

• • • Your 'at a glance' guide to staying healthy for life By Quest Vitamins • • •

How strong your bones are results in part from the amount of calcium and other minerals they contain. Your body is constantly making new bone and breaking down old bone. As we age this process becomes slower, and bone is lost quicker than it can be replaced.

A diet rich in calcium, vitamin D and other key nutrients, combined with regular physical activity, can help maintain bone density and prevent diseases like osteoporosis (brittle bones) developing.

## Bone

The skeleton is continually renewed through a process whereby old bone is replaced by new bone. Osteoclasts (bone re-absorption cells) are responsible for the re absorption (destruction) of old worn out bone, which is necessary for the repair of bone surfaces and the remodelling of bone, while osteoblasts are responsible for the formation of new bone.

Until peak bone mass is achieved, between the ages of 30 and 35, the rate of breakdown and formation are equal and bone mass remains relatively constant; as we get older, the rate of breakdown increases and exceeds the rate at which bone is formed.

### Key Nutrients For Bone Health:

- ✓ Calcium
- ✓ Vitamin D
- ✓ Magnesium
- ✓ Boron
- ✓ Isoflavones

## Osteoporosis

Osteoporosis, which means "porous bone," is a disease in which the bones gradually become weak and brittle; fractures-especially of the hip, wrist, and spine-can result even from simple activities like lifting a chair. The following factors increase the risk of developing osteoporosis:

- Health conditions caused by hormone imbalances, such as hyperthyroidism (elevated thyroid hormone), interfere with the regulation of the hormones that control bone re-modelling.
- Gastrointestinal disorders, such as celiac disease and Crohn's disease, interfere with the absorption of nutrients.
- The use of corticosteroids, aluminium containing antacids, diuretics and methotrexate (used in the treatment of cancer and autoimmune diseases).
- Women are particularly at risk of developing osteoporosis (brittle bone disease) since oestrogen levels drop dramatically after the menopause; oestrogen slows the rate of bone breakdown, stimulates the absorption of calcium and decreases calcium excretion.

## Taking Care of Your Bones

### Life-Style

#### Get moving

One of the most important things you can do to prevent osteoporosis is to get moving; weight bearing exercise (jogging, dancing, weight lifting), involving the bones supporting body weight, has been shown to have a positive effect in maintaining and increasing bone mass.

#### Don't develop a Coke habit

Consumption of cola drinks has been associated with bone loss; cola contains phosphoric acid and caffeine. High phosphate levels in the blood reduce the formation of the active form of vitamin D

(calcitriol) in the kidneys. Cola also contains high levels of caffeine, caffeine is a diuretic so may promote urinary loss of calcium, however research has not confirmed that caffeine has a significant impact on bone health.

#### Eat a balanced diet

Diets rich in fruit (especially figs), vegetables (especially dark green leafy vegetables), dairy foods, canned oily fish, sesame seeds, almonds, dark chocolate, whole-grains and tofu will provide lots of calcium, phosphorus and magnesium, all required for bone mineralisation. Vitamin D, required for calcium utilisation, is found in egg yolks, dairy and oily fish, it is also synthesised by skin on exposure to sunlight.

Information created by Quest Vitamin's Nutritionist. Questions and Comments please email us; [nutritionists@questvitamins.co.uk](mailto:nutritionists@questvitamins.co.uk)

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Maintaining a balanced intake of protein is important for bone health. Excessive protein consumption can promote urinary excretion of calcium, two to three servings daily of protein is suggested (a serving being a typical portion of meat, fish, eggs, cheese or beans).

### **Maintain a healthy weight**

Being underweight is associated with an increased risk of developing osteoporosis.

### **Key nutrients**

#### **Calcium-**

Calcium is the major structural component of bone in the form of a calcium phosphate salt called hydroxyapatite, it is the foundation of bone health. The UK recommended daily intake is 700mg, but intakes of 1,200mg daily are suggested by health professionals for adults over 50 years; 1,500mg is safe for self-supplementation. Supplements are suggested particularly during the teenage and postmenopausal years.

#### **Vitamin D-**

Vitamin D maintains calcium activity in three ways:

- 1) increasing the intestinal absorption of dietary calcium,
- 2) increasing the reabsorption of calcium filtered by the kidneys, and
- 3) mobilizing calcium from bone when there is insufficient dietary calcium to maintain normal blood calcium levels. The UK Food Standards Agency suggests supplementing with 10µg if you are elderly, vegetarian or unable to get enough sun exposure.

#### **Magnesium-**

About two thirds of all magnesium in our body is found in our bones, where it plays a structural role. The UK recommended daily intake is 300mg daily; 350mg is safe for self-supplementation.

**Boron-** Animal and preliminary human studies report that boron may play a role in mineral metabolism, with effects on calcium, phosphorus, and vitamin D.

#### **Isoflavones-**

Isoflavones are plant compounds with weakly oestrogenic activity; soy, red clover and legumes such as chickpeas are rich in isoflavones. The incidence of osteoporosis is very much lower among Asian populations using soy as a staple food.



**Combined with a balanced diet and an active, healthy life-style, supplementation with key nutrients can help you ensure that your skeleton stays strong.**