

Falls Prevention in Practice



A literature review

Falls Prevention in Practice

A literature review

Samuel R Nyman

School of Psychology, University of Southampton,
Southampton

Claire Ballinger

Department of Allied Health Professions,
London South Bank University, London

© Help the Aged 2007

All rights reserved

Registered charity no 272786

Help the Aged

207–221 Pentonville Road

London N1 9UZ

A CIP record for this publication is available
from the British Library

Contents

Introduction

Search strategy

Findings

ProFaNE recommendation 1

General theory and evidence

Falls-related theory and evidence

ProFaNE recommendation 2

General theory and evidence

Falls-related theory and evidence

ProFaNE recommendation 3

General theory and evidence

Falls-related theory and evidence

ProFaNE recommendation 4

General theory and evidence

Falls-related theory and evidence

ProFaNE recommendation 5

General theory and evidence

Falls-related theory and evidence

ProFaNE recommendation 6

General theory and evidence

Falls-related theory and evidence

Implications

Suggestions for further research

References

Appendix

Introduction

This report presents the findings of a literature review that explores how the recent recommendations made by the Prevention of Falls Network Europe (ProFaNE) may be implemented in everyday practice by those working with older people.¹ This review is the first stage in translating evidence into practice.²

This review is timely as recent studies in the UK and the USA suggest that older people do not receive as much health education and prevention advice as younger generations.³ Healthcare staff may deal with falls and mobility problems in older people 34 per cent of the time,⁴ and adhere to evidence-based falls prevention practice 42 per cent of the time after an education intervention.⁵ Equally, evidence acquired by academics is not necessarily easily implemented in practice.⁶ For example, several barriers prevent general practitioners from using falls risk assessments with older patients.⁷ Thus, further work is required to bridge the gap between academic recommendations and everyday practice.⁸

The aim of this literature review is to facilitate those working with older people to use the ProFaNE recommendations in practice and to stimulate further ideas for implementation.

Search strategy

The six recommendations made by ProFaNE were used to direct the literature review. The evidence in the review was based on evidence previously accumulated and a search on the ProFaNE website resources. Searches were also conducted on social science and allied health profession electronic citation indexes for general falls prevention literature, published since the submission of the ProFaNE recommendations. Specific literature searches for each recommendation were carried out too (see Appendix for search histories). Further sources were obtained from the reference lists of papers. The six research areas that directed the literature review are detailed at the start of each section.

Findings

In line with the ProFaNE recommendations, the findings have been subdivided into subsections of general theory and evidence, and falls-related theory and evidence.

ProFaNE recommendation 1

Raise awareness in the general population that undertaking specific physical activities has the potential to improve balance and prevent falls.

This section considers which formats and strategies to use, and how to use them, when communicating to older people that specific physical activities can improve their balance and prevent falls.

General theory and evidence

Philip Ley showed how patient adherence can be increased by improving doctor-patient communication and by increasing patient satisfaction, understanding and recall of advice. He advised making the most important statement first (primacy effect); using simple language, repetition and specific rather than general statements; and stressing the importance of what is said; and for written materials, making them readable and attractive.⁹

Written materials can be effective in increasing healthy behaviours,¹⁰ and are likely to obtain better adherence rates if kept short.¹¹ A physical activity directory can advertise local facilities. However, this may not appeal to men and may only inspire 15 per cent of older people to use them.¹²

American studies have shown that warning labels found on prescriptions can be too difficult to read for many older people,¹³ and that a font size of 7+ should be used.¹⁴ A recent review also indicated that pictures can aid people's attention, recall, and adherence of written or spoken health education, especially those with low literacy skills. The reviewers recommended using pictures to support key points, to keep these pictures and their captions simple and closely linked, to include those from the intended audience in the design of pictures, to have health professionals and not artists plan the pictures, and to evaluate their effects by comparing materials with and without the pictures.¹⁵

Falls-related theory and evidence

Older people can interpret the term 'falls' in different ways and be confused by the term 'falls prevention'.¹⁶ In addition, whereas health professionals can be concerned with the older person's medical and rehabilitation needs, and

in reducing the risk of further falls, older people may be more concerned with the impact of a fall on their social image and social relationships.¹⁷

For recruitment strategies into falls prevention programmes, it has been suggested in recent studies that mailings and media advertisements generate the most interest, although more older people participate if they are invited by a friend or relative.¹⁸ In addition, those recruited from general practitioner surgeries are likely to be in poorer health than those recruited from friends and family.¹⁹

Nurses who recruited older women, who had sustained a hip fracture, into an intervention study believed that the following facilitated recruitment: using a personal approach, emphasising the benefits (of the research), eliciting support from other staff and the older person's family, being knowledgeable about the topic, using positive testimonies from other older people, seizing opportunities, and giving a professional first impression.²⁰

ProFaNE recommendation 2

When offering or publicising interventions, promote benefits which fit with a positive self-identity.

This recommendation concerns the image of ageing that an older person is implicitly asked to accept when offered falls prevention advice.

