

QUALITATIVE RESEARCH REPORT

# Staying Steady: A community-based exercise initiative for falls prevention

Laura Hedley, MSc Physiotherapy, MCSP, Nicola Suckley, MSc Physiotherapy, MCSP, Lisa Robinson, BSc (Hons) Physiotherapy, MCSP, and Pamela Dawson, PhD, PGCED, Dip Soc Res, MCSP

*School of Health, Community and Education Studies, Coach Lane Campus, Northumbria University, Newcastle upon Tyne, United Kingdom*

## ABSTRACT

Over the past decade falls in the older population have become a priority in government policy. There is good evidence to suggest that tailored exercise effectively reduces falls; however, much of this evidence takes the form of randomized controlled trials that do not reflect the diversity of clinical practice. In response to emerging evidence, a community falls prevention program, called Staying Steady, was developed targeting older people at risk of falls. The program was evaluated using a mixed methods approach to capture both the personal experiences of the five participants, and any measurable clinical outcomes. The narrative accounts, supported by the measurable clinical outcomes, indicated that it was possible to replicate the results of large trials at a local level. The qualitative aspect of the evaluation enabled detailed consideration of other issues important to falls prevention programs. A social cognitive model was used to explain the reasons why participants either did, or did not, adhere to the program. The acceptability of the program to the participants was also explored in detail. Recommendations have been made to develop the Staying Steady program for future service users.

## INTRODUCTION

Over the past 10 years falling in the older population has become a widely accepted public health issue. In the UK, falls are the leading cause of injury-related hospitalization, accounting for 4% of all hospital admissions in people over 64 years (Lord, Sherrington, and Menz, 2001). Approximately 30% of people living in the community aged over 65 years, and 42% aged over 75 years, fall at least once per year (Masud and Morris, 2001; Stel, Smit, Pluijm, and Lips, 2004) and about half of those who fall do so repeatedly (Tinetti and Speechley, 1989). Scuffham, Chaplin, and Legood (2003) estimate the cost of fall-related injuries to the National Health Service (NHS) to be £981 million per year. In addition the total annual cost of

hip fractures to the NHS, the most common serious injury following a fall, has been calculated as £1.7 billion (Department of Health, 2001).

Many individuals lose their independence and quality of life following a fall. Injuries sustained can seriously impact on long-term mobility, with loss of confidence in everyday activities and fear of falling cited as common problems (Bruce, Devine, and Prince, 2002). Many older people who fall never regain their mobility, resulting in greater admission rates to institutional care (Donald and Bulpitt, 1999).

Fear of falling and loss of confidence is often overlooked as a problem for older people despite reported prevalence rates as high as 55% in community-dwelling older adults (Lach, 2005). Fear of falling results in self-imposed activity restrictions that not only accelerate physical decline, but contribute to social isolation, loneliness, and loss of independence (Vellas et al, 1997). Falling and fear of falling have a significant impact on quality of life (Salkeld et al, 2000).

The UK government has made falls prevention a priority in its policies. Standard 6 of the National

Accepted for publication 16 December 2009.

Address correspondence to Dr Pamela Dawson, Associate Dean of Learning and Teaching, School of Health, Community and Education Studies, Coach Lane Campus, Northumbria University, Newcastle upon Tyne, United Kingdom, NE7 7XA.  
E-mail: pam.dawson@northumbria.ac.uk

Service Framework for Older People (Department of Health, 2001) and Programme 4 of the New Ambition for Old Age (Department of Health, 2006a) deal specifically with the issue of falls in the older population. The primary objectives set out by these publications are to reduce the incidence of falls in addition to providing treatment and rehabilitation after a fall via specialist, integrated services.

Evidence suggests that falls are caused by multiple risk factors, including balance and gait abnormalities, environmental hazards, visual impairment, multiple medications, and fear of falling (American Geriatrics Society, 2001; Friedman et al, 2002). Multifactorial approaches to falls prevention have been shown to be the most effective in reducing falls rates (Gillespie et al, 2003); however, more recent evidence suggests that tailored exercise, as a single intervention, is effective in reducing falls (Campbell and Robertson, 2007; Sherrington et al, 2008).

In 2004, the National Institute for Clinical Excellence (NICE) developed guidelines for the assessment and prevention of falls in older people, providing recommendations for good practice based on the best available evidence. The NICE Guidelines recognize that tailored exercise has a strong role to play in falls prevention.

### Development of the Staying Steady program

In response to the emerging evidence regarding exercise and falls prevention and the publication of the NICE Guidelines, a multiagency working party was commissioned to develop a community-based falls prevention program, called Staying Steady. The multiagency working party consisted of representatives from local health, social, leisure, voluntary, and academic sectors.

Partnership working between agencies is of key importance in delivering preventative services that meet the needs and priorities of older people living in the community (Department of Health, 2006b). An international, population-based, Cochrane review by McClure et al (2005) recommends a whole-community approach to falls prevention, promoting partnership between existing services to achieve a shared vision. It was hoped that by promoting partnership between community services, a more sustainable model of falls prevention would ensue.

The Staying Steady program was based on a previously successful randomized controlled trial led by Skelton, Dinan, Campbell, and Rutherford (2005). Participants of the FaME (Falls Management Exercise) trial took part in 36 weeks of tailored group exercise comprising of balance, strength, endurance, flexibility, and gait training, in addition to a home exercise

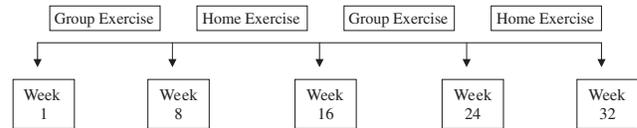


FIGURE 1 Schemata of the Staying Steady program.

program. The FaME intervention group demonstrated a 31% reduction in number of falls during the 3-year trial period compared with the control group. Additionally, significantly fewer of the intervention group had died, moved into residential care, or were in hospital on completion of the study.

The Staying Steady program hoped to establish a continuum of exercise provision to bridge the gap between the clinical falls rehabilitation programs already available within secondary care and the generic exercise classes provided by local leisure services. Funding was obtained via a partnership between the Primary Care Trust and a local charitable organization as part of a joint strategy to improve preventative community services. The program was run over 32 weeks. Participants attended four 8-week blocks, alternating once-weekly tailored group exercise and education sessions with an individualized home-based exercise program (Figure 1). It was envisaged that this model would allow two groups to take part in the program simultaneously, with Group 2 beginning the group-based component as Group 1 entered the home-based phase. It was considered that this model would prove more sustainable in the long term.

