

Understanding Osteoporosis

What is Osteoporosis?

Osteoporosis is a chronic condition that weakens bones, making them brittle and more likely to fracture. The disease primarily affects the hips, spine and wrists, but can impact any bone in the body. Key indicators of osteoporosis include:

- Reduced bone density.
- Increased bone fragility.
- A higher propensity for fractures even with minimal stress.

How does Osteoporosis occur?

Osteoporosis develops when the balance between bone resorption (breakdown) and bone formation is disrupted. This can be due to several factors:

- **Age:** peak bone mass is generally achieved by the mid-20's, after which bone density begins to decline.
- **Hormonal Changes:** oestrogen in women and testosterone in men have protective effects on bone mass. Postmenopausal women experience a sharp decline in oestrogen, increasing their osteoporosis risk.
- **Nutritional Deficiencies:** inadequate intake of calcium, Vitamin D and other nutrients.
- **Lifestyle Factors:** sedentary lifestyle, smoking and excessive alcohol consumption.

Managing Osteoporosis

Managing osteoporosis requires a comprehensive approach that includes dietary, lifestyle and medicinal interventions. Calcium, Magnesium and Vitamin D supplementation play a critical role in prevention and management, while medical treatments such as bisphosphonates, SERMs, PTH analogues, and Denosumab are crucial for those with established osteoporosis.

Supplements for Prevention and Management

- **Calcium** is essential for bone formation and maintenance. Numerous studies indicate that calcium supplementation, especially when combined with Vitamin D, can help slow age-related bone loss and reduce fracture risk. However, it is important to balance intake as excessive calcium can lead to kidney stones or cardiovascular issues.
Good sources of calcium: Dairy products, green leafy vegetables (e.g. broccoli and kale), fortified foods (e.g. orange juice and cereals).
Recommended dose: 1,200 mg per day for women aged 51 and older, and men aged 71 and older. Do not exceed 2,500 mg per day to avoid potential side effects.
(Meta-analysis show a reduction in fracture risk with a daily intake of 1,000-1,200 mg, particularly when combined with Vitamin D).
- **Vitamin D** is crucial for calcium absorption in the intestines. Several clinical trials have shown that Vitamin D supplementation alone or with calcium can decrease fracture risk in older adults and those who have low levels of Vitamin D.
Vitamin D can be found in sunlight exposure, fatty fish (e.g. salmon, trout and mackerel) and fortified foods.
Recommended dose: 800-1,000 IU (20-25 mcg) per day for adults aged 50 and older. Do not exceed 4,000 IU (100 mcg) per day, particularly in individuals with low baseline levels.
(Clinical trials indicate that 800-1,000 IU daily helps reduce the rate of fractures and supports overall bone health).



- **Magnesium** plays a role in converting Vitamin D into its active form which supports calcium absorption. Studies suggest that higher magnesium intake is associated with increased bone mineral density in the elderly.
Good sources of magnesium include nuts (e.g. almonds and cashews), seeds, whole grains and leafy green vegetables.
Recommended dose: 310-320 mg per day for women and 400-420 mg per day for men. Higher magnesium intake is associated with increased bone density; 310-420 mg daily is recommended for optimal benefits.
- **Vitamin K2** helps proteins bind calcium, ensuring it is stored in bones and teeth rather than arteries and soft tissues. Research suggests that Vitamin K2 supplements can improve bone density and reduce fracture risk, although more extensive studies are needed.
Vitamin K2 is found in leafy green vegetables (e.g. spinach and kale), fermented foods (e.g. natto) and some cheeses.
Recommended dose: 100-200 mcg per day. There is no established upper limit, but consult with a healthcare provider, especially if on blood thinners.
Emerging studies suggest that 100-200 mcg per day can improve bone health and reduce fracture risk.
- **Collagen** provides structural framework for bones and joints. Preliminary studies indicate that collagen peptides may support bone health by improving bone mineral density and overall bone strength.
Recommended Dose 2.5-15 grams per day, divided into smaller doses.
Preliminary research supports doses of 5-15 grams daily for improved bone mineral density and joint health.

Medical Treatments

- **Bisphosphonates** inhibit osteoclast activity, thereby reducing bone resorption and maintaining bone density. Clinical trials have demonstrated that bisphosphonates significantly lower the risk of both vertebral and non-vertebral fractures.
Common Bisphosphonates: Alendronate, Risedronate, Ibandronate, Zoledronic acid.
- **Selective Oestrogen Receptor Modulators (SERMs)** mimic the bone-preserving effects of oestrogen without some of the hormone's potential side effects. Studies show that SERMs can reduce the incidence of vertebral fractures in postmenopausal women.
Common SERMs: Raloxifene.
- **Parathyroid Hormone (PTH) Analogues:** stimulate bone formation by activating osteoblasts. Clinical studies have shown significant increases in bone mineral density and reductions in fractures, particularly in the spine.
Common PTH Analogues: Teriparatide, Abaloparatide.
- **Denosumab** is a monoclonal antibody that inhibits osteoclast maturation, thereby reducing bone resorption. Evidence: Clinical trials have shown that Denosumab significantly increases bone mineral density and reduces fracture risk in various populations, including postmenopausal women and men receiving hormone therapy for prostate cancer.
Common Drugs: Prolia.

If you have questions or are unclear on any of the points, be sure to let us know. You can email us at: enquiries@chiropractic-clinic.com or visit our website www.chiropractic-clinic.com