The Feasibility and Effectiveness of Translating *A Matter of Balance* into a Volunteer Lay Leader Model

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Abstract

The purpose of this study was to examine whether *A Matter of Balance,* a cognitive behavioral program previously found to be efficacious in a randomized clinical trial (RCT), could be translated into a community-based volunteer lay leader model and achieve outcomes comparable to those found in the RCT. A repeated measures single group design was employed. Participants experienced significant increases in Falls Efficacy, Falls Management, and Falls Control at 6 weeks, 6 months, and 12 months, thus achieving comparable outcomes with those of participants in the RCT. This successful translation of a professionally led health promotion program into a volunteer lay leader model enables embedding the program in community-based organizations thus making it more broadly available to older adults in diverse settings. The findings also suggest that other evidence-based programs currently requiring professional staff can be adapted for facilitation by volunteers.

Nationally, one in three older adults fall annually (National Council on Aging, 2005). Of those who fall, 30% suffer injuries that decrease mobility and independence and result in high medical costs (National Council on Aging, 2005; Stevens, Corso, Finkelstein & Miller, 2006). The rate of fatal falls for persons 65 and older increased about 35% from 1990 to 2002 (Merck Institute on Aging & Centers for Disease Control, 2006). In addition, fear of falling is associated with a spiraling risk of falls and functional decline (Friedman, Munoz, West, Rubin & Fried, 2002; Howland & Lachman, 1998) and it is estimated that up to 55% of community dwelling older adults experience a fear of falling (Lach, 2003; Peterson, Murphy, Hammel, 2003). Because so many older adults do not inform anyone of their fear of falling, it is important that interventions to prevent falls be easily accessible to older adults in their own communities (Baker et al., 2005).

A Matter of Balance is an evidence-based health promotion group program for older adults that uses cognitive-behavioral techniques to reduce the fear of falling (Howland & Lachman, 1998; Tennstedt et al., 1998). The original program was professionally led and used cognitive restructuring methods based on the work of Lachman and colleagues (1992). The primary participant outcomes from the randomized clinical trial (RCT) conducted by the Roybal Center for Enhancement of Late-Life Function at Boston University, included significant improvements regarding confidence in performing everyday activities without falling and perceived ability to manage the risk of falling (Tennstedt et al., 1998).

Although considerable research aimed at establishing the efficacy of preventive strategies through RCTs exists, these evidence-based health promotion programs, such as *A Matter of Balance*, have not been widely adopted into practice. The purpose of this study was to determine whether, under real world conditions, *A Matter of Balance* could be translated into a volunteer

lay leader model (MOB/VLL) and delivered in community settings with achievement of outcomes comparable to those found for participants in the original RCT. Three proximate measures, Falls Self-Efficacy (confidence about performing everyday activities), Falls Management (confidence in managing falls by increasing physical strength, becoming more steady and finding a way to get up if a fall occurs) and Falls Control (belief that falls can be prevented and that one can overcome fear of falling) and three distal measures of effectiveness: exercise level, social activity and monthly falls were used to measure outcomes. Participants completed these measures at baseline, 6 weeks, 6 months, and 12 months.

Methods

Program Overview

A key component of translational research is the determination and maintenance of the core elements as prescribed by the tested intervention in the translation (Santacroce, Maccarelli & Grey, 2004). The core elements of *A Matter of Balance*, clearly described in the original program manual, include: (a) the cognitive restructuring and behavioral activation activities that promote the belief that falls and fear of falling are controllable (b) enhancing falls self-efficacy and falls management by helping participants set realistic goals for increasing activity (c) promoting changes in modifiable risk factors such as securing loose rugs in their home environment and (d) teaching exercises known to reduce risk of falling by increasing strength and balance (Tennstedt et al., 1998) The MOB/VLL maintains these cognitive restructuring activities. Experts in exercise were consulted concerning adaptations to ensure that the exercises taught in the translation promoted the increased strength and balance needed to reduce risk of falling and were safe for persons with osteoporosis and joint replacements. The MOB/VLL curriculum is highly structured and delivered in eight 2-hour sessions over 4 weeks by a pair of

volunteer lay leaders, known as coaches. Each class includes eight to twelve adults who voluntarily enroll.