Adherence is vital to the success of any exercise program (Bassett, 2003); it is also the most commonly reported obstacle to successful interventions in falls prevention (Fortinsky et al, 2004). There is no evidence to suggest that the beneficial effect of exercise continues beyond the period of exercising (Campbell et al, 1999), consequently not only is adherence important during the Staying Steady program, but also it is vital that the participants continue to exercise after the completion of the intervention. The Staying Steady program hopes to support the individuals taking part to make the necessary changes to maintain exercise behavior long term.

### Service aims

To establish a sustainable preventative exercise program targeting older people at risk of falls that will:

- Integrate evidence-based guidelines into routine clinical practice and replicate the results of the randomized controlled trials.
- Provide an acceptable falls prevention intervention for the individuals who are taking part.

- Promote adherence to exercise.
- Provide the participants with the necessary support and skills to maintain exercise behavior long term.
- Promote partnership working between local health, social, leisure, and voluntary sectors to develop a more sustainable model of falls prevention.

The purpose of this evaluation was to describe how an evidence-based intervention, targeting older people at risk of falls, could be implemented in clinical practice. Specific aims of the evaluation were to determine whether the results of the randomized controlled trials could be replicated at a local level, to explore the reasons why the participants either did or did not adhere to the intervention, and to assess the acceptability and the organization of the intervention. This information would allow the program organizers to make modifications to improve the Staying Steady program for future service users. This evaluation may also inform other clinicians attempting to initiate a similar intervention in their own clinical setting.

## METHODS

The evaluation of the Staying Steady program was designed to be both summative and formative. The purpose of the summative evaluation was not to contribute to the growing literature ascertaining best practice for falls prevention, but to assess the effectiveness of implementing this evidence at a local level. It is recognized that the tightly controlled environments required for a randomized controlled trial do not represent the diversity of typical community settings (Robitaille et al, 2005). For example, although several randomized controlled trials have demonstrated that multiple-risk-factor reduction can substantially reduce fall rates in nursing homes, implementation of these strategies into nursing homes has not yielded the expected decline in fall rates (Colón-Emeric et al, 2006). Abundant evidence exists to promote exercise as a successful falls prevention strategy; however, there are few published examples of how this evidence has been translated into clinical practice.

The formative evaluation hoped to provide insight into the day-to-day running of the Staying Steady program, specifically investigating participant adherence to exercise and the acceptability of the intervention.

Evaluation methodology is indistinguishable from other research in terms of design, data collection and analysis, and benefits from a principled, systematic approach (Robson, 2002). This evaluation took a mixed methodological approach, utilizing both quantitative and qualitative data collection methods. There is growing recognition that significant advances

in health care are made when both methods of enquiry are used (Johnson and Onwuegbuzie, 2004). Qualitative data provide rich and vivid descriptions of people's experiences that offer the reader a deeper understanding of complex issues embedded in real context (Mays and Pope, 2006). Quantitative data were included to ascertain whether this evidence-based falls prevention program would yield the same improvements in falls risk factors that the trials had demonstrated. The quantitative data were also used to corroborate the qualitative findings and enhance the trustworthiness of interpretation via triangulation.

## Sampling

Referrals for the Staying Steady program were accepted from local general practitioners (GPs), primary care staff, an integrated falls service, and physiotherapists working with older people at risk of falls. Six participants were recruited into the first program; however, of these six, one participant was unable to complete the program due to a family bereavement. The data presented are therefore taken from the five participants who completed the 32-week program.

Working with a small group of participants is a common feature of qualitative research where the aim is to collect detailed and insightful information rather than obtain a statistically representative sample (Bowling, 2002). Working with a small group was considered beneficial to the evaluation, as detailed data could be collected.

Participants were invited to join the group if they had a history of falls (injurious or noninjurious), felt unstable, or had a fear of falling. They were all female, living independently in the community, with ages ranging from 60 to 88 years and a mean age of 77 years. More details regarding each participant are presented in Table 1.

Participants suffered from a range of preexisting medical conditions, for example, rheumatoid arthritis, osteoarthritis, osteoporosis, stroke, joint replacements, and depression, some of which are likely to have contributed to their increased risk of falling. None of the comorbidities described by the participants were considered to be contraindications for taking part in exercise.

To maintain confidentiality and anonymity, it was necessary to conceal the identity of the participants taking part in the evaluation. However, rather than allocating each participant with an arbitrary number, their names have been changed. The individual stories of each participant are considered integral to the evaluation. Providing participants with a different name ensured confidentiality, whilst allowing the reader greater ease of following the narrative accounts.

TABLE 1 Participants demographic information

Participant	Ann	Vera	Dorothy	Margaret	Joyce
Age	79	76	88	84	60
Gender	Female	Female	Female	Female	Female
Source of referral	Physiotherapist	Physiotherapist	GP	Physiotherapist	GP
Medical history	<ul style="list-style-type: none"> <li>• Rheumatoid arthritis</li> <li>• Knee replacement 1992: right</li> <li>• Angina</li> <li>• Dizzy spells</li> <li>• Wears glasses</li> </ul>	<ul style="list-style-type: none"> <li>• Osteoarthritis</li> <li>• Back problems</li> <li>• Depression</li> <li>• Ex-smoker, wheezy chest</li> <li>• Right arm and shoulder pain.</li> </ul>	<ul style="list-style-type: none"> <li>• Osteoporosis</li> <li>• 4 collapsed vertebrae</li> <li>• Stroke 2002</li> <li>• Ex-smoker</li> <li>• Hearing problems</li> <li>• Wears glasses</li> </ul>	<ul style="list-style-type: none"> <li>• Osteoarthritis</li> <li>• Osteoporosis</li> <li>• Bilateral knee replacements</li> <li>• Hip replacement</li> <li>• Angina</li> <li>• Cataracts</li> <li>• Asthma</li> <li>• Dizzy spells</li> </ul>	<ul style="list-style-type: none"> <li>• Depression</li> <li>• Concentration problems</li> <li>• Glasses for reading only</li> </ul>
Number of falls in the last year	One, managed to get up with difficulty.	One, managed to get up with difficulty.	None	None	One, admitted to hospital for 5 days
Walking aides	Furniture walking indoors, stick, delta frame.	None. Stair lift.	Uses 2 banisters on stairs, stick for outdoor use.	Furniture walking indoors, stick, delta frame. Stair lift.	None
Living situation	House with husband and daughter	Upper flat with husband who has health problems	Upper flat, alone	House, alone	Upper flat, alone

Ethical permission was obtained from the University School Ethics Sub-committee and the Trust Research and Development Department. In accordance with the Data Protection Act, all personal information was anonymized and destroyed at the end of the evaluation. All data were stored on a secure computer and password protected.

