

Preventing falls to prevent fractures



Increased susceptibility to falling is one of the most serious and costly problems associated with aging. Approximately one third of people aged 65 years and over living in the community fall at least once a year, with many suffering multiple falls. Falls are the leading cause of injury-related hospitalisation and death in persons aged 65 years and over. Injuries such as bruises, cuts and abrasions, head injuries, dislocations and fractures occur in 5 to 15% of all falls in any given year. Over 90% of hip fractures result from a fall, and this serious injury outcome occurs in approximately 2% of all falls.

Commonly reported risk factors for falls found in recent research studies are shown in Table 1. Fortunately, many of these risk factors are amenable to interventions or treatments, and while others are not modifiable, an understanding of these predisposing factors can help target prevention strategies and awareness-raising programs.

Table 1: Risk factors for falls

- Older age
- Being a woman
- Having fallen in the past year
- Poor vision and inappropriate glasses
- Reduced sensation in the feet and legs
- Poor reaction time and coordination
- Impaired leg strength, balance and mobility
- Depression
- Medical conditions affecting the neurological system such as Parkinson's disease, Alzheimer's disease, stroke, diabetes and incontinence
- Other conditions such as lower limb arthritis and feet deformities
- Some medications - particularly those for treating anxiety, depression and sleep disturbances
- Inactivity
- Unsafe footwear
- Environmental hazards in the home and public places

Based on this knowledge of falls risk factors, researchers have followed two major approaches in studies aimed at preventing falls. The first approach has involved implementing treatments or interventions that have addressed a single risk factor. The interventions in these studies have been exercise to promote strength and balance, environmental modifications to promote safety in the home and strategies for reducing hazardous medication use. The second approach has involved interventions that have targeted multiple risk factors.

Of the single risk factor intervention studies, exercise has been the strategy most extensively studied. These studies have found that programs containing home-based physiotherapy, Tai Chi and general group exercise are particularly effective in preventing falls. Two studies have shown that environmental modifications to promote safety in the home can prevent falls and one study has found that falls are reduced in people who cease using medications for treating anxiety, depression and sleep problems. Studies addressing impaired vision and unsafe footwear still need to be performed.

Many of the multifaceted interventions have also been found to be effective in preventing falls, particularly those in which interventions are targeted to an older person's individual impairments and situation. Typical interventions included in these studies are medication adjustment, behavioural change recommendations, home modifications and exercise programs.

With this background of research findings it is now possible to provide evidence-based advice for minimizing the risk of falls in older age. With the help of their general practitioners, the main areas where older people can take action to minimize their risk relate to maintaining physical functioning through exercise, maximizing vision, managing health conditions and medications, and avoiding unnecessary risks related to eye-wear, footwear and unsafe environments. A comprehensive list of falls

prevention strategies is included in the publication "Staying on your feet"¹ and some evidence-based tips are provided below.

Strategies for Minimising Falls Risk

1. Improving and maintaining strength, coordination and balance and mobility

Exercise is the best "treatment" for maximizing physical functioning. Exercise classes are particularly beneficial, as any specific balance, strength or coordination problem can be targeted. Exercising in a group also provides a structure and social support. Specific home exercises and increased general exercise such as walking and gardening provide important additional benefits. It is advisable for older people with significant balance and mobility problems to have their programs prescribed by a suitably qualified professional such as a physiotherapist.

Principles of a good exercise program:

- Before starting obtain a medical clearance from your GP
- Ensure the exercise program you choose is appropriate for your level of ability, it should be challenging but not too difficult so as to cause pain or injury
- Start at a comfortable level and gradually increase the intensity of the exercise as you improve
- Carry out the activity at least 2-3 times per week
- Warm up for 5 minutes by walking and moving the arms
- Make sure the conditioning period contains strengthening, balance, flexibility, endurance and co-ordination activities
- Cool down for 5-10 minutes after the conditioning period by stretching muscle groups, and relaxing with controlled breathing

Tips for maintaining and exercise regime

- Choose an activity that you enjoy and that you feel comfortable doing
- You don't have to do all of the exercises at once. Spread them out and do some in the morning and some in the evening if you like
- Exercise with a friend or in a group - it is more enjoyable if you have someone to talk to. Class activities are organised through many councils
- Home exercise also suitable for those who don't like or are unable to attend group exercise classes
- When walking for exercise, vary your walk route and choose interesting places to visit, such as a park or beach
- Don't exercise during the hottest part of the day
- Set weekly goals that are achievable
- Note, it takes time for improvements to become apparent

