

Osteoporosis in Women

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What is osteoporosis?

Osteoporosis is the weakening of bone that can occur as you get older. As bones get thinner with age, they become weaker. There is a much greater risk they will break if you fall or have a minor injury. Medical complications of these injuries can result in longer stays at the hospital, disability, and even death.

Osteoporosis is most common in white and Asian women, especially slender women, but it can occur in women of any race.

How does it occur?

Osteoporosis occurs as women get older. After menopause women produce much less of the sex hormone estrogen. Estrogen helps women's bones stay strong. For example, it helps deposit calcium in the bones. Low levels of estrogen cause a weakening of the bones.

Women who smoke or are physically inactive are at a greater risk of developing osteoporosis as they grow older. Too little calcium in the diet or a family history of osteoporosis are other risk factors.

In addition to aging, other causes of osteoporosis are:

- surgical removal of the ovaries, which reduces estrogen levels
- intense exercise (such as marathon running), which reduces estrogen levels
- long periods of bed rest during serious illness
- too much aluminum hydroxide, a common antacid used to treat heartburn and ulcers.

What are the symptoms?

You may have no symptoms until a bone breaks. Broken bones are the most common problem for people with osteoporosis. Often it's the hip, arm, or wrist that breaks.

The bones of the spine are also a common area of thinning. Often, over time, the bones of the spine (vertebrae) collapse on themselves, one at a time, causing loss of height, back pain, and a stooping posture.

How is it diagnosed?

Your health care provider may discover you have osteoporosis from an x-ray taken for some other problem. Otherwise, the diagnosis might be made from a review of your medical history and symptoms, a physical exam, x-rays, and blood tests. If you are in a high-risk category, your provider may order tests that measure the density of the bones in your forearm, spine, or heel.

How is it treated?

Treatment cannot eliminate osteoporosis, but medications can slow down the loss of bone and rebuild some bone.

The single most effective treatment for osteoporosis is estrogen (hormone replacement therapy). Women begin to produce less estrogen before menopause. Without this hormone to help bones stay strong, women are more likely to have osteoporosis. Starting to take estrogen pills around the time of menopause is the best way to slow calcium loss from the bones and keep the bones strong. The greatest loss of bone density occurs in the first years of menopause. For this reason many health care providers prescribe estrogen for women who are close to menopause.

There are pros and cons for taking estrogen. Estrogen helps slow the loss of bone and may decrease your risk of heart and blood vessel disease. However, estrogen taken alone, without the hormone progesterone, may increase the risk of uterine cancer. Also, your health care provider may not recommend that you take estrogen if you have a history of breast cancer, blood clots, or stroke. You and your health care provider need to discuss your particular situation.

Treatment also includes increasing the calcium your body gets, usually through diet and supplements. Calcium is helpful in the treatment of osteoporosis, especially if you are not taking estrogen, but it is not nearly as helpful as estrogen. Most adult women should have 1000 mg of calcium a day. Postmenopausal women who are not taking estrogen supplements need 1500 mg a day.

New treatments for osteoporosis are being studied. Examples of new medicines are:

- Calcitonin, which helps prevent bone weakening but is not as effective as estrogen. The most convenient form of calcitonin is a nasal spray, which you use once a day.
- Alendronate (Fosamax), which also helps prevent bone weakening and helps build some bone. It is taken in the form of pills once a day.
- Raloxifene (Evista), which is a new estrogenlike drug that keeps bone dense without increasing the risk of uterine cancer. It is taken as a pill once a day.

These medicines are most often prescribed for women who cannot take estrogen or who have already had a fracture due to osteoporosis.

Weight-bearing exercise, such as walking or stair climbing, also helps keep your bones strong. Doing this kind of physical activity every day may help stop further weakening of your bones. Swimming, although very healthy, is not a weight-bearing exercise. It can be part of your overall fitness program, but for women at risk for osteoporosis, exercise should include walking.

How long will the effects last?

The risk of a broken bone resulting from osteoporosis increases with age. Once menopause begins, most women, especially Caucasian and Asian women, need to take precautions for the rest of their lives to prevent osteoporosis.

How can I take care of myself?

Follow the treatment prescribed by your health care provider. In addition, you can:

- Eat healthy foods, especially low-fat milk and dairy products, green leafy vegetables, citrus fruits, sardines, and shellfish.
- Take a daily calcium supplement if your provider recommends it.
- Do weight-bearing physical activity, such as walking, regularly. Be sure to exercise your upper body also.

What can I do to help prevent osteoporosis?

You can help prevent osteoporosis with:

- hormone replacement therapy, or other medications recommended by your health care provider, at menopause
- adequate calcium in your diet
- regular exercise.

What can I do to reduce my risk of injury?

