Variables

Balance measures. The two dimensions of balance that had improved immediately after the program (static balance and mobility) were included in this study. The one-legged stance test (eyes open and closed—right and left sides), the tandem stance test, and the tandem walk test were used to assess balance performance (Dargent-Molina et al., 1996; El Kashlan, Shepard, Asher, Smith-Wheelock, & Telian, 1998; Franchignoni, Tesio, Martino, & Ricupero, 1998; MacKnight et Rockwood, 1995). The detailed assessment protocol is described elsewhere (Robitaille et al., 2005). Two trials were carried out for each test, and the best score obtained on each test was used in analyses. In the first five balance performance tests, a high score represents a high level of balance. For the tandem walk test, lower scores depict better performance (i.e., walking as fast as possible for a distance of 3 m). Balance performance tests were administered by physical therapists who were not involved in the intervention.

Self-reported fall. A fall was defined as an event during which a person finds himself or herself involuntarily on the ground or on a lower level (Lamb et al., 2005; O’Loughlin, Robitaille, Boivin, & Suissa, 1993). At baseline,
participants were asked to describe falls that had occurred in the 12 months preceding enrolment in the study. At each follow-up, participants were questioned about falls occurring since the previous interview. Thus the first interview involved a 12-month recall period, the second and third interviews involved a 3-month recall period, and the last interview involved a 6-month recall period. For each fall reported, the interviewer inquired about the occurrence of injuries.

**Descriptive and Control Variables.** Sociodemographic variables (e.g., age, sex, education), physical activity involvement (e.g., frequency of physical activities during the previous month), and health variables (e.g., perceived health) were collected during face-to-face interviews.

**Data Analysis**

Baseline characteristics of study dropouts were compared to those of participants who remained in the study. Reasons for discontinuing participation were explored to rule out the possibility that this was due to fall events. Participants who remained in the study were compared on baseline characteristics across experimental and control groups. The size of clustering effects at the organization level was also examined to determine if such effects should be controlled in analyses. Given low intraclass correlation (ICC) due to heterogeneity of participants within recruiting organizations, the clustering effect was deemed negligible and thus not controlled in subsequent analyses. All data were analyzed on an intention-to-treat basis using the Stata 9.2 package.

**Change in Balance Performance.** First, we graphically compared the raw means of scores obtained on balance performance tests at each point in time for experimental and control groups to determine the extent to which increased balance observed at the end of the program had been maintained several months later. Second, we performed linear regression analyses for each balance outcome measured at final follow-up, according to the following two steps: (a) assessment of effect of group membership while controlling for baseline scores; and (b) controlling for a series of demographic, physical activity, and health covariates.

**Self-Reported Falls.** Two indicators of falls occurrences were examined: total number of falls and total number of injurious falls (any level of injury reported). After comparing the 12-month prestudy period to the 12-month
study period, the latter period was subdivided into three segments: the 3-month program period; the immediate 3-month postprogram period; and the final 6-month period. Incidence rates (IR) were adjusted to a standard 1-year period. Incidence rate ratios (IRR = experimental group incidence rate/control group incidence rate) and 95% confidence intervals were computed for each time period to allow comparison across groups and time. The incidence of falls recorded during the 12-month study period was then adjusted for control variables (age, sex, and number of falls in the 12 months preceding the study) using negative binomial regression procedures.

**Results**

**Recruitment**

Experimental and control organizations recruited 98 and 102 persons respectively. A total of 168 study participants attended the final follow-up assessment of balance performance (retention = 84%) while 184 participants were administered the final follow-up questionnaire on falls (retention = 92%; see Figure 1).

**Participants’ Characteristics at Baseline**

Participants lost to follow-up (n = 16) quit the study for health reasons not related to falls, and for unavailability. They did not differ from the rest of the study sample (n = 184). The mean age of participants was 74 years at study entry. Table 1 shows that experimental (n = 88) and control (n = 96) participants were similar on demographics, health characteristics, and balance performance.

**Changes in Balance Performance During the 12-Month Study Period**

Figure 2 shows the heterogeneity of changes in the unadjusted balance measures in the experimental group after the end of the program (at 3 months), except for the tandem stance test where the scores measured at the end of the program were maintained up to the final follow-up.

Table 2 shows unstandardized linear regression coefficients. Coefficients represent changes in balance performance scores at the final follow-up associated with being part of the experimental group. A final analysis of the effect of group membership, controlling for demographic, health, and physical activity
characteristics (complete model), revealed maintenance of improvements in the intervention group for three indicators of static balance, namely, the one-legged stance measure with eyes open (left and right sides) and the tandem
stance measure (respectively 6.98, 5.57, and 6.29 s). There was, however, no benefit associated with being part of the experimental group for the mobility indicator (i.e., the tandem walk measure) at the final follow-up.