2. Maximising vision

Poor vision is an important risk factor for falls. Vision can be maximized by the following strategies

- Have eyes checked by an eye-specialist every 12 months



- Wear up-to-date prescription glasses
- When walking outside the home or on steps wear single-lens distance glasses, and not multifocal glasses (bifocals, multifocals or progressive lenses). Multifocal glasses increase falls risk because they the lower lenses blur ground-level hazards
- Wear a hat and/or sunglasses when out in the sun to reduce glare and maximise contrast vision
- Make sure your home is well lit, and turn the lights on when walking in the house at night
- Have cataracts removed if recommended by an eye-specialist

3. Managing health conditions and medications

Many health conditions increase the risk of falls and falls injuries. Maintain regular visits with health care providers to ensure appropriate management of:

- Conditions affecting the neurological system such as Parkinson's disease, Alzheimer's disease, stroke, diabetes and incontinence
- Lower limb arthritis and feet problems
- Depression
- Medication use for treating anxiety, depression and sleep disturbances

4. Minimising personal and environmental hazards

Unnecessary person and environmental hazards can contribute to falls. The following simple strategies can help prevent them.

- Wear safe shoes (shoes with low heels, rubber soles & good grip)
- Ensure your home is well lit and step and edge hazards have contrasting colours
- Remove / fix unnecessary hazards such as loose rugs, clutter, damaged floors, steps and paths.
- Mop up spillages on floors to avoid slips
- Install hand rails near stairs and in bathrooms if necessary
- Report fall hazards (eg. cracked footpaths) in public places to local council etc



Uneven surfaces can be hazardous.

In summary, falls are common in older people and can have serious consequences including fractures. Much is now known about risk factors and interventions that are successful in preventing falls. By following simple steps such as taking part in regular physical activity, maximizing vision, managing medical conditions and medications, wearing safe shoes and removing tripping and slipping hazards in the home and public places, older people have considerable potential to reduce their risk of falls and falls injuries.

*Associate Professor Stephen Lord,
Principal Research Fellow,
Prince of Wales Medical Research Institute, Randwick, NSW* ■

Osteoporosis in men



Osteoporosis, traditionally regarded as a disease affecting women, is now being increasingly recognised in men. Osteoporosis develops less often in men because they have larger skeletons, bone loss starts later and progresses more slowly. However, men are experiencing increasing rates of hip fractures which is only partly due to an increase in longevity. It is projected that by 2010, in Australia, one-third of all hip fractures will occur in men and will cost an estimated \$300 million annually. Up to 40% of men living in residential care will sustain a hip fracture, and 20% of those men will sustain another fracture, often within that first year. Also, more men than women die in the year following a hip fracture. Up to 20% of men die within that first year. Therefore, as for women, it is important to identify men who sustain osteoporotic hip fractures so they can receive treatment to prevent further fractures.

Osteoporotic fractures can also occur in the spine. Many spinal fractures are painless and height loss may be the only physical sign. Spinal deformity rates in men are slightly less than in women but they occur earlier, when men are in their 40s and 50s.

The majority of men with osteoporosis are not being identified. Men sustaining fractures due to osteoporosis need to be both recognised and treated appropriately.

Risk factors for Osteoporosis in Men

Several risk factors have been linked to osteoporosis and men:

- Increased life expectancy for men (about 76-78 years) means they are more likely to develop more illnesses that will contribute to bone loss, fractures and falls.
- It is estimated that 30-60% of men who have spinal fractures have another illness that is contributing to their bone loss. It is therefore

important to eliminate underlying medical causes in men with osteoporosis.

- Some hormones, for example parathyroid hormone (PTH) and testosterone, are also considered risk factors for hip fractures.
- Smoking is considered a contributing factor for osteoporosis in men.
- Low levels of Vitamin D.
- High alcohol consumption.
- Corticosteroid use.

These risk factors should be identified and treated (Table 1). Investigations may be needed to exclude associated medical conditions.

Osteoporosis Management in Men

There are several simple measures to help prevent osteoporosis.

I. General Preventative Measures

- Healthy diet
- Adequate daily calcium intake.
- Regular weight-bearing exercise for children and adolescents.
- Exercise 3 times a week, for men over 40, that includes resistance training to improve muscle mass, strength and balance.
- Adequate intake of vitamin D, especially in men aged over 65.
- No smoking.
- Moderate alcohol and coffee intake.
- Falls prevention programmes for elderly men.