Participants

In contrast to the RCT, participant recruitment for MOB/VLL targeted the community-at-large rather than senior housing sites. Standard community-based program recruitment methods (e.g. presentations to healthcare and social service providers and to community-dwelling older adults as well as notices in local newspapers) targeted older adults who were concerned about falling. Also in contrast to the RCT, there was no requirement for self-reported restriction of activity due to fear of falling. Older adults were allowed to participate in MOB/VLL whether or not they agreed to participate in the effectiveness study. Persons who requested information about MOB/VLL in response to recruitment efforts were given a clear description of the program and of the effectiveness study before registering in the program.

Volunteer Lay Leader Training

The coaches were recruited in collaboration with volunteer coordinators at partner organizations. Coaches agreed to participate in training and evaluation, including fidelity monitoring, during the delivery of MOB/VLL. A standardized two-day training design was used in order to increase teach-back opportunities. The manual developed for training professionals was adapted to be more accessible and easier for volunteers to use. Effective delivery of the curriculum as intended by the coaches was enhanced by the use of a mentor system in which an experienced coach was paired with a novice to provide feedback concerning maintenance of fidelity and effective delivery of the course content.

Fidelity Monitoring

Fidelity monitoring using the five-component model developed by the Behavioral Change Consortium (design, training, delivery, receipt, and enactment) (Bellg, et al., 2004; Resnick, et al., 2005) was employed to enhance the reliability and validity of MOB/VLL. The original program designers and experts in the field were consulted concerning the adaptations made to the original program and concerning the development of the volunteer training to ensure that the core elements of the tested intervention were maintained in the translation. The mentor system also enhanced the delivery of the curriculum as intended. A visit by a guest health care professional during one of the eight sessions was included to address specific issues such as use of assistive devices and how to get up from a fall. In addition, volunteer coaches were observed during one session by a master trainer. A participant handbook was developed to increase participant receipt of the curriculum. Attendance was tracked to measure dose. It was assumed that improved scores on self-reported participant outcome measures at 6 weeks, 6 months, and 12 months would indicate participants' continued enactment of the cognitive and behavioral skills acquired in MOB/VLL.

Procedures

An informed consent form and the baseline questionnaire with a stamped self-addressed envelope were mailed to those interested in participating in the effectiveness study. Participants who enrolled in the study were mailed follow-up questionnaires with self-addressed stamped envelopes at 6 weeks, 6 months, and 12 months. The study procedures and research instruments were approved by the Institutional Review Board of the University of Southern Maine.

Study Design

Our aim was to translate the evidence-based program *A Matter of Balance*, for which efficacy was already established in a randomized clinical trial, into a program that would be feasible to disseminate widely in real world settings. It was deemed impractical to include control or comparison groups to replicate the earlier study. The effectiveness of MOB/VLL model was tested using a single group repeated measures design that compared participant outcomes to baseline measures at 6 weeks, 6 months, and 12 months. The primary hypothesis of this effectiveness study was that the participants in the MOB/VLL would achieve comparable outcomes to those who participated in the RCT (Tennstedt et al., 1998) by reporting improved scores compared to baseline measures on two proximate measures. It was anticipated that there would be a significant positive change in falls self-efficacy at 6 weeks and 12 months and in falls management at 6 weeks, 6 months, and 12 months following the intervention. It was hypothesized that participants in MOB/VLL would report improvement compared to baseline over time in three proximate measures and three distal measures. Baseline measures were repeated at 6 weeks, 6 months, and 12 months.

Measures

Baseline demographic sample characteristics including age, gender, living situation, Medicaid status, education, race and clinically important variables including use of an assistive device, self-restriction of activity due to concern about falling, experience of a fall within the past three months and number of falls within the past three months were obtained for all participants.

The three proximate measures of fear of falling were a Falls Efficacy Scale (FES) that was modified by Tenndstedt and colleagues (1998), Falls Control Scale (FCS), and Falls

Management Scale (FMS) (Tennstedt et al., 1998; Tinetti, Richman & Powell, 1990). The reliability for all three measures in the RCT and current study are presented in Table 1 and sample items are presented in Table 2.