**Falls Occurrences: Crude Falls Rates**

A total of 117 falls were registered for the 12-month period preceding the study, and 155 falls were registered during the 12-month study period (Table 3). The number of falls and incidence rates per person-year tended to be higher in the experimental group for the 12 months preceding the study (IRR = 1.27; 95% CI: [1.02, 1.59]), and lower during the 12-month study period (IRR = 0.88; 95% CI: [0.77, 1.00]), suggesting a lower risk of falls among experimental group participants during intervention and following months. Similar results were obtained for the number of injurious falls, but with larger CIs because of smaller subsample sizes.
Table 2. Results of Linear Regression Analyses Testing the Effect of Group Membership on Balance Performance at Final Follow-up

<table>
<thead>
<tr>
<th>Balance variables</th>
<th>Reduced model&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Complete model&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unstandardized coefficient&lt;sup&gt;c&lt;/sup&gt;</td>
<td>β</td>
</tr>
<tr>
<td><strong>Static balance (sec)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One-legged stance—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>eyes open, L</td>
<td>n = 158</td>
<td>6.29</td>
</tr>
<tr>
<td>One-legged stance—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>eyes open, R</td>
<td>n = 160</td>
<td>4.40</td>
</tr>
<tr>
<td>One-legged stance—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>eyes closed, L</td>
<td>n = 155</td>
<td>0.53</td>
</tr>
<tr>
<td>One-legged stance—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>eyes closed, R</td>
<td>n = 157</td>
<td>0.92</td>
</tr>
<tr>
<td>Tandem stance</td>
<td>n = 159</td>
<td>5.84</td>
</tr>
<tr>
<td><strong>Mobility (sec)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tandem walk</td>
<td>n = 139</td>
<td>−1.22</td>
</tr>
</tbody>
</table>

Note: L = left; R = right.

<sup>a</sup> Reduced model included baseline measure and group membership.

<sup>b</sup> Variables included in the complete linear regression model are measures of balance at baseline, a series of demographic variables (age, gender, level of education), a series of physical health variables (perceived health status, number of medical consultations during the last 3 months, number of health problems, number of medication classes), mental health, fall history and balance self-confidence, and practice of physical activity (frequency and diversity).

<sup>c</sup> β = regression coefficient of the group membership variable (Evolution attributable to membership in the experimental group). Partial η²: proportion of variance explained by group membership (experimental/control).
Table 3. Falls Occurrence During the 12 Months Preceding the Study and the 12-Month Study Period

<table>
<thead>
<tr>
<th>Indicators of falls occurrence</th>
<th>Experimental</th>
<th>Control</th>
<th>Total</th>
<th>Incidence rates ratio^b</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n = 88</td>
<td>n = 96</td>
<td>n = 184</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All falls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 months preceding the study</td>
<td>63 0.72</td>
<td>54 0.56</td>
<td>117 0.64</td>
<td>1.27</td>
<td>[1.02, 1.59]</td>
</tr>
<tr>
<td>12-month study period</td>
<td>69 0.78</td>
<td>86 0.90</td>
<td>155 0.84</td>
<td>0.88</td>
<td>[0.77, 1.00]</td>
</tr>
<tr>
<td>3-month program period^a</td>
<td>21 0.95</td>
<td>15 0.63</td>
<td>36 0.78</td>
<td>1.53</td>
<td>[0.84, 2.77]</td>
</tr>
<tr>
<td>3-month postprogram period^a</td>
<td>24 1.09</td>
<td>35 1.46</td>
<td>59 1.28</td>
<td>0.75</td>
<td>[0.49, 1.15]</td>
</tr>
<tr>
<td>Last 6 months of follow-up^a</td>
<td>24 0.55</td>
<td>36 0.75</td>
<td>60 0.65</td>
<td>0.73</td>
<td>[0.47, 1.25]</td>
</tr>
<tr>
<td>Injurious falls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 months preceding the study</td>
<td>32 0.36</td>
<td>28 0.29</td>
<td>60 0.33</td>
<td>1.25</td>
<td>[0.82, 1.89]</td>
</tr>
<tr>
<td>12-month study period</td>
<td>34 0.39</td>
<td>52 0.54</td>
<td>86 0.47</td>
<td>0.71</td>
<td>[0.52, 0.98]</td>
</tr>
<tr>
<td>3-month program period^a</td>
<td>11 0.50</td>
<td>10 0.42</td>
<td>21 0.46</td>
<td>1.20</td>
<td>[0.54, 2.69]</td>
</tr>
<tr>
<td>3-month postprogram period^a</td>
<td>10 0.45</td>
<td>20 0.83</td>
<td>30 0.65</td>
<td>0.55</td>
<td>[0.27, 1.10]</td>
</tr>
<tr>
<td>Last 6 months of follow-up^a</td>
<td>13 0.30</td>
<td>22 0.46</td>
<td>35 0.38</td>
<td>0.64</td>
<td>[0.27, 1.24]</td>
</tr>
</tbody>
</table>

