

## A primary care based fall prevention programme

Alison Allen and Janet M. Simpson

In response to research findings and Government initiatives, a fall prevention programme was set up in Canterbury, UK, in 1996. It is nurse led and takes place in a primary care setting targeting older people who have recently fallen. The programme consists of:

- A comprehensive assessment and medication review.
- Referral to other agencies as appropriate.
- Seated progressive resistance exercises aiming to build muscle strength in the lower limbs.
- Functionally oriented activity including getting up from the floor.
- A discussion group focusing on general health issues, emotional matters, goal setting with respect to regaining lost function and summoning help after a fall.

The effectiveness of the programme is being evaluated in a randomised controlled trial which will finish in 2 years, after the final participant, who is still in the programme, has been followed up. The purpose of this paper is to describe the organisation and content of the prevention programme, to give preliminary information about recruitment, and to examine the reasons for people refusing to participate.

### INTRODUCTION

#### Background to the programme

The importance the UK Government now attaches to preventing falls among older people is borne out by the number of relevant initiatives that it

sponsors. The Department of Health has commissioned national guidelines for the prevention of falls in older people (Feder, Cryer & Donovan, 1998) and has funded an audit of the extent to which the Guidelines for the Collaborative Rehabilitative Management of Older People who have Fallen (Simpson, Harrington, & Marsh, 1998; Simpson, Marsh, & Harrington, 1998) are being implemented. At the same time the Health Education Authority is fostering the development of fall prevention interventions with older people in the community as part of its physical activity programme.

Ahead of these developments a systematic review of fall prevention trials was published (Sowden et al., 1996). Its recommendations

**Alison Allen**, East Kent Health Promotion Service, East Kent Community NHS Trust, 43 Old Dover Road, Canterbury, Kent CT1 3HR

**Janet M. Simpson**, Department of Geriatric Medicine, St George's Hospital Medical School, London SW17 0RE

(Reprint requests to AA)

*Accepted for publication February 1999*



stimulated health promotion staff in Canterbury, UK to set up a fall prevention programme for older people in August 1996. Based on the evidence then available, the review concluded that "exercises such as balance training are effective at reducing falls in older people". It went on to recommend that access to such interventions should be offered and ways of promoting uptake investigated. Furthermore, the authors suggested that "home visits and surveillance to assess and, where appropriate, modify environmental and personal risk factors can be effective in reducing falls" and that these interventions can be carried out by "nurses, health visitors, occupational therapists, or trained volunteers". The Canterbury multifaceted programmed addresses all these issues.

The Health Education Authority has also carried out a "mapping" exercise around accident prevention activities for older people living in their own homes. It focused on community services such as general practices, social service departments, and health promotion units (Ashton, 1998) and indicated that the most common provisions for older people included home assessments, provision of safety aids such as community alarms, and general advice on keeping active. To date, however only a few schemes have been reported in this country which involve formal prevention programmes in primary care settings. Two hospital-based schemes that follow up older people who have fallen and attended accident and emergency departments (A&E) have been described and assessed for effectiveness in reducing falls. One, focusing on medical and occupational therapy assessment and referral to other agencies, was successful (Close et al., 1999), another based on nurse-led assessment and referral was less so (Lightbody, Watkins, McDonald, & Sharma, 1999). Neither scheme was in a position to recruit fallers who had *not* attended A&E. Two primary care based schemes, however, are able to do so but neither has been systematically evaluated (Barnes, Riley, Baird, & Carroll, 1998; Hagedorn, 1998). Each of these programmes offers a different intensity, duration, and mix of interventions.

In line with Sowden et al.'s (1996) recommendations that "new programmes should be part of controlled evaluations", the effectiveness of the Canterbury programme is being assessed in a

randomised controlled trial conducted in collaboration with the South East Institute of Public Health. It will finish in 2 years' time after the final participant, who is still in the programme has been followed up.

The purpose of this paper is to describe the programme and the measures taken to recruit participants and elicit their co-operation, as well as to show how this type of intervention can be incorporated into health professionals' daily practice. Also we report preliminary data about recruitment and attendance and some anecdotal evidence about the effect of the programme. We include an initial examination of the reasons given for people refusing to participate.

### Purpose of the Canterbury programme

The aims of the programme are:

- To identify the presence of any risk factors for falling in each participant (see paper by Piotrowski Brown in this issue).
- To modify or reduce these risk factors as far as possible.
- To reduce the rate of falling among participants.
- To promote good health and psychological well-being.