## Intervention

The Staying Steady program was based at a community leisure center. An exercise instructor, after completing the Later Life Training (Postural Stability Instructor) Course offered by Skelton and Dinan, was responsible for developing and conducting the group and home elements of the exercise intervention.

The Staying Steady program was adapted from the original FaME program described by Skelton and Dinan (1999), and closely followed the Later Life Training material. Exercises were, however, tailored to suit each individual's needs and abilities.

The group program included:

- Warm Up—15 to 20 minutes. Taking into account the British Association of Cardiac Rehabilitation Guidelines.
- Cardiovascular Exercises, including marching, side point, step touch—10 to 20 minutes. Progressing by increasing duration, increasing use of upper limbs,

increasing complexity (e.g., double side step). Using a modified Borg Scale (0–10) and working at a rate of perceived exertion of 3–4.

- Resistance Training—10 minutes. Using progressive resistance bands, working towards 6 repetitions, holding at a peak strain count of 3.
- Dynamic Balance Training—10 to 15 minutes. Closed chain exercises on progressively unstable surfaces with progressively less support.
- Cool Down—10 minutes. Including stretching of key muscles and adapted tai chi. Taking into account the British Association of Cardiac Rehabilitation Guidelines.

The group exercise sessions lasted between 60 and 70 minutes. They were followed by an education session and a 20-minute coffee break to allow the participants to socialize. Transport was provided to and from the group sessions.

The home exercise programs were prescribed by the exercise instructor and adapted to individual needs. Each program included a cardiovascular element (i.e., walking outside for the participants who felt confident to do so and marching and step ups for those who did not), resistance exercises, stretching, and balance work. Participants were advised to do their cardiovascular exercises daily, and the other exercises three times per week. It was estimated that the home exercise program would take the participants 30 to 40 minutes, but be broken up through the day. The

participants were given advice about how to fit the exercises into their daily routines.

At the end of the intervention, participants were supported to move onto other appropriate community-based activities. Physical activity coordinators were invited to attend an education session to talk about the local, low-cost activities available, such as swimming, yoga, and dancing.

## Data collection methods

### Qualitative data

The majority of the qualitative data were collected via one-to-one semistructured interviews with each participant and with the exercise instructor. The interviews took place at Week 8 and Week 16 of the intervention. They were conducted in a conversational manner covering a set of predetermined topics. Open-ended questions were used to encourage discussion and allow exploration of topics in detail. Examples of these questions can be found in Appendix 1. Each interview lasted 30 to 40 minutes and was audiotaped and transcribed to ensure accuracy of data collection.

A focus group was undertaken at Week 32 to generate additional data. It also provided an opportunity for early interpretative findings to be fed back to the participants and verified.

The interviews and focus group were conducted by two of the authors. The authors were familiar to the participants through the evaluation process, but were not linked directly to the Staying Steady program. It was hoped that participants would be able to be open and honest about the intervention.

### Quantitative data

Three standardized, validated outcome measures were used to record the clinical outcomes of the program; participants were assessed at baseline and at the end of the 32-week program. Gait and balance were assessed using the Performance Orientated Assessment of Mobility (POAM) (Tinetti, 1986), a reliable and valid measure for older people at risk of falling (Chui, Au-Yeung, and Lo, 2002; Lin et al, 2004; Perell, Nelson, Goldman, and Luther, 2001). The Timed Sit-To-Stand was used as a functional measure of lower limb strength (Bohannon, 1998; Whitney et al, 2005). Participants were timed performing five repeated chair stands. Grip Strength was also recorded, as it is considered to be representative of overall muscle strength in older people (Bohannon, 2002) and is associated with recurrent falls in older people (Pluijm et al, 2006). The quantitative clinical outcome measures were recorded in an assessment undertaken by an

experienced clinician, specializing in falls, who was independent to the evaluation.

Adherence data were collected by recording attendance rates to the group sessions and by asking the participants during interview how often they had completed their home exercise program.

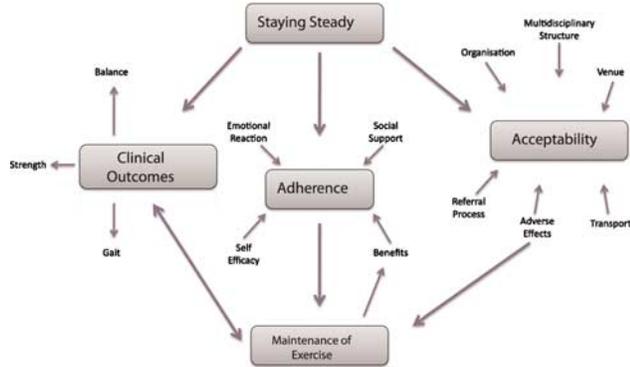
## Data analysis

The qualitative data were analyzed thematically using a model described by Miles and Huberman (1994). This model includes data reduction, data display, and conclusion drawing. Data reduction refers to the process of focusing, simplifying, and transforming the data into thematically coded concepts. Codes were developed to assign meaning to the descriptive data. Following the reduction process, data were organized into a systematic and accessible conceptual framework. Conclusions emerged through the consideration of themes, patterns, and interactions extracted from the conceptual framework. The quantitative data are presented using simple descriptive statistics and each case was considered separately. The data from both qualitative and quantitative sources were triangulated to investigate corroborating trends and enhance interpretability.

Although the researcher unavoidably shapes the interpretation of data, steps were taken to enhance the reliability and validity of the qualitative data analysis. The researchers applied the principle of 'trustworthiness' to the process, taking into account the concepts of credibility, transferability, dependability, and confirmability (Lincoln and Guba, 1985). The researchers reflected upon their interpretation of the data throughout, and were honest in presenting their findings. Peer debriefing and member checking were utilized to enhance the trustworthiness of the data interpretation (Robson, 2002). Two researchers coded the transcripts independently and then shared their analyses, discussing and confirming their conclusions. Interpretation of the data was discussed and confirmed with those from whom the data were collected on two separate occasions during the evaluation. Firstly, during the interviews the researcher continually confirmed interpretation of the responses with the participants. Secondly, the focus group was used to feedback the interpretation of the interview data for verification. Finally, the process of triangulation improves the accuracy, validity, and relevance of the interpretation of data (Golafshani, 2003). The principles of triangulation were applied not only to the different qualitative data sets but also between the quantitative and qualitative data sets.