II. Medical Treatment

For men that require medication, there are several types of treatment available for osteoporosis. In comparison with women, research on medications in men is limited.

Calcium

In itself, calcium does not prevent fractures. The recommended daily intake is approximately 800mg for men and 1000mg for men with osteoporosis. This can be easily obtained from the diet through dairy and calcium-enriched soy products. On average, three serves per day of dairy products should provide an adequate dietary calcium



intake. If one can't obtain enough dietary calcium, a large variety of calcium supplements (containing calcium citrate and calcium carbonate) are available. There is some evidence that calcium acts better when taken at night. Calcium may cause mild constipation, abdominal bloating or upper gastrointestinal upset. It should be avoided in patients with a history of kidney stones. The need for calcium supplements should be discussed with your doctor first.

Vitamin D

Vitamin D deficiency is also recognized as a risk factor for osteoporosis. Vitamin D can be obtained through the diet from foods such as oily fish, margarine, eggs and liver. Vitamin D



supplements can be taken orally if necessary - 800IU Vitamin D is recommended. Some studies have shown that Vitamin D supplements decrease the numbers of hip fractures.

Men who have limited exposure to sunlight, either by being housebound or in residential care, may be Vitamin D deficient. They could benefit from long-term Vitamin D supplementation but more studies are needed in this area.

Bisphosphonates

Bisphosphonates are now the treatment of choice for men with osteoporosis. Currently, several bisphosphonate medications are available. They are risedronate (Actonel), alendronate (Fosamax) and etidronate (Didronel). The need for medication must always be discussed with your doctor.

Bone Formation Stimulating Agents

In the future, parathyroid hormone (PTH) will most likely be available in Australia for the treatment of osteoporosis. Due to its expense, it will probably initially be used only for men who continue to experience fractures despite medication or who have extremely low bone density.

Conclusion

For many men with osteoporosis, the problem is unrecognised. And, the majority of men with fractures in Australia are not being treated. Doctors and the general public need to be aware that osteoporosis can affect men and that it is a treatable condition. Height loss is a common sign of spinal osteoporosis. In men with osteoporosis, it is very important to exclude secondary causes. An adequate calcium intake, regular weight-bearing exercise and normal vitamin D levels are important, particularly with increasing age. The medical treatment of choice for osteoporosis in men is the bisphosphonates. In the future, it is likely PTH will be used to treat men with severe osteoporosis.

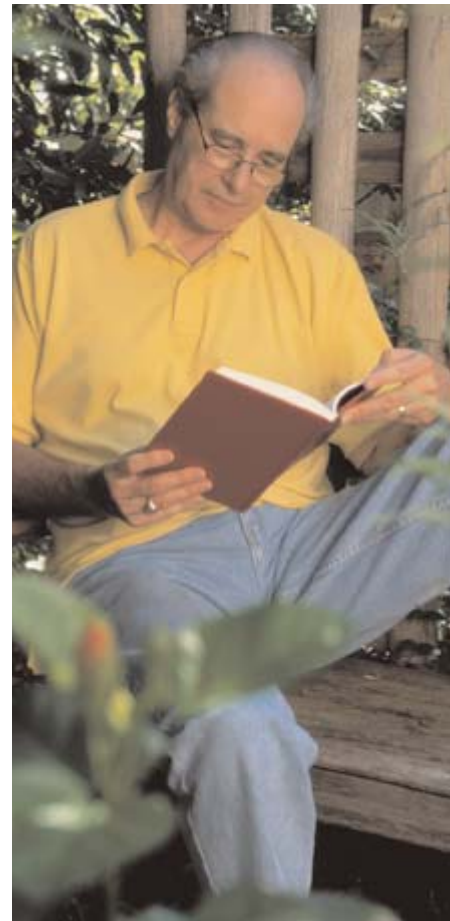


Table 1. Factors and medical conditions associated with an increased risk of osteoporosis in men

- Increasing age
- Family history of osteoporosis
- Previous fracture
- Low calcium intake
- Low body weight
- Eating disorders associated with decreased weight
- Immobilisation
- Lifestyle factors including smoking, excessive alcohol use, lack of exercise or excessive exercise
- Corticosteroid therapy for more than 3 months
- Hypogonadism
- Cushing's syndrome
- Chronic liver and kidney disease
- Rheumatoid arthritis
- Thyroid Disease

Adapted from "Management of Osteoporosis in Men"

by Peter R Ebeling MD FRACP -

written for Osteoporosis Australia ■