



PATIENT EDUCATION
*Healthy Bones for Life:
Preventing Osteoporosis*

EDUCATION
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HEALTHY INTERACTION
LIVING

BARBARA WOODWARD LIPS
PATIENT EDUCATION CENTER

Tips to Remember

Follow these suggestions to keep your bones strong:

1. Exercise 30 to 60 minutes most days.
2. Eat a balanced diet of nutritious foods, including adequate calcium and vitamin D.
3. Do not smoke cigarettes or use other tobacco products.
4. Limit caffeine and alcohol intake.
5. Maintain an appropriate weight.
6. Maintain a healthy posture.
7. Take steps to prevent falls such as wearing low-heeled shoes and using a cane or walker if necessary.
8. Have regular physical examinations.

Introduction

It is never too early or too late to think about bone health. Everyone can take steps to keep bones strong and healthy throughout life. This resource describes how bones grow and change with age. It also outlines risk factors for and suggestions to help prevent bone loss and osteoporosis.

Bones and Aging

Bones are living tissue made up of minerals and protein. Bone strength depends in part on its mineral content. When bones contain less calcium, phosphorous and other important minerals, they become weaker, placing a person at risk for fractures.

Despite its stable appearance, bone is always changing — new bone is made and old bone is broken down in a process called remodeling. When you are young, your bone density increases and you attain your peak bone density around age 30 (see figure 1).

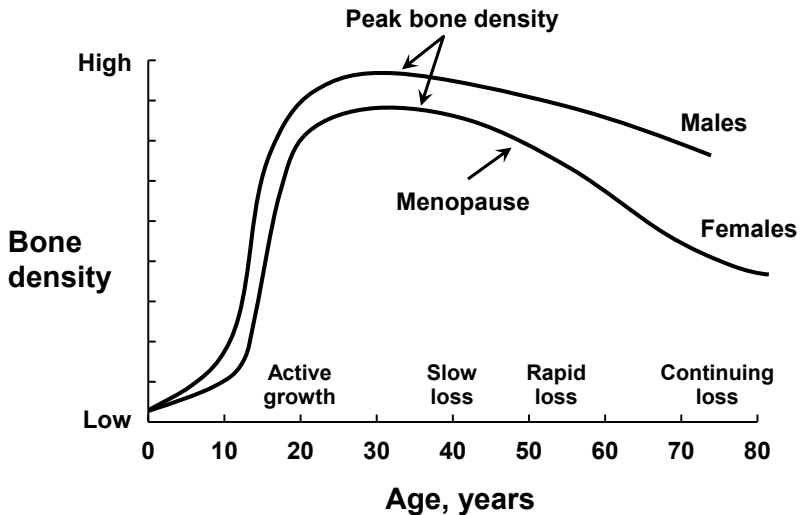


Figure 1. Bone density over time

Afterward, bone density slowly declines as you break down a little more bone than you build. In women, bone loss speeds up at menopause, when estrogen levels drop. Around age 60, bone loss in women slows but does not stop. Men lose bone too, but usually at a slower rate than women.

Lifestyle choices can prevent you from reaching your peak bone mass, putting you at risk for developing osteoporosis later in life. For example, one major risk is poor nutrition. Proper nutrition is particularly important for children and young adults while they build bone mass, yet young people's diets often lack adequate calcium and other minerals.

Often, children, teens and young adults drink carbonated soft drinks in place of milk. Soft drinks lack essential nutrients; have a high sugar content, which can lead to dental cavities, obesity and diabetes; and may contain ingredients that interfere with calcium absorption. In a quest to be thin, young women in their teens and early 20s may be especially likely to diet excessively and deprive themselves of valuable nutrients. Adults and children build strong bones by drinking milk or calcium-fortified juice instead of soft drinks and by avoiding restrictive diets.

Osteoporosis

While some bone loss is normal as you age, it is not natural for your back to become rounded. Also abnormal is losing significant height or experiencing painful fractures simply from coughing, hugging or bending over. These conditions can happen if you develop osteoporosis, or have bone density low enough to put you at risk for osteoporosis.

Osteoporosis is a disease in which bones become thinner and more porous due to loss of mineral content. It is most common in older women, affecting about 25 percent of women older than 60. Besides increasing fracture risk, osteoporosis can cause the spine to become deformed, leading to compression or damage to other body organs.

Osteoporosis Risk Factors

Risk factors and other osteoporosis causes are listed below. If you believe you are at risk, talk with your health care provider about screening tests and planning a prevention strategy.

Risk factors you can change

Lifestyle choices can help reduce some risks for developing osteoporosis. (See “Preventing Bone Loss” for additional information about these risk factors.)

- **Inactivity** — An inactive lifestyle can keep you from developing and maintaining strong bones.
- **A diet low in calcium and vitamin D** — Getting enough of these nutrients is essential to bone health.
- **Tobacco, alcohol and caffeine use** — Tobacco use and excessive consumption of alcohol or caffeine can reduce bone formation, interfere with the body’s ability to absorb calcium and contribute to weak bones.

Risk factors you cannot change

The following factors can increase your risk of developing osteoporosis.

- **Gender** — Women are at higher risk of osteoporosis than men.
- **Age** — The risk of osteoporosis increases with age.
- **Body size** — People who are quite thin or have small body frames often have less bone density to draw from as they age.
- **Ethnic or racial origin** — Caucasians or

those of Asian descent have the greatest risk of osteoporosis.

- **Family history** — Having a parent or sibling with osteoporosis increases your chance of developing the disease, especially if you also have a family history of fractures.
- **Sex hormone levels** — Early menopause, removal of ovaries before age 45 or late onset of puberty may increase your risk.