General theory and evidence

Poor self-rated health is the primary marker of a high risk of mortality and may be culture specific.²¹ For example, African-Americans have been found to evaluate their health in terms of both health status and rationale (to compare with others or cope with adverse events).²² Health services that acknowledge different cultural values – for example, that communicate to users in their first language which may not be English, appreciate the role of the family in care giving, and recognise other needs such as diet and food preparation – may generate greater uptake.²³

Gender may also play a role in how identities of older people are expressed, in relation to both the older person and the interviewer/assessor. For example, older women may talk less about previous occupations when interviewed by younger women, and older men may talk more about previous occupations and less about their current family network when interviewed by

younger men.²⁴

Advertisements that portray older people in an undesirable manner – for example, as objects of ridicule, out of touch, frail, etc. – are offensive to older people.²⁵ Older people appear to experience ageing in terms of life events rather than the passing of years.²⁶ A focus-group study with older people revealed that four interrelated factors were important to healthy ageing: a positive attitude, support systems, good health, and engagement in stimulating and meaningful activities.²⁷ In addition, the benefits of physical activity relating to self-image, self-esteem, and social networking appear important for older people, and the social aspect of classes can be more motivating for sedentary and/or frail older people than the health benefits.²⁸

Falls-related theory and evidence

Kingston has suggested that theories of 'status passage' and 'preferred identities' can help to make sense of a fall from the perspective of an older person, and help challenge the prevailing medical view of old age as decremental.²⁹

Suffering a fall may threaten masculine identity and motivate men to prevent further falls,³⁰ whereas those that believe falls are caused by an unpreventable decline in functioning are less likely to recover from a fall or believe that avoiding similar falls is worthwhile.³¹

Psychosocial factors, such as using proactive coping strategies and engaging in social activities in older age, can have significant independent protective effect on the risk of hip fracture in older age.³² It has been shown that older people value opportunities for social and recreational activity in relation to group exercise. One successful falls prevention programme directly engaged older people through the use of adult learning principles, problem-solving techniques and coping strategies.³³

ProFaNE recommendation 3

Utilise a variety of forms of social encouragement to engage older people in interventions.

This recommendation concerns how other people can encourage older people to engage in falls prevention activities, with the focus on facilitating adherence to group-based activities.

General theory and evidence

Issues previously experienced when running focus groups with older people include low attendance, difficulty in answering questions because of sensory or memory impairments, and difficulty in remaining focused because of waning energy and attention.³⁴

For physical activity adherence, group cohesion may be important (how well the group bonds together). Enhancing group cohesion with a class of older people significantly increased their attendance at weekly sessions.³⁵ Group cohesion was enhanced by increasing the distinctiveness of the group, clarifying roles within the group, creating group goals, and encouraging group interaction and socialising before and after sessions. Another study concerning t'ai chi classes found older people's attendance may have been facilitated by additional factors including small group size and the instructor being an older adult.³⁶

Falls-related theory and evidence

Recent studies have shown that group-based strength and balance training can reduce falls in older people living in the community who are at risk of falls.³⁷ Courses are available for those wishing to be trained to run strength and balance training sessions for older people. (See www.laterlifetraining.co.uk for details.)

An intervention to make older people's homes safer was not successfully delivered in a class or a home visit,³⁸ whereas an intervention to increase strength and balance training in a nursing home was successful in both a class and at home.³⁹ Although those in the class walked more and improved more in strength and sense of spatial orientation, the authors recommended home-based activities for their convenience and lower cost.

ProFaNE recommendation 4

Ensure the intervention is designed to meet the needs, preferences and capabilities of the individual.

This recommendation concerns how to tailor falls prevention interventions so that they are personally relevant to the individual.⁴⁰

General theory and evidence

Tailoring has been used across a variety of health behaviours to enhance the communication of advice. Tailoring is achieved by asking questions to generate a profile of a person, and then matching pre-planned advice to that profile.⁴¹ Reviews across health behaviours have found tailoring to be more effective in communicating advice, but found mixed results for the impact of the advice on influencing people to change their behaviour.⁴²

To elicit public preferences for healthcare, a number of methods are available. Those recommended include rating and choice-based questionnaires, interviews and focus groups.⁴³

Falls-related theory and evidence

Tailoring falls prevention advice has only recently begun to be used, notably through websites developed in the Netherlands⁴⁴ and the UK.⁴⁵ The UK website www.balancetraining.org.uk was designed to encourage older people to undertake strength and balance training. The website tailors advice based on the older person's self-rated balance (to determine how strenuous the activities should be), health problems known to be associated with falls risk (eg, osteoporosis) and their preference for physical activities (eg, walking).

To tailor falls prevention activities to older people, the physiological profile assessment (PPA) was developed by researchers in Australia.⁴⁶ It tests older people's falls risk, based on assessments of their vision, vestibular function, peripheral sensation, muscle force, reaction time, and balance. A 45-minute clinical test version has been developed, along with a shorter 10–15 minute community version. The short version could be used to measure current balance or progress in balance from measuring the older person's overall falls risk score. The longer version can be used to identify particular risk factors that could be addressed to improve the older person's balance. (See www.powmri.unsw.edu.au/FBRG/calculator.htm for more details.)

ProFaNE recommendation 5

Encourage self-management rather than dependence on professionals by giving older people an active role.

This recommendation concerns how to encourage older people to take responsibility for their health and be proactive in preventing falls.

General theory and evidence

The term 'compliance' can have negative connotations, suggesting the imposition of rules, with non-adherence deemed as irrational behaviour that defies the health professional's logic.⁴⁷ 'Adherence', rather, is the formation of a therapeutic alliance, an equally powered partnership, where the patient is active and independent in reaching this shared goal.⁴⁸

One technique of the adherence approach in advising people on health behaviours is motivational interviewing.⁴⁹ This uses counselling, allowing the individual to explore what their desires are, whether they want to change any behaviours to meet these desires and, if so, which behaviours they are prepared to change. Sessions can be as brief as 15 minutes and meta-analyses have found it to be effective with alcohol, drugs, diet, and physical activity.⁵⁰ The element of choice is important as older people often engage in physical activity to have fun and to socialise.⁵¹

Face-to-face and video interventions have been successful in increasing patient participation during consultations (question-asking, raising concerns, and requesting clarification or checking understanding), which can increase patient attendance, adherence, and disease control, with no extra time added to the consultation.⁵²

Lastly, action plans can help people act upon their intentions to change behaviour. Action plans (or 'behavioural contracts', or 'implementation intentions') entail the person specifying when, where, and how they will do the activity that will help them to achieve their goal.⁵³ Action plans help to recall the behaviour by making it part of their usual routine, and increases confidence by helping to provide structure, anticipate problems, and foster the potential for clear evaluation and feedback.⁵⁴

Falls-related theory and evidence

An action plan was used in the website www.balancetraining.org.uk which was found to increase older people's confidence to undertake strength and balance training.⁵⁵

In considering environmental modifications and adaptations, evidence is emerging that interventions are more successful when older people are actively involved in the assessment process rather than as passive recipients (as often

the case, for example, when checklists of hazards are used).⁵⁶

ProFaNE recommendation 6

Draw on validated methods for promoting and assessing the processes that maintain adherence, especially in the longer term.