Insert Table 1 here

The modification Tennstedt and colleagues made in the FES originally developed by Tinetti, Richman, and Powell in 1990 was to add two additional items to the original ten for a total of 12 items. Note that is scale is not the modified Falls Efficacy Scale developed by Hill (1996) that included 14 items. On the FES employed in the current study, participants rate their degree of confidence about carrying out twelve everyday activities without falling from *not at all sure* to *very sure*. The four-item FCS asks participants to indicate the degree to which they agree with statements that reflect their confidence that they can prevent falls The original five-point likert scale was modified to a four-point scale from *strongly agree* to *strongly disagree* for ease of use in a self-administered questionnaire format. The FMS is a five-item scale that measures perceived ability to manage risk of falls or actual falls on a four-point scale from *very sure* to *not at all sure* concerning statements that reflect the confidence that participants can take action that will reduce fall risk. Higher scores on all three scales indicate less fear of falling (for the FES and FMS, a greater degree of confidence, and FCS, a greater perception of control).

Insert Table 2 here

Data were collected on three distal measures as well. As exercise is associated with reduced risk of falling (Buchner, et al., 1997; Carter, et al., 2001; Gardner, et al., 2000; Lord, et al., 2003; Rubenstein, et al., 2000, Tinetti, 2003), a modified version of the Physician-Based Assessment and Counseling on Exercise (PACE) was used to measure exercise level. The PACE is a single response measure, originally developed to evaluate readiness for exercise

(Cardiovascular Health Branch Centers for Disease Control, 1992) and used more recently as an outcome measure (Green et al., 2002; Leveille et al, 1998). The first six response categories from the original measure were used. Because fear of falling often inhibits maintaining social activity (Howland & Lachman, 1998; Lach, 2003), an item was added to assess the extent to which concerns about falling interfered with social activity. Because of the concern that increased activity due to reductions in fear of falling might actually increase fall rate (Tenndstedt, et al., 1998), at six weeks, participants were asked how many falls were experienced within the past 6 weeks and at 6 and 12 months they were asked how many falls were experienced during the past 6 months. We chose to use the same time period for recalling self-reported falls as used in the RCT to stay as close as possible to the original study. A monthly falls rate was calculated based on these responses.

Dose was measured by tracking attendance at all eight sessions. In the RCT, attendance at five or more sessions was required in order to achieve significant positive benefits from the tested intervention (Tennstedt et al., 1998).

Volunteer coaches were found to have come from two major sources: from the community at large and from those employed in the social service sector. Thus, volunteer coach type was included in the analyses.

Data Analysis

Intent-to-treat analysis was used for those who attended at least one session of MOB/VLL. Data were analyzed using a one-group repeated measures design to examine change over time related to the key proximate and distal measures.

Data collected from those who agreed to participate in the effectiveness study between April 2004 and December 2005 were used in the analysis (see Figure 1). Because participants

were enrolled on a rolling basis as MOB/VLL was offered, data were collected baseline, 6 weeks, and 6 months for those who participated until November 2005 (*n* = 335). Only those who enrolled by May 2005 (*n* = 224) were sent a 12-month questionnaire. Only participants who attended at least one session of MOB/VLL were included in analyses of participant outcomes. By the end of May 2006, 349 participants had completed baseline questionnaires and 335 (96%) of those attended at least one session of MOB/VLL. Of those who started MOB/VLL and completed baseline data, 75% (243 of 335) completed follow-up questionnaires at 6 weeks, 68% (226 of 335) at 6 months, and 58% (129 of 224) at 12 months.

Insert Figure 1

For purposes of analysis, baseline demographic sample characteristics were dichotomized including: age (*80+ / 79-*), gender, living status (*alone/ with others*), Medicaid status (*yes/ no*), education (*HS or less / more than HS*), Race (*White / Nonwhite*) and clinically important variables including use of an assistive device (*yes/no*), self-restriction of activity due to concern about falling (*yes/no*) and experience of a fall within the past three months (*yes/no*). In order to examine possible patterns related to attrition, Pearson's and Fisher's exact tests were used to examine the difference between those who completed baseline questionnaires but did not attend MOB/VLL and between those who returned and did not return follow-up questionnaires mailed to them.

Because the number of sessions attended and the type of coaches who facilitated the training sessions are the two main factors that could influence whether or not the intervention was delivered as intended and received as intended, these factors were included the analyses. In the RCT, participants needed to attend at least five of the eight sessions to experience significant benefit in Falls Efficacy and Falls Management. Analyses were conducted using Pearson Chi

square tests to examine possible association between attendance and the questionnaire return status (whether the participants returned questionnaires at 6 weeks, 6 months, and 12 months). The volunteer type characteristic considered was whether volunteer coaches were from the community-at-large or employed as staff at community agencies. The SAS® PROC MIXED procedure allowed incorporating repeated records (measurements) with missing components into the analysis to conduct formal tests of significance on these two factors (attendance and coach type) with regard to all key variables of interest over the time. A computer intensive nonparametric bootstrap procedure was used to analyze the change of mean scores of all key variables between each individual time point and the baseline.