^a To allow comparison of incidence rates from one period to another, incidence rates were adjusted over a standard period of 1 year.
^b Incidence rates ratios (IRR) resulting from negative binomial regression (unadjusted models).
Division of the 12-month study into three time intervals showed that during the 3-month program period, experimental group participants tended to report proportionally more falls than control group participants (IRR = 1.53; 95% CI: [0.84, 2.77]). The reverse occurred for the two periods that followed the end of the program (IRR of 0.75; 95% CI: [0.49, 1.15] and 0.73; 95% CI: [0.47, 1.25] respectively).

Falls Rates Adjusting for Covariates

Negative binomial regression analyses allowed for examination of the association between group membership (experimental or control) and the number of falls that occurred during the 12-month study period, after adjusting for participants’ falls history, age, and sex (Table 4). The analysis showed that only Falls in the previous year were independently associated with falls that occurred during the 12-month study period (IRR = 1.48; 95% CI: [1.25, 1.76]). Group membership was not statistically significant (IRR = 0.81; 95% CI: [0.54, 1.20]) in the final binomial regression model.

Discussion

This study examined the extent to which a fall prevention program delivered in real-world settings by community-based organizations can have long-term effects on balance among independent older adults. It also explored effects of the program on falls.
**Effect on Balance**

Results showed that, 9 months after the end of the program, intervention participants had maintained higher balance performance scores than control participants on three out of six balance indicators, namely, the one-legged stance measure (eyes open, left and right sides) and the tandem stance measure. These findings are in line with those of other studies showing a significant effect of group exercise programs on falls incidence among older adults and an improvement on a proximal outcome measure such as balance performance (Day et al., 2002; Means, Rodell, & O’Sullivan, 2005; Weerdesteyn et al., 2006). The balance measures used in this study are amongst those identified in prospective studies as being associated with the risk of falls (Muir, Berg, Chesworth, Klar, & Speechley, 2010). Given the relative intensity of the program, the satisfactory attendance rates (Filiatrault et al., 2007), the reliance on objective balance measures, and the fact that other studies have also observed the effects of group exercise programs on balance (Day et al., 2002; Means et al., 2005; Weerdesteyn et al., 2006), we believe that the improvements in balance observed in the present study are real, although of modest magnitude.

What can explain some lasting effect of a short-term intervention? We believe that the explanation for the positive impact of a 12-week group exercise program on maintenance of improvement in balance 9 months after the program lies in its logic model and components. Indeed, the program’s underlying logic model views the 12 biweekly sessions as an intensive period during which participants can achieve improvements in balance, integrate regular physical activity in their lifestyle, and develop strategies to help integrate what they have learned beyond the program period. To this end, *Stand Up!* includes a home exercise module with simple exercises illustrated on a mini-poster given to each participant. Also, one of the educational sessions aims specifically at motivating and enabling participants to stay active. An exploratory study on maintenance of physical activity among these individuals concluded that, despite similar increases in weekly frequency of physical activities in both groups, program participants showed greater increases in variety of physical activities (Laforest et al., 2009). Greater variety in physical activities has been associated with a lower risk of falls (O’Loughlin et al., 1993). Also, it is possible that the targeted population (i.e., community-dwelling seniors concerned with falling) were particularly motivated to integrate physical activity into their lifestyle and that many participants continued practicing balance exercises learned during the program.
Effect on Falls

Although experimental group participants reported fewer falls than control group participants during the 12-month study period, this difference did not reach statistical significance. In this study, we included the objective of exploring the program’s effects on falls despite the relatively small size. We think that there is value in reporting these results even with limited statistical power because it could allow future pooled analyses of intervention impacts in systematic reviews.

What’s New About These Results?