This recommendation concerns the application of health promotion theory in the design and evaluation of interventions.

General theory and evidence

A number of theories have been developed in health psychology to help explain and predict health behaviour.⁵⁷ Frameworks and guidelines have also been developed to facilitate the use of theory when designing, planning, and evaluating interventions.⁵⁸

When monitoring adherence to physical-activity interventions, health professionals should not just measure the frequency of sessions, as this alone will not indicate whether the older person has participated for the duration and intensity required to improve their balance.⁵⁹ Rather, monitoring or more detailed assessments could more fully measure adherence.

Falls-related theory and evidence

The precaution adoption process model⁶⁰ was used in developing the Dutch website 'SeniorGezond' (www.seniorgezond.nl). The theory asserts that people progress through a series of stages before they intend on changing their behaviour.⁶¹ This theory was used to categorise people to try to provide them with falls prevention advice that is commensurate with their level of intention to change behaviour. Similarly, this theory has been used in an intervention with menopausal women on osteoporosis prevention.⁶²

Social cognitive theory⁶³ was used in the design of websites providing information on hip fractures prevention. Two central features to the theory are that people will change their behaviour when they believe the change will bring positive outcomes (outcome expectancy) and when they have the confidence to bring about such outcomes (self-efficacy). The researchers centred the information on the positive outcomes of changing behaviour and used different means of providing encouragement to instil confidence.⁶⁴

Theories are also used to determine which attitudes and beliefs are salient in behaviour change. For example, protection motivation theory⁶⁵ and the theory of planned behaviour⁶⁶ were used to determine what factors are associated with older people's intention to undertake strength and balance training.⁶⁷ Theories are also used in the evaluation of interventions, to assess whether the attitudes and beliefs believed to be pertinent to behaviour change are influenced by the intervention. Questionnaires are typically administered to quantitatively compare different trial conditions. For example, the theory of planned behaviour was used to develop the Attitudes to Falls-Related Interventions Scale⁶⁸ (AFRIS). This scale was then used to evaluate the effectiveness of tailored advice compared to non-tailored advice in motivating older people to undertake strength and balance training.

Implications

1. Raise awareness in the general population that undertaking specific physical activities has the potential to improve balance and prevent falls.

A range of strategies appear effective in communicating with older people, including face-to-face contact by people known to the older person, mailings and media campaigns. When communicating in person, taking a positive, personal, and professional approach may facilitate adherence. When developing written materials, it may be useful to use concise text, large font, and pictures. Of note is the range of interpretations by older people of the meaning of a 'fall', suggesting that this is useful to clarify before starting the programme.

2. When offering or publicising interventions, promote benefits which fit with a positive self-identity.

Older people may respond better to advertisements related to life events, such as retirement and being a grandparent rather than for 'seniors' or 'older adults'. In addition, it may be helpful to use favourable images and to emphasise the social benefits of interventions. Communicating in a way that is sensitive to cultural and gender norms may also facilitate adherence.

3. Use a variety of forms of social encouragement to engage older people in interventions.

Group-based strength and balance training may be of particular help in improving older people's balance because they can be encouraged by, and learn from, the instructor and others in the group. However, some people are likely to prefer home-based interventions because of their convenience and low cost. Of note, group-based discussions can be demanding for older people because of difficulties with hearing, sight, and/or short-term memory. It is recommended to use short and simple questions, to keep discussion times short, to introduce each topic, and to be aware of literacy levels when using written materials.⁷⁰ Attendance at group-based strength and balance training may be facilitated by enhanced group cohesion.

4. Ensure the intervention is designed to meet the needs, preferences and capabilities of the individual.

Tailoring is a strategy that can be used in a variety of ways to enhance communication in different contexts. Tailoring can be carried out according to a range of factors⁷¹: sociodemographic (gender, age, education), psychological (confidence, attitude), clinical (feedback on health status), ethnicity, language, and cultural values and beliefs⁷² and be delivered in a variety of formats, including in-person, in print and online. Advice can be tailored using tools such as self-help websites, and interventions can be tailored to the falls risks of older people using standardised assessments.

5. Encourage self-management rather than dependence on professionals by giving older people an active role

Older people can be empowered to manage their health by being included in the process of formulating recommendations for change, and by using techniques such as motivational interviewing, which encourages active participation and action plans. Checklists of environmental hazards administered by health professionals appear to be less effective in preventing falls than partnerships between professionals and older people considering behaviour, routines, and environment.

6. Draw on validated methods for promoting and assessing the processes that maintain adherence, especially in the longer term.