Moreover, although the Canterbury programme was developed before the Guidelines for the Collaborative Rehabilitative Management of Older People who have Fallen were published (Simpson, Harrington, & Marsh, 1998; Simpson, Marsh, & Harrington, 1998), it does, in fact, address all four aims of these guidelines:

1. To improve elderly people's ability to withstand threats to their balance.
2. To improve the safety of their surroundings.
3. To prevent them suffering the consequences of a long lie on the floor, e.g. pressure sores, hypothermia, bronchopneumonia.
4. To optimise their confidence and, wherever relevant, their carer's confidence, in their ability to move about as safely, and as independently as possible in order to do the things they want to do.



In order to try to achieve all these aims, local fallers are, in the first stage of the programme, invited to be assessed in their own homes including having their medications reviewed and being referred to other agencies when indicated. In the second stage they are invited to attend a group intervention programme twice a week for 6 months. These interventions consist of:

- Seated exercise emphasising progressive resistance strength training especially for the lower limbs.
- Practising functional activities including getting up from the floor.
- Group discussion addressing health and emotional needs.

## Setting

Practical reasons governed the choice of general practice from which to recruit suitable older people to participate in the programme. The first was that the local health services and social services planned to improve their leisure facilities for older people in the area the practice covered and second, a newly refurbished community centre, ideal for carrying out the programme, became available for hire nearby and could be used for future programmes if appropriate. The area covered by the practice is one of the city's poorer districts with a combination of private and local authority housing.

It is a typical city-centre practice with approximately 20% of its patients aged 65 years and over, and thereby corresponding to the proportion of older people carried by other local practices. There are seven general practitioners (GPs), one trained district nurse, four trained community nurses, three health care assistants, three practice nurses, and 24 administrative staff including receptionists.

## Referral process

Two sources of referral were identified and staff alerted to their role in the success of the project. The first source was from general practice. The co-operation of practice staff was essential for identifying older people who had fallen but who had

not attended A&E. To this end a colourful display was set up in the staff room. It remained on view for 18 months and depicted the referral process and how each member of staff could contribute. The process itself was easy; staff needed only to complete four questions: name, age, address, telephone number, and brief details of the referral fall.

Second, an arrangement was made with the Community Trust's hospital Community Liaison Team whereby copies of the list of fallers aged over 65 who attended the Kent and Canterbury Hospital Accident and Emergency Department the previous day was made available each morning to the first author (AA) who is the project instigator and manager.

This referral process meant that some people were referred from several different sources at the same time. The small increase in work involved in cross-checking was far outweighed by the increased confidence that the system was working and few possible referrals were being missed.

Following referral to the programme, all fallers received a letter inviting them to be interviewed and assessed in their own homes. A great deal of thought had been given to the content of this letter. The name of the senior GP was prominent together with that of the programme administrator (AA) who also signed the letter. It was designed to give enough information to inform readers of its purpose but not so much as to confuse them or raise anxiety. It invited them to be interviewed in their own home, clearly explaining the purpose of the interview, what would be required of them as well as its relevance to them and their recent traumatic experience of having a fall. It informed them that a named person would soon be contacting them. This person, either AA or one of the health care assistants, then either telephoned the potential recruit to arrange an appointment or, on the rare occasions that the older person did not have a telephone, wrote suggesting a date for the visit.

## Staff delivering the programme

The Canterbury fall prevention programme is not delivered by a multi-professional team, although that had been the original intention. When the programme was set up in 1996 it proved impossible to involve other agencies so the programme is



delivered by a team of health promotion staff from East Kent Health Promotion Service, and nursing staff employed by the general practice. However, experts from other professions have contributed to building the content of the programme (see acknowledgements).

Two health care assistants (HCAs), members of the practice district nursing team, undertake the initial post-fall assessments in the person's home for which they have been carefully trained. Also, these HCAs together conduct one of the two weekly exercise classes as part of their routine work. The other weekly exercise class is taken by two health promotion staff. On both occasions assistance and supervision is offered by the first author (AA). Apart from one change after the first year, the same people have continued to carry out the programme. The discussion group is facilitated by AA with help from other staff as necessary.

Three of the health promotion staff have had previous experience of delivering different types of exercise groups: gymnastics, community-based GP exercise prescription schemes, and cardiac rehabilitation. They and all other staff involved in delivering the exercise programme were trained to do so by a highly experienced clinical exercise specialist. An exercise physiologist, employed by East Kent Health Promotion Service, also attended the training sessions and now visits the group every 2 months to monitor delivery of the exercise programme and to advise on progression for individual participants.

Independent funding in connection with the evaluation study allowed a third part-time HCA to be employed to carry out all follow-up assessments.

In the early stages, the first author (AA) undertook at least one third of the assessment interviews herself and frequent meetings were held to check administration of the questionnaires and performance of the physical tests in order to ensure consistency of data collection.