Results

Participant Characteristics

Baseline characteristics for those completing baseline questionnaires who attended at least one session of MOB/VLL are summarized in Table 3. Participants were predominately older White women with a moderate to low income who lived alone. On average participants reported an educational level of thirteen years. Even though less than one-third had fallen within 3 months before starting MOB/VLL, almost half had stopped doing things due to concerns about falling. None of the participants were injured during the program activities.

Insert Table 3 here

Attrition

The measurements of demographics and clinically important variables that were included in the following attrition analysis were taken at baseline. The first set of analyses compared baseline measurements in these variables between those who completed the baseline measures but did not start and those who did start MOB/VLL. Pearson Chi Square and Fisher's exact tests

revealed no significant differences concerning age, gender, education, race, Medicaid status, living status, self-restriction of activity, and experience of a fall within 3 months between those who started and those who did not. However, Chi Square analyses revealed significant differences between expected and actual reports of use of assistive devices for those who did not start. More than expected of those who did not start MOB/VLL reported that they used assistive devices (X^2 (1, N = 349) = 8.046, p = .005).

The same analyses were used for those participants who started MOB/VLL to examine the differences in baseline measures of demographic and clinically important variables between those who returned the mailed questionnaires at 6 weeks, 6 months, and 12 months as compared with those who did not return the questionnaires. There were also no significant differences in all the demographic variables, use of assistive device, and experience of a fall within 3 months at all time points between those who returned and did not return questionnaires at 6 weeks, 6 months, and 12 months. However, significant differences were found concerning self-restricted activity at 6 weeks and 12 months. Although there was no significant difference between those who returned questionnaires and those who did not at 6 months regarding self-restriction of activity, those who did not return questionnaires were less likely to have reported self-restriction of activity at baseline than those who returned questionnaires at 6 weeks (X^2 (1, N = 335) = 4.52, p = .04) and at 12 months (X^2 (1, N = 210) = 12.04, p = .01).

Attendance

Of the 335 participants who attended at least one session, only 11% (n = 37) attended less than five sessions. Significant associations were found between attendance and questionnaire return status at 6 weeks, 6 months, and 12 months using Pearson Chi Square tests. Fewer than expected participants who did not return questionnaires attended less than five sessions at all

three time points: at 6 weeks (X^2 (1, N = 335) = 86.674, p = .0001), only three participants; at 6 months (X^2 (1, N = 334) = 20.124, p = .0001), only thirteen participants; and at 12 months (X^2 (1, N = 224) = 6.356, p = .01), only nine participants who attended less than five sessions returned questionnaires. The following indicates the percentage of those who returned questionnaires who attended five or more of the eight sessions: 89% (n = 289) at baseline, 98.8% (n = 298) at 6 weeks, 94.2% (n = 213) at 6 months, and 93% (n = 120) at 12 months. Thus the majority of questionnaires available for analysis were for those who attended five or more sessions, the dose level found necessary to achieve benefit in the RCT.

Coach Type

Volunteers who were employed in a social service capacity (staff volunteer) as well as volunteers from the community at large (community volunteer) served as coaches. Because sessions were led by two coaches, the number of MOB/VLL sessions that were led by community volunteers only, staff volunteers only, and a combination of both were evaluated. About one third of all MOB/VLL sessions were facilitated by each group of coach type: 112 (33%) by Community Volunteer Coaches, 107 (32%) by Staff Volunteer Coaches, and 116 (35%) by a combination of Community and Staff Volunteer Coaches. Coach type was therefore included in further analyses.

Effectiveness of the Intervention: Participant Outcomes

As noted above, the majority of questionnaires available for analysis were for those who attended five or more sessions, the dose level required in the RCT. As expected, an F test in PROC MIXED affirmed that attendance is insignificant with regard to all key variables. Using the same F test without assuming any special covariance structure, it was found that coach type had no significant impact on all key variables of interest except the variable falls management (F

(2, 879) = 3.16, p = 0.0429). An analysis on coach type at each time point using standard ANOVA indicated that the significance of falls management might be spurious since it was significant only at baseline (F (2, 305) = 3.5, p = 0.03) and insignificant at the other three times. A further analysis using one-tailed two-sample normal test based on two large independent samples found that the mean baseline FMS score with staff volunteer coaches was higher than community volunteer coaches (z = 2.2394, p = 0.01) and mixture of staff and community volunteer coaches (z = 2.331, p = 0.01). Thus the significant differences were found only at baseline and not at subsequent times.