## FINDINGS

Following data analysis, a conceptual framework, presented below, was created to illustrate the themes and their interactions. The findings are discussed in more detail using the themes as organizational markers.



The primary themes emerging from the evaluation were the clinical outcomes, adherence to exercise, and the acceptability of the program to the participants, all of which are key elements contributing to a sustainable intervention. Each of these themes played a role in ensuring the participants continued to exercise after the completion of the intervention thus retaining the benefits gained.

### Clinical outcomes of the program

The participants noticed improvements in their strength, gait, and balance as a result of participating in the Staying Steady program.

*“My right leg always gave way—but now, it’s not as steady as the left, but it’s almost as good” (Vera)*  
*“She [granddaughter] says ‘Nana, you’re walking much better ... we don’t have to walk behind you on the stairs’” (Joyce)*

The improvements in gait, balance, and strength enhanced the participants’ ability to perform activities of daily living (ADLs) that they had previously struggled to complete.

*I was having to pull myself up each step one at a time but now I can ... Without having to do that.” (Vera)*  
*“When she first came in always hooked onto someone’s arm ... after about five weeks she says ‘oh no, I don’t need that now’.” (Exercise Instructor)*

The quantitative data corroborated the narrative accounts. Over the 32-week period, participants improved in all measurable clinical outcomes. These results are displayed graphically in Figure 2.

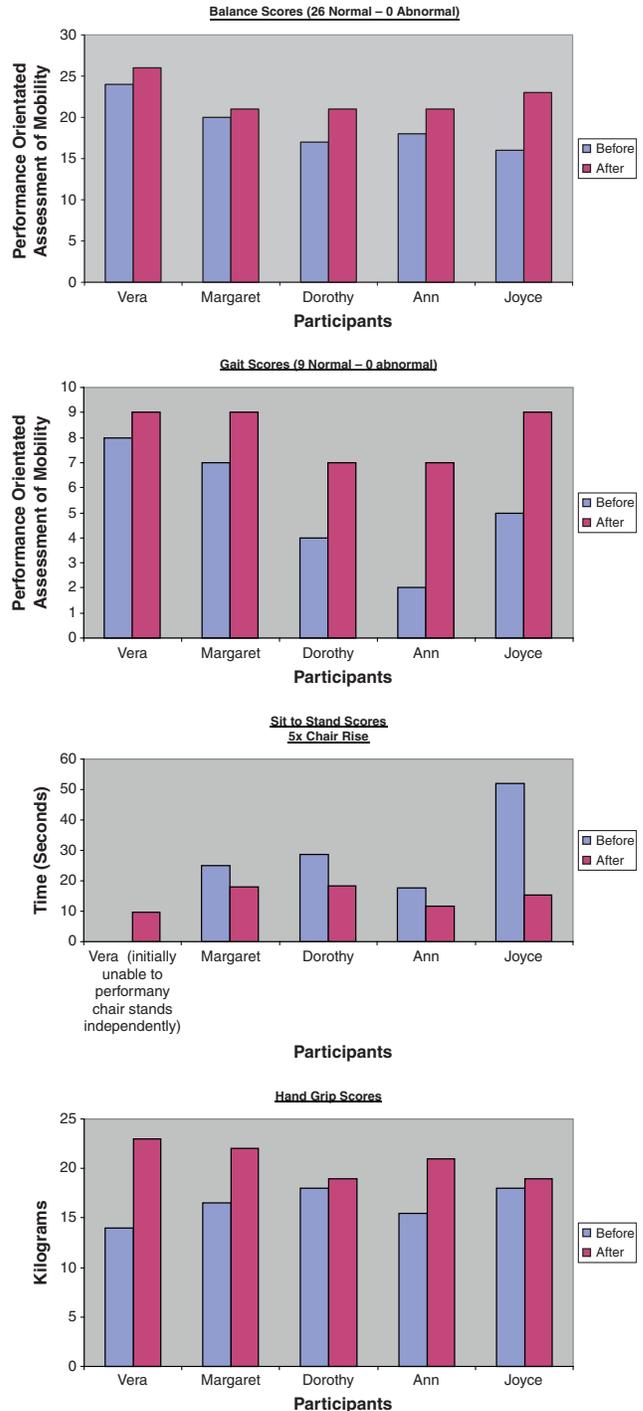


FIGURE 2 Clinical outcome measures (pre and post 32-week programme).

### Adherence to the Staying Steady program

Records showed an 80% attendance rate for the group exercise sessions. Data collected during the interviews indicated that the participants completed their home exercises, on average, four times per week. Participants

stated that they had found the home exercises more difficult to adhere to than the group sessions.

Social cognitive factors are considered to be the most important determinants in the uptake and maintenance of health behaviors (Bandura, 1977; Rosenstock, 1974). There are numerous social cognitive models attempting to explain and predict health behavior; however, given the considerable overlap between models, an integrated model has been identified (Connor and Norman, 2005). According to this integrated model, exercise is more likely to occur if:

- (1) The benefits of performing exercise outweigh the costs to the individual.
- (2) The individual has high self-efficacy (i.e., confidence in their ability to successfully participate in exercise).
- (3) The social support perceived to exercise is considered to be greater than not to exercise.
- (4) The individual anticipates the emotional reaction to exercising to be more positive than negative.

This integrated model of health behavior has been used to explain and predict the decisions made by the Staying Steady participants.

### Benefits of the Staying Steady program

In addition to the improvements in balance, gait, and strength, the participants felt that there had been other important benefits to exercising regularly. They noticed both physical and psychological benefits.

Participants stated that they had experienced relief from aches and pains, decreasing stiffness, increased circulation, and a general feeling of physical maintenance.

*“The exercises have helped that [neck pain], the more you do, the better it gets”* (Ann)

*“They’re helping to manipulate and keep it [spine] from seizing”* (Margaret)

The psychological benefits gained appeared to be of particular importance to the participants, they discussed improvements in mood, increased alertness, and better memory.