## METHODS

### Participants

The criteria for inviting people to participate in the programme were:

- Reporting a fall in the last two weeks which fulfils the following definition: An event which results in a person coming to rest inadvertently on the ground or lower level and involving a change of position and lack of intention to do so (Gibson et al., 1987; O'Loughlin, Robitaille, Boivin, & Suissa, 1993). This definition excludes sustaining a violent blow, loss of consciousness, sudden onset of paralysis (e.g. stroke), or an epileptic seizure.
- Aged 65 years or over.
- Living independently in the community, i.e. not in a nursing or residential home.
- Registered with the target general practice.
- Able to communicate well enough to participate appropriately in all aspects of the programme.

People with a diagnosis of Alzheimer's disease or other forms of dementia were excluded as were people who do not speak English or who were judged unable to co-operate for other reasons at first contact. All people contacted but subsequently excluded on any grounds were offered a routine comprehensive assessment for those aged 75 or over.

### Data collection

At the first contact, respondents were assured that the information they give will be treated in the strictest confidence. During the 90 minute interview a detailed 24 page interview schedule guided the collection of data. The exact wording of each question to be posed was given as well as precise instructions for carrying out the performance tests and administering the questionnaires. For the most part responses were recorded by ticking boxes. The categories of data are listed in Box 1 and certain components of the assessment are described in more detail below. The interview could be shortened once the formal evaluation had been completed.

### Medication review

In a controlled trial, Tinetti et al. (1994) found that reducing the number of prescription



**BOX 1****Data collected during initial post-fall assessment**

*Personal details* including status of other people living in the same household, name of own GP, usual means of transport, financial situation.

*Home environment* including stairs, steps and whether the person can manage them, whether they have any concerns about electricity, gas, flooring, and security.

*Medical information* including any existing health problems, any trouble with continence, blood pressure, lying and standing and urine tests.

*Medication review:* see text for details.

*Physical health* including activity level ("Before your recent accident, how would you compare how active you were compared with other people your age?", five response choices); physical functioning before the accident; mobility before the accident; usual walking ability.

*Personal care ability* including getting on or off the toilet, use of bath or shower, cutting toenails, managing zips and buttons.

*Senses:* hearing, vision, taste.

*Alcohol* consumption and smoking habits if any.

*Social functioning* before the accident.

*Use of services* in the last 3 months.

*Perceived need for aids and equipment*, e.g. bath aids.

*Falls history* including date of last fall, number of falls in previous 12 months, details of last three falls before the referral fall, e.g. exact location and activity at the time, follow-up action taken.

*Occurrences during pre-fall phase:* untoward feelings, etc. in the 14 days before the last fall, e.g. dizziness, palpitations.

*Circumstances of last fall:* precise details including type of fall, direction of fall, perceived cause of fall.

*Summoning help after last fall:* action taken and length of time remained on floor.

*Types of injuries* if any were sustained.

*Fears of falling:* Falls Efficacy Scale (Tinetti, Richman, & Powell, 1990), see text for details.

*Postural stability testing:* Timed up and go (Podsiadlo & Richardson, 1991), functional reach (Duncan et al., 1990), one leg balance (Iverson et al., 1990), see text for details.

*Mood Assessment:* Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983), see text for details.

medicines a person was taking significantly reduced their risk of falling during a follow-up period. As part of the Canterbury intervention programme the number and type of over-the-counter and prescription medicines a participant was taking was examined in detail. As part of the intervention this information was passed to the study pharmacist for review. Then the person's GP could decide whether or not to act in accordance with any recommendations for change that had been made. Thus all people who agree to be interviewed received this intervention at least, even if they did not proceed to participate in the full programme.

## Postural stability tests

Three postural stability tests, used in a previous study (Skelton & McLaughlin, 1996), were carried out during the initial and subsequent assessments to measure responsiveness to the exercise and functional activity components of the programme.

*Timed get up and go:* Participants were asked to rise from a standard height chair (without using their arms for support) and walk 3 metres at their own comfortable pace, turn and return to the chair and sit down. Time to complete the task was recorded with a stop-watch (Podsiadlo & Richardson, 1991). A minority of participants lived in



homes where it was not possible to clear a straight 3-metre walkway. In these cases, the distance it was possible to use was recorded and subsequent testing took place over the same distance for that person. Changes in test distance were taken into account during data analysis.

*Functional reach* is the maximal distance a person can reach forward beyond arm's length while maintaining a fixed base of support (Duncan, Weiner, Chandler, & Studentski, 1990). Participants stood with their feet slightly apart and one arm held up in front at right-angles to the trunk and close to but not against a suitable surface. The person reached forward as far as possible without taking his or her heels off the floor. The distance between the finger tips of the outstretched hand at the start and finish positions was measured in centimetres (Skelton & McLaughlin, 1996). Note that in the original version described by Duncan et al. (1990) distance reached was measured from the knuckles of the clenched fist. The test was repeated three times and the furthest distance reached recorded.

