Older people and physical activity

Background

This fact sheet is one of a series, which relate to the health of older people. It:

- demonstrates the importance of physical activity in the prevention and management of falls among older people;
- provides a quick and up to date reference guide and resource for policy makers, providers of health, caring and social services, planning and housing department of local authorities;
- will be of value to those involved in the promotion of physical activity and all those with a responsibility for the health of older people.

The fact sheets are one of many initiatives emanating from work commissioned by the Department of Health from the Health Education Authority (HEA)* which aim to increase the overall knowledge and skills of public health workers who work with or support older people.

*The Health Education Authority closed on 31 March 2000.
It was replaced by the Health Development Agency and Health Promotion England.

Introduction

An ageing population

- The UK population is gradually becoming older, with the number of children aged under 14 projected to fall by around three-quarters of a million (9%), between 1996 and 2021 and the number of people aged 65 and over projected to increase by over 2 million (30%) between 1996 and 2021.
- The number of people of pensionable age (allowing for the raising of women's retirement age to 65) will rise from almost 7.8 million in 1996 to over 10 million by 2021. Numbers are likely to peak at nearly 13 million during the 2030s.
- In 1996, 31% of the population were aged 50 and over and almost 16% were aged 65 and over. By 2026, 41% of the population will be aged 50 and over and 21% of the population will be over pensionable age.
- Numbers of older, older people (i.e. generally those that are 75 years and over) are predicted to increase by similar rates, with those aged 75 years and over set to rise to over 2 million and those over 85 years to 470,000 by 2026.[1]

(For further details relating to population trends see HEA older people Fact sheet 1 – *Older people in the population*).

Accidents and falls

- The UK population aged over 75 has almost five times the rate of accidental deaths as the total population. Those aged 75 and over have a death rate of 114 per 100,000 caused by accidents, compared with 21 per 100,000 in all age groups.[2]
- The main causes of accidental deaths for those aged 65–74 are falls, traffic-related accidents, and fires. Among those aged 75–84 years, falls are a significant cause of death and they are one of the main causes of accidental deaths among those aged 85 and over.[3]
- Forty per cent of all accidental deaths in the UK happen in the home, which is the most common accident location for older people.

(For further information on statistics relating to falls and accidents among older people see Fact sheet 2 – *Older people and accidents*).

Physical activity and the prevention of falls

The general health benefits of physical activity for older people are well established, but few studies have examined the effectiveness of exercise in the prevention of falls. A number of randomised control trials have included exercise as a stand-alone intervention in falls prevention programmes.

Physical activity as a stand-alone intervention

In 1995, the Faculty and Injuries: Cooperative Studies on Intervention Technique trials (FICSIT) demonstrated that:

- with strength, balance and endurance training, the risk of falling was reduced by 10%
- with balance training, the risk of falling was reduced by 25%
- with regular T'ai Chi, the risk of falling was reduced by 47%.[4]

Campbell *et al*. (1997) demonstrated the effectiveness of a home-based exercise programme among older women taking part in tailored progressive strength, balance and gait (walking) training exercises with a 20–30% reduction in falls compared with a control group.[5]

Physical activity as part of a combined intervention

Combined interventions, the majority of which use some form of exercise, reduce the number of falls. Postural hypotension change (dizziness on rising caused by a swift drop in blood pressure), improvements in balance, step length and transfers have all been associated with reduced risk of falling.[6]

Successful intervention programmes include medical and home safety assessment and advice, changes in prescribed drugs, environmental changes, specific, tailored exercise, training in transfer skills and gait, and referral of patients to relevant health-care professionals according to need.[7]

Physical activity and the reduction of risk factors

Research has indicated a wide range of multiple risk factors for falls.[8]

- nutritional status, lack of vitamin D and calcium deficiency
- **four or more medications**
- **use of sedatives, antidepressants**
- **low levels of physical activity (poor leg strength, poor balance, mobility and gait disorders)**
- **physical disability, lack of balance, postural hypotension**
- mental functioning including cognitive impairment and depression
- acute chronic diseases and disorders, including stroke, heart disease and **poor vision**
- environmental hazards, e.g. loose carpets, poor lighting, badly fitting shoes
- lifestyle factors such as alcohol use
- **a history of previous falls.**

Research has shown that assessing and modifying the risk factors highlighted in **bold** above, reduces falls in the region of 50-60%.[9]

Improvement in physical activity related risk factors for falls

As well as reducing the risk of falling, physical activity has been shown to modify a significant number of the risk factors associated with falling. Appreciable reduction in risk factors can be derived from a six-month programme if the exercise intervention is appropriate, specific, tailored, progressive, practised regularly and if the sessions are supported through home exercise.[10]

The following table shows the amount of time that different tailored exercise programmes need to be undertaken for there to be a significant reduction in risk factors associated with falling.

