



# Osteoporosis in men

## What is osteoporosis?

Osteoporosis is a disease usually affecting older women and men. It is a disorder of the skeleton that lessens bone strength, which increases the risk of fracture. Bone strength is measured by bone mineral density and bone quality. Most bones except those of the face and head can be affected by osteoporosis, but the most common sites of fractures are the hip, spine, wrist and ribs. Osteoporosis (bone loss) is often called the 'silent disease' because it arises without symptoms.

## How common is it?

One in three men in Australia over 60 will suffer a fracture due to osteoporosis<sup>1</sup>. The disease affects more women than men however, when fractures happen in men it is more likely to shorten their lifespan. This shorter lifespan is probably because osteoporosis in men is often present together with other serious illnesses.

## How does osteoporosis happen?

Osteoporosis happens when bones lose minerals, such as calcium, more quickly than the body can replace them (increased bone turnover) leading to a loss of bone thickness (bone mass or density). As a result, bones become thinner and less solid, so that even a minor bump or accident can cause serious fractures.

## Do all men have a higher risk of developing osteoporosis as they age?

In men and women over the age of 65, the intestine cannot absorb calcium from food as well as in youth. A hormone known as the parathyroid hormone from the parathyroid glands in the neck is produced at a higher rate and makes the bone give up its calcium into the blood stream. This hormone increases in production with age and makes the bones lose more calcium to become thinner. Taking calcium tablets to increase the amount absorbed from the intestine may help older people reduce bone loss.

## At what age in men does bone mass begin to fall?

In most people, bone mass starts to fall after about the age of 30. When bone mass begins to fall, it is more gradual in men than women. Women generally have less bone mass than men and women's bones lose calcium and other minerals at

a much faster rate after menopause due to a decrease in their oestrogen levels.

## What causes osteoporosis in men?

Testosterone, the male sex hormone, is important for the normal health of a range of body functions including the development and maintenance of bone mass. In some men, low testosterone levels may cause bone thinning, a decrease of muscle mass and increase the rate of bone turnover so bones become less solid. Men with proven (clinically confirmed) low testosterone levels (testosterone deficiency) are therefore more likely to have bone fractures compared to men with normal testosterone levels. However, low testosterone levels are not the only cause of osteoporosis in men, and a range of factors including genetic factors, can have a strong influence on bone mass.

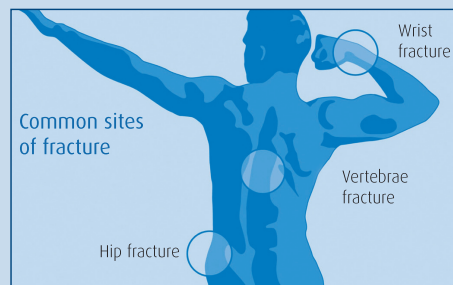


Image courtesy of Osteoporosis Australia

## What other hormones can cause osteoporosis?

The female hormone oestrogen is present in much lower amounts in men than in women, but is important to a man's health. In men and women, oestrogen controls bone turnover and in men may be important for peak bone mass. Peak bone mass is when bones are at their strongest; normally in men at about 20-30 years of age. Lack of oestrogen in men is likely to reduce bone formation, which leads to a decrease in bone mass. This can still happen in men with normal levels of testosterone.

## Can trauma and excessive exercise cause osteoporosis in men?

Some osteoporosis in men is caused by trauma linked to excessive exercise and poor nutrition, which results in low levels of male sex hormones. Too much exercise can put bones under a high level of stress, causing bones to fracture easily. However, for most men regular physical activity has

been found to reduce the risk of fractures when they are older by improving muscle mass, balance and bone strength<sup>2</sup>. Men who do little or no exercise should speak to their doctor first about an appropriate exercise plan to minimise their risk of injury.

## What are the major risk factors that can lead to osteoporosis in men?

Some men are more likely to develop osteoporosis than others. Lifestyle factors that may increase the rate of bone loss include low levels of physical activity, smoking, excessive alcohol intake, poor calcium levels and vitamin D deficiency. Other factors that may lead to osteoporosis include if a man has had a previous fall or fracture, age, family history and being underweight, (which can be caused by chronic diseases). Some medications such as corticosteroids (often used for asthma, arthritis and kidney disease) and anticonvulsants, commonly used to treat epilepsy and some psychiatric disorders, can also speed up the first signs of osteoporosis.

## Can osteoporosis be prevented?

If osteoporosis is diagnosed early and effective treatments are used, bone loss can be prevented from getting worse. Having a healthy lifestyle by not smoking, limiting alcohol intake and being active are some of the ways men can reduce their risk of osteoporosis. Weight-bearing and resistance exercises, such as walking, jogging and lifting weights will help improve muscle tone and help maintain bone mass.

Getting enough calcium and vitamin D each day is also important to keep bones healthy. Men can get enough calcium by eating 3-4 serves of dairy foods such as milk, yoghurt and cheese daily or by taking calcium tablets. Vitamin D can be taken in tablets or absorbed through sunlight. A balance is required between achieving enough sun exposure to maintain adequate vitamin D levels and avoiding an increased risk of skin cancer. As little as a few minutes of sunlight per day outside peak exposure times (UV index <3) may be recommended to help prevent bone fracture.

