

Exercise Therapy

For information on all types of injuries visit:
<http://www.cssphysio.com.au/Doctors/forDoctors.html>



Falls Prevention in the Elderly

The proportion of Australians aged 65 & over is predicted to increase from 14% currently (3 million people) to 14% (8.1 million) by 2050 (2). Falls are the most common cause of injury in older people (1). One-third of people over 65 fall once or more annually (2). A person who suffers a fall is twice as likely to suffer a subsequent one within 12 months (1). Around a quarter of all falls result in medical attention being required (1). Falling results in a three-fold greater risk of hospital admission (2). As well as the risk of injury, falls lead to loss of confidence, with a direct effect being a reduction in activity levels. This results in further loss of strength, balance, and overall well-being.

There have been over 100 randomised trials into falls prevention, and clear evidence that prevention is possible with a well-designed programme (2,3). In one study, an exercise group suffered 35% less falls than a control group (1). It is claimed up to 42% of falls can be prevented by a well-designed programme (2). Participants older than 80 years had the greatest improvements (1). Both group & home based approaches are effective (1,2,3), so the one selected for the patient should be the one they prefer & are most likely to comply with.

Types of Programmes

It appears that programmes are most successful if they include balance training and are conducted for more than 2 hours per week (2). While walking programmes are beneficial in general terms, they have not been found to be specifically effective in falls prevention (2). Brisk walking should be avoided by those at high risk (2).

Balance Training:

Balance is essentially the ability to maintain the projection of the body's centre of mass within manageable limits within the base of support (3). It is a key aspect of the performance of daily tasks. Training may involve combinations of:

- reducing the base of support (narrowed stance, one foot in front of other, single leg)
- moving the centre of mass (eg safe reaching, transfer from one leg to the other, stepping up)
- reducing hand support (2).

Strength training:

Data from trials indicates that strength training may not be essential to a programme on falls reduction in the short-term (2). However, as reduced muscle strength is an important risk factor for falls, strength training may have longer-term benefits (2). It is recommended that programmes should target muscles essential for maintenance of upright postures (3). This includes extensor muscle activation through sit to stand practice, and calf muscles through heel raises (3). More research is required to determine the ideal loads for such programmes. It is unknown if the traditional 'overload' principle of strength training applies to falls prevention.

Functional training:

An important component of any training programme is that it be specific to the task. A falls prevention programme should incorporate tasks relevant to the person's daily activities (3). For instance, strength training has been found to be more effective when performed in standing rather than sitting (3).

Tai Chi:

Studies conducted in 2007 & 1996 report benefits of group based Tai Chi in falls prevention (reference quoted in 1,2).

Effects of Exercise Programmes

There are several possible mechanisms whereby falls prevention programmes are effective:

Cognitive effects

There is evidence that a large part of the benefit of exercise in preventing falls may be due to the effect on cognitive function (3). Improved balance after exercise is most likely a result of central & peripheral neurological adaptations (3). It has long been recognized that any strength programme has both local and central effects. Improvements are almost immediate, occurring well before any structural changes in muscle. Neurological adaptations are due to changes in coordination & learning that result in improved recruitment of motor units (3). There may also be a decrease in antagonistic muscle co-activation along with improved coordination of synergistic muscles (3). Weights which are too light to have an effect on muscle cross-sectional area may still result in improved strength & coordination.

Improved strength & muscle mass:

The muscles of elderly patients are generally very responsive to training effects, as disuse atrophy is significant & progressive with age.

Increased confidence & activity levels:

People who have suffered a fall are known to be hesitant to perform tasks which place them in positions of risk. Exercise programs can work to improve confidence, and reduce the person's fear of falling (1). This leads to a greater ability to engage in physical activity.

Other factors in falls prevention

The literature details factors other than exercise which have been shown to be associated with falls reduction (1,2). In relevant individuals, consider:

1. Home hazard assessment & modification in those at risk of falling
2. Psychotropic medication withdrawal.
3. Cataract surgery.
4. The use of single lens rather than multifocal glasses when walking on uneven ground.

References

1. Robertson, C et al (2002). Preventing injuries in older people by preventing falls: a meta-analysis of individual-level data. Journal of the American Geriatric Society, 50, 5, 905-911.
2. Sherrington, C et al (2011). Exercise to prevent falls in older adults: an updated meta-analysis & best practice recommendations. NSW Public Health Bulletin, 22, 78-83.
3. Sherrington, C & Henschke, N (2013). Why does exercise reduce falls in older people? Unrecognised contributions to motor control & cognition. British Journal of Sports Medicine, 47, 12, 730-731.

Please contact us if you would like a printable copy of this document.

For information for doctors on physiotherapy management of all types of injuries visit:

<http://www.cssphysio.com.au/Doctors/fordoctors.html>

Information for patients is at:

<http://www.cssphysio.com.au/forpatients.html>



Concord Sport & Spine Physiotherapy
202 Concord Road
Concord West, NSW 2138
Sydney, Australia.

Ph (02) 9736 1092

Email: info@cssphysio.com.au

Web: www.cssphysio.com.au

Copyright © 2012 Paul Monaro. All Rights Reserved