Other causes of osteoporosis

Osteoporosis can be associated with the following:

- **Medications** — Using some medications long term can damage bone. These include corticosteroids to treat chronic conditions such as asthma, rheumatoid arthritis and psoriasis (dry, red patches on the skin), the blood-thinning medications, heparin and warfarin (Coumadin™), medications that lower sex hormones, some anti-seizure medications and sometimes thyroid hormone when prescribed in high doses. Talk with your health care provider about the medications you take.
- **Other causes** — Various conditions can interfere with calcium absorption and contribute to bone loss. These include liver or kidney disease, diabetes, hyperthyroidism (overactive thyroid), stomach surgery, Cushing's disease (the body produces excess cortisol) and conditions affecting the digestive system (such as anorexia nervosa or Crohn's disease, which causes inflammation of the intestines).

Preventing Bone Loss

It is important to keep your bones strong. The bone density you gain as a child and young adult can help protect you from the impact of bone loss in later years and reduce your risk of developing osteoporosis.

The following suggestions can help you build strong bones when you are young and help prevent or slow bone loss as you age.

Exercise

Exercise helps strengthen bones, slows bone loss and improves fitness. Try to get 30 to 60 minutes of exercise most days. Use a combination of:

- **Weight-bearing exercises.**

Weight-bearing exercises — activities done while on your feet with your bones supporting your weight — mainly affect leg, hip and lower back bones. Examples include walking, dancing, jogging, running, stair-climbing, skipping rope and skiing.

- **Strength training exercises.** Strength training uses resistance, such as free weights, weight machines, resistance bands and water activities, to strengthen muscles and bones. These can be especially helpful for bones in the arms and upper spine.

- **Back-strengthening exercises.** These use resistance (free weights, weight machines and resistance bands) to strengthen back muscles and improve posture.

The best exercises for you will depend on your goals, overall health status, degree of bone loss and what you enjoy doing. A physical therapist, fitness trainer or health care provider can help you design an exercise program.

Maintain good nutrition

A balanced diet of nutritious foods can help you maintain an appropriate weight and preserve healthy bones. Calcium and vitamin D are particularly important for bone health.

Calcium and Vitamin D Needs for Healthy Adults	
Calcium	
Recommended daily amounts in milligrams (mg)	
Women	
Age 50 & younger	1,000 mg
Age 51 & older	1,200 mg
Men	
Age 70 & younger	1,000 mg
Age 71 & older	1,200 mg
Vitamin D	
Recommended daily amounts in international units (IU)	
Women and Men	
Under age 50	400-800 IU
Age 50 & older	800-1,000 IU

Your calcium and vitamin D recommendations may be slightly different if you are under age 18, are pregnant or breast-feeding, or already have documented bone loss. Ask your health care provider what is right for you.

The preferred source of calcium is from the diet. Dairy products (such as low-fat milk, cheese or yogurt), certain green vegetables (such as broccoli, spinach or kale) and calcium-fortified products (such as some breakfast cereals, breads, pasta, rice, pancake and waffle mixes, fruit juices and soy beverages) are rich sources of calcium. For example, an 8-ounce glass of milk or calcium-fortified soymilk contains about 300 milligrams (mg) of calcium, an ounce of cheese contains about 200 mg of calcium and an 8-ounce serving of yogurt contains 400 mg of calcium.

You may need to take a calcium supplement if you have difficulty digesting milk or are avoiding certain dairy products because of concerns about fat or cholesterol.

Vitamin D helps the body absorb calcium and is normally made in the skin with regular sunlight exposure. Other important vitamin D sources include some foods (such as vitamin D-fortified milk, cereals, egg yolks, saltwater fish or liver), multivitamins and some calcium supplements. For example, an 8-ounce glass of vitamin D-fortified milk contains 100 international units

(IUs) of vitamin D. Check the nutrition labels on product packages for the vitamin D content of foods. Talk with your health care provider before taking vitamin D supplements.

Avoid tobacco use, and limit alcohol and caffeine intake

Tobacco, alcohol or caffeine use increases bone loss and puts you at risk of developing osteoporosis.

- Do not smoke cigarettes or use other tobacco products.
- Limit alcohol intake to no more than one drink per day if you are a woman and two drinks per day if you are a man. (One drink is 1.5 ounces of hard liquor, 5 ounces of wine or 12 ounces of beer.)
- Limit caffeine intake to no more than three cups of caffeine-containing beverages a day.

Maintain a healthy posture

Healthy posture helps reduce stress on your spine and can increase your exercise endurance.

To maintain a healthy posture:

- Keep your head and chest held up, chin slightly tucked in, shoulders back and relaxed, upper back and neck comfortably straight and lower spine arched.

- When you sit or drive, place a rolled towel in the small of your back.
- Do not lean over when reading, working at a computer or doing handwork. Raise your book, keyboard or other handwork to a level that allows you to maintain good posture.
- When lifting, bend at the knees, not the waist, and lift with your legs, keeping your upper back straight.

Prevent falls

Falls increase the likelihood of breaking a bone. Wear low-heeled shoes with nonslip soles and check your home for exposed electrical cords, area rugs and slippery surfaces that might cause you to trip or fall. Use a cane, walker or other assistive device if you have trouble maintaining your balance.

Contacting Your Health Care Provider

If you have questions about this information, talk with your health care provider.

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BARBARA WOODWARD LIPS PATIENT EDUCATION CENTER

Mrs. Lips, a resident of San Antonio, Texas, was a loyal Mayo Clinic patient of more than 40 years and a self-made business leader who significantly expanded her family's activities in oil, gas and ranching. Upon her death in 1995, Mrs. Lips paid the ultimate compliment by leaving her entire estate to Mayo Clinic. By naming the Barbara Woodward Lips Patient Education Center, Mayo honors her generosity, her love of learning, her belief in patient empowerment and her dedication to high-quality care.

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