Analysis on Mean Score Change Between Each Individual Time Point and Baseline.

Since no control group was used in this design, treatment effect was evaluated through comparing the mean scores observed at each time point with that of baseline for participants who participated in at least one session of MOB/VLL. The standard paired t-test can be used to achieve this goal if there are no missing values or the missing values are missing at random (MAR). It was not considered useful in this analysis because of the amount and the feature of missing data and the lack of normality of the scores of the key variables. For this analysis, a robust distribution-free test based on the computer intensive bootstrap resampling method (Efron, 1979; Efron & Tibshirani, 1993) was performed for the difference of mean scores observed at baseline and each time point respectively (see Table 4). The bootstrap p-values (achieved significance level) calculated using algorithm 16.2 of Efron and Tibshirani (1993, p. 224) based on 10,000 replications and the difference of mean scores at baseline and each time point are summarized in the Table 4. Participants reported significant improvement compared to baseline at 6 weeks, 6 months, and 12 months with regard to FES, FMS, and FCS. In contrast, the original RCT compared scores at each time point to a control group and did not find any

significant FCS scores, found significance at 6 weeks and 12 months in the FES and significance in the FMS at 6 weeks, 6 months and 12 months. In this study significant improvement in the distal measures as compared to baseline were noted: exercise level as measured by the modified PACE and Social Activity improved at 6 weeks and 6 months and marginally significant improvement was in found Social Activity (p = .0516) at 12 months. In addition, there were significant reductions in self-reported monthly falls at 6 months and 12 months. The line plots of the mean score changes over time (baseline, 6 weeks, 6 months and 12 months) are illustrated in Figure 2.

Insert Table 4 here

Insert Figure 2 here

Discussion

The purpose of the current effectiveness study was to examine whether under real world conditions, *A Matter of Balance* could be translated into a volunteer lay leader model (MOB/VLL) and achieve participant outcomes comparable to those achieved in the randomized clinical trial (RCT). The findings of the present study support the primary hypothesis that participants in MOB/VLL would achieve comparable outcomes to those who participated in the RCT by reporting improved scores over time compared to baseline measures for at least two proximate measures of fear of falling. MOB/VLL has been shown to be effective in reducing the fear of falling among a community-dwelling older adult population using a repeated measures single group design that employed the same proximate measures of fear of falling as used in the original RCT. Participants were found to experience significant increases in Falls Efficacy, Falls Management, and Falls Control at 6 weeks, 6 months, and 12 months as compared to baseline scores. In the RCT, participants who attended at least five of the eight sessions were found to

have significantly better scores than the control group in Falls Efficacy at 6 weeks and 12 months and in Falls Management at 6 weeks, 6 months, and 12 months. No significant differences between treatment and control groups were found in Falls Control at any time point. Because the data available for analysis were provided predominately by those who participated in five or more sessions, the findings of this study are consistent with those of the RCT that found that participants needed to attend five or more sessions to benefit from the intervention.

This study used different distal measures from those used in the RCT, but the findings related to these measures lend further support for the effectiveness of MOB/VLL. Participants in MOB/VLL reported improved exercise levels (modified PACE scores) and greater Social Activity at 6 weeks and marginally significant improvement in Social Activity at 12 months. There was a concern when *A Matter of Balance* was originally developed that, by decreasing fear and increasing activity levels, falls would actually increase. Because of this concern, the RCT tracked self-reported falls and found no statistically significant difference either in number of participants who reported a fall or in the mean number of falls reported between the intervention versus control group (Tennstedt, et al, 1998). Our analysis of self-reported falls differed from the RCT in that we did not compare falls rate between a treatment and a control group but between time points for participants in MOB/VLL. A monthly falls rate was calculated based on self-reported experience with falls in the periods between follow-up measures; there was a statistically significant decrease in falls rate at 6 months and 12 months. Although experience with falls is a soft self-reported measure, this is an important and reassuring finding. It appears that by learning skills to make wise decisions about activity and exercise, older adults are able to actually increase exercise and activity levels while at the same time decreasing falls. It may be that in the current study, the emphasis placed on the need to attend at least five classes in order to

benefit led to increased attention to factors that helped participants change their behavior in ways that contributed to this decrease in falls rate.