*“Before this I was on tablets for deep depression. I joined a health club and came here and I can cope much better now, I’m back up high”* (Vera)

*“My daughter thinks they [the exercises] are doing me good, mentally as well because I had a stroke a few years ago and that makes me a bit forgetful, but I think that has improved.”* (Dorothy)

Fear of relapse and loss of these benefits was one of the primary factors promoting continued adherence to the Staying Steady program.

*“I’m worried in case I lapse ... I’m going to try really hard to do it”* (Ann)

*“It’s keeping it level, if I didn’t probably do that, I would drift back ... It would have gone back to stiffness”* (Margaret)

### Self-efficacy

Over the course of the Staying Steady program, self-efficacy increased as the participants gained confidence in their ability to exercise successfully.

*“I put on a swimsuit at 75 and went to the baths, hung onto the edge and did my exercises. I went with other people who could swim and now I’ve signed up for swimming lessons”* (Vera)

As self-efficacy grew, the participants paid less attention to the costs of exercise and focused more upon the benefits they were gaining. This in turn encouraged continued adherence to exercise. When asked what sorts of things had kept them exercising, one participant responded:

*“Confidence, making us do things that I couldn’t do before”* (Joyce)

Powell and Myers (1995) consider self-efficacy to be intrinsically related to fear of falling, and define falls self-efficacy as the “personal belief in one’s ability to engage in certain activities of daily living without falling or losing balance.” During the interviews, the participants expressed a reduction in fear of falling as a result of their involvement in the Staying Steady program.

*“I’m not as frightened anymore ... I think I have a clearer outlook on it”* (Vera)

*“I had a fear of the bath but I can get out now”* (Ann)

Increased self-efficacy and reduced fear of falling allowed the participants to lift some of their self-imposed activity restrictions and participate in additional recreational activities.

*“You know the open top bus? Well, at one time I wouldn’t have gone on there, but we’re on every week now. I take my granddaughter and her friends—and there’s only me!”* (Joyce)

### Social support

Peer support during the Staying Steady program promoted adherence both during the group sessions

and when exercising at home. Participants enjoyed the relaxed, social environment at the leisure center. They were able to share their experiences and concerns, and found meeting people in a similar situation to themselves reassuring.

*“Getting among people who are in the same situation as yourself helps you a lot because you can talk about it” (Ann)*

Making new friends was considered to be a significant benefit of the program.

*“The company is excellent ... the first morning I only knew one person, the others were complete strangers and now we’re friends” (Vera)*

Feelings of social responsibility towards each other, and to the exercise instructor, motivated the participants to exercise at home. They did not want to “let the team down.” They also planned to keep in touch during the home phase to motivate each other, highlighting the development of a strong group identity.

*“It would be nice to keep in touch, just to chat on the phone” (Dorothy)*

The participants valued the support provided by the professionals involved with the program.

*“She [exercise instructor] gives me encouragement to do a bit more” (Vera)*  
*“I think that’s important, if you’ve got a good rapport with the people that help you” (Ann)*

### **Emotional reaction to exercising**

Two significant emotional responses to exercise were discussed by the participants at interview and during the focus group. These were feelings of enjoyment and feelings of personal achievement. These emotions were experienced during the group exercise sessions, but not when exercising at home. The social element of the group sessions significantly contributed to enjoyment of exercise.

*“I used to think about it on a Thursday morning. We used to have a laugh!” (Ann)*

The group exercise sessions were considered to be more physically demanding than the home exercises, resulting in a stronger sense of personal achievement. Consequently the home exercises were thought to be of less value than the group sessions.

*“I thought they [home exercises] were remarkably easy compared to the exercise group. That was hard, really hard ...” (Ann)*  
*“Coming here [group sessions] is the better part of it, oh yes definitely, you’re getting the real I am” (Margaret)*

Without these emotional responses, the participants found exercising at home more difficult. They also identified more barriers to exercising at home, such as lack of time and competing priorities.

*“There’s always somebody coming and going...my daughter maybe comes in and I get things out and then put them away again.” (Margaret)*  
*“I just couldn’t find the time to do them every-day and when I remembered I did it” (Ann)*

There was, however, evidence that some of the participants had developed motivational strategies encourage them to exercise at home.

*“I leave a dining chair in the living room so that I can do little bits now and again” (Dorothy)*  
*“When I’m going from the cupboard to the fridge, I’m doing it with the exercises, so instead of walking straight there I’m doing the side steps” (Vera)*

### **Acceptability of the Staying Steady program**

It was important to the program organizers that the intervention met the needs and preferences of the individuals taking part. Any feedback from the participants and the exercise instructor regarding design issues would be used to modify the Staying Steady program in the future.

The community leisure center chosen as the venue for the group exercise sessions was very popular with the participants.

*“You’re comfy for a start” (Vera)*  
*“Coming in here, it was perfect really ... went at the end of the morning and had a cup of tea” (Ann)*

The exercise instructor felt that the leisure-based setting, rather than the traditional hospital setting, was instrumental in promoting independence and empowering the participants to take responsibility for their own health.

*“They’re learning that their own physical well being and health is to do with them. If they go to hospital they think things are being done to them. I think that’s where the shift has come, when they’re in the community setting they are doing it”* (Exercise Instructor)

The provision of transport to and from the group exercise sessions both facilitated attendance and acted as a motivational tool. Getting the minibus together became part of the social experience for the participants.

*“You must be up and ready, it motivates you”*  
(Vera)

There were some adverse physical effects reported during the intervention: one participant reported mild low back pain and another swollen ankles. It was not possible to state, given the population group, whether this was a direct result of the intervention; however, the multidisciplinary nature of the Staying Steady team ensured that these individuals were referred onto appropriate health professionals.

*“The good thing about being in a situation like this was I could refer her back to the physio so the issue could be dealt with”* (Exercise Instructor)

There was funding available for eight participants, but only six referrals were received. It was suggested by both the participants and the exercise instructor that referral via GPs may not be the most effective method of reaching appropriate individuals.

*“It may be that the GPs aren’t the right people, it may be the Health Visitors or other professionals in the community”* (Exercise Instructor)

The exercise instructor identified some organizational difficulties. Time had not initially been set aside for the exercise instructor to create the individualized home exercise programs, consequently these were completed in her own time. The exercise instructor also found that she was called upon to help set up or clear away the education sessions and time had not been allowed for this. Neither was there any provision to cover sickness or annual leave.