Theories have been applied in behaviour change interventions, and guidelines and frameworks have been developed to facilitate the application of theory into practice. Theories are used to guide the design of interventions so that they target and influence the key attitudes and beliefs that predict behaviour change, in tailoring advice, and in evaluating interventions.⁷³ Despite their limitations,⁷⁴ key health psychology theories,⁷⁵ such as social cognitive theory and the theory of planned behaviour⁷⁶ are represented in the ProFaNE recommendations and are likely to be of use in everyday practice. Tools to facilitate people acting upon their intentions, such as action plans, may be used to supplement theories, including the theory of planned behaviour.⁷⁷ Although stage-based theories (eg, the transtheoretical model)⁷⁸ appear to be increasingly used, presumably because of their ease of application, these have been criticised on theoretical grounds.⁷⁹

Suggestions for further research

Little recently published information was found on how to enhance in-person communication between health professionals and patients. Further research could investigate the facilitators of face-to-face communication with older people and, in particular, on the subject of falls prevention.

There is little research which explores how older people view and respond to the challenges of healthy living and so further work could explore what older people view as a positive identity, and how this knowledge can be used to promote healthy ageing, including falls prevention advice.

Little was found on how to run discussion and intervention groups with older people, and so further research could explore the factors that facilitate effective group activities and older people's adherence to them.

Further work is still required on the effectiveness of tailoring health advice. It is suggested that the question for future research is not whether or not tailoring works, but in what circumstances it is most effective.⁸¹ Other factors could be explored when tailoring falls prevention advice, including cultural acknowledgement, health information processing style and learning style, and other settings (eg, on public transport and in supermarkets) and platforms (eg, using mobile technology).⁸²

A review found evidence to suggest that written materials designed to encourage older people to be active in their medical consultations were less effective than video and in-person interventions,⁸³ and further research could explore the reasons for this.

Both motivational interviewing and self-determination could be explored when advising older people on falls prevention. Self-determination theory uses a similar approach to motivational interviewing to address older people's needs for autonomy, competence and relatedness.⁸⁴

References

- 1 Yardley, L., Beyer, N., Hauer, K., McKee, K. J., Ballinger, C., & Todd, C. J. (2007). Recommendations for promoting the engagement of older people in activities to prevent falls. *Quality and Safety in Health Care, 16*, 230–4.
- 2 Sabir, M., Breckman, R., Meador, R., Wethington, E., Reid, M. C., & Pillemer, K. (2006). The CITRA research-practice consensus-workshop model: Exploring a new method of research translation in aging. *The Gerontologist, 46*, 833–9.
- 3 Callahan, E. J., Bertakis, K. D., Azari, R., Robbins, J. A., Helms, L. J., & Chang, D. W. (2000). The influence of patient age on primary care resident physician-patient interaction. *Journal of the American Geriatrics Society, 48*, 30–5.
- 4 Wenger, N. S., Solomon, D. H., Roth, C. P., MacLean, C. H., Saliba, D., Kamberg, C. J. et al. (2003). The quality of medical care provided to vulnerable community-dwelling older patients. *Annals of Internal Medicine, 139*, 740–7.
- 5 Colón-Emeric, C., Schenck, A., Gorospe, J., McArdle, J., Dobson, L., DePorter, C. et al. (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*, 1414–18.
- 6 Sabir op. cit.
- 7 Chou, W. C., Tinetti, M. E., King, M. B., Irwin, K., & Fortinsky, R. H. (2006). Perceptions of physicians on the barriers and facilitators to integrating falls risk evaluation and management into practice. *Journal of General Internal Medicine, 21*, 117–22.
- 8 Armstrong, R., Waters, E., Roberts, H., Oliver, S., & Popay, J. (2006). The role and theoretical evolution of knowledge translation and exchange in public health. *Journal of Public Health, 28*, 384–9.
- 9 Ley, P. (1988). *Communicating with patients: Improving communication, satisfaction and compliance*. Cheltenham, UK: Stanley Thornes.
- 10 Fox, S. A., Stein, J. A., Sockloskie, R. J., & Ory, M. G. (2001). Targeted mailed materials and the medicare beneficiary: Increasing mammogram screening among the elderly. *American Journal of Public Health, 91*, 55–61.
- 11 Gerace, T. A., George, V. A., & Arango, I. G. (1995). Response rates to six recruitment mailing formats and two messages about a nutrition program for women 50–79 years old. *Controlled Clinical Trials, 16*, 422–31.
- 12 Miller, R. & Miller, Y. D. (2003). Nifty after fifty: Evaluation of a physical activity directory for older people. *Australian and New Zealand Journal of Public Health, 27*, 524–8.
- 13 Gaynes, B. I., Kramer, J., Gorbien, M. J., & Yasutake, D. M. (2002). Prescription auxiliary label readability within the elder population. *Journal of the American Geriatrics Society, 50*, S7.
- 14 Wogalter, M. S. & Vigilante Jr, W. J. (2003). Effects of label format on knowledge acquisition and perceived readability by younger and older adults. *Ergonomics, 46*, 327–44.
- 15 Houts, P. S., Doak, C. C., Doak, L. G., & Loscalzo, M. J. (2006). The role of pictures in improving health communication: A review of research on attention, comprehension, recall, and adherence. *Patient Education & Counseling, 61*, 173–90.
- 16 Commonwealth Department of Health and Aged Care (2001). *National falls prevention for older people initiative 'step out with confidence'*. Canberra: Commonwealth of Australia.
- Zecevic, A. A., Salmoni, A. W., Speechley, M., & Vandervoort, A. A. (2006). Defining a fall and reasons for falling: guidelines into practice: A systematic review of theoretic concepts, practical experience and research evidence in the adoption of clinical practice guidelines. *Canadian Medical Association Journal, 157*, 408–16.

Comparisons among the views of seniors, health care providers, and the research literature. *The Gerontologist*, 46, 367–76.