## What are the effects of osteoporosis on a man's quality of life?

Osteoporosis can have a major effect on quality of life. It can cause a man pain, disability, depression and loss of independence

and social isolation can follow. For men with hip fractures and other illnesses, life expectancy may be reduced. When bone fractures happen, there may be a loss of height or curvature of the spine that can impair lung functioning and normal breathing.

### How is osteoporosis diagnosed?

Osteoporosis is diagnosed by examining a man's medical history, taking his height measurement and some specific tests, such as a DXA (Dual-energy X-ray Absorptiometry) scan. The DXA scan, commonly known as a bone density test, measures the density of a man's bones compared with the bone density of an average young adult of the same gender and ethnicity. The DXA scan uses a small amount of radiation to measure the density of the bones in the spine and hip. The test gives a 'T score', which tells the doctor whether or not bone loss has happened. The patient's bone density is then classified into three categories based on the T score: normal, low bone density, or osteoporosis. Osteoporosis may also be described as severe osteoporosis based on the T score in combination with fracture.

### What do the results of a bone mineral density test mean?

A man who has a T score of -2.5 or less has osteoporosis and is at high risk of getting a bone fracture. If a man has this score after having a bone density test then he should talk to his doctor about treatment for osteoporosis. A score between -1.0 and -2.5 shows osteopenia or low bone density. This may mean that some lifestyle changes are needed to reduce the risk of developing further bone loss and/or the risk of fracture.

### Should all men have a bone density test?

Men should have a bone density test if they have:

- Previously been diagnosed with osteoporosis
- Symptoms that suggest osteoporosis, such as loss of height or past fractures of minimal trauma
- Rheumatoid arthritis
- Chronic kidney and liver disease
- An overactive thyroid

| Classification                | T score  |
|-------------------------------|--|
| Normal bone density           | Greater than -1.0  |
| Osteopenia (low bone density) | Between -1.0 & -2.5  |
| Osteoporosis                  | -2.5 or less   |
| Severe Osteoporosis           | -2.5 or less with a fragility fracture (fracture that happens as a result of minimal trauma) |

- Been prescribed corticosteroids, a drug usually given to treat arthritis, asthma or kidney diseases for more than 3 months
- Been taking certain anti-convulsive drugs
- Testosterone deficiency
- A family history of osteoporosis
- An age of 70 years or greater
- Smoked or consumed excessive amounts of alcohol
- A low body mass index (less than 20)
- Inflammatory forms of arthritis
- Malabsorption from the intestines
- High urine calcium levels

### Can osteoporosis be treated or improved?

If a man has had bone fractures or is diagnosed with osteoporosis, there are medications that may stop further bone loss or even improve bone mass, and also prevent further spinal fractures. The most common medication used to treat osteoporosis in men is a bisphosphonate, a non-hormonal drug, which can help increase bone mass and reduce the risk of fractures. A drug known as teriparatide (parathyroid hormone), that helps new bone to grow and increases bone mass, can also be given by daily injections.

### Can testosterone therapy reduce the risk of osteoporosis?

Replacing testosterone in men who have symptoms of testosterone deficiency and clearly low testosterone levels can improve bone density<sup>4</sup>. There is no evidence that testosterone replacement therapy improves bone density in men with normal levels of testosterone. Testosterone deficiency is treated by giving testosterone in doses that return the testosterone levels in the blood to normal. The available forms of testosterone

therapy are injections, implants, skin patches, oral capsules, gels and creams. Testosterone therapy is not recommended for men who do not have proven (clinically confirmed) testosterone deficiency.

### How important is it for men to maintain good bone health?

Often the only time a man realises he may have osteoporosis is when he breaks a bone. Many men do not realise that osteoporosis can affect men as well as women and it is not just a disease of older people.

Having a healthy lifestyle including adequate calcium in the diet and normal vitamin D levels, and increasing weight-bearing exercise, and paying attention to bone health from childhood throughout life is the best way for men to maintain bone mass and reduce their risk of osteoporosis. Such a healthy lifestyle is likely to also reduce the risk of other chronic diseases, such as diabetes, hypertension and obesity.



osteoporosis australia

For more information on osteoporosis, visit [www.osteoporosis.org.au](http://www.osteoporosis.org.au)

<sup>1</sup> International Osteoporosis Foundation. Invest in your bones: Osteoporosis in Men. 2004

<sup>2</sup> Farahmand B, Persson P, Michaelsson K, Baron J, Alberts A, Moradi T & Ljunghall S. Physical activity and hip fracture: a population-based case-control study. *Int J Epidemiology* 2000; 29:308-314

<sup>3</sup> Ebeling PR. Clinical Practice. Osteoporosis in Men. *New Engl J Med* 2008; 358:1474-82

<sup>4</sup> Meier C, Tuan N, Handelsman D, Schindler C, Kushnir M, Rockwood A, Meikle W, Center J, Eisman J, Seibel M. Endogenous Sex Hormones and Incident Fracture Risk in Older Men: The Dubbo Epidemiology Study. *Arch Intern Med* 2008; 168(1):47-54

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