You can reduce the risk of injury and broken bones if you:

- Avoid lifting heavy objects.
- Avoid unusually vigorous physical activity; build your activity level gradually.
- Wear proper footwear: low-heeled shoes with nonslippery soles for walking and suitable shoes for sports and recreation. Make sure the soles of your shoes don't catch on carpeted surfaces.
- Use support for walking, such as a cane, if you need it.
- Maintain a safe, well-lit, and uncluttered home to help prevent falls.
- Avoid throw rugs on your floors at home.
- Avoid icy, wet, or slippery surfaces, especially in the bathroom. Use nonskid mats in the shower and bathtub.

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Calcium and Vitamin D

The Role of Calcium

Calcium is important to postmenopausal women because, although it cannot prevent osteoporosis on its own, adequate daily intake may help to slow down bone loss.¹ Calcium is a mineral that not only promotes good bone health, but has other benefits that impact your overall well-being.¹

Recommended Daily Calcium Intake (mg/day)²

Birth-6 months	400
6 months-1 year	600
1-10	800-1200
11-24	1200-1500
25-50 (women & men)	1000
51-64 (women on ERT & men)	1000
51+ (women not on ERT)	1500
65 or older	1500
Pregnant or lactating	1200-1500

Adapted from the National Institutes of Health (1994).

The amount of calcium needed for good bone health is influenced by diet, hormones, medications, age, and genetic factors. Furthermore, your recommended daily intake of calcium changes over your lifetime. Therefore, it is important for you to discuss your unique calcium needs with your doctor or healthcare provider.

Sources of Calcium

Most dietary calcium comes from dairy products, but other foods are excellent sources as well. Below is a table of some foods that contain calcium.³

Food	Serving size	Calcium content (mg)
Grated Parmesan cheese	1 oz	390
Collard greens	1 cup	357
Sardines, canned in oil	8 medium	354
Rhubarb, cooked, added sugar	1 cup	348
Yogurt, low fat, fruit flavored	8 oz	345
Gruyere cheese	1 oz	308
Milk, skim	1 cup	303
Calcium-fortified orange juice	1 cup	300
Blackstrap molasses	2 tablespoons	274
Figs, dried	10 figs	269
Spinach, cooked	1 cup	245
Cheddar cheese	1 oz	211
Creamed cottage cheese	1 cup	211
Broccoli, cooked, drained	1 medium spear	205
American cheese, processed	1 oz slice	195
Salmon, canned	3 oz	167

Adapted from *Family Practice Recertification*. 1998;20:17-36.

It is best to obtain daily calcium requirements from dietary sources, but supplements can be used if you cannot get enough calcium in your diet. Talk with your healthcare provider about the use of supplements since there are several different types of calcium and many different supplements available. If you take supplements, the calcium is best absorbed if taken with meals and if the dose is split so that you take no more than 500 mg at one time.¹

The Role of Vitamin D

For calcium to be effective, it needs to be properly absorbed by the body.¹ Adequate levels of vitamin D are needed for the best calcium absorption. Your body manufactures vitamin D in response to sunlight. Chief dietary sources of vitamin D include vitamin D-fortified milk and cereals, egg yolks, saltwater fish, and liver.⁴ However, some people may need to supplement these natural sources. The amount of vitamin D found in multivitamins is generally enough for proper calcium absorption, but too much vitamin D can be harmful, so be sure to speak to your doctor or healthcare provider before adding a vitamin D supplement to your diet.¹

References:

1. *Boning Up on Osteoporosis. A Guide to Prevention and Treatment.* Washington, DC: National Osteoporosis Foundation; 1997:14-22.
2. National Institutes of Health. Osteoporosis and Related Bone Diseases National Resource Center. *Osteoporosis Overview.* Available at: www.osteoporosis.org/osteoporosis.html. Accessed October 19, 2000.
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4. *Physician's Guide to Prevention and Treatment of Osteoporosis.* Belle Mead, NJ: Excerpta Medica, Inc., 1998:16,20,22.

The Benefits of Exercise—Help Fight Osteoporosis

A regular exercise program helps fight osteoporosis by maintaining bone strength, and it reduces the likelihood of falling by improving coordination, balance, and muscle strength.¹ It also strengthens your heart and increases your stamina and energy level.²

Bone is living tissue that responds to exercise by becoming stronger and denser.³ If you lead a life with little or no physical activity, it may contribute to lower bone mass.³

Help Prevent Fractures With Exercise

Two types of exercise can help build bone mass and density:

- **Weight-bearing exercises** are those in which your bones and muscles work against gravity. Your feet and legs bear your weight. Any activity that causes muscles to work against gravity is a weight-bearing exercise: walking, treadmill walking, tennis, dancing, low-impact aerobics, jogging, or using cross-country ski machines or stair-step machines are some obvious ones.^{4,5} In addition to helping keep your bones strong,⁵ other benefits of weight-bearing exercise include reducing your cardiac risk, reducing stress, and facilitating weight loss.²
- **Resistance exercises** (weight training) use muscular strength to improve muscle mass and strengthen bone. These activities include weight lifting, which may be done with free weights or weight machines found at gyms and health clubs.³

Important Considerations When Starting an Exercise Program

- Check with your doctor or healthcare professional for any concerns or limitations in initiating exercise.
- Make sure you have shoes that provide proper support and balance.
- Thirty minutes of weight-bearing exercise 3 to 5 times a week can help maintain your bone density.⁴
- Look for opportunities to exercise in daily activities: park farther away, take the stairs, or walk the dog.
- If you are considering weight training, check with your doctor before beginning a program. You may also want to start out with an instructor to reduce the risk of injury. (The potential for injury is greater when you add resistance; working out with an instructor may reduce the risk.) Once you have established a routine, you may want to continue on your own.

Please remember: Exercise is an important component of an osteoporosis prevention or treatment program, but it is not a substitute for osteoporosis medications and/or calcium supplementation in preventing bone loss in postmenopausal women.³

References:

1. *Physician's Guide to Prevention and Treatment of Osteoporosis*. Belle Mead, NJ: Excerpta Medica, Inc., 1998: 1, 2, 16, 17.
2. *Health at Home*. Farmington Hills, MI: American Institute for Preventive Medicine Press; 1998:41.
3. *Boning Up on Osteoporosis. A Guide to Prevention and Treatment*. Washington, DC: National Osteoporosis Foundation; 1997: 22, 24.
4. *The Bone Density Diet*. New York, NY: Ballantine Books; 2000: 270.
5. National Osteoporosis Foundation. *Prevention, Exercise for Healthy Bones*. Available at: www.nof.org/prevention/exercise.htm. Accessed May 16, 2002.

Fall Prevention

Preventing falls is important in decreasing fracture risk due to osteoporosis. Take time to evaluate your home and look for ways to prevent falls. Here are some suggestions:

Bathroom¹⁻³

- Install grab bars on the walls in the shower, bathtub area, and near the toilet. Towel bars and built-in soap holders are not substitutes for grab bars.
- Use nonskid mats.
- Add a nonskid shower seat and handheld showerhead to allow for sitting while bathing.
- Consider installing carpeting as an alternative to marble or tile, which can get slippery when wet.

Bedroom¹⁻³

- Have a light switch within reach of the bed.
- Place a night-light between the bedroom and bathroom. Night-lights that come on when detecting motion are best.
- Keep a flashlight nearby in case of a power failure. Check to make sure the flashlight is working on the first day of every month.

Living Areas^{2,3}

- Clear electrical cords and telephone wires from walk-through areas.
- Anchor rugs to the floor. Remove area rugs if possible. Area rugs on bare floors should have a nonskid backing, and the edges should be taped down. If you have thick or sculptured design wall-to-wall carpet, consider replacing it with smooth, low-pile carpet.
- Look for areas that are not well lit, and add light with more lamps.

Kitchen¹⁻³

- Store frequently used items in easy-to-reach areas.
- Avoid cleaning the floor with products that leave a waxy finish.
- Wipe up spills immediately.
- Avoid area rugs in the kitchen; if area rugs are necessary, place nonslip pads underneath them.

Stairs¹⁻³

- Install handrails and use them while going up and coming down stairs.
- Have a light switch at the top and bottom of every staircase.
- Make sure stairs are well lit.
- Install a strip of bright tape along the edge of the top and bottom steps.

Other Tips

- ❑ While grocery shopping, use the shopping cart for support and balance. Have grocery bags packed lightly, and request bags with handles.
- ❑ Avoid excessive drinking of alcoholic beverages; it can impair your balance and weaken your bones.⁴
- ❑ Do not wear long coats, dresses, nightgowns, or robes that may cause you to trip.²
- ❑ Avoid walking around your home in socks, stockings, or backless slippers, which can be slippery on uncarpeted floors.²
- ❑ Get out of bed slowly, and sit on the edge for a moment before standing.²
- ❑ Have your vision and hearing checked regularly.^{2,5}
- ❑ If you have an illness that affects your circulation or mobility, or if you take medications for your blood pressure or heart, you may feel dizzy or disoriented at times.² Speak to your doctor if you experience these sensations.

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1. *Health at Home*. Farmington Hills, MI: American Institute for Preventive Medicine Press; 1998:41,49,50.
2. *Living With Osteoporosis*. Washington, DC: National Osteoporosis Foundation; 1998.
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