Programme focus		Expected period for significant improvement as a result of tailored exercise programme
Strength		8 weeks for significant improvement among people aged 74-92 in functional tasks if the strength training mimics these tasks [10]
Balance	*Dynamic*	8 weeks through T'ai Chi[11]
	Static	6 months through T'ai Chi or targeted exercises for people aged 74-92[10]
Power		12 weeks for people aged 75-93[12]
Endurance		26 weeks for people aged 70-79[13]
Gait		8 weeks for people aged 75-92[10]
Transfer		6 months following hip fracture among older people aged 65 and over[6]
Postural hypotension		24 weeks seated exercise class for nursing home residents mean age 84[15]
Bone loading – Femur		1 year from high intensity strength training among women aged 50-70[17]
Femur and lumbar spine		1 year from high intensity strength training among women aged 50-70[17]
Total exercise		10-36 weeks aged 65 and over;[4] 1 year aged 80 and over[5]

How active are older people ?

As Figure 1 shows, only a minority of people over 50 years of age are sufficiently active to get a health benefit.

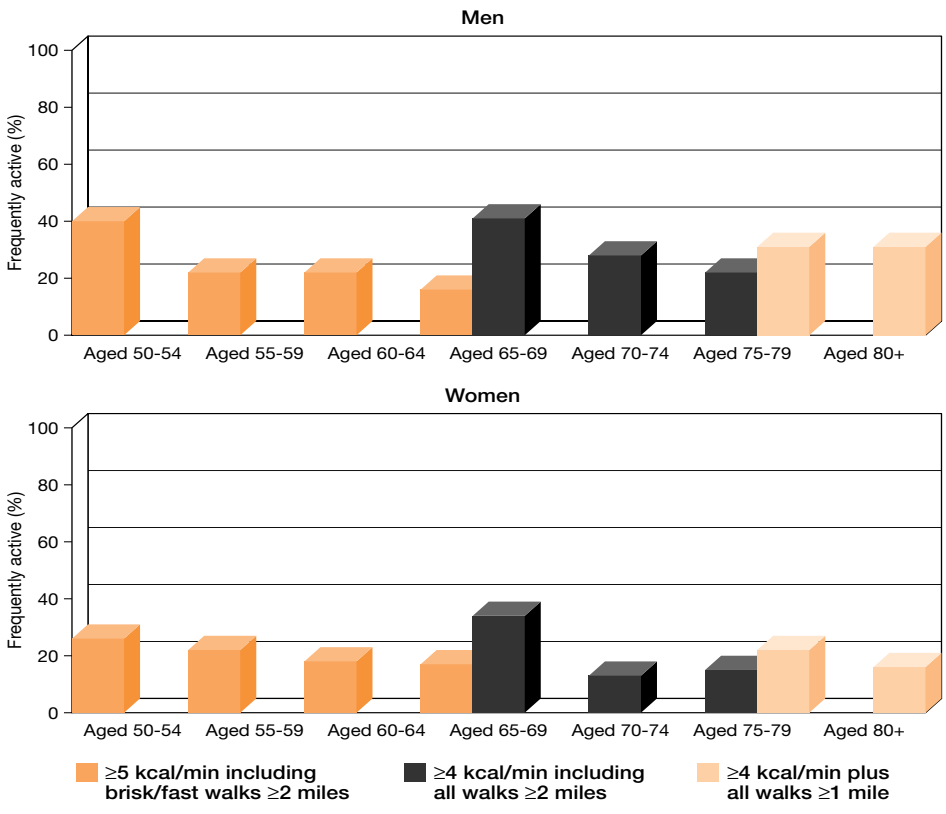

Fig. 1. Proportion of people aged 50+ participating in physical activity at least five times a week at an intensity defined as sufficient, at their age, to be likely to produce a health benefit.