17 Ballinger, C. & Payne, S. (2000). Falling from grace or into expert hands? Alternative accounts about falling in older people. *British Journal of Occupational Therapy*, 63, 573–9. Ballinger, C. & Payne, S. (2002). The construction of the risk of falling among and by older people. *Ageing & Society*, 22, 305–24. Yardley, L. & Smith, H. (2002). A prospective study of the relationship between feared consequences of falling and avoidance of activity in community-living older people. *The Gerontologist*, 42, 17–23.

18 Clemson, L., Taylor, K., Kendig, H., Cumming, R. G., & Swann, M. (2007). Recruiting older participants to a randomised trial of a community-based fall prevention program. *Australasian Journal on Ageing*, 26, 35–39. Mahoney, J. E., West, E., Wysocki, S., Wheeler, E., Lyons-Marx, M., Shea, T. et al. (2006). Recruiting older adults for falls prevention research. *Journal of the American Geriatrics Society*, 54, S16.

19 Clemson, L., Cumming, R. G., Kendig, H., Swann, M., Heard, R., & Taylor, K. (2004). The effectiveness of a community-based program for reducing the incidence of falls in the elderly: A randomized trial. *Journal of the American Geriatrics Society*, 52, 1487–94.

20 Resnick, B., Concha, B., Burgess, J. G., Fine, M. L., West, L., Baylor, K. et al. (2003). Recruitment of older women: Lessons learned from the Baltimore hip studies. *Nursing Research*, 52, 270–3.

21 McMullen, C. K. & Luborsky, M. R. (2006). Self-rated health appraisal as cultural and identity process: African American elders' health and evaluative rationales. *The Gerontologist*, 46, 431–8.

22 *ibid.*

23 Temple, B., Glenister, C., & Raynes, N. (2002). Prioritising home care needs: Research with older people from three ethnic minority community groups. *Health and Social Care in the Community*, 10, 179–86.

24 Stephenson, P. H., Wolfe, N. K., Coughlan, R., & Koehn, S. D. (1999). A methodological discourse on gender, independence, and frailty: Applied dimensions of identity construction in old age. *Journal of Aging Studies*, 13, 391–401.

25 Grenier, A. (2007). Constructions of frailty in the English language, care practice and the lived experience. *Ageing & Society*, 27, 425–45. Robinson, T. & Umphrey, D. (2006). First- and third-person perceptions of images of older people in advertising: An inter-generational evaluation. *International Journal of Aging and Human Development*, 62, 159–73.

26 Stead, M., Wimbush, E., Eadie, D., & Teer, P. (1997). A qualitative study of older people's perceptions of ageing and exercise: The implications for health promotion. *Health Education Journal*, 56, 3–16.

27 Reichstadt, J., Depp, C. A., Palinkas, L. A., Folsom, D. P., & Jeste, D. V. (2007). Building blocks of successful aging: A focus group study of older adults' perceived contributors to successful aging. *American Journal of Geriatric Psychiatry*, 15, 194–201.

28 Stead *op. cit.*

29 Kingston, P. (2000). Falls in later life: Status passage and preferred identities as a new orientation. *Health*, 4, 216–33.

30 Horton, K. (2006). Gender and the risk of falling: A sociological approach. *Journal of Advanced Nursing*, 57, 69–76.

31 McKee, K. J. (1998). The body drop: A framework for understanding recovery from falls in older people. *Generations Review*, 8, 11–12. McKee, K. J., Orbell, S., & Radley, K. A. (1999). Predicting perceived recovered activity in older people after a fall. *Disability and Rehabilitation*, 21, 555–62.

32 Peel, N. M., McClure, R. J., & Hendrikz, J. K. (2007). Psychosocial factors associated with fall-related hip fractures. *Age and Ageing*, 36, 145–51.

33 Clemson *op. cit.*

34 Barrett, J. & Kirk, S. (2000). Running focus groups with elderly and disabled elderly participants. *Applied Ergonomics*, 31, 621–9.

