



## *Staying Healthy: How can I avoid osteoporosis? How can I help my parents and children avoid it?*

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### **What is osteoporosis?**

Osteoporosis is a silent disease that causes the bones to thin and weaken to a point where they break more easily, particularly the hip, spine and wrist. One in two women, and one in eight men over the age of 50 will have an osteoporosis-related fracture in their lifetime. Most won't know that they have osteoporosis until they break a bone or have a bone density test.

### **Why should you be concerned?**

Osteoporosis can affect how you look, how you feel, and how long you live. People with osteoporosis often lose several inches in height because the vertebrae in the spine begin to collapse. They may also develop a hump in their back as they age. People with osteoporosis fracture bones much more easily, and live with the fear of a serious injury. A broken hip, for example, almost always requires hospitalization and major surgery, and even after it heals many cannot walk unassisted. A broken hip could lead to permanent disability or even death; 15% of those who suffer this common injury die as a result of complications such as pneumonia, or other infections, often within the first six months following the fracture.

### **What causes osteoporosis?**

Osteoporosis starts many years before a woman suffers her first fracture. In a way, it is a disease of childhood that isn't obvious until adulthood. Since 97% of bone mass is usually achieved by the age of 18, the bone mass you develop as a child, through exercise and a healthy diet rich in calcium and vitamin D, has a great impact on bone health later in life. An inactive childhood or a poor diet prevent you from reaching your peak bone mass.

Although the body has almost reached maximum bone mass by age 18, it continues to build bone slowly until you reach peak bone mass at about the age of 30, then the building slows down and is relatively unchanged until you reach menopause. In the five to seven years following menopause, when estrogen levels fall and bone loss is the most rapid, women can lose up to 20% of their bone mass, making them more susceptible to osteoporosis. Bone loss continues into old age, although at a slower rate.

Hormone replacement therapy (HRT) is often prescribed for treating the symptoms of menopause, including the prevention of osteoporosis, but a recent study by the National Institutes of Health (NIH) found that the risks of hormones outweigh the benefits. Since diet and exercise have been shown to prevent and treat osteoporosis, the NIH recommends that hormones be used to treat the symptoms of menopause only if the symptoms seriously disrupt daily functioning or the enjoyment of life. For more information, see: [www.center4policy.org/hrt072002.html](http://www.center4policy.org/hrt072002.html)

### **How can I prevent osteoporosis?**

There are several things you can do to prevent osteoporosis.

- ◆ Eat a balanced diet rich in calcium and vitamin D, as a child and for the rest of your life.
- ◆ Participate in weight-bearing exercise (such as walking, tennis, dancing, weight-training)
- ◆ Limit use of alcohol and don't smoke
- ◆ Take medications and supplements when appropriate

**Calcium** is important for everyone. If your mother told you to drink three glasses of milk each day, she was right. Children ages 4-8 need 800 mg, and ages 9-18

require 1300 mg. Every adult needs about 1000 mg of calcium each day, and three 8-oz glasses of milk will provide 1050 mg. According to the NIH, calcium intake should increase to 1200 mg a day for those ages 51-64 and to 1500 mg a day for those over age 65.

In addition to milk products such as yogurt and cheese, other foods that are rich in calcium include broccoli, spinach and other dark green leafy vegetables, tofu and almonds. More and more foods today such as orange juice, bread, and cereals are fortified with calcium, making it easier to consume the recommended level of calcium. However, check the amounts. For example, an 8 oz glass of milk or fortified orange juice, or an 8 oz container of yogurt each has 350 mg, but of course if you have a smaller container of yogurt or smaller glass of juice, you'll get less calcium.

Vegetables are not likely to provide all the calcium you need: a typical serving of broccoli, about a half cup, has about 36 mg of calcium when boiled, or 21 mg when raw. A half cup of spinach that has been boiled contains about 122 mg of calcium, and when raw contains about 15 mg. Almonds have more calories than calcium: one ounce of almonds contains 70 mg of calcium and has about 160 calories; so, to get 1000 mg of calcium from almonds would equal the daily calorie consumption for a typical woman.

For information on the calcium content of many foods see: <http://www.nal.usda.gov/fnic/foodcomp>

**Dietary supplements** can also help. Results published in 2006 from a very large study known as the Women's Health Initiative showed that women who regularly took vitamin D and calcium supplements every day<sup>1</sup> suffered fewer hip fractures than women who took placebo (sugar pills). However, these benefits were only observed if the women were very conscientious about taking these daily supplements. These results, together with other research, support the idea that regular use of calcium and vitamin D supplements can reduce the risk of bone fracture.

Adult women need a total of 1000 to 1200 mg of calcium each day, but our bodies can't absorb that much all in one dose. The best strategy is to divide the total daily amount you need into two or three smaller doses and take them with meals throughout the day. If a meal includes calcium-rich foods like cheese, yogurt, milk, or calcium-fortified orange juice, then it is better to take a smaller dose of calcium with that meal (like a multi-vitamin that has only 200-300 mg of calcium), or to take none with that meal and save two 600 mg doses to take with other meals. Remember that calcium

<sup>1</sup> They took two pills daily. Each contained 500 mg of calcium and 200 IU of vitamin D.

works together with vitamin D. If your diet and sunshine exposure don't provide the daily requirement of 400-600 IU of vitamin D to complement the calcium, then a single-dose of a supplement can be used to make up the difference.