*One leg balance:* Participants stood on their preferred leg as long as they could, first with their eyes open, and then with them closed. Both tasks were timed with a stop-watch from the moment one leg was lifted off the floor until balance was lost or the foot placed on the floor again (Iverson, Gossman, Shadeau, & Tucker, 1990).

## Psychological tests

Fear of falling may be assessed in a variety of ways. The authors of the Falls Efficacy Scale (FES; Tinetti, Richman, & Powell, 1990) operationalised it as "low perceived self-confidence at avoiding falls during essential, relatively non-hazardous activities". The 10-item scale assesses peoples' confidence in their ability to perform selected daily activities without falling. In the version used in Canterbury, one item has been modified from the original version and an 11th item added. Five response choices are presented rather than the original 10-point response scales. The source of these modifications is unknown.

Anxiety and depression are commonly examined in relation to fear of falling although different researchers use different instruments. When

examining these emotions in older people, it is necessary to select an instrument constructed with few, if any, items referring to physical symptoms. Such symptoms are in any case more common in old age and may not necessarily reflect emotional distress. For the Canterbury programme a self-administered questionnaire, the Hospital Anxiety and Depression Questionnaire (HAD) was chosen. It has been shown to detect and distinguish between anxiety and depression and measures the severity of emotional disorder with respect to the previous few days. The 14 items have been selected to be relatively unaffected by physical illness and it is easy to complete, using language readily acceptable to the age group of participants in the programme (Davies, Burn, McKenzie, & Brothwell, 1993; Wattis et al., 1994; Zigmond & Snaith, 1983).

After reviewing the number and type of medicines the interviewees were taking, the potential benefits to them of joining the programme were explained and they were given written information about the venue, attendance times, and transport arrangements. In connection with the evaluation, the mechanisms of randomisation to either the intervention or control arm of the study were explained and if people agreed in principle they gave written consent to take part in the study. Later, also in connection with the evaluation, the assessments were repeated at 6, 12 and 18 months by the part-time HCA who was unaware to which group participants had been assigned. Once the evaluation is complete, the follow-up assessments will be replaced by tests of balance, mood, and falls efficacy made just before discharge from the programme.

---

## THE INTERVENTION PROGRAMME

Once people had been randomly assigned to the intervention, a letter inviting them to join the programme was sent and followed up by a telephone call to discuss the potential benefits to them of attending. Participants who could make their own way to the Centre were encouraged to do so. For those unable to do so, however, transport was provided by the volunteer services within the Community Trust.



People who agreed to participate in the substantive intervention programme attended for 6 months, two sessions per week each of 2 hours' duration, 46 sessions in all. The three key elements of the programme, exercise, functional activity, and group discussion, are described in detail. Another key element is provision of refreshments.

## Chair-based exercise

Safety is a prime consideration when organising exercise groups for older people. Research guided the choice of exercises for this component of the programme. McMurdo and Rennie (1993) ran a controlled trial of seated exercise among residents of local authority homes for older people. Over a 7 month period, 49 residents aged 64–91 years participated in either twice-weekly exercise sessions of 45 minutes each, or in the controlled condition—reminiscence sessions. One of the statistically significant changes observed among the exercise group compared to the control group was the sit-to-stand time which reflects strength and power of the extensor muscles of the legs. This study demonstrated the acceptability, effectiveness, and safety of chair-based exercises.

A further advantage of seated exercises is that anyone can join in regardless of their level of ability. It is very useful to explain this when inviting people to attend. The prospect of a seated programme seems much more acceptable, bearing in mind that most participants are over 75 years of age. The programme was developed by a clinical exercise specialist who also trained the staff leading the group.

Each 40 minute twice-weekly session of chair-based exercise included:

- General warm-up by simple rhythmic movements, some using soft balls or incorporating clapping.
- Gentle mobilising movements to increase range of movements in the joints of the leg and including trunk rotation and flexion.
- Pulse-raising activities such as brisk alternate arm and leg movements.
- Stretching exercises involving major muscle groups.

- Resisted exercises using Therabands to improve muscle strength in the knee and trunk extensors.

Anything that may reduce the likelihood of participants attending regularly was avoided. To this end no lists of exercises were distributed nor was home practice stressed, nothing in fact that could give the feeling that "homework" had to be done. It was feared that doing so could lead to some people feeling guilty if they do not "do their homework" and hence being reluctant to attend. In any case two exercise sessions per week was considered adequate. Nevertheless, those who expressed interest in home exercise were encouraged to do so as was working to achieve functional goals (see next section).

