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Osteoporosis

What is osteoporosis?

Osteoporosis is a condition in which bones have been weakened, making fractures more likely. All bones can be affected, but the spine, hips and wrists fracture most often. Osteoporosis affects about two in every three women and one in three men over 60 years old. The main causes of osteoporosis are heredity (runs in the family) and a natural tendency to lose bone tissue as we age. Gradual bone loss begins at 30–40 years of age. Factors that increase bone loss are:

- menopause in women (less oestrogen causes faster bone loss);
- immobilisation (e.g. to treat fractures or joint injuries);
- some medical conditions or their treatments (e.g. certain drugs);
- an inactive lifestyle; and
- not enough calcium and vitamin D in the diet.

The loss of muscle strength and balance as people age also speeds up bone loss through disuse, and increases the risk of falling. More than 90% of hip fractures in people with osteoporosis occur as a direct result of a fall.

Osteoporosis is usually diagnosed with a special test using a very low-dose X-ray of the hip and spine. However, the disease often remains undetected until a person suffers a fracture. A person with a lower than average bone mass may progress to osteoporosis with age if steps are not taken to reduce further bone loss. Fractures can happen even in the early stages of bone loss.

Why is exercise important for osteoporosis?

Exercise causes bones to modify their shape and size so they are stronger and better protected from injury. In children and in inactive adults with low bone mass, regular exercise increases bone mass. In healthy active adults, vigorous exercise helps to prevent typical age-related bone loss. Exercise also increases muscle strength and improves balance, which reduce the risk of falling.

To prevent osteoporosis, **healthy people** should engage in weight-bearing (i.e. done while standing) activities that have a high impact on the bones (see the table below for examples). Resistance or strength training (i.e. lifting weights with arms, legs or trunk) at home or the gym also helps protect bones. Weights should be as heavy as can be lifted for only three or four repetitions and should be increased gradually as the exercise becomes easy to perform seven or eight times. The safest option is to have a strength test at the gym before starting a program. Cycling, swimming and walking at normal pace are nonimpact activities that have many health benefits but do not effectively stimulate bone.

Conversely, **people with osteoporosis** should only perform low-impact weight-bearing exercises, mainly to reduce falls rather than stimulate bone growth (see table). Gentle exercise with weights that can be lifted around 20 times before tiring helps maintain muscle tissue. Weights should be gradually increased as required. Do not lift heavy weights, or lift weights over your head. Daily sitting and lying down should be minimised.

Points to keep in mind are:

- initiate your program slowly and progress gradually;
- maintain the program or you will lose the benefits;
- high-impact activities may be impractical for people with painful joints or other limiting medical conditions; and
- if you feel more pain than general muscle soreness after exercise, consult a doctor or physiotherapist.

Recommended activities for adults with and without osteoporosis

Women and men without osteoporosis	Women and men with osteoporosis
Aim for 4 to 5 times per week for 30 minutes per day, preferably in two 15-minute sessions. Engage in a variety of moderate to high-intensity exercises designed to overload the bones, such as: ▪ running ▪ jumping (all directions) ▪ hopping (all directions) ▪ skipping ▪ high-impact aerobics ▪ volleyball, basketball and netball ▪ ballet ▪ tennis and squash ▪ high-weight, low-repetition resistance exercises.	Aim for 4 to 5 times per week for 40 to 50 minutes per day. To prevent falls, engage in a variety of low-intensity exercises designed to optimise balance, muscle strength and endurance, such as: ▪ tai chi ▪ walking ▪ stair climbing ▪ line dancing ▪ upright cycling ▪ low-impact aerobics or water aerobics ▪ standing on one leg, heel-to-toe walking along a line, stepping sideways over objects ▪ low-weight, high-repetition resistance exercises.

Related information

Osteoporosis Australia www.osteoporosis.org.au

Exercise & Sports Science Australia www.essa.org.au