Participation in physical activity among over-50s

- Only one in four men and one in six women participate in enough physical activity to benefit their health.*[18]
- Seven out of ten men (74%) and eight out of ten women (83%) do not participate in enough physical activity to benefit their health.**[18]
- Even when considering only those older people free of serious disease, at least a third of men and women are sedentary.[18]
- Physical activity declines with age. In the 45–54 age group, only 39% of men and 35% of women participate in enough physical activity to benefit their health. By the age of 74, this figure has declined to 14% for both men and women.*

Physical inactivity among over 50s

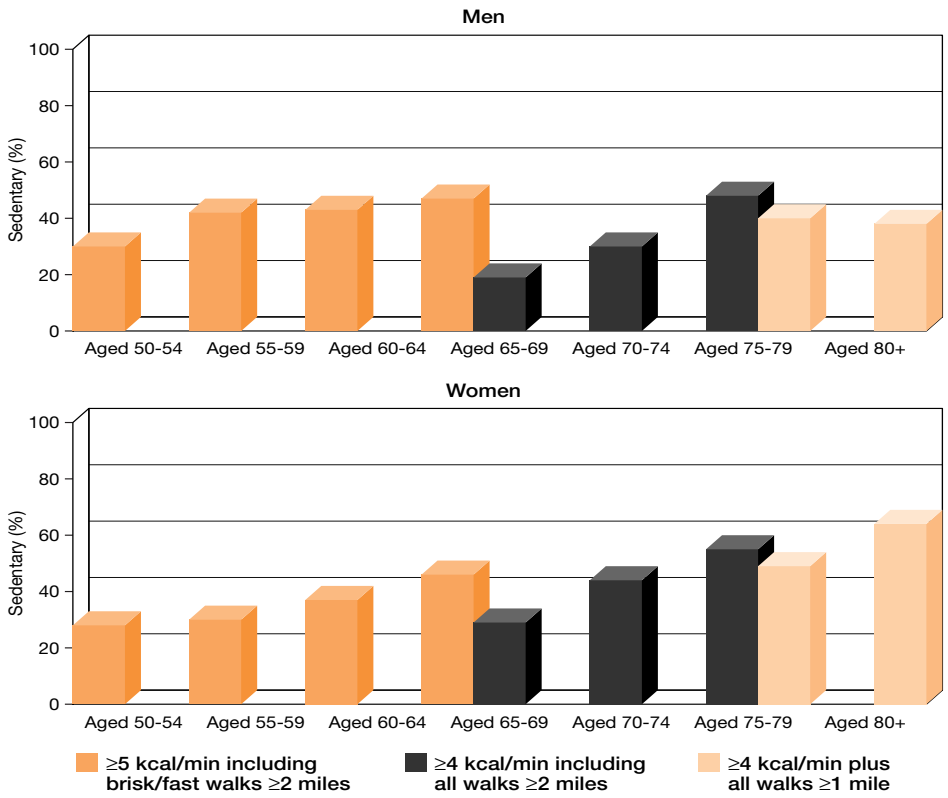

Fig. 2. Proportion of men and women aged 50+ participating in activity less than once a week at an intensity defined as sufficient, at their age, to be likely to produce a health benefit. (Described as sedentary behaviour.)

* Participation in at least 30 minutes of moderate intensity activity on at least five days of the week

** Participation in less then 30 minutes of moderate intensity activity less than once a week

† Physical activity and social activity were assessed by questionnaire. Physically activity is defined by participation in at least 30 minutes of moderate intensity activity on at least five days of the week. Sedentary is defined by participation in less than 30 minutes of moderate activity less than once a week.

- Four out of ten men (39%) and women (42%) are totally sedentary.[18]
- Sixty-five per cent of women aged over 80 are sedentary. Ill health will affect physical activity but even when considering only those who perceive their health as fair or good, greater than 30% of over-50s are sedentary.[18]
- Sixteen per cent of men and a fifth of women climb no stairs at all in a week. One-third of the over-70s climb no stairs.[18]
- Only 13% of men and 10% of women walk at least once a week at an intensity sufficient to be likely to produce a health benefit.[18]
- A quarter of men (26%) and a third of women (34%) aged over 70 are unable to walk a quarter of a mile or more on their own.[18] This figure rises to 50% of over-80s.
- Smokers (20+ a day) are more likely than non-smokers to take no regular physical activity.[18]
- Two-thirds of physically active men are socially active compared with 59% of men who are sedentary.†[18]
- Frequently active older men and women are more likely to have a positive mood than those who are sedentary, but part of this difference is associated with poor health amongst sedentary older people.[18]

Black and minority ethnic groups

The Department of Health has shown that black and minority ethnic groups suffer disproportionately higher rates of certain health conditions. Many of these conditions can be helped by participation in physical activity.[19]

