# Osteoporosis

ALCHEMY IN MOTION

## What is Osteoporosis?

Osteoporosis is a common bone disease in which bones lose density and essential minerals, becoming weak and fragile. Over time, bones can become so brittle that even minor falls or in severe cases, simple actions such as bending or coughing can result in fractures.

Osteoporosis is often called the “silent disease” because it usually has no symptoms until a fracture occurs. These fractures most commonly affect the hip, spine, and wrist.

Bone is a living tissue that is constantly being formed, broken down, and replaced. This ongoing process helps maintain strength, repair micro-damage, regulate calcium levels, and adapt the skeleton to physical stress. Bone tissue is continually renewed throughout life through this remodelling process. Osteoporosis develops when the formation of new bone cannot keep up with the loss of old bone.

Although osteoporosis can affect anyone, women are at higher risk particularly older women after menopause due to hormonal changes.

The good news is that osteoporosis can often be prevented and effectively managed through a balanced diet, regular weight-bearing exercise, and appropriate medical treatment when required.

## Prevalence

Osteoporosis is a significant health issue in Australia, affecting over 1 million people. It is estimated that 23% of women and 6% of men over the age of 50 have osteoporosis.

In addition, around 6.2 million Australians (67%) aged 50 and over were living with poor bone health including osteoporosis or osteopenia in 2023.

Approximately 2 in 5 women and 1 in 4 men will experience a minimal-trauma fracture in their lifetime. Each year, there are about 105,000 hospitalisations due to minimal-trauma fractures among Australians aged 45 and over.

## Signs and Symptoms

Osteoporosis is often referred to as the “silent disease” because it typically develops

without noticeable symptoms until a fracture occurs. It is characterised by a gradual loss of bone density and strength, usually beginning after peak bone mass is reached in the late 20s to early 30s. Bone loss becomes more noticeable from around the mid-30s onward.

Many individuals remain unaware they have osteoporosis until physical changes or fractures occur.

**Key signs of advanced bone loss include:**

- Back pain caused by vertebral fractures
- Gradual loss of height over time
- Stooped or hunched posture (kyphosis)
- Bones that fracture easily with minimal trauma
- Reduced strength or physical function

Osteoporosis progresses silently over many years, making early awareness, screening, and prevention essential to reduce fracture risk and long-term complications.

## Causes and Risk Factors

Osteoporosis develops when bone loss occurs faster than the body can replace it, resulting in weakened bone structure. A range of factors can increase the risk of developing osteoporosis or sustaining fractures.

Some risk factors cannot be changed, while others can be modified through lifestyle choices.

**Factors that may increase risk include:**

- **Sex:** Women are at higher risk, although men - especially over 70 - are also affected
- **Age:** Bone loss increases with age while new bone formation slows
- **Body size:** Smaller, thinner individuals have less bone mass to draw from
- **Family history:** A parent with osteoporosis or a hip fracture increases risk
- **Hormonal changes:**
  - Reduced estrogen levels (especially after menopause)
  - Loss of menstrual periods due to hormonal imbalance or excessive exercise
  - Low testosterone levels in men
- **Diet:** Low intake of calcium, vitamin D, or protein
- **Medical conditions:** Including hormonal, gastrointestinal, autoimmune disorders, some cancers, HIV/AIDS, and eating disorders
- **Medications:** Long-term use of corticosteroids, some anti-epileptic drugs, hormone therapies, proton pump inhibitors, antidepressants (SSRIs), and certain diabetes medications
- **Lifestyle factors:**
  - Physical inactivity

- Excessive alcohol consumption
- Smoking

Understanding and addressing modifiable risk factors can help maintain bone health and reduce the likelihood of osteoporosis and fractures.

## Assessment and Diagnosis

Osteoporosis is typically diagnosed using a DEXA (DXA) scan, a quick and non-invasive test that measures bone mineral density.

Results are reported as a T-score, which compares your bone density to that of a healthy young adult.

**T-score interpretation:**

- **≥ −1.0** → Normal bone density
- Between **−1.0** and **−2.5** → Osteopenia (low bone density)
- **≤ −2.5** → Osteoporosis
- **≤ −2.5** with a fragility fracture → Severe osteoporosis

**Screening is generally recommended for:**

- Women aged 65 years and older
- Men aged 70 years and older
- Younger postmenopausal women with risk factors

Follow-up scans are typically performed every two years, or as clinically indicated.

## Who is this for? You may be at risk if you:

- Are aged 50 years or older
- Are a postmenopausal woman
- Are a man aged 70 years or older
- Have experienced a fracture from a minor fall or injury
- Have a family history of osteoporosis or hip fractures
- Have been diagnosed with osteopenia (low bone density)
- Have low calcium or vitamin D intake
- Have low levels of physical activity
- Smoke or regularly consume alcohol
- Take medications that affect bone health (e.g. long-term corticosteroids)

This fact sheet is intended for individuals who may be at risk of osteoporosis or who want to better understand bone health, prevention strategies, and early management.

## Why is it important?

Osteoporosis is a serious condition that can significantly affect movement, independence, and overall health if left undiagnosed or untreated. Because it develops silently, many people are unaware they have it until a fracture occurs often during everyday activities such as walking, bending, or lifting.

Healthy bones are essential for safe and effective movement. When bones become weak and fragile, the risk of fractures increases, which can lead to pain, reduced mobility, and fear of movement. This often results in decreased physical activity, further accelerating bone loss, muscle weakness, and reduced balance.