The limitations of the present study warrant attention. The findings have limited generalizability due to the lack of a control group. This limitation is mitigated by considering the findings with those of the original RCT. Because we recruited voluntary participants who believed they might benefit from the program, selection bias may have influenced our results. Also, attrition in this study is of concern. The staggered manner in which data were collected increased this problem at 12 months. The rate of attrition is similar to rates found in other community-based effectiveness studies (e.g. Belza et al., 2006; Quijano, et al., 2007; Phelan, et al., 2002). However, in the current study, multiple analyses revealed that there were no important differences in demographic and clinically important factors between those providing the data available for analysis and those who did not provide data at 6 weeks, 6 months, or 12 months. These analyses support the validity of the findings. Data in this study are based solely on self-reported measures and thus suffer the possible bias of social desirability. However, the same self-reported measures as used in the RCT and in other studies of effectiveness were used, thus strengthening the results.

The outcomes of this translational research extend the literature concerning falls prevention as well as the translation of evidence-based practice. The results of the current effectiveness study suggest the feasibility of translating *A Matter of Balance* into a volunteer lay leader program (MOB/VLL) while achieving significant benefits for participants over time. Although MOB/VLL participants reported benefiting from the program, broadening inclusion criteria has the potential of limiting significant findings in translational research. When attrition cannot be avoided in real world settings, there are methods for accounting for missing data that

can be employed. Volunteer lay leaders can be successfully trained to deliver MOB/VLL as intended. Implementing fidelity monitoring procedures in routine programmatic procedures of community-based agencies is feasible provided that there is a clear articulation of the core elements of the evidence-based intervention. The finding that both community-based volunteers and volunteers embedded in the social service sector can be trained to facilitate MOB/VLL effectively opens up the possibility that MOB/VLL could be adopted by community-based agencies with the existing capacity to recruit and support volunteers as well as by the social service sector that may have lay staff available for MOB/VLL volunteer coach training. This successful translation of a professionally led health promotion program into a volunteer lay leader model enables embedding the program in diverse community-based organizations, thus making it more broadly available to older adults. It also suggests that other evidence-based programs currently requiring professional staff can be adapted for facilitation by volunteers.

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Figure 1 MOB/VLL research participant flow