*“There’s been a lot more of that [organizational pressure] than I think we anticipated. My time is very, very tight, so it’s put quite a lot of pressure on me”* (Exercise Instructor)

## Maintenance of exercise behavior

Long-term maintenance of exercise behavior was a key aim of the program organizers, and necessary to maintain the benefits gained during the Staying Steady program. Despite the physical frailty of the participants and their preexisting medical problems, the exercise instructor felt that they had the potential to progress further with exercise. She highlighted the importance of exercise as a recreational activity to continue to promote self-efficacy.

*“They need to move on ... go into the gym and use mainstream equipment ... it would give them more confidence, they would feel like they had gone back into mainstream society”*  
(Exercise Instructor)

The participants identified two main barriers to continuing once the Staying Steady program ended. These were withdrawal of transport and withdrawal of professional support.

*“We asked a taxi driver but he couldn’t do it for under £35 and there’s only five of us”*  
(Margaret)  
*“How do you get those sort of participants to your venue without transport? They are not going to do it themselves because they are too scared”* (Exercise Instructor)  
*“We’ve gone so far and been dropped”*  
(Margaret)

Despite these barriers, all participants expressed a desire to continue with exercise, and a number of them had already considered alternative activities.

*“I went to the Community Association on my own and got a leaflet on what’s available for me to do. There’s all sorts—Tai Chi, line dancing. I can get a bus outside my front door.”* (Joyce)

The general consensus was that they would like to continue exercising together, further demonstrating that social support from peers can promote long-term adherence to exercise.

*“I would like to continue with the group”*  
(Dorothy)  
*“There’s a group who’s going to the baths ... we were wondering if we could just join them”*  
(Vera)

Since the completion of the Staying Steady program, the evaluation team have learned that two of the original

Staying Steady members continue to exercise regularly at the community leisure center.

## DISCUSSION AND RECOMMENDATIONS

The purpose of this evaluation was to describe how an evidence-based falls prevention program, targeting older people at risk of falls, could successfully be implemented in routine clinical practice. It is recognized that the results of randomized controlled trials do not always translate successfully into real-world settings (Colón-Emeric et al, 2006). The Staying Steady organizers hoped that by taking a whole-community approach, a sustainable program could be established.

The narrative accounts provided by the participants along with the corroborating quantitative data indicate that it is possible to replicate the results of large randomized controlled trials at a local level. Gait, balance, and strength all improved over the course of the intervention, which in turn enabled the participants to complete their ADLs more easily. The participants also noted other physical and psychological benefits to exercising regularly, many of which are typically reported by healthy older people participating in exercise (Biddle and Mutrie, 2000; Fox, 2000; Martin and McCann, 2005; O'Brien Cousins, 2000). Completion of ADLs and enhanced psychological health have a significant impact on quality of life for older people (Levasseur, Tribble, and Desrosiers, 2009; McFarquhar and Bowling, 2009).

Adherence is the most commonly reported obstacle to successful interventions in falls prevention (Fortinsky et al, 2004) and is also a topic about which little is written within the falls literature. In this instance, a social cognitive model was used to describe the factors affecting adherence to the intervention, it was hoped that this information could be used to promote the adherence of future service users, particularly during the home phase of the intervention.

Enhanced self-efficacy and self-confidence were considered key in promoting adherence to the Staying Steady program. Jackson, Leclerc, Erskine, and Linden (2005) found that self-efficacy was one of the strongest predictors of ongoing adherence to exercise. It is associated with firmer commitment to exercise, more effort expended to perform exercise, greater perseverance and lower likelihood of being dissuaded from exercise when costs are encountered (Bandura, 1997).

As Powell and Myers (1995) suggested, self-efficacy and fear of falling have strong links. Over the course of the program, self-efficacy increased and fear of falling decreased, a finding also identified by Li, Fisher, Harmer, and McAuley (2005). This shift enabled

participants to lift some of their self-imposed activity restrictions and participate in other recreational activities such as riding on an open top bus and going swimming. These activities have the potential to further improve quality of life by reducing social isolation and becoming involved in enjoyable and rewarding activities (Salkeld et al, 2000; Suzuki, Ohyama, Yamada, and Kanamori, 2002). Self-efficacy can promote adherence to falls prevention programs, as well as having a direct effect upon fear of falling, a recognized falls risk factor.

The social aspect of the intervention had a strong positive effect upon adherence. Setting time aside for socializing and providing a relaxed and friendly atmosphere in which to spend time encouraged the participants to develop a strong group identity. Social ties with both peers and professionals have an important motivational influence upon people to exercise (Yardley et al, 2007).

The social environment fostered during the group sessions also contributed to the participants' enjoyment of exercise. Feelings of enjoyment and of achievement were notably absent from the home exercise sessions and were recognized as the biggest differences between the group and home phases of the intervention. These emotional responses are important to encourage older people to continue to exercise (O'Brien Cousins, 2000; Resnick and Spellbring, 2000), and could explain why the home exercises were more difficult to adhere to.

The participants found the Staying Steady program an acceptable intervention. The leisure setting chosen to hold the group exercise sessions was highly praised and considered by the exercise instructor to be instrumental in promoting self-efficacy and independence. Transport to and from the venue contributed to the social experience and facilitated adherence to the group phase of the intervention. The small number of health problems arising during the intervention were dealt with smoothly and swiftly by the multidisciplinary team. Areas that will require development if the Staying Steady program is to continue are the referral process, which yielded only small numbers and the organizational oversights that put additional pressure upon the exercise instructor.

The Staying Steady organizers hoped to encourage the participants to make a long-term commitment to exercise to maintain the benefits gained during the intervention. The value of social support in promoting long-term adherence to exercise was highlighted by the participants' desire to continue to exercise as a group. The main difficulty was transport, a barrier often reported by older people wishing to exercise (Snodgras, Rivett, and Mackenzie, 2005). Despite this, all of the participants were keen to continue with

exercise once the intervention had ended. They had researched alternative local activities and two of the original members of the Staying Steady group still exercise regularly at the community leisure center.