## Functional activity

Whereas the chair-based exercise programme stressed muscle strength, this component of the programme involved weight-bearing functional activity. Recruiting community-living women aged 74 years and over, Skelton and McLaughlin (1996) achieved training-associated improvements of 9–55% in quadriceps and handgrip strength, joint flexibility, balance, and selected functional abilities following an 8-week programme of moderate intensity exercise targeting these abilities. They suggested that training for strength using movements which closely mirror everyday activities may be more beneficial than training to increase the strength and power of individual muscle groups. Additional help with developing this section of the programme had been given by local physiotherapists. They also advised on management and handling when individual patients presented with specific mobility problems.

In contrast to the seated exercise programme, which was repeated at each twice weekly session, the topics covered in this part of the programme and the discussion group were spread over the 6 months of attendance, not necessarily following the same pattern each week but introduced and reintroduced as necessary. Participants practised rising from a chair, preferably without using their hands, getting down to and up from the floor following the backward chaining method (Reece &



Simpson, 1996). The latter is particularly important with people who may harbour unrealistic expectations of how they might cope after another fall (Simpson & Mandelstam, 1996). Participants also learnt how to keep their walking aids in good, safe condition.

## Group discussion

Following the exercise and functional activity sessions, participants spent another 40 minutes or so in group discussion. If the session was very well attended and especially if some members had hearing difficulties, two or three subgroups were formed each with a member of the programme staff as facilitator. The first author (AA) was the lead facilitator. The discussion content was both educational and therapeutic.

Like the functional activity part of the programme, the discussion content followed a semi-structured format. A number of issues have to be addressed over the 6 months that it lasts. At the same time new members regularly join the group so topics may be introduced as seems appropriate according to the needs of the group at the time and then gone over again as often as required. Topics which have to be covered include:

- Planning how to cope with another fall, including summoning help and preventing complications.
- Worries about falling.
- Safety in the home, garden, and outside.
- Maintaining mental and physical health, including how to deal with chronic pain, sensory impairment, sleep difficulties, stress, continence problems, anxiety, and depression.
- Expectations about growing older, and other people's behaviour—ageism.
- Additional topics include: Relationships with family friends and neighbours, health professionals, and other group members.

Throughout the sessions, group discussions focused on falling and anything that related to it: risk of falling, the consequences of falling, worry about falling, etc. Emphasis was placed upon instilling or restoring confidence through acknowledgement of fear and anxiety then considering how to tackle these concerns. Further

emphasis was placed on promoting self-esteem, self-assertiveness, and building self-confidence, especially in relation to gaining access to health and social services, local authority, and the voluntary sector.

Goal setting to reduce fear of falling and increase functional activity was therefore a key feature of the group work. Participants identified activities which they had curtailed because they were afraid of falling. Next they were encouraged to identify small steps they could take towards reinstating activity in their life, e.g. walking a little further each day until they could visit a favourite shop again.

Coping with another fall was another essential ingredient of the group sessions. Most people who fall cope by getting up again. This is not always the case in old age. Simpson and Mandelstam (1995) argued that people who cannot get up again with great ease or who are unwilling to learn how to do so must rehearse methods of summoning help. They found that only 63% of the older people interviewed in their study, either inpatients or day hospital patients, were willing to be taught. Moreover, many of those approached expressed unrealistic notions about their own ability to get up or their mechanisms for summoning help.

Group members were encouraged to think about what they could do in the event of a further fall, to think about each room in their home and to plan how to cope and how to summon help. All those who were able to do so practised getting down and up from the floor following the backward-chaining method (Reece & Simpson, 1996). Group participants being at different stages of the exercise programme was an advantage in that they could see how others, who may be more or less advanced than themselves, were working out coping strategies. They could also share feelings about their struggles.

## Discharge from the programme

Group members commonly found it very difficult to adjust as the end of their allocated period of time in the group approached. From the beginning it was made clear to them that their participation was limited, not open ended. They rarely wanted to leave and it became evident in our first



year that many were displaying signs of distress. To reduce this sadness to a minimum we ensured that leaving was discussed regularly and besides staff keeping records of attendance and progression, participants also kept their own record of attendance showing how close they were to finishing the course.

After discharge they were invited to attend a monthly reunion group. This was held in a different building from that in which the regular programme took place, also participants had to take responsibility for getting themselves there. Once there, the exercise regime was repeated, but without the Therabands, and informal group discussion encouraged.

With the success of the whole programme in view, it is anticipated that the effort of organising these reunions pays off in promoting continuing adherence to the exercise programme and to the other lessons learnt during formal attendance. This seems to be the case.

A majority of participants attend the reunions although not necessarily every month. Those who do seem to remember their exercises easily and appear to be maintaining their gains in flexibility and strength. Furthermore, many friendships have been formed within the group and members often meet independently.

