

# Osteoporosis and exercise

Osteoporosis is a condition where bone tissue has been lost and weakened so the bones are more likely to fracture. The spine, hip and wrist are the most common fracture sites but any bone can be affected. Osteoporosis will affect around two in every three women and one in six men over the age of 60.

## What causes osteoporosis?

Heredity and a tendency to lose bone as we age are the primary causes of osteoporosis, beginning around 30-40 years of age. The rate of loss accelerates for women at the time of menopause as oestrogen is somewhat protective of bone up to that time. Lifestyle behaviours such as inactivity and inadequate dietary calcium and vitamin D also increase risk.

## How does exercise influence bone?

When a person becomes active or increases their level of activity, the bones modify their shape and/or size, in order to withstand the new loads. Once a bone has adapted to an activity however, it ceases to change; therefore increasing exercise intensity and/or changing activities is necessary to continue to stimulate positive bone adaptation.

## What exercise is best for osteoporosis?

**Weight bearing exercise:** High impact activities are the best exercises to stimulate bone in healthy children and adults with normal bone mass. People with osteoporosis however need to exercise caution in order to prevent low trauma fractures during high impact loading. Instead, activities to improve leg muscle function and overall balance such as Tai Chi, line dancing, stair climbing and low impact aerobics should be adopted to prevent falls and risk of fracture. Activities that involve notable twisting (golf) or abrupt movements (squash) are not recommended. Time spent routinely sitting and lying down during the day should be minimised.

**Resistance training:** High weight (80% 1RM) resistance training will benefit the bones of individuals with normal bone mass. Moderate weights (such as can be lifted around 10 times before tiring) to enhance muscle strength of the back and lower limbs are more appropriate for those with osteoporosis. Very heavy weights, loaded deep forward bending (sit ups, toe touching, rowing) and overhead lifts should be avoided. Correct technique should be emphasised.

## Caveats

- Any new exercise program should be initiated carefully and progress gradually
- Gains in bone from exercise in adulthood will be lost if the exercise is stopped
- High impact activities may not be practical for individuals with painful joints but gradual introduction of lower loads is likely to be beneficial
- If pain over and above general muscle soreness is experienced after exercise, a physician or physiotherapist should be consulted

## Exercise recommendations for osteoporotic women and men

**Aim for 40 minutes per day, 4–5 times per week.**

- Engage in a variety of moderate intensity exercises designed to optimise balance, and lower extremity muscle strength and endurance to prevent falls
- Moderate weight resistance exercise, including back muscle strengthening and avoiding deep forward bending and overhead lifts
  - Low to moderate impact aerobics
  - Stair climbing and descending
  - Line dancing (if not at high risk of falling)
  - Tai chi
- Balance activities including; standing on one leg, heel-to-toe walking along a line, stepping sideways over objects

## References and further information

Exercise is Medicine Australia [www.exerciseismedicine.org.au](http://www.exerciseismedicine.org.au)

Find an Accredited Exercise Physiologist [www.essa.org.au](http://www.essa.org.au)

Exercise Right [www.exerciseright.com.au](http://www.exerciseright.com.au)

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For more detailed information, please read the full version of this factsheet at [www.exerciseismedicine.org.au](http://www.exerciseismedicine.org.au)

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