- 35 Estabrooks, P.A. & Carron, A.V. (1999). Group cohesion in older adult exercisers: Prediction and intervention effects. *Journal of Behavioral Medicine*, 22, 575–88.
- 36 Beaudreau, S.A. (2006). Qualitative variables associated with older adults' compliance in a Tai Chi group. *Clinical Gerontologist*, 30, 99–107.
- Lord, S. R., Castell, S., Corcoran, J., Dayhew, J., Matters, B., Shan, A. et al. (2003). The effect of group exercise on physical functioning and falls in frail older people living in retirement villages: A randomized, controlled trial. *Journal of the American Geriatrics Society*, 51, 1685–92.
- 37 Barnett, A., Smith, B., Lord, S. R., Williams, M., & Baumand, A. (2003). Community-based group exercise improves balance and reduces falls in at-risk older people: A randomised controlled trial. *Age and Ageing*, 32, 407–14.
- Skelton, D.A., Dinan, S. M., Campbell, M. C., & Rutherford, O. M. (2005). Tailored group exercise (falls management exercise – FaME) reduces falls in community-dwelling older frequent fallers (an RCT). *Age and Ageing*, 34, 636–9.
- 38 Abreu, N., Hutchins, J., Matson, J., Polizzi, N., & Seymour, C. J. (1998). Effect of group versus home visit safety education and prevention strategies for falling in community-dwelling elderly persons. *Home Health Care Management and Practice*, 10, 57–65.
- 39 Donat, H. & Özcan, A. (2007). Comparison of the effectiveness of two programmes on older adults at risk of falling: Unsupervised home exercise and supervised group exercise. *Clinical Rehabilitation*, 21, 273–83.
- 40 Kreuter, M.W., Strecher, V. J., & Glassman, B. (1999). One size does not fit all: The case for tailoring print materials. *Annals of Behavioral Medicine*, 21, 276–83.
- 41 Kreuter, M.W., Farrell, D., Olevitch, L., & Brennan, L. (2000). *Tailoring Health Messages: Customizing Communication with Computer Technology*. NJ: Lawrence Erlbaum Associates.
- 42 Ryan, P. & Lauver, D. R. (2002). The efficacy of tailored interventions. *Journal of Nursing Scholarship*, 34, 331–7.
- Revere, D. & Dunbar, P. J. (2001). Review of computer-generated outpatient health behavior interventions: Clinical encounters 'in absentia'. *Journal of the American Medical Informatics Association*, 8, 62–79.
- 43 Ryan, M., Scott, D.A., Reeves, C., Bate, A., van Teijlingen, E. R., Russell, E. M. et al. (2001). Eliciting public preferences for healthcare: A systematic review of techniques. *Health Technology Assessment*, 5.
- 44 Alpay, L. L., Toussaint, P. J., Ezendam, N. P. M., Rövekamp, T. A. J. M., Graafmans, W. C., & Westendorp, G. J. (2004). Easing Internet access of health information for the elderly users. *Health Informatics Journal*, 10, 185–94.
- Alpay, L., Toussaint, P., Ezendam, N., Rövekamp, T., Westendorp, R., Verhoef, J. et al. (2007). The Dutch website: 'SeniorGezond': An illustration of a road map for the informed patient. *Managed Care*, 2, 1–11.
- Ezendam, N. P. M., Alpay, L. L., Rövekamp, T. A. J. M., & Toussaint, P. J. (2005). Experimenting with case-based reasoning to present educative health information on the internet: The example of SeniorGezond. *Studies in Health Technology & Informatics*, 116, 867–72.
- 45 Nyman, S. R. & Yardley, L. (2007c). www.balancetraining.org.uk: New website for preventing falls. *Generations Review*, 17, www.britishgerontology.org/newsletter2/news_reviews3.asp
- Yardley, L. & Nyman, S. R. (2007). Internet provision of tailored advice on falls prevention activities for older people: A randomized controlled evaluation. *Health Promotion International*, 22, 122–8.
- 46 Lord, S. R., Menz, H. B., & Tiedeman, A. (2003). A physiological profile approach to falls risk assessment and prevention. *Physical Therapy*, 83, 237–52.
- 47 Donovan, J. L. & Blake, D. R. (1992). Patient non-compliance: Deviance or reasoned decision-making? *Social Science & Medicine*, 34, 507–13.
- Dracup, K.A. & Meleis, A. I. (1982). Compliance: An interactionist approach. *Nursing Research*, 31, 31–6.
- Trostle, J.A. (1988). Medical compliance as an ideology. *Social Science & Medicine*, 27, 1299–308.
- Vivian, B. G. (1996). Reconceptualising compliance in home health care. *Nursing Forum*, 31, 5–13.

- 48 Myers, L. B. & Midence, K. (1998). Concepts and issues in adherence. In L. B. Myers & K. Midence (eds.), *Adherence to treatment in medical conditions* (pp. 1–24). Amsterdam: Harwood Academic. Vivian 1996 op. cit.
- 49 Miller, W. R. & Rollnick, S. (2002). *Motivational interviewing: Preparing people for change*. (2 ed.) London: The Guilford Press.
- 50 Burke, B. L., Arkowitz, H., & Menchola, M. (2003). The efficacy of motivational interviewing: A meta-analysis of controlled clinical trials. *Journal of Consulting and Clinical Psychology*, 71, 843–61. Rubak, S., Sandbæk, A., Lauritzen, T., & Christensen, B. (2005). Motivational interviewing: A systematic review and meta-analysis. *British Journal of General Practice*, 55, 305–12.
- 51 Caserta, M. S. & Gillett, P. A. (1998). Older women's feelings about exercise and their adherence to an aerobic regimen over time. *The Gerontologist*, 38, 602–9. Massie, J. F. & Shephard, R. J. (1971). Physiological and psychological effects of training - a comparison of individual and gymnasium programs with a characterization of the exercise 'drop-out'. *Medicine and Science in Sports*, 3, 110–17. Rose, D. J. (2007). *A global report on falls prevention: The role of physical activity in the prevention of falls in older age*. Geneva: World Health Organisation. Stead op. cit. Wankel, L. M. (1993). The importance of enjoyment to adherence and psychological benefits from physical activity. *International Journal of Sport Psychology*, 24, 151–69.
- 52 Harrington, J., Noble, L. M., & Newman, S. P. (2004). Improving patients' communication with doctors: A systematic review of intervention studies. *Patient Education & Counseling*, 52, 7–16.
- 53 Gollwitzer, P. M. (1999). Implementation intentions: Strong effects of simple plans. *American Psychologist*, 54, 493–503.
- 54 Bandura, A. (1997). *Self-efficacy: the exercise of control*. NY: W.H. Freeman and Company. Gollwitzer, P. M. & Brandstätter, V. (1997). Implementation intentions and effective goal pursuit. *Journal of Personality & Social Psychology*, 73, 186–99. Janz, N. K., Becker, M. H., & Hartman, P. E. (1984). Contingency contracting to enhance patient compliance: A review. *Patient Education and Counseling*, 5, 165–78. Kanfer, F. H. & Gaelick, L. (1986). Self-management methods. In F. A. Kanfer & A. P. Goldstein (eds.), *Helping People Change: a textbook of methods* (3rd ed., pp. 283–345). Oxford: Pergamon Press. Locke, E. A. & Latham, G. P. (1990). *A theory of Goal Setting and Task Performance*. NJ: Prentice Hall.
- 55 Nyman, S. R. & Yardley, L. (2007b). *Website-based Tailored Strength and Balance Training Promotion: a randomised controlled evaluation*. Manuscript in preparation.
- 56 Todd, C. J., Ballinger, C., & Whitehead, S. (2007). *A Global Report on Falls Prevention: reviews of socio-demographic factors related to falls and environmental interventions to prevent falls amongst older people living in the community*. Geneva: World Health Organization.
- 57 Michie, S., Johnston, M., Abraham, C., Lawton, R., Parker, D., & Walker, A. (2005). Making psychological theory useful for implementing evidence based practice: a consensus approach. *Quality and Safety in Health Care*, 14, 26–33. Ogden, J. (2000). *Health psychology: a text book*. (2nd ed.) Buckingham, UK: Open University Press.
- 58 Best, A., Stokols, D., Green, L. W., Leischow, S., Holmes, B., & Buchholz, K. (2003). An integrative framework for community partnering to translate theory into effective health promotion strategy. *American Journal of Health Promotion*, 18, 168–76. Brown, S. C. & Park, D. C. (2003). Theoretical models of cognitive aging and implications for translational research in medicine. *The Gerontologist*, 43, 57–67. Chen, H.-T. (2003). Theory-driven approach for facilitation of planning health promotion or other programs. *The Canadian Journal of Program Evaluation*, 18, 91–113. Kok, G., Schaalma, H., Ruiter, R. A. C., van Empelen, P., & Brug, J. (2004). Intervention mapping: a protocol for applying health psychology theory to prevention programmes. *Journal of Health Psychology*, 9, 85–98. Michie ibid. Stokols, D. (1996). Translating social ecological theory into guidelines for community health promotion. *American Journal of Health Promotion*, 10, 282–98.
- 59 Martin, K. A. & Sinden, A. R. (2001). Who will stay and who will go? A review of older adults' adherence to randomized controlled trials of exercise. *Journal of Aging and Physical Activity*, 9, 91–114.