---

## THE FIRST TWO YEARS

---

In this section we review the working of the programme during the period from its inception at the beginning of August 1996 until the end of September 1998.

### Recruitment

Many people who are referred can be discounted immediately because one or more team members know them to be confused, very ill, or otherwise illegible. Between 1 August 1996 and 30 September 1998, 253 fallers received an invitation to be visited at home and after passing through the stages of the recruitment process summarised in Table 1, 92 of them were invited to participate in the prevention programme (mean age 83, range

67–92). A total of 43 agreed to participate, of which 13 were men. Of these, 26 have completed the programme to date and four are still attending.

Most referrals were made by GPs and practice receptionists, in particular the receptionist who took telephone requests for home visits from patients who had experienced a fall. She was alert to any mention of a fall during all requests for visits. The possibility of being offered a home visit and assessment was not mentioned at the referral stage so the first opportunity to refuse came when the invitation to be visited at home was received and they were contacted at home by AA or a health care assistant. Three people refused to be visited during this period. They were quite adamant that they did not need any sort of help.

At the end of the visit, after people deemed eligible as potential candidates for the programme had been assessed, the programme and the study was described and the implications of randomisation explained.

At this point they were asked how they would feel about taking part. None of the 202 people who reached this stage refused outright. Several, possibly not liking to refuse to the interviewer's face, expressed only guarded interest. Some, on the other hand, were extremely keen to take part.

Nevertheless, when the 92 people randomised to participate in the programme received their formal letters of invitation, 48 (52%) refused.

All participants selected to take part were telephoned by the first author (AA). This enabled a consistency within the approach, which was especially helpful when discussing with refusers their feelings about not taking part.

Like the three who refused at the previous stage, a large proportion were active older adults enjoying a busy retirement. For the most part they could explain away their falls and blame poorly maintained pavements or other people for leaving clutter about. The other, equally large group of refusers were people who claimed not to like joining groups. One can only speculate that years of living alone, with perhaps little social contact, may contribute to this reaction. They were encouraged to come along once with no obligation to continue and they were reassured about the friendliness of the staff and other participants. People who took



**Table 1**  
**Recruitment to the Canterbury Fall Prevention Programme from 1 August 1996 to 30 September 1998**

		Number (%)
Referred because they reported a recent fall and seemed eligible, therefore invited to be visited at home		253 (100)
Accepted invitation and visited at home		244 (97)
Not visited at home	9 (3)	
Refused	3	
Too ill	1	
Died	3	
Moved out of the area	2	
Visited, completed interview, assessment, medication review, and formally agreed to take part in the study		202 (82.7)
Visited but deemed unsuitable to be assessed	42 (21)	
Too mentally confused	19 (45)	
Medical reasons for falling	5 (12)	
Terminally ill	7 (17)	
Sudden onset of paralysis	10 (24)	
Moved out of area	1 (2)	
Randomised to the control arm of the study		110 (54.5)
Randomised to the intervention arm of the study		92 (45.5)
Agreed to take part in the study, i.e. join programme		43 (46.7)
Did not agree to take part in the study	49 (53.3)	
No response to invitation to participate	1	
Refused to participate	48 (52)	
Active lifestyle already	19 (39)	
Does not like groups	19 (39)	
Too frail or ill	7 (14)	
Other	3 (8)	
Still attending the programme (at the end of September 1998)		4 (4)
Dropped out from the intervention programme	13 (30.2)	
Anxieties about health raised	2	
Inappropriate behaviour in the group	1	
Became very ill	7	
Died	2	
Unknown – only attended once	1	
Completed the intervention programme		26 (60)

up this offer usually carried on attending but one person did not.

### Referral to other agencies

After the initial assessment, most intervention referrals were made back to the Primary Health Care Team: GP, practice nurse, or district nurse. Among the first 100 participants, 132 separate signs or symptoms were noted, especially hearing, and continence problems. Also 24 referrals were made for community occupational therapy, 17 to opticians, seven to the NHS chiropody service, and five for community physiotherapy. Referrals were also made to the Benefits Agency, the police about

doorstep security, and to gas and electricity suppliers.

### Acceptability and safety of the programme

The assessments have, for the most part, proved acceptable in that participants could do them. The exceptions are the one leg balance test which turned out to be beyond the capability of many participants, and the timed up and go which, because of space limitations in about 10% of cases, had to be modified as described above. Functional Reach can pose difficulties in that a suitable surface against which to take the measurement has



to be found. These were not found to be insurmountable as long as permission was granted to move a picture or item of furniture.

The seated exercise programme was well tolerated and no accidents occurred during the exercise session or during any part of the 2-hour sessions in the course of the programme. The functional activity session comprised many weight bearing, balance-related movements, nevertheless, a programme directed at reducing postural instability, a major risk factor for falling, could include yet more balance related exercises and movements.

