

LOVE YOUR BONES

EXERCISE FACT SHEET

There is a strong relationship between physical activity and bone health at all ages.

To build and maintain strong bones and prevent muscles from wasting away, we need to keep moving. Put simply, it's a case of 'move it or lose it'!

EXERCISE EFFECTS ON BONE

- Being active benefits both bone and muscle strength regardless of age.
- Immobilization of the skeleton (such as through prolonged bed rest, casting or spinal cord injury) leads to bone loss, muscle wasting and increased risk of fracture within a few weeks.
- Exercise during childhood and adolescence helps develop stronger bones and therefore helps reduce the risk of fracture later in life.
- Several studies support a positive association between a greater lifetime physical activity and preservation of bone mineral density (BMD), as well as a lower risk of hip, upper arm and vertebral fracture, at older age.
- Studies which compare individuals who exercise with groups who do not, have shown significantly higher BMD in those who exercise regularly. Exceptions are seen with high intensity non-weight bearing activities such as swimming or in amenorrhoeic athletes, who may have a BMD similar or worse than controls.
- Exercising prior to age 40 is associated with a lower risk of falling in seniors.

EXERCISE PRECAUTIONS IN THE ELDERLY OR PEOPLE WITH OSTEOPOROSIS

- With existing osteoporosis, caution should be applied with sports that have the potential of severe injury, such as ice skating, downhill skiing, mountain biking.
- People at risk of fracture should involve a health care professional in designing an exercise programme. Supervised, targeted exercise programmes are recommended.
- People at risk for osteoporotic fracture should avoid deep backbends and activities that involve forward bending of the spine, especially if carrying an object, as this increases the risk of spinal compression fractures.
- Programmes that include muscle strengthening, balance training and coordination exercises are highly recommended.
- Exercise in frail seniors with poor balance should be supervised by physiotherapists and supported by strength and balance training.

WHAT EXERCISE IS BEST?

- Several studies have shown that moderate to high intensity weight-bearing aerobic exercise, high intensity progressive resistance training (lifting weights) and high impact exercise (jumping or rope skipping) increase BMD by 1 to 4% per year in pre- and postmenopausal women.
- More vigorous exercise seems to produce greater effects. Casual walking may not reduce fracture risk, but one large study showed a benefit of brisk walking on reducing the risk of hip fracture (more than 4 hours a week may reduce hip fractures by 41%).
- Rapid, short bursts of high intensity and/or high impact activities such as jogging, jumping and rope skipping are more stimulating to bone cells than sustained, low impact activities, such as walking.
- Resistance training (lifting weights) is an effective non-weight-bearing activity.
- Aerobic activity that is non-weight-bearing (such as swimming or cycling) does not improve bone density.
- Lifting heavy weights is more effective than lifting light weights and lifting heavy weights rapidly (power training) seems to be more effective than lifting heavy weights slowly (traditional resistance training).
- Rapid movements are more stimulating than slow movements.
- Muscles connected to clinically important bones susceptible to osteoporotic fracture (hip, wrist, mid spine) need to be targeted specifically to achieve benefit at those skeletal sites.

EXERCISE AND FALL PREVENTION

- Simple weight-bearing exercise programmes improve gait speed, muscle strength, and balance in seniors, which translates into fall reduction by 25 to 50%.
- Exercise programmes for fall and fracture prevention should include balance training and lower and upper limb strength training.
- Tai Chi has been successful in reducing falls among healthy older individuals, while frail older people and fallers may not benefit as much.
- Programmes that support cognitive function within an exercise programme may be of great value for fall prevention. Fall risk is increased in seniors unable to walk while talking (reduced ability to perform two tasks simultaneously).

References are provided in the IOF publication "Three Steps to Unbreakable Bones – Vitamin D, Calcium and Exercise" (2011) – available on www.iofbonehealth.org



EXAMPLES OF EXERCISE PROGRAMMES THAT ARE SUCCESSFUL IN INCREASING BONE DENSITY

1. About 50 jumps (approx. 8 cm. high, three to six days per week).
2. Two to three sets of 10 repetitions of multiple weight-lifting exercises, three days per week.
3. 45 to 60 minutes of weight-bearing aerobic exercise three days per week (e.g. brisk walking).

embrace an active lifestyle