- 60 Weinstein, N. D. (1988). The precaution adoption process. *Health Psychology, 7*, 355–86.
- 61 Alpay (2007) op. cit.
- 62 Blalock, S. J., Devellis, B. M., Patterson, C. C., Campbell, M. K., Orenstein, D. R., & Dooley, M. A. (2002). Effects of an osteoporosis prevention program incorporating tailored educational materials. *American Journal of Health Promotion, 16*, 146–56.
- 63 Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*, 191–215. Bandura (1997) op. cit.
- 64 Nahm, E.-S., Resnick, B., & Covington, B. (2006). Development of theory-based, online health learning modules for older adults: Lessons learned. *Computers, Informatics, Nursing, 24*, 261–8.
- 65 Rogers, R. W. (1983). Cognitive and physiological processes in fear appeals and attitude change: A revised theory of protection motivation. In J. T. Cacioppo & R. E. Petty (eds.), *Social psychophysiology: a source book* (pp. 153–76). NY: Guilford Press.
- 66 Ajzen, I. (1988). *Attitudes, Personality, and Behavior*. Milton Keynes, UK: Open University Press. Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*, 179–211.
- 67 Yardley, L., Donovan-Hall, M., Francis, K., & Todd, C. J. (2007). Attitudes and beliefs that predict older people's intention to undertake strength and balance training. *Journal of Gerontology: Psychological Sciences, 62B*, 119–25.
- 68 Prevention of Falls Network Europe [ProFaNE]. (2006). *Questionnaire to assess attitudes to balance and falling-related interventions*. Retrieved July 11, 2006, from www.propane.eu.org/afriis.php?PHPSESSID=d8bd5f5d4e3bcead8f9fe12ddf17cd00.
- 69 Nyman (2007b) op. cit.
- 70 Barrett op. cit.
- 71 Rakowski, W. (1999). The potential variances of tailoring in health behavior interventions. *Annals of Behavioral Medicine, 21*, 284–9.
- 72 Kreuter, M. W., Lukwago, S. N., Bucholtz, D. C., Clark, E. M., & Sanders-Thompson, V. (2003). Achieving cultural appropriateness in health promotion programs: Targeted and tailored approaches. *Health Education & Behavior, 30*, 133–46.
- 73 Michie (2005) op. cit. Ogden (2000) op. cit.
- 74 Ogden (2000) op. cit.
- 75 Bandura (1977), (1997) op. cit.
- 76 Ajzen (1988), (1991) op. cit.
- 77 Orbell, S. & Sheeran, P. (2002). Changing health behaviours: The role of implementation. In D. Rutter & L. Quine (Eds.), *Changing health behaviour: Intervention and research with social cognition models* (pp. 123–38). Buckingham, UK: Open University Press.
- 78 Prochaska, J. O., DiClemente, C. C., & Norcross, J. C. (1992). In search of how people change – applications to addictive behaviors. *American Psychologist, 47*, 1102–14.
- 79 Bandura, A. (1998). Health promotion from the perspective of social cognitive theory. *Psychology and Health, 13*, 623–49. Michie, S. & Abraham, C. (2004). Interventions to change health behaviours: Evidence-based or evidence-inspired? *Psychology and Health, 19*, 29–49. Ogden (2000) op. cit.
- 80 Reed, J. (2007). Older people developing ways of living healthily: Research study summary. *Generations Review, 17*, www.britishgerontology.org/newsletter3/news_reviews9.asp
- 81 Nyman S. R. & Yardley, L. (2007a). Tailoring: A tool to enhance computer-based health interventions. *Health Psychology Update, 16*, 45–7.
- 82 Diefenbach, M. A., Butz, B. P., & Mohamed, N. (2007). Development of a multimedia interactive education system for prostate cancer. *The European Health Psychologist, 9*, 26–9. Kreuter (2000), (2003) op. cit. Kreuter, M. W. & Holt, C. L. (2001). How do people process health information? Applications in an age of individualized communication. *Current Directions in Psychological Science, 10*, 206–209. Miller, S. M., Fang, C. Y., Diefenbach, M. A., & Bales, C. B. (2001). Tailoring psychosocial interventions to the individual's health information-processing

style: The influence of monitoring versus blunting in cancer risk and disease. In A. Baum & B. L. Andersen (eds.), *Psychological Interventions for Cancer* (pp. 343–62). WA: American Psychological Association.