### Adherence to the programme

Table 1 shows that during this 2 year period 13 (30%) people dropped out of the programme. Nine people either died or became too ill to continue. Two people, already showing signs of anxiety on joining, found discussing health problems upsetting whereas a third person behaved in a rather challenging manner and tended to upset other group members. Long-term adherence to functional exercise and safe behaviour following discharge must be a goal of falls prevention programmes. Experience suggests that the reunion groups may foster this behaviour.

### Transport

Transport costs were born by the Community Trust Voluntary Services and supported by Volunteer drivers and escorts. Wherever possible, people made their own way to the venue especially in areas providing free or reduced-cost travel passes to older people. Not all people who would benefit from attending the group, however, were able to manage public transport so transport arrangements needed to be made for them. Therefore, funds need to be sought to cover these costs when a programme is being set up.

---

## DISCUSSION

---

Key features of the Canterbury programme compared to other primary care or outreach schemes are the emphasis on group work and social

interaction as well as the intensity of and length of involvement: initially a total of 92 hours attendance and then the provision for follow-up. In contrast Tinetti et al. (1994) and Campbell et al. (1997) showed that social contact is not essential to successfully preventing falls. Their community-dwelling older people, not all of whom had fallen in the previous year, practised their exercises at home on their own. Obviously not all people relish joining groups but for those who do, how important is social contact with other older people who have also experienced falling, to preventing further falls? This question may be answered when the results of the evaluation become available.

The referral methods used appear to be very successful although, at this time it cannot be known how many potential recruits may have been missed. A key element in this success has been the enthusiasm and co-operation of the practice staff and other local colleagues. No programme can be successful without such help and programme organisers have to allow time to share their ideas with and accept advice from local staff on whom they may depend.

All people who agreed to the visit and were fully assessed at least benefited from a medical review and the general practice benefited from so many comprehensive over-75 health checks being carried out and health promotion commitments fulfilled. When the evaluation study is no longer running, however, the initial interview will be shorter.

The careful wording of the initial letter inviting people to be visited at home may have gone some way to limiting the number of refusers at this stage. A similar group of healthy active senior citizens, unlikely to accept any offer of intervention, has been observed in the Worthing Study (Hagedorn, 1998). Many were unwilling to give up time to participate or indeed to consider that they need to do so. Of greater concern are the people who refuse to participate because they do not like being in groups—they may benefit from a home exercise programme.

The drop-out rate (30%) is similar to that reported in other community exercise adherence studies such as that of Williams and Lord (1995). Apart from the one person who attended only



once and the people who were not comfortable in the group it is doubtful whether this proportion could be reduced markedly. Nine out of the 13 participants who dropped out became ill, some having to be admitted to nursing homes while two others died. Unfortunately, these are inevitable occurrences when working with people in this age group.

A key aim of the whole project is to demonstrate that an intervention like the Canterbury falls prevention programme can be incorporated into health professionals' daily practice. Two years of experience have already shown that an established medical and nursing team can extend their practice to encompass accident and injury prevention with older people. As a rule health care assistants in a District Nursing Team do not carry out assessments, but with additional careful training, supervision and support, they are able to conduct general interviews and carry out exercise programmes. Fruitfully, GPs can undertake medication reviews in conjunction with a pharmacist.

## CONCLUSION

At this stage, after more than 2 years experience of running the programme, it can be said with confidence that the methods used to facilitate referral of older people who have fallen to the programme and to maintain the enthusiasm and commitment of those who participate appear to be successful. Experience indicates that many participants continue to exercise regularly at home and that the majority extend their range of functional activities. Whether this enthusiasm translates into preventing a statistically significant number of subsequent falls among the participants will become known when the outcome of the evaluation study is available in 2 years time.

## Acknowledgements

Several people advised on the design and content of the Canterbury Falls Prevention Programme. Design of the seated exercise component: Susie Dinan, Clinical Exercise Specialist, Royal Free Hospital, London and Claire Martin, Exercise Physiologist, East Kent Health Promotion Service, who adapted and monitored the exercise component of the programme; medication review: Linda Dodds, Pharmaceutical Advisor, East Kent Health Authority; choice of psycho-

logical assessments and other advice: Melanie Place, Older Adult Psychology Service, East Kent Community NHS Trust. Other people involved in delivering the programme were: Claire Buckingham, Debbie Rake, Sue Swan, Marilyn Knott, Lin Roles, Cherry Goode and staff of the Watling Street Surgery, Canterbury.

Data Collection and analysis for the programme evaluation has been funded by the South East Institute of Public Health and the East Kent Health Authority and directed by Dr Colin Cryer.

