

# Osteoporosis

## Introduction

The minerals in our bones are constantly being reabsorbed and reformed throughout our lifetimes. Osteoporosis and osteopenia happen when your bone minerals are being removed faster than they are being replaced and your bones become less dense. Osteoporosis is a more serious decrease in bone density, which can lead to fractures. Osteoporosis and osteopenia are common, with approximately 44 million Americans affected. Fractures caused by osteoporosis may lead to hospitalization, early admission to a nursing home and decreased quality of life. You may already be using prescription medications such as hormone replacement therapy or bone resorption inhibitors (Fosamax, Actonel or Boniva). There are other non-prescription ways that you can use to help keep your bones strong.

## How is Osteoporosis Diagnosed?

You cannot feel osteoporosis– it must be diagnosed by your doctor. Your doctor may perform a painless bone density scan to determine whether your bone density is normal or you have osteoporosis or osteopenia.

## Risk Factors for Osteoporosis

- Non-controllable: female gender, Asian or Caucasian, post-menopausal, early menopause (before age 45), small frame, age, family history of osteoporosis, long-term use of steroids (i.e. prednisone), hyperthyroidism, intestinal absorption disorders.
- Controllable: low calcium intake, excessive caffeine use, nicotine use, chronic alcoholism, lack of sun exposure, sedentary lifestyle, anorexia or bulimia.

## Calcium Supplementation

Suggested daily calcium intake depends upon a person's age. The following table shows the minimum recommended daily intake of calcium for each age group.

| Age         | Recommended Daily Calcium Intake (milligrams) |
|-------------|---|
| 0-6 months  | 210 mg  |
| 7-12 months | 270 mg  |
| 1-3 years   | 500 mg  |
| 4-8 years   | 800 mg  |
| 9-18 years  | 1,300 mg                                      |
| 19-50 years | 1,000 mg                                      |
| 50+ years   | 1,200 mg                                      |

<http://dietary-supplements.info.nih.gov/factsheets/calcium.asp#h2>

Most multivitamins have less than 500 mg of calcium. Taking only a multivitamin will not provide a full day's requirement of calcium.

The two main types of calcium you are likely to find are calcium citrate and calcium carbonate. Calcium carbonate is inexpensive and is found in Tums and other antacids. Unfortunately it is not as easily absorbed by the stomach and must be taken with food. Calcium citrate is a little more expensive but more easily absorbed by the body. You do not have to take calcium citrate with food and it is a good choice for people with low stomach acid.

Your body can only absorb about 500 mg of calcium at a time. If you need 1,000 mg per day, you will need to take 500 mg at two different times during the day.

You may also get some of your daily requirement of calcium from the food you eat. The following table lists some calcium-rich foods and the amount of calcium they contain.

Do not take more than 2,500 mg per day of calcium unless recommended by your doctor. This could cause your blood levels of calcium to be too high and may lead to kidney stones.

| <b>Food</b>                      | <b>Milligrams per Suggested Serving</b> |
|----------------------------------|---|
| Yogurt                           | 415                                     |
| Sardines, canned with bones      | 324                                     |
| Cheddar cheese                   | 306                                     |
| Milk                             | ~300                                    |
| Mozzarella                       | 275                                     |
| Orange juice (calcium-fortified) | 200-260                                 |
| Tofu                             | 138-204                                 |
| Salmon, canned with bones        | 181                                     |
| Pudding                          | 153                                     |
| Cottage cheese                   | 138                                     |
| Spinach                          | 120                                     |
| Cereal (calcium-fortified)       | 100-1,000                               |
| Frozen yogurt                    | 103                                     |
| Ice cream                        | 85                                      |
| Soy beverage (calcium-fortified) | 80-500                                  |
| Chinese cabbage                  | 74                                      |
| Tortilla                         | 37-42                                   |
| Sour cream                       | 32                                      |
| Bread                            | 20-31                                   |
| Broccoli                         | 21                                      |
| Cream cheese                     | 12                                      |

<http://dietary-supplements.info.nih.gov/factsheets/calcium.asp#h3>

### **Vitamin D Supplementation**

Vitamin D is required for the absorption of calcium. Traditionally, vitamin D is obtained from sun exposure. However, with more concerns about skin cancer and more time spent inside working, most Americans do not get enough vitamin D from sun exposure alone. Sunscreen effectively blocks 99% of the necessary UV rays. The current suggested daily intake of vitamin D for healthy children and adults is 800-1,000 IU (International Units) per day. Some people will require much more vitamin D if they have a blood test that shows they are very deficient.

Vitamin D may also be found in food that we eat. Main sources include oily fish, fortified milk, fortified cereals, eggs (yolks) and liver.

### **Vitamin K Supplementation**

- Vitamin K is important in regulating bone strength. Regular intake of vitamin K has been shown to decrease the likelihood of fractures.
- Recommended intake of vitamin K for adult women is 90µg (micrograms) and 120µg for adult men. Vitamin K can be taken as a supplement or you can get vitamin K in your diet from eating leafy green vegetables, such as spinach or broccoli.
- Vitamin K is also involved in the blood clotting process. People on blood thinners (Coumadin, or warfarin) must talk to their doctor before beginning vitamin K supplementation. The dose of your blood thinner may need to be changed.

### **Lifestyle Modifications**

- Weight-bearing exercise, or exercise that puts weight on your bones, is the most effective exercise for maintaining bone strength. Some examples of weight-bearing exercise are light weights, walking, running or stair-climbing.
- If you smoke, stop. Your doctor or pharmacist can recommend ways to help you stop. Not only will smoking cessation help your bones, but has beneficial effects all over the body.
- Moderate your caffeine intake. Limit yourself to 2-3 cups per day.
- Limit alcohol intake to one drink per day for women or two per day for men.

## Resources

Holick MF, Chen TC. *Vitamin D deficiency: a worldwide problem with health consequences.* Am J Clin Nutr 2008;87(suppl):1080S-6S.

Iwamoto J, Sato Y, Takeda T, Matsumoto H. *High-dose vitamin K supplementation reduces fracture incidence in postmenopausal women: a review of the literature.* Nut Res 2009;29:221-228.

Mayo Clinic. *Osteoporosis.* <http://www.mayoclinic.com/health/osteoporosis/DS00128>

National Institute of Health. *Dietary supplement fact sheet: calcium.*

<http://dietary-supplements.info.nih.gov/factsheets/calcium.asp#h3>

National Institute of Health. *Dietary supplement fact sheet: vitamin D.*

<http://dietary-supplements.info.nih.gov/factsheets/vitamind.asp#h3>

National Osteoporosis Foundation. *Access to osteoporosis testing for Americans in jeopardy, DXA task force urges Congress to pass bill to protect patient access.* [http://www.nof.org/news/pressreleases/2009\\_op\\_testing\\_in\\_jeopardy.htm](http://www.nof.org/news/pressreleases/2009_op_testing_in_jeopardy.htm)