83 Harrington op. cit.

84 Dacey, M. L. & Newcomer, A. R. (2005). A client-centered counseling approach for motivating older adults toward physical activity. *Topics in Geriatric Rehabilitation, 21*, 194–205.

Appendix

General search on the falls literature to update the evidence

ISI Web of Science

Articles published in 2006–2007; and contained the following keywords: falls, prevention, and old* or eld* (eg, older or elderly) = 210 documents.

1 Search on raising awareness

a) Ley and Patient Communication

ISI Web of Science

Articles written by Ley, P, and contained the following keywords: review in the title, and communication in the title = 50 documents.

PsycINFO including PsycARTICLES 1985 – Present (15/08/2007)

Articles written by Ley, P = 6 documents.

b) Labels

ISI Web of Science

Contained the following keywords: old* or eld* in the title, and label in the title = 54 documents.

c) Readability

ISI Web of Science

Contained the following keywords: old* or eld* in the title, readability in the title = 9 documents.

2 Search on positive identity in ageing

a) Identity

ISI Web of Science

- Contained the following keywords: old* or eld* in the title, identity or age* or aging, and fall = 11 documents.
- Contained the following keywords: old* or eld* in the title, identity or age* or aging, fall, identity in the title, and image = 5 documents.
- Contained the following keywords: old* or eld* in the title, identity or age* or aging, fall, identity in the title, and health = 13 documents.
- Contained the following keywords: old* or eld* in the title, identity or age* or aging, fall, fall in the title, prevention, image = 1 document.
- Contained the following keywords: old* or eld* in the title, identity or age* or aging, fall, fall in the title, prevention,

qualitative = 1 document.

- Contained the following keywords: old* or eld* in the title, identity or age* or aging, fall, fall in the title, prevention, health = 80 documents.

b) Marketing or posters

ISI Web of Science

- Contained the following keywords: old* or eld* in the title, market or advert in the title, communication = 3 documents.
- Contained the following keywords: old* or eld* in the title, poster in the title, communication = 1 document.
- Contained the following keywords: old* or eld* in the title, poster in the title, health = 1 document.
- Contained the following keywords: old* or eld* in the title, market or advert in the title, health = 18 documents.
- Contained the following keywords: old* or eld* in the title, target in the title, communication = 6 documents.
- Contained the following keywords: old* or eld* in the title, target in the title, health = 13 documents.
- Contained the following keywords: old* or eld* in the title, market or advert in the title, appearance = 1 document.

c) Recruitment

ISI Web of Science

Contained the following keywords: old* or eld* in the title, recruit* in the title, and participa* = 61 documents.

3: Groups/class-based interventions

ISI Web of Science

- Contained the following keywords: old* or eld* in the title, fall in the title, group or class in the title = 18 documents.
- Contained the following keywords: old* or eld* in the title, group or class in the title, run or facilitate = 18 documents.

PsycINFO including PsycARTICLES 1985 – Present (15/08/2007)

- Contained the following keywords: old* or eld* in the title, group or class in the title, fall in the title = 4 documents.
- Contained the following keywords: old* or eld* in the title, group or class in the title, run or facilitate = 53 documents.

Journals@OVID

- Contained the following keywords: old* or eld* in the title, group or class in the title, fall in the title = 10 documents.
- Contained the following keywords: old* or eld* in the title, group or class in the title, run or facilitate = 83 documents.

HMIC Health Management Information Consortium (July 2007)

- Contained the following keywords: old* or eld* in the title, group or class in the title, fall in the title = 1 document.
- Contained the following keywords: old* or eld* in the title, group or class in the title, run or facilitate = 8 documents.

Ovid MEDLINE ® 1996 – August week 1 2007

- Contained the following keywords: old* or eld* in the title, group or class in the title, fall in the title = 17 documents.
- Contained the following keywords: old* or eld* in the title, group or class in the title, run or facilitate = 25 documents.

EMBASE (1996 – 2007) Week 32

- Contained the following keywords: old* or eld* in the title, group or class in the title, fall in the title = 14 documents.
- Contained the following keywords: old* or eld* in the title, group or class in the title, run or facilitate = 15 documents.

CINAHL – Cumulative Index to Nursing & Allied Health Literature 1982 to August Week 2 2007

- Contained the following keywords: old* or eld* in the title, group or class in the title, fall in the title = 23 documents.
- Contained the following keywords: old* or eld* in the title, group or class in the title, run or facilitate = 18 documents.

British Nursing Index (1994 to August 2007)

- Contained the following keywords: old* or eld* in the title, group or class in the title, fall in the title = 2 documents.
- Contained the following keywords: old* or eld* in the title, group or class in the title, run or facilitate = 1 document.

6.Theory search

PsycINFO including PsycARTICLES 1985 – Present (15/08/2007)

Contained the following keywords: apply* or translat*, theories or psychological theories, health = 14 documents.

ISI Web of Science

Contained the following keywords: apply* or translat* or theor* in the title, health = 49 documents.

POL/00 ID/7072 11/07 Registered charity no 272786

WE WILL fight to free disadvantaged older people in the UK and overseas from
POVERTY, ISOLATION and NEGLECT

Head Office, 207–221 Pentonville Road, London N1 9UZ
T 020 7278 1114 F 020 7278 1116
E info@helptheaged.org.uk www.helptheaged.org.uk

HELP THE AGED WE WILL[®]