Dr Janet Simpson has not been involved in developing or delivering the programme but has prepared this paper for publication.

## References

- Ashton L 1998 Accident prevention among older people—A database on accident prevention initiatives in England. Health Education Authority, London
- Barnes M, Riley J, Baird MA, Carroll N 1998 Elderly fallers: Feasibility of assessment and intervention in primary care by a falls nurse. *Age and Ageing* 27: Abstract supplement
- Campbell AJ, Robertson C, Gardner MM, Norton N, Tilyard W, Buchner D 1997 Randomized controlled trial of a general practice programme of home based exercise to prevent falls in elderly women. *British Medical Journal* 315: 1065–1069
- Close JC, Ellis M, Hooper R, Glucksman E, Jackson S, Swift C 1999 Prevention of falls in the elderly trial (PROFET): a randomised controlled trial. *Lancet* 353: 93–97
- Davies KN, Burn WK, McKenzie FR, Brothwell JA 1993 Evaluation of the HAD as a screening instrument in geriatric medical inpatients. *International Journal of Geriatric Psychiatry* 8: 165–169
- Duncan PW, Weiner DK, Chandler J, Studenski S 1990 Functional reach: A new clinical measure of balance. *Journal of Gerontology* 45: M192–197
- Feder G, Cryer C, Donovan S 1998 Guidelines for the prevention of falls in older people. Department of General Practice and Primary Care, Queen Mary and Westfield College London and the South East Institute of Public Health
- Gibson MJ, Andres RO, Isaacs B, Radebaugh T, Worm-Peterson J 1987 The prevention of falls in later life. *Danish Medical Bulletin* 34: 1–24
- Hagedorn R 1998 The Worthing 'Focus on Falls' Project. In Ashton L. Accident prevention among older people—approaches in practice, a series of case studies, pp. 119–125. Health Education Authority, London
- Iverson BD, Gossman MR, Shadeau SA, Tucker ME 1990 Balance performance, force production and activity levels in non-institutionalised men 60–90 years of age. *Physical Therapy* 70: 348–355
- Lightbody CE, Watkins CL, McDonald D, Sharma AK 1999 Fallers attending accident and emergency: Management by a nurse-led outreach team vs. usual care. *Clinical Rehabilitation* (in press), Abstract
- McMurdo MET, Rennie L 1993 A controlled trial of exercise by residents of old peoples' homes. *Age and Ageing* 22: 11–15
- O'Loughlin JL, Robitaille Y, Boivin J-F, Suissa S 1993 Incidence of and risk factors for falls and injurious falls among the community-dwelling elderly. *American Journal of Epidemiology* 137: 342–354



- Podsiadlo D, Richardson S 1991 The timed 'up and go': A test of basic functional mobility for frail elderly persons. *Journal of the American Geriatrics Society* 39: 142-148
- Reece A, Simpson JM 1996 Teaching elderly people how to cope after a fall. *Physiotherapy* 82: 227-235
- Simpson JM, Harrington R, Marsh N 1998 Managing falls among elderly people. *Physiotherapy* 84: 173-177
- Simpson JM, Mandlestam H 1995 Elderly people at risk of falling: Do they want to be taught how to get up again? *Clinical Rehabilitation* 9: 65-69
- Simpson JM, Marsh N, Harrington R 1998 Managing falls among elderly people. *British Journal of Occupational Therapy* 61: 165-168
- Skelton DA, McLaughlin AW 1996 Training functional ability in old age. *Physiotherapy* 82: 159-167
- Sowden A, Sheldon T, Pehl I, Eastwood A, Glenny A-M, Long A 1996 Preventing falls and subsequent injury in older people. *Effective Health Care* 2(4): 1-16
- Tinetti ME 1994 Prevention of falls among elderly persons. *Journal of the American Medical Association* 269: 65-70
- Tinetti ME, Baker DI, McAvay G, Clause EB, Garrett P, Gottschalk M, Koch ML, Trainor K, Horwitz RI 1994 A multifactorial intervention to reduce the risk of falling among elderly people living in the community. *New England Journal of Medicine* 331: 821-827
- Tinetti ME, Richman D, Powell L 1990 Falls efficacy as a measure of fear of falling. *Journal of Gerontology* 45: P239-243
- Wattis JP, Davies KN, Burn WK, McKenzie FR, Brothwell JA 1994 Correlation between HAD and other measures of anxiety and depression in geriatric in-patients. *International Journal of Geriatric Psychiatry* 9: 61-63
- Williams P, Lord SR 1995 Predictors of adherence to a structured exercise program for older women. *Psychology and Ageing* 10: 617-624
- Zigmond AS, Snaith RP 1983 The Hospital Anxiety and Depression scale. *Acta Psychiatrica Scandinavica* 67: 361-370