



Exercise Fact Sheet

Why is exercise important to reduce fractures?

- Through stress- generally referred to as “weight bearing exercises” (jumping, running, dancing, walking), young peoples’ bones acquire both density and mass. The bones become stronger and less vulnerable to osteoporosis later in life
- The building up of bone density and bone mass is particularly important among young girls and boys aged 8-16, and to a lesser extent, in younger adults
- In older adults, weight-bearing exercise helps to maintain bone density. Exercise is especially important for older women, who have a higher rate of bone tissue loss after menopause.
- Exercise builds muscle tone and improves balance, thereby preventing falls, which are a major trigger of fractures. This is particularly important among older people
- Exercise is part of a successful rehabilitation program following a fracture

Building bone mass and reducing likelihood of osteoporosis

- Sports and exercise have a positive effect on increasing bone mass and bone strength on weight bearing bones ¹
- Young children who engage in 40 minutes of normal vigorous activity each day have significantly stronger bones than their less active peers. Boys who did the most vigorous daily activity had nine percent more bone area and 12 percent more bone strength than less active boys. The most active girls had seven percent more bone area than less active girls, and nine percent more bone strength ²
- A study of Finnish pre-menopausal woman showed that high impact exercise is effective in improving bone mineral density ³
- A Finland study showed that the most physically active young girls gain about 40% more bone mass than the least active girls of the same age ⁴
- In girls, the bone tissue accumulated during the ages of 11 to 13 approximately equals the amount lost during the 30 years following menopause ⁵

Preventing falls and reducing fracture risk

- Falling is a major factor contributing to the occurrence of symptomatic fractures in older people ⁶
- Approximately 30% of persons 65 years or older fall every year; inactivity and impaired neuromuscular function are well-known risk factors for falling and hip fractures ^{7 8 9}

- High level physical activity is associated with reduced risk for hip fracture (but not wrist or vertebral fractures)¹⁰
- Graded reductions in risk of hip fracture were found in women who performed moderate-to-vigorous activities for at least two hours per week of who reported more hours of heavy chores per week than control group¹¹
- The more hours a woman spent sitting per day, the higher her risk of hip fractures. Women who sit more than nine hours a day are 50% more likely to have a hip fracture than those who sit for less than six hours a day¹²
- Among elderly people, participants who practiced tai chi had a lower rate of falling than controls¹³. Another study showed that six months of practicing tai chi could reduce the risk of falling by 70% in people 70 years and older¹⁴
- Strengthening back muscles can reduce risk of vertebral fractures among postmenopausal women aged 58 – 75 years.¹⁵
- Bone mineral density in postmenopausal women was maintained or increased with therapeutic exercise^{16 17}
- Early post-menopausal women with osteoporosis who participate in an intense exercise program may experience reduced bone loss, reduced back pain, and lower cholesterol levels¹⁸

Rehabilitation after vertebral fracture

- Strong back muscles are significantly correlated with decreased risk of vertebral fractures and kyphosis^{15 19 20}
- Intensive physical training is effective for improving strength and functional performance in older people, even among those who are frail and residing in a nursing home^{21 22}
- A 3-month progressive resistance and functional training program increased strength and functional performance during rehabilitation after hip fracture²³

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³ Vainionpää A, et al., Effects of high-impact exercise on bone mineral density: a randomized controlled trial in premenopausal women, *Osteoporosis Int* 2004 June 16, (Epub ahead of print)

⁴ Lehtone-Veronmaa M. Mottonen T. Heinonnen OJ et al (2004) influence of physical activity and vitamin D on bone mineral gain among peripubertal Finnish girls: a 3-year prospective study. *Osteoporosis Int* 15 (Suppl 1) S13-S18

⁵ Bonjour P. Invest in Your Bones: How diet, lifestyles and genetics affect bone development in young people; International Osteoporosis Foundation 2001

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