Results of this study are in keeping with the program’s logic model. Accordingly, one of the program’s key proximal outcomes necessary for falls reduction is increase in balance and strength (Filiatrault et al., 2007). Improvements in balance observed immediately following the intervention seem to have been maintained 9 months after the end of the program, at least for some components of balance. These results are important because they suggest that it is possible for a group exercise program delivered in real-world settings to reach a key prerequisite to reduce falls.

The context of program delivery and the chosen design (which minimizes interference with the usual functioning of community-based organizations) support the generalizability of findings from previous group-based exercise program evaluations. Contrary to randomized controlled trials (Barnett, Smith, Lord, Williams, & Baumand, 2003; Day et al., 2002), experimental organizations had full responsibility over three major issues linked with intervention effectiveness: participant recruitment, instructor recruitment, and program delivery. These conditions replicate conditions in which the intervention is offered in the real-world and thus contribute to the literature by presenting results of an effectiveness trial. Hence, it is by its relevance to the implementation context that this study constitutes a novel contribution to fall prevention research.

How to Increase the Effectiveness for Fall Prevention?

At the program level, we think that program leaders should emphasize the importance and strategies to integrate physical exercises into participant’s lifestyle in the long term throughout the program and not wait at the end of the program to do so. Any short program (such as Stand Up!) should also be well integrated with other physical activities offered in the neighborhood.
Support from participants’ social and physical environment is a predictor of maintenance of physical activity in the long term (Laitakari, Vuori & Oja, 1996). Thus, at the neighborhood level, more concerted efforts should be devoted to promote a wide range of physical activities that will stimulate balance, strength, flexibility, and endurance among seniors (e.g., Tai Chi, Tango dance) and make them accessible to older adults.

**Limitations**

Two limitations are related to the choice of a quasi-experimental design in natural settings. First, this design does not exclude a possible effect of some confounding variables not controlled for in the design and analyses. Such a design was chosen because randomization was unacceptable for some participating community-based organizations that were already providing an earlier version of the program in their community. Excluding these organizations from the study would have created an artificial situation that was incompatible with our goal of examining effectiveness in real-world settings. Second, for maximum accuracy, randomized studies on falls among older adults often include a system of monthly phone calls or weekly postcards (Lamb et al., 2005). Our concern, however, was that such measures would possibly increase participants’ awareness about falls prevention and boost intervention effects. Again, we believed that using such procedures would have created an artificial situation departing from the real-world conditions of community-based organizations.

The less invasive follow-up method used in this study (i.e., four contacts with participants during the study period) likely led to an underestimation of the number of self-reported falls. It is known that the interval over which patients are asked to remember their falls affects fall reporting (Ganz, Higashi, & Rubenstein, 2005). In this study, all participants in experimental and control groups were asked to remember their falls for the same time periods (12 months prestudy; 3-month program period; 3-month postprogram period; last 6-month period of the study). We cannot rule out the possibility that experimental participants actually did increase their risk of falls, either due to temerity or as a consequence of more extensive involvement in physical activity. It is also possible that during the program period, experimental participants were more apt to remember falls than control participants because they were exposed to an intervention providing weekly opportunities for discussing falls. It is also possible that program participants answered according to what they thought was expected from them (i.e., reporting fewer falls). It is not possible to rule out or to support the presence of either one of these
biases. We think, however, that it is probably the falls resulting in less severe or no injuries, which have greater chances of being under- or overreported. The more severe falls are likely reported with equal accuracy by program participants and control participants.

Conclusion

From a public health perspective, group-based exercise interventions designed for community-dwelling seniors have been developed in several countries. A Cochrane review thoroughly examined these interventions results and concluded in the effectiveness of group-based exercise intervention in reducing falls in older adults (Gillespie et al., 2009). The participants involved in these studies were either self-selected (Clemson et al., 2004; Means et al., 2005), invited by researchers (Day et al., 2002; Fitzharris, Day, Lord, Gordon, & Fildes, 2010), or referred by health professionals (Barnett et al., 2003). However, the fact that an intervention shows effectiveness under controlled conditions does not mean that it can reach its objectives when implemented in real-world conditions (Prohaska et al., 2006). There is currently a strong interest toward the applicability of research results in public health (Green & Glasgow, 2006), and for translation of effective fall-prevention interventions into community-based settings (Stevens & Sogolow, 2008). The focus of the present study was to help answering the pragmatic question, “Does it work in everyday practice?” We conclude that improvements in balance can be maintained several months after the program’s termination, which strengthens the rationale for including such programs among the list of strategies to increase and maintain balance and thus reduce falls among older adults.

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Declaration of Conflicting Interests

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