- African-Caribbeans have a higher risk of stroke, hypertension and diabetes than the population nationally.[19]
- South Asians have a higher rate of death from coronary heart disease.[19]
- Among black and minority ethnic groups (notably South Asian women) the proportion of people that is sedentary is far higher than in the general population.[20]
- Half of all South Asian women aged 16 to 74 are sedentary and among African-Caribbeans aged 16-74 years, 62% of men and 75% of women do not participate in enough activity to benefit their health.[20]

Physical activity and inequalities

- After taking account of health and age, social class has little effect on levels of physical activity. However, a lack of material resources is strongly associated with sedentary behaviour.[21]
- The most deprived older people are twice as likely to have a sedentary lifestyle compared with the most advantaged.[21]

How fit are older people?

Functional capacity declines with age (strength, endurance capacity, bone density and flexibility are 'lost' at about 10% a decade, muscle power is lost even faster at around 30% a decade).[10] This loss of physical function is exponential and will eventually cross a threshold level beyond which a person cannot maintain an independent life. For some older people, rising from a chair is difficult and getting up off the floor impossible.

One major impact of reduced functional capacity is the inability to prevent a trip from becoming a fall. One-third of over-65s and a half of over-85s fall each year. Approximately half of all fallers who fracture their hips are never functional walkers again and one in five will die within six months.[23] The loss of confidence and increase in fear that occurs in many fallers leads to a further reduction in activity (so as not to fall again) and this leads to a further decline in functional capacity.

- Twenty per cent of women and 14% of men aged over 50 do not have the flexibility to wash their hair comfortably.[18]
- Twenty-five per cent of women and 7% of men aged 70-74 do not have sufficient strength in their legs to get out of a chair without using their arms.[18]
- One in fourteen men (7%) and a quarter of women (28%) aged over 50 do not have the strength and power in their leg muscles to be able to climb the stairs easily. Nearly half of women (47%) aged 70-74 have insufficient muscle strength and power for ease of stair use.[18] (See Figure 4.)
- Nearly one in ten men (9%) and over a third of women (38%) aged 50-74 do not have the physical ability to walk at a 20 minute-a-mile pace. Age-effects are pronounced with a third of men (35%) and four out of five women (80%) aged 70-74 are unable to keep to this slow pace of walking.[18]
- Men are typically 20-30% stronger than women of the same age. This may explain the increased disability amongst women at advanced ages, when many will be close to, or will have crossed, an important threshold level of physical function.[18]

Reversibility of functional decline

Older people are just as likely to change their behaviour as young people and it is possible to reverse age-and activity-related decline relatively quickly. For example, among people over 75 years, 15 years' rejuvenation of muscle strength (27%) can be regained in three months through strength training with one supervised class a week and some home exercises.[10]

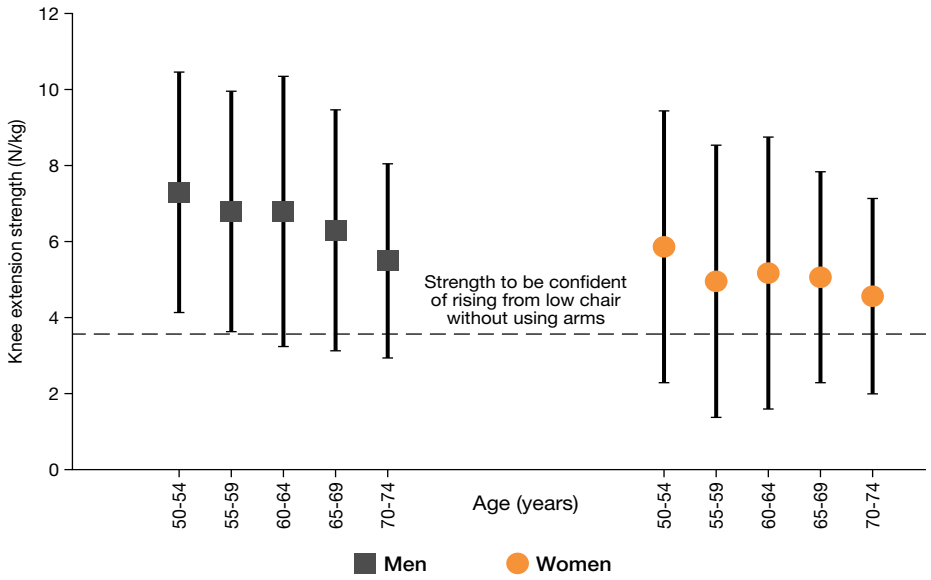

Fig. 3. Strength to be confident of rising from low chair without using arms.