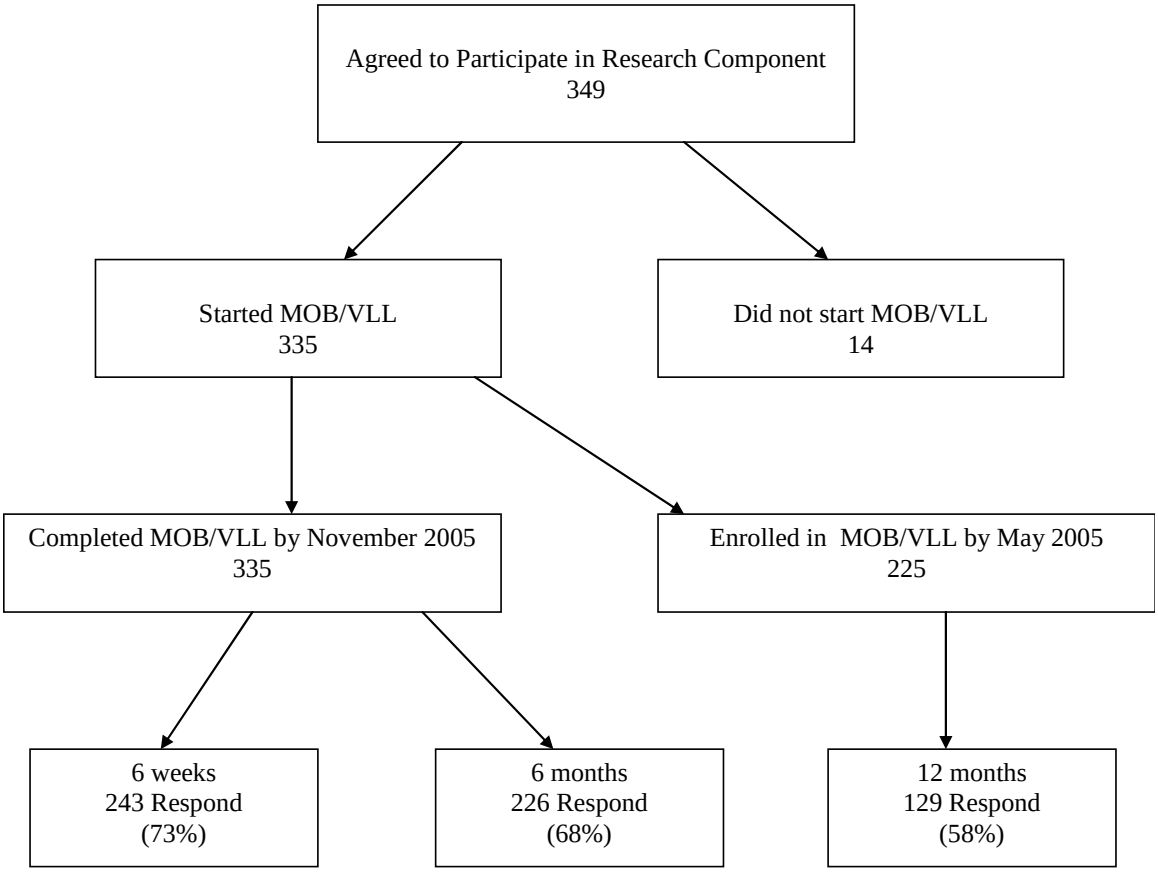

Table 1. Reliability of Proximate Measures: Cronbach alphas

	RCT	Current Translation
Modified Falls Efficacy Scale	.90 to .93	.92 to .94
Falls Management Scale	.76 to .84	.85 to .87
Falls Control Scale	.70 to .76	.83 to .87

Table 2
Sample Items from Key Measures

Sample items from the Falls Efficacy Scale as modified by Tennstedt et al. (1998)

How sure are you that you can (statement) without falling?	*Very Sure*	*Pretty Sure*	*A little Sure*	*Not at all sure*
Get dressed and undressed				
Walk around the neighborhood				
Carry bundles from the store				

Sample Items adapted from Falls Control Scale (Tennstedt et al., 1998)

Falling down is something that I can control	*Strongly Agree*	*Agree*	*Disagree*	*Strongly Disagree*
There are things I can do to keep myself from falling				

Sample Items from the Falls Management Scale (Tennstedt et al, 1998)

	Very Sure	*Sure*	*Somewhat Sure*	*Not at all Sure*
I can find ways to reduce falls				
I can increase my physical strength				

Sample responses from the first six response categories from PACE (Cardiovascular Health Branch Centers for Disease Control, 1992)

I do not exercise or walk regularly, but I have been thinking of starting	
I have been doing moderate exercise 3 or more times per week	

Table 2 (continued)

Social Activity Item for the current study

During the last 4 weeks to what extent has your concern about falling interfered with your normal social activities?”	*Extremely*	*Quite a bit*	*Moderately*	Slightly	*Not at all*

Table 3. Baseline characteristics for those attending at least one session

	Mean (*SD*)	Range
Age	78.7 (*SD* 8.3)	51-95
Education	13.2 (SD 2.7)	0-18
	Percent	Frequency
Age 80 or older	55	178
Education - High School or less	50.6	168
Women	89.9	289
Lives Alone	68.5	222
Lives with spouse/partner	22	71
White/European	88	278
Native American	10.5	32
Low income of $1,500/month or less	63	190
Medicaid	20	67
Fell within past 3 months	28	95
Use of Assistive Device	36	125
Stopped doing things due to concern about falling	47	155

Table 4. Tests based on bootstrap resampling (based on 10,000 replications)
(Null hypothesis**:** *the mean score change ≤ 0*)

	Mean Score Change from the Baseline (p-value)		
Key Variable	6 weeks	6 months	12 Months
Falls Control	0.1131 (0.0060)	0.0857 (0.0366)	0.1117 (0.0218)
Falls Efficacy	0.2221(0.0001)	0.1950 (0.0005)	0.2045 (0.0013)
Falls Management	0.3483(<0.0001)	0.2657(<0.0001)	0.3406 (<0.0001)
PACE	0.6433(<0.0001)	0.3215 (0.0201)	0.1423 (0.2318)
Social Activity	0.2589 (0.0072)	0.0791 (0.204)	0.1840 (0.0516)
Monthly Falls *	-0.0132 (0.3347)	-0.0622 (0.0010)	-0.1031(<0.0001)

