beneficial to increase or maintain BMD than one longer, less-intense or low-impact session.[8,9] Weight-bearing impact exercises should be performed on most days of the week and include multidirectional or diverse movements to stimulate bone adaptation.[9] Resistance training requires two to three sets of 8–10 repetitions at moderate to high intensity (progress to 70–85% of peak muscle strength) that include exercises targeting major muscle groups attached to the hip and spine (about eight exercises per session) and performed at least twice per week.[9] Resistance training may be prescribed using machines or free weights in which the loads (weights) are increased progressively over time. This is referred to as 'progressive overload', a critical training principle to elicit skeletal adaptations over time. For optimal skeletal benefits, progressive resistance training should be performed in combination with moderate- to high-impact exercises.[1,3,10]

Exercise to promote balance and prevent falls

Exercise for preventing falls needs to include high challenging balance and functional training (e.g., exercises should be undertaken while standing and challenge balance; that is, place the person at the edge of their balance or functional ability, and incorporate activities relevant to everyday functional tasks).[11,12] The greatest benefits in reducing falls risk are observed following individualised and supervised programs that include stepping and multimodal balance and functional training programs performed two to three times per week (dose of ≥3 hours per week) for at least four months.[12] Examples of challenging balance exercises include standing with the feet close together, standing on one leg, tandem walking, figure-8 walking, stepping exercises, backwards or sideways walking, 'exergames' and tai chi. Effective programs have been designed so that older people can undertake balance training safely unsupervised at home or in centre-based classes.

Caution is advised to avoid or minimise rapid, repetitive, weighted and end-range forward flexion or twisting of the spine in those with spinal osteoporosis or a history of vertebral fractures. In people with spinal osteoporosis or a history of vertebral fractures, emphasis should be placed on exercises to strengthen back muscles (focusing on muscle endurance at a low intensity) to improve posture and support the spine. Challenging balance training should be undertaken in safe settings, initially under supervision. Important muscle groups to target include back extensors, abdominals, shoulder stabilisers, triceps, hip extensors, hip abductors, knee extensors, plantar and dorsiflexors.

The goals of exercise in the treatment of osteoporotic hip fracture focus on the modifiable, non-skeletal contributors to weakness, frailty, falls and functional dependency, including muscle strength and power, balance, gait stability, poor appetite, depression, cognitive impairment, social isolation, and polypharmacy (e.g., by substituting exercise for sedatives and antidepressants).