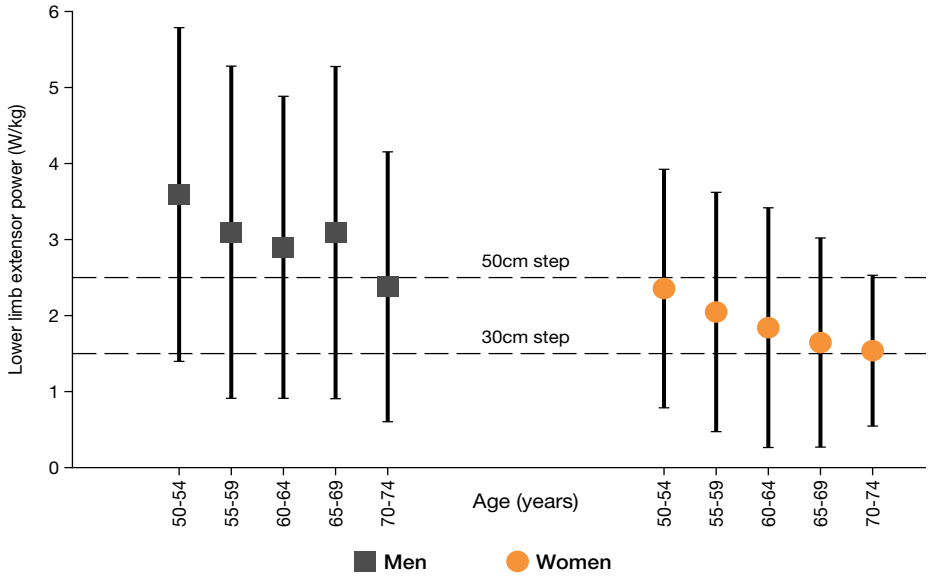

Fig. 4. Power/kg to be confident of mounting 50cm and 30cm steps.

How active should older people be?

Physical activity must be specific for the purpose:[8]

- *to improve health and modify certain risk factors for falling (such as strength),* moderate physical activity is appropriate
- *to reduce injurious falls,* exercise should include training in balance, strength, co-ordination and reaction times
- *to reduce fractures,* exercise should include bone loading in addition to the elements required for reducing falls.

Perceptions concerning physical activity among people over 50

More than half of older men and women, although officially defined as sedentary,[4] believed they took enough exercise to keep fit and were fairly active.[18] This disparity, between what people believe they are doing and what they actually do, increases with age. Over two-thirds of sedentary over-70s think they do enough exercise.

Older people do perceive exercise as beneficial to their health, both in terms of 'prevention' and 'rehabilitation' of health problems – an 'insurance policy for retirement'. Weight control, maintaining suppleness, social factors and mental stimulation are key motivators for activity for older people, along with being able to keep up with grandchildren, coping with illness or grief and a strong desire to maintain mobility and independence.[24] They are, however, concerned about overexertion 'at their age' leading to more problems. Older people would be concerned about a 'universal' exercise recommendation, as they are aware of variations in individual responses to exercise.[24]

Barriers to exercise include embarrassment (for example, lack of private changing facilities), fears about overdoing it, practical safety concerns about the environment or exercise facilities (for example, cold water or slippery edges to swimming pools, or concerns about traffic or fear of attack). Lack of time is a real barrier with many caring for family or taking up voluntary employment but also covers a lack of interest and a lack of confidence (for example, no one to go with or embarrassment about their lower physical capabilities).[22]

Cost of the exercise facility is not considered a major barrier to most older people. Further consideration is needed for cultural groups who, particularly in relation to their religion, have different dress codes. Provision of greater privacy and single gender changing areas may be required.[24]

The health benefits of physical activity

In addition to its role in preventing falls, regular physical activity provides a range of important health benefits for older people including a range of conditions once associated directly with old age:[25]

- reduction in coronary heart disease and stroke
- management of type II (late onset) diabetes
- prevention and management of osteoporosis
- weight control and management
- relief of arthritis
- prevention and control of high blood pressure
- improved quality of sleep
- reduced risk of colon cancer
- maintenance of independence and mobility.

Psycho-social benefits

There is ample evidence of the psycho-social benefits of physical activity for older people[25] including:

- reduction in hypertension
- reduction in depression
- improvement in cognitive function
- reduction in loneliness and isolation.

