

OSTEOPOROSIS

Osteoporosis means “porous bones”. It causes bones to become so weak and brittle they can easily fracture.

Like every other part of your body, your bones are constantly being renewed through a two-step process called remodeling, in which calcium is both taken away (known as resorption) and deposited. The balance between resorption (bone loss) and deposition (bone building) changes with age, there are many factors important in maintaining bone density. Bones increase in size and mass during childhood and adolescence, reaching peak bone mass around age 30. *The greater the bone mass, the longer one can delay serious bone loss with increasing age.*

Everyone should therefore consume adequate amounts of calcium and vitamin D throughout one’s life, and young woman and men who exercise regularly generally achieve greater peak bone mass than those who do not.

Women have a far greater chance of suffering from osteoporosis than men, When women go through menopause, there is a sharp decline in estrogen production by the ovaries. This decrease in estrogen production results in increased bone loss and decreased calcium absorption. Bone loss is most rapid in the first five years after menopause, with annual decreases in bone mass of 3-5% leading to significant weakening of bones and a heightened risk of fracture.

Fortunately, you can do many things throughout your life to prevent osteoporosis. Eating a healthy diet in rich calcium and vitamin D, regular weight-bearing exercise, and not smoking or consuming alcohol are very important. Menopausal women should get 1500 mg of calcium daily, along with 400 International Units (IU) of vitamin D for women over 50 (800 IU/day for women over 60). Important: Calcium intake should not exceed 2500mg/day, and vitamin D intake should not exceed 2000 IU/day, unless directed by your doctor.

Dairy products like milk, yogurt and cheese are the major dietary sources of calcium. Leafy green vegetables (broccoli, Chinese cabbage, kale, etc.), sardines and foods fortified with calcium, such as orange juice, tofu or many cereals, are also a good source. For more information, see the attached table listing foods rich in calcium. Vitamin D is often present in calcium supplements or a multivitamin, and for women younger than 50, casual exposure to sunlight converts precursors in the body to vitamin D.

Generally, getting enough calcium from dietary sources alone is difficult, so taking supplements is another important preventative measure for osteoporosis. The two main forms of calcium in supplements are *calcium carbonate* and *calcium citrate*. Calcium carbonate is more commonly available, inexpensive and convenient; the body more easily absorbs calcium carbonate when it is taken with food. Both types are similarly well absorbed, but those with reduced levels of stomach acid can absorb calcium citrate more easily, and calcium citrate is absorbed equally effectively when the supplement is taken with or without food.

While not as vital as calcium, other minerals are also important in keeping osteoporosis away. Iron, while often recommended as a nutritional supplement, should not be taken at the same time of day as calcium (allow a couple of hours in between). When your diet is balanced toward keeping your bones healthy and strong, then you are probably also getting sufficient amounts of magnesium and phosphorus.

Because of its ability to neutralize stomach acid, calcium carbonate is found in some over-the-counter antacids but not all forms of calcium supplements will dissolve. There are many brands available in different forms – tablets, chewables or liquids. If you choose this way to supplement your calcium, look for the USP symbol on the product label. Cirtacel, Caltrate, Os-Cal and Tums are particularly well

absorbed by the body. Some generic brands may not dissolve. (A note about Citracel: The amount of calcium stated on the Citracel label is for two pills, not one.)

Absorption of calcium is highest in doses of less than 500 mg (for example, someone taking 1000 mg of a calcium supplement daily should split the dose and take 500 mg at two separate times during the day). Some individuals taking calcium supplements experience gas, bloating, constipation or combination of these symptoms, although there is less of this when using calcium citrate. Again, spreading out the dosage throughout the day can resolve these symptoms.

A small amount of caffeine in the daily diet – less than two cups of coffee or tea – has a minimal effect on calcium levels in the body. However, a higher daily caffeine intake *does* increase the excretion of calcium and reduce calcium absorption. If you are drinking more than two caffeinated beverages a day, you should cut back.

It's also important to discuss with your doctor or pharmacist possible interactions between calcium supplements and your prescription or over-the-counter medications.

CALCIUM-RICH FOODS

Food	Serving Size	Milligrams (mg) per serving
Yogurt, plain, low-fat	8 ounces	415
Sardines, canned in oil, w/bones	3 ounces	324
Cheddar cheese	1.5 ounces	306
Milk, reduced fat (2% milk fat)	8 ounces	297
Yogurt, with fruit, low-fat	8 ounces	245-384
Orange juice, calcium fortified	6 ounces	200-260
Cottage cheese, 1% milk fat	1 cup (unpacked)	138
Tofu, soft, made with calcium sulfate	½ cup	138
Spinach, cooked	½ cup	120
Kale, cooked	1 cup	94
Ice cream, vanilla	½ cup	85
Broccoli, raw	½ cup	21

Exercise is extremely important in treating and preventing osteoporosis. Bone is living tissue that responds to exercise by becoming stronger. Women over age 20 can help prevent bone loss with regular exercise; exercise allows us to maintain muscle strength, coordination and balance, which helps prevent falls and related fractures.

The best exercise for your bones is the weight-bearing kind, which forces you to work against gravity, and at least 30 minutes of physical activity most days of the week is recommended. Weight training, walking, hiking, jogging, climbing stairs, tennis and dancing are all weight-bearing exercises.

If you have health problems such as heart trouble, high blood pressure, diabetes or obesity – or if you are age 40 or older – check with your doctor before beginning an exercise program. If you have osteoporosis, ask your doctor which activities are safe for you.