Fragility fractures, particularly of the hip and spine, can have a major impact on quality of life. They may lead to long-term disability, loss of independence, and increased reliance on others for daily tasks. In older adults, these injuries are also associated with higher rates of hospitalisation and complications.

Reduced movement not only affects bone health but also contributes to declines in muscle strength, cardiovascular fitness, and overall wellbeing. This can create a cycle of inactivity, increasing the risk of further falls and fractures.

Early identification and management of osteoporosis, along with regular weight-bearing and strength-based exercise, are essential for maintaining bone health, supporting movement, and preserving independence and quality of life.

## How can exercise help?

Exercise is one of the most effective strategies for preventing and managing osteoporosis. While it may not completely reverse bone loss, it can slow its progression, maintain or slightly improve bone density, and significantly reduce fracture risk.

Bone is a living tissue that adapts to the forces placed upon it. When bones are exposed to regular mechanical loading through weight-bearing and resistance exercise, they respond by strengthening their structure. This process helps maintain bone mineral density and may stimulate small increases over time when performed consistently and at appropriate intensity.

In addition to its direct effects on bone, exercise improves muscle strength, balance, coordination, and posture. Stronger muscles place greater forces on bone, further supporting bone health, while improved control and stability reduce the risk of falls the leading cause of fractures in people with osteoporosis.

Exercise also helps counteract age-related declines in mobility and physical function, supporting independence and safe performance of daily activities.

**Key benefits include:**

- Slowing bone loss and helping maintain bone density
- Stimulating bone formation through mechanical loading
- Increasing muscle strength and joint stability
- Improving balance, coordination, and posture
- Reducing falls and fracture risk
- Supporting mobility, independence, and overall health

To be effective, exercise should be regular, progressive, and appropriately prescribed, with a combination of weight-bearing, resistance, and balance training providing the greatest benefit.

## What type of exercise is recommended?

The most effective exercise for osteoporosis includes activities that safely load the skeleton while improving strength, balance, and posture. A varied program provides the greatest benefit.

**Recommended exercise includes:**

- Weight-bearing exercise (e.g. walking, stair climbing, dancing, low-impact aerobics)
- Resistance training using body weight, bands, or weights
- Balance and coordination exercises to reduce fall risk
- Postural and functional exercises to support everyday movement

Exercise should be individualised, especially for those at higher fracture risk.

## How much exercise do you need?

Exercise should be consistent and part of a long-term routine to support bone health.

**General guidance includes:**

- Weight-bearing activity most days (e.g. walking 30–60 minutes)
- Resistance training 2–3 times per week
- Balance training daily or as often as possible
- Postural and functional exercises throughout the week

Progression over time is important to continue stimulating bone and muscle adaptation. Consistency is more important than intensity alone.

## Movements and activities to avoid or modify

Certain movements may place excessive stress on weakened bones and should be modified or avoided depending on fracture risk.

**Spinal loading and movement:**

- Avoid deep or loaded forward bending of the spine
- Modify repeated or end-range spinal flexion or twisting
- Examples include sit-ups, heavy rowing variations, toe-touching with load, and some yoga or Pilates positions

**Impact and loading:**

- High-impact activities may need modification in higher-risk individuals
- Brisk walking is often more appropriate for those with fractures or frailty
- Running and jumping may not be suitable for those at high fracture risk

**Extra caution is needed with:**

- History of vertebral or multiple fractures
- Poor balance or frequent falls
- Significant postural changes (e.g. kyphosis)
- Other medical conditions affecting movement or safety

## Safety considerations

When appropriately prescribed, exercise is safe for most people with osteoporosis. Serious injury or fracture during exercise is rare, and most side effects are mild, such as temporary muscle soreness.

In contrast, inactivity contributes to faster bone loss, reduced strength, and increased fall risk. Therefore, the goal is not to avoid movement, but to modify and safely progress exercise.

## Key message

Exercise is a safe and essential part of osteoporosis management. The focus is not avoidance, but appropriate modification—particularly of loaded spinal flexion, excessive twisting, and high-impact activity in higher-risk individuals. Tailored programs that consider fracture risk, balance, and physical capacity are essential for safety and effectiveness.

## When should you see an Exercise Physiologist?

**You may benefit from professional guidance if you:**

- Have osteoporosis or osteopenia
- Have a history of fragility fractures
- Are unsure what exercise is safe
- Have balance, strength, or mobility limitations
- Have a history of falls
- Are returning to exercise after inactivity
- Experience pain or fear of movement
- Have multiple health conditions affecting exercise safety

Individualised programming helps ensure exercise is safe, progressive, and effective.

## Key Takeaways

- Osteoporosis weakens bones and increases fracture risk, often without symptoms
- Exercise is essential for bone strength, function, and fall prevention
- Weight-bearing, resistance, and balance training are most effective
- Movement should be modified—not avoided
- Consistency is key for long-term bone health
- Safe exercise supports independence and quality of life

## Frequently Asked Questions (FAQs)

**Is exercise safe if I have osteoporosis?**

Yes, when appropriately tailored, exercise is safe and highly beneficial.

**Can exercise make osteoporosis worse?**

No. Properly prescribed exercise supports bone health and reduces fracture risk.

**What exercises should I avoid?**

Avoid or modify heavy spinal flexion, forceful twisting under load, and high-impact activity in high-risk individuals.

**Is walking enough?**

Walking is beneficial but should be combined with resistance and balance training for best results.

**How often should I exercise?**

Regular weekly exercise is recommended, with strength and balance training several times per week.