The prevention of complications of immobility

Frail older people with multiple pathologies and disabilities can derive benefits from regular physical activity.[26] Immobility can lead to further complications, which can be reduced through physical activity, for example:

- faecal impaction (severe constipation)
- deep vein thrombosis (clotting)
- gravitational oedema (swelling of the legs caused by accumulation of fluid)
- contractures (thickening of joint tissues leading to deformity)
- pressure sores.

Promoting physical activity with older people

A number of recommendations will improve the effective promotion of physical activity to older people, including:

- The existing promotion of the benefits of exercise is perceived as being aimed at younger people and women. Older people want to see promoters of exercise as authoritative and informative (such as doctors), and role models to be 'their age' and not 'superfit' or 'superslim'.[24]
- A widening in perceptions of what constitutes an active lifestyle. Older people do not associate with 'fashionable exercise' (for example, step aerobics) but rather with more everyday activities such as walking (especially with a dog), dancing and physical activities with grandchildren. They need to know what level of exertion is safe for them and be reassured that exercise is not dangerous, irrespective of their age. Promotion should emphasise the potential enjoyment, sense of well-being and opportunities for socialisation gained from physical activity.[24]
- Health information about the benefits of exercise needs to be brought to people's attention from a young age and could be promoted as 'an insurance policy for your future', or a way to earn a healthy retirement and be fit for grandchildren.[24]
- A need for accessible and safe facilities with sensitivity to the vulnerabilities of older people (warm water pools, non-slip flooring, separate changing facilities and similarly-aged sessions). Ramp entrances, safe access to all facilities, concessionary fees and ease of transportation to the facility are essential for the inclusion of all people with disabilities and especially older disabled people.[24]
- Distribution of promotional information must be aimed both at individuals (say from the 75+ GP health check or along with any local authority information aimed at over-50s) and at groups or facilities that older people attend. These include pre-retirement groups, women's organisations, working men's clubs, British Legion groups, Age Concern or Help the Aged groups, volunteer or caring groups, local shopping centres, libraries, community groups, churches and village halls.[23]
- Local newspapers or radio stations provide good publicity outlets as most older people rely on the media as their key source of information.[27]
- There are also important cultural differences that make general approaches to promoting physical activity inappropriate. In some cultures, certain sports and activities are favoured above others. Language also may be a barrier to effective communication and promotional material must be tailored to the cultural mix in the area.[28]

Policy issues

Many recent policy frameworks are relevant to the prevention and management of falls and aim to improve the health and quality of life of older people. These policy frameworks can spearhead local strategy and action and assist in the development of strategic alliances to include physical activity within work to prevent falls and accidents among older people.

Health policy frameworks

The new NHS: Modern and dependable (1997)

- Primary care groups.

Saving lives: our healthier nation (1999)

- Older people as a population group
- CHD/stroke, mental health and cancer as target areas
- Accidents as a target area.

Modernising health and social services (1998)

- Relevant to falls prevention and management
- Promoting independence.

Health improvement programmes: planning for better health and better care (1998)

Local authority policy frameworks

- *Modern local government in touch with the people* (1997)
- *Better services for vulnerable people* (1997)
- *Best value in public services* (1998)
- *Reducing health inequalities* (1998)
- *Better government for older people* (1997).

Common themes

From these policy frameworks, a number of common themes emerge which support strategic working across all sectors and support future work involving physical activity in preventing falls and accidents:[8]

- improving independence and maintaining mobility
- reducing health inequalities
- improving and integrating service provision
- consultation and involvement of local people
- strategic partnerships between key players.

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Most of these reference sources should be available from local reference libraries

FACT SHEET 5

Avoiding slips, trips and broken hips

Avoiding slips, trips and broken hips fact sheets

These fact sheets are part of the *Avoiding slips, trips and broken hips* campaign which is run by Health Promotion England in association with the Department of Trade and Industry. They provide up to date facts and figures about the subjects described in the title and aim to be a resource and guide for policy makers and those from the statutory and voluntary sectors. They will also benefit all those who have a responsibility for the health and well-being of older people.

1 Older people in the population
2 Older people and accidents
3 Older people, visual impairment and accidents
4 Promoting the health of older people: evaluating approaches and methods
5 Older people and physical activity

All these fact sheets are available from the Department of Trade and Industry Publications Orderline: tel. 0870 1502 500.
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