**The null hypothesis is: the mean score change ≥ 0*

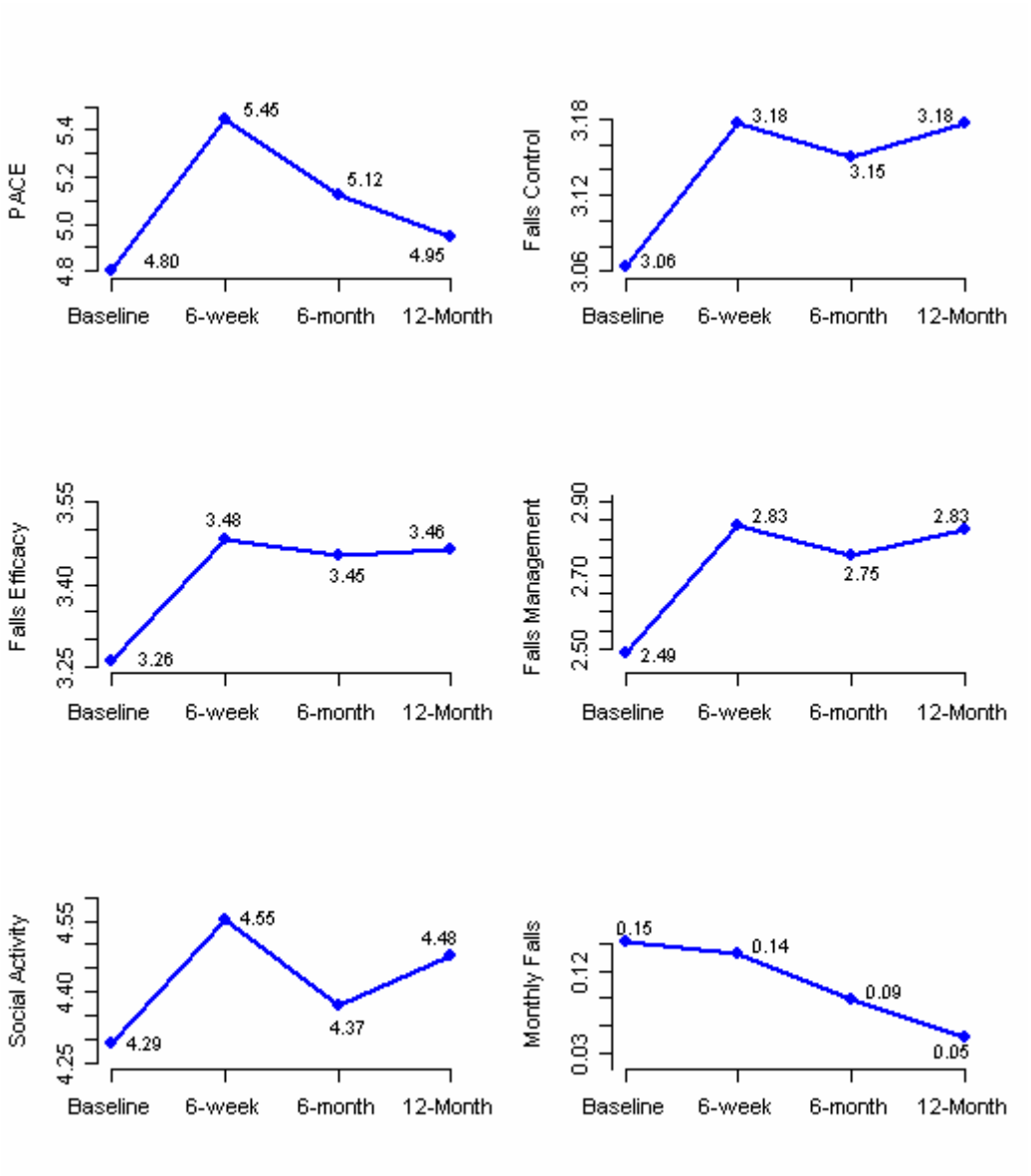

Figure 2. The time series plot of mean scores of all key variables of interest at each time point showing the overall trend of changes. The line plots of the mean score change over the times (baseline, 6 weeks, 6 months and 12 months). The numbers in the figure are the mean scores of the key variables of interest (vertical axis) observed at each time point (horizontal axis).