### Recommendations for the development of the Staying Steady program

- Maintain a whole-community approach to falls prevention to ensure sustainability.
  - Continue to develop the links between local health, social, leisure, and voluntary services.
- Understand the value of additional physical and psychological benefits of exercise and their impact on quality of life.
  - Consider using an outcome measure that reflects these additional benefits to support funding applications.
- Implement strategies to enhance adherence to exercise, particularly during the home exercise phase.
  - Promote self-efficacy at an early stage in the intervention by encouraging participation in other enjoyable, recreational activities.
  - Set aside time for the participants to get to know each other and encourage a social atmosphere.
  - Utilize these social ties during the home exercise phase and encourage the participants to motivate each other.
  - Reconsider the home exercise program, exercises should be both enjoyable and challenging to encourage adherence.
- Continue to develop the Staying Steady program.
  - Maintain the leisure-based setting to empower the participants to take responsibility for their own health as well as providing a pleasant atmosphere in which to socialize.
  - Maintain the multidisciplinary nature of the Staying Steady organizers to enable smooth referral between health professionals if issues arise.
  - Further investigate the referral process.
  - Provide training for more than one exercise instructor and identify a suitable central coordinator to alleviate the organizational demands placed upon individual instructors.
- Ensure the participants understand the importance of continuing to exercise once the intervention ends.
  - Support and encourage social relationships during the intervention to promote long-term adherence to exercise.
  - Utilize the education sessions to develop practical problem solving skills to help the participants overcome barriers such as transport.
  - Support participants to continue with their home exercise program long term.

### CONCLUSION

It is possible to successfully integrate evidence-based falls prevention guidelines into routine clinical practice to replicate the results of large trials. Not only did the Staying Steady program have a positive effect upon falls risk factors, but also qualitative investigation indicated that this falls prevention program improved the quality of life of the individuals taking part. The narrative accounts demonstrate that participants adhered to the program to maintain the physical and psychological benefits gained through regular exercise. Self-efficacy made an important contribution to adherence to the intervention, as did social support and emotions such as enjoyment and feelings of achievement. The intervention met the needs and preferences of the individuals, and recommendations have been made to enhance the sustainability of the intervention. At the end of the program, all participants expressed a desire to continue to exercise. They had investigated alternative activities and were keen to continue to exercise regularly as a group.

### ACKNOWLEDGMENTS

We would like to thank the study participants for sharing their insights and experiences with us. We would also like to thank the members of the steering group for their dedication and commitment in developing the Staying Steady program. In particular Sarah Hulse, the Falls Prevention Co-ordinator who initiated the Staying Steady program, and Linsley Charlton, the Fitness Development Officer, for her continued hard work.

**Declaration of Interest:** The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

### REFERENCES

- American Geriatrics Society 2001 Guideline for the prevention of falls in older persons. *Journal of the American Geriatrics Society* 49: 664–672
- Bandura A 1977 Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review* 84: 191–215
- Bandura A 1997 Self-efficacy: The exercise of control. San Francisco, W.H. Freeman and Company
- Bassett SF 2003 The assessment of patient adherence to physiotherapy rehabilitation. *New Zealand Journal of Physiotherapy* 31: 60–66
- Biddle S, Mutrie N 2000 *Psychology of physical activity: Determinants, well-being and interventions*. London, Routledge, Taylor and Francis Group
- Bohannon R 1998 Alternatives for measuring knee extension strength of the elderly at home. *Clinical Rehabilitation* 12: 434–440
- Bohannon R 2002 Quantitative testing of muscle strength: Issues and practical options for the geriatric population. *Topics in Geriatric Rehabilitation* 18: 1–17