**Exercise** is almost as important as diet in developing and maintaining bone mass. Childhood exercise helps to develop bones, and exercise throughout adulthood helps to maintain and even slightly increase bone density. After menopause, women also benefit from regular activity such as walking, dancing, weight-training and low impact aerobics, which can decrease the risk of fractures. So, exercising not only makes you feel and look better, it will decrease your risk of fractures now or later in life when fractures can be most dangerous to your quality of life.

**Smoking** is bad for your bones. Women who smoke increase their chances of developing osteoporosis. It has been found that smokers may absorb less calcium from their diets, and low calcium intake is associated with low bone mass, rapid bone loss, and high rates of fracture. Also, women who smoke have lower levels of estrogen compared to nonsmokers, and typically go through menopause earlier. When postmenopausal women who smoke seek hormone replacement therapy, they find that they might need more hormones than other women, and may have more side effects.

## Risk Factors

Certain people are more likely to develop osteoporosis than others, and while there are many risk factors you can't change, you do have control over others.

### Factors you can't change:

- ◆ Being female
- ◆ Having a small frame
- ◆ Being Caucasian or Asian (although African Americans and Hispanic Americans are also at risk)
- ◆ Advanced age
- ◆ A family history of osteoporosis
- ◆ History of fractures in an immediate relative
- ◆ Estrogen deficiency as a result of menopause, especially early or surgically induced
- ◆ Use of certain medications, such as corticosteroids and anticonvulsants
- ◆ Personal history of fracture after age 50
- ◆ Current low bone mass
- ◆ Abnormal absence of menstrual periods

### Factors you can change:

- ◆ Low lifetime calcium intake
- ◆ Being very thin or anorexic
- ◆ An inactive lifestyle
- ◆ Current cigarette smoking
- ◆ Excessive use of alcohol

### Diagnosis

The bone mineral density (BMD) test is a painless test that measures bone density in the spine, wrist, and/or hip (the most common sites of fractures due to osteoporosis), while other tests measure bone in the heel or hand. The results of this test can tell you how dense your bones are, whether or not you have osteoporosis, and the chances of a future fracture. This test can also be used to monitor bone loss, and the effects of any treatment you may be receiving. The National Osteoporosis Foundation recommends that all women over age 65, and post-menopausal women under age 65 who have risk factors have a BMD test.

### Treatment

The treatment of osteoporosis is very similar to prevention. A balanced diet rich in calcium and vitamin D, exercise, limited alcohol consumption, no smoking and in some cases, medication all help prevent bone loss.

For detailed information on specific medicines approved by the FDA for treatment of osteoporosis, see this website: [www.nof.org/patientinfo/medications.htm](http://www.nof.org/patientinfo/medications.htm)

### Fall Prevention

Each year about one-third of people over age 65 falls, and some will face permanent disability from the broken bones suffered. Those with osteoporosis are at greater risk since their bones are more fragile. Several factors contribute to the greater likelihood of an older person falling. Many face physical factors such as, poor eyesight, bad hearing, lack of strength and/or coordination, and poor balance. Others are affected by the medications they take, such as muscle relaxants, sedatives or blood pressure drugs, which can cause dizziness and/or lightheadedness. And finally, people are more likely to fall in a cluttered house, in dim lighting, or on loose carpeting or throw rugs.

### Precautions you can take to avoid falls:

- ◆ Make sure all stairways, entrances and halls are well lit. Consider using nightlights, particularly in the bathroom.
- ◆ Install non-slip material and a grab bar in the tub/shower.
- ◆ Secure all loose cords and throw rugs.
- ◆ Make sure stairs are clear of clutter and treads or carpet is secure.
- ◆ Use non-skid rubber mats in front of the sink and stove and clean up spills immediately.
- ◆ Wear sturdy, rubber-soled shoes.
- ◆ Ask your doctor if any of the medications you're taking could contribute to a fall.

### Websites of interest

[www.strongwomen.com/decision\\_tree.htm](http://www.strongwomen.com/decision_tree.htm)  
Dr. Miriam Nelson of Tufts University offers an exercise program especially for prevention and treatment of osteoporosis. This website can get you started.

[www.cdc.gov/powerfulbones](http://www.cdc.gov/powerfulbones)  
The National Bone Health Campaign website is interactive and geared to help younger girls learn about the importance of building bones.

### References

[www.osteoporosis.org](http://www.osteoporosis.org)  
National Institutes of Health Osteoporosis and Related Bone Diseases - National Resource Center

[www.nia.nih.gov/health/agepages/osteoporosis.htm](http://www.nia.nih.gov/health/agepages/osteoporosis.htm)  
National Institute on Aging

[www.nof.org/](http://www.nof.org/)  
National Osteoporosis Foundation

[www.nal.usda.gov/fnic/foodcomp](http://www.nal.usda.gov/fnic/foodcomp)  
National Agricultural Library  
U.S. Department of Agriculture

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