- Bowling A 2002 *Research methods in health: Investigating health and health services*. London, Open University Press
- Bruce D, Devine A, Prince R 2002 Recreational physical activity levels in healthy older women: The importance of fear of falling. *Journal of the American Geriatric Society* 50: 84–89
- Campbell J, Robertson C 2007 Rethinking individual and community fall prevention strategies: A meta-regression comparing single and multifactorial interventions. *Age and Ageing* 36: 656–662
- Campbell J, Robertson C, Gardner M, Norton R, Buchner D 1999 Falls prevention over 2 years: A randomized controlled trial in women 80 years and older. *Age and Ageing* 28: 513–518
- Chui A, Au-Yeung S, Lo S 2002 A comparison of four functional tests in discriminating fallers from non-fallers in older people. *Disability and Rehabilitation* 25: 45–50
- Colón-Emeric C, Schenck A, Gorospe J, McArdle J, Dobson L, DePorter C, McConnell E 2006 Translating evidence-based falls prevention into clinical practice in nursing facilities: Results and lessons from a quality improvement collaborative. *Journal of the American Geriatrics Society* 54: 1414–1418
- Connor M, Norman P 2005 *Predicting health behaviour*, 2nd edn. London, Open University Press
- Department of Health 2001 *National Service Framework for Older People*. London, Department of Health
- Department of Health 2006a *A new ambition for old age: Next steps in implementing the National Service Framework for Older People*. London, Department of Health
- Department of Health 2006b *Our health, our care, our say: A new direction for community services*. London, Department of Health
- Donald IP, Bulpitt CJ 1999 The prognosis of falls in elderly people living at home. *Age and Ageing* 28: 121–125
- Fortinsky R, Iannuzzi-Sucich M, Baker D, Gottschalk M, King M, Brown C, Tinetti M 2004 Fall-risk assessment and management in clinical practice: Views from healthcare providers. *Journal of the American Geriatrics Society* 52: 1522–1526
- Fox K 2000 The effects of exercise on self-perceptions and self-esteem. In: Biddle S, Fox K, Boutcher S (eds). *Physical activity and psychological well-being*. Chap 5, pp 88–117. London, Routledge
- Friedman S, Munoz B, West S, Rubin G, Fried L 2002 Falls and fear of falling: Which comes first? A longitudinal prediction model suggests strategies for primary and secondary prevention. *Journal of the American Geriatrics Society* 50: 1329–1335
- Gillespie L, Gillespie W, Robertson M, Lamb S, Cumming R, Rowe B 2003 Interventions for preventing falls in elderly people. *The Cochrane Database of Systematic Reviews* (4): CD000340
- Golafshani N 2003 Understanding reliability and validity in qualitative research. *The Qualitative Report* 8: 597–607
- Jackson L, Leclerc J, Erskine Y, Linden W 2005 Getting the most out of cardiac rehabilitation: A review of referral and adherence predictors. *Heart* 91: 10–14
- Johnson R, Onwuegbuzie A 2004 Mixed methods research: A research paradigm whose time has come. *Educational Researcher* 33: 14–26
- Lach H 2005 Incidence and risk factors for developing fear of falling in older adults. *Public Health Nursing* 22: 45–52
- Levasseur M, Tribble D, Desrosiers J 2009 Meaning of quality of life for older adults: Importance of human functioning components. *Archives of Gerontology and Geriatrics* 49: e91–e100
- Li F, Fisher J, Harmer P, McAuley E 2005 Falls self-efficacy as a mediator of fear of falling in an exercise intervention for older adults. *The Journals of Gerontology* 60B: 34–40
- Lin M, Hwang H, Hu M, Wu H, Wang Y, Huang F 2004 Psychometric comparisons of the timed up and go, one-leg stand, functional reach and Tinetti balance measures in community-dwelling older people. *American Geriatrics Society* 52: 1343–1348
- Lincoln Y, Guba E 1985 *Naturalistic inquiry*. Newbury Park, California, Sage Publications
- Lord SR, Sherrington C, Menz H 2001 *Falls in older people. Risk factors and strategies for prevention*. Cambridge, Cambridge University Press
- Martin P, McCann TV 2005 Exercise and older women's wellbeing. *Contemporary Nurse* 20: 169–179
- Masud T, Morris R 2001 Epidemiology of falls. *Age and Ageing* 30: 3–7
- Mays N, Pope C 2006 *Qualitative research in health care*, 3rd edn. Oxford, UK, Blackwell Publishing
- McClure R, Turner C, Peel N, Spinks A, Eakin E, Hughes K 2005 Population based interventions for the prevention of fall-related injuries in older people. *Cochrane Database of Systematic Reviews* (1): CD004441.
- McFarquhar T, Bowling A 2009 Psychological well-being and active ageing: Maintaining quality of life in older age. *European Psychiatry* 24: S1102
- Miles M, Huberman A 1994 *Qualitative data analysis: An expanded sourcebook of new methods*, 2nd edn. Newbury Park, California, Sage Publications
- National Institute for Clinical Excellence (NICE) 2004 *The assessment and prevention of falls in older people*. London.
- O'Brien Cousins S 2000 My heart couldn't take it: Older women's beliefs about exercise benefits and risks. *British Journal of Gerontology of Psychology Science and Social Science* 55: 283–294
- Perell K, Nelson A, Goldman R, Luther S 2001 Falls risk assessment measures: An analytic review. *Journal of Gerontology: Medical Sciences* 56A: M761–M766
- Pluijm S, Smit J, Tromp E, Stel V, Deeg D, Bouter L, Lips P 2006 A risk profile for identifying community-dwelling elderly with a high risk of recurrent falling: Results of a 3-year prospective study. *Osteoporosis International* 17: 417–425
- Powell L, Myers A 1995 The activities-specific balance confidence (ABC) scale. *Journal of Gerontology: Medical Sciences* 50A: M28–M34
- Resnick B, Spellbring A 2000 Understanding what motivates older adults to exercise. *Journal of Gerontological Nursing* 26: 34–42
- Robitaille Y, Laforest S, Fournier M, Gauvin L, Parisien M, Corriveau H, Trickey F, Damestoy N 2005 Moving forward in fall prevention: An intervention to improve balance among older adults in real-world settings. *American Journal of Public Health* 11: 2049–2058
- Robson C 2002 *Real world research*, 2nd edn. Oxford, UK, Blackwell Publishing
- Rosenstock IM 1974 Historical origins of the health belief model. *Health Education Monographs* 2: 1–8
- Salkeld G, Cameron ID, Cumming RG, Easter S, Seymour J, Kurl SE 2000 Quality of life related to fear of falling and hip fractures in older women: A time trade off study. *British Medical Journal* 320: 341–346
- Scaffham P, Chaplin S, Legood R 2003 Incidence and costs of unintentional falls in older people in the United Kingdom. *Journal of Epidemiology and Community Health* 57: 740–744
- Sherrington C, Whitney J, Lord S, Herbert R, Cumming R, Close J 2008 Effective exercise for the prevention of falls: A systematic review and meta-analysis. *Journal of the American Geriatrics Society* 38: A128–A137
- Skelton D, Dinan S 1999 Exercise for falls management: Rationale for an exercise programme aimed at reducing postural instability. *Physiotherapy Theory and Practice* 15: 105–120
- Skelton D, Dinan S, Campbell M, Rutherford O 2005 Tailored group exercise (Falls Management Exercise—FaME) reduces falls in community-dwelling older frequent fallers (an RCT). *Age and Ageing* 34: 636–639
- Snodgrass SJ, Rivett DA, Mackenzie LA 2005 Perceptions of older people about falls injury prevention and physical activity. *Australasian Journal on Ageing* 24: 114–118

- Stel V, Smit J, Pluijm S, Lips P 2004 Consequences of falling in older men and women and risk factors for health service use and functional decline. *Age and Ageing* 33: 58–65
- Suzuki M, Ohyama N, Yamada K, Kanamori M 2002 The relationship between fear of falling, activities of daily living and quality of life among elderly individuals. *Nursing and Health Sciences* 4: 155–161
- Tinetti M 1986 Performance-orientated assessment of mobility problems in elderly patients. *American Geriatrics Society* 34: 119–126
- Tinetti M, Speechley M 1989 Prevention of falls among the elderly. *The New England Journal of Medicine* 320: 1055–1059
- Vellas B, Wayne S, Romero L, Baumgartner R, Garry P 1997 Fear of falling and restriction of mobility in elderly fallers. *Age and Ageing* 26: 189–193
- Whitney S, Wrisley D, Marchetti G, Gee M, Redfern M, Furman J 2005 Clinical measurement of sit-to-stand performance in people with balance disorders: Validity of data for the five-times-sit-to-stand test. *Physical Therapy* 85: 1034–1045
- Yardley L, Beyer N, Hauer K, McKee K, Ballinger C, Todd C 2007 Recommendations for promoting the engagement of older people in activities to prevent falls. *Quality and Safety in Health Care* 16: 230–234

## **APPENDIX 1: EXAMPLES OF INTERVIEW QUESTIONS**

- Since attending the exercise program how do you feel your balance and mobility have been?
- How do you feel about falling? Has that changed since participating in the program?
- For you were there any particular benefits and/or drawbacks to attending the group exercise program?
- Have there been any benefits/drawbacks to exercising at home?
- Where there any issues that affected your adherence to the exercise program?

Copyright of *Physiotherapy Theory & Practice* is the property of Taylor & Francis Ltd and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.