

# Keeping Bones Strong and Healthy

## Let's Talk about Osteoporosis

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Our bones are alive. We might not think of them that way—but to keep themselves strong and usable, our bones are always changing.

“Bone is living, growing tissue,” says Dr. Joan McGowan, a scientist at NIH. “It’s constantly breaking down and building up. It keeps refreshing itself.”



But as you get older, your bones may be at increased risk for **osteoporosis** (oss-tee-oh-pore-OH-sis), when the bones become weak, fragile and more likely to break. And once they break, they take longer to heal. This can be both painful and expensive.

Current estimates suggest that around 10 million people in the U.S. have osteoporosis, and 34 million more have low bone mass, which places them at increased risk.

Osteoporosis is a “silent” disease. You may not realize you have it until a sudden strain, twist or fall causes a broken bone (also called a “fracture”). With osteoporosis, even a minor tumble can be serious, requiring surgery and hospitalization.

If you have osteoporosis, you can get a broken bone even though you haven’t fallen—by shoveling snow, for example. A spinal fracture, a break in one of the small bones in your back, may be subtle and go unnoticed. Or it may cause back pain, which you shouldn’t ignore.

“A large part of osteoporosis and fracture risk is inherited,” says McGowan. “If close relatives have suffered a fracture in their later years, this may be a clue to think carefully about your own risk. But diet and physical activity are major ways to build and maintain the best possible skeleton.”

NIH-funded research shows that childhood is the best time to build up bone tissue. Most bone is built by age 18 in girls and 20 in boys.

Start with a well-balanced diet rich in calcium and vitamin D. Most of our bone is made of a rigid protein framework. Calcium (a mineral) adds strength and hardens that framework. Vitamin D helps the intestine absorb calcium.

Calcium is found in many foods, but the most common source for Americans is milk and other dairy products. One 8-ounce glass of milk provides about one-third of the recommended intake for younger children and about one-fourth of the recommended intake for teens.

Your body makes vitamin D in the skin when you’re out in the sun. Some people get all they need from sunlight, but others need to take vitamin D pills. Talk to your doctor or see the chart at [www.niams.nih.gov/health\\_Info/Bone/Osteoporosis/osteoporosis\\_f.f.asp](http://www.niams.nih.gov/health_Info/Bone/Osteoporosis/osteoporosis_f.f.asp) to find out how much calcium and vitamin D you should get each day.

Physical activity is also important for building bone. The more work bones do, the stronger they get. That’s why it’s so important for kids to run and play.

“There is good evidence,” says McGowan, “that you can build the best skeleton by doing physical activity in childhood: jumping rope, playing basketball and running around. The trend now—of not having physical education in school and playing computer games instead of tag—may be a serious threat to bone health.”

But no matter what your age, McGowan says, “It’s never too late to promote bone health.” Increase your load-bearing exercise, like walking, and make good food choices, rich in calcium and vitamin D.

Unfortunately, some factors are beyond your control. Women are more likely to have osteoporosis and related fractures, particularly Caucasian and Asian women. Osteoporosis becomes more common as you get older. Low body weight can also increase your risk. And so can certain medications (such as steroids) and certain diseases and conditions (such as anorexia nervosa, rheumatoid arthritis, gastrointestinal diseases, thyroid disease and depression).

“But even if you have osteoporosis, you can do things to prevent fractures,” McGowan says.

Talk to your doctor well before the age of 50 about your risk. One out of 2 women and 1 out of 4 men over age 50 will break a bone due to osteoporosis.

“We know that all women over the age of 65 should have a bone mineral density test,” McGowan says. The test uses a tiny amount of radiation to look at how dense your bones are. It isn’t painful, and there’s usually no need to undress. However, she says that researchers haven’t yet come up with universal recommendations about when you should get this test. That depends on your risk factors.

“We need to make sure that all involved in this disease—patients, physicians and scientists—maintain an awareness and progress in combating it,” says NIH-funded scientist Dr. Sundeep Khosla of the Mayo Clinic.

So ask your doctor about osteoporosis. And don’t forget to mention the medications you’re taking that might increase your risk.

Remember that osteoporosis remains silent—until there’s a fracture. “A big red flag is when a person over age 50 has a fracture of any kind,” McGowan says. “Doctors should follow up.”

If you do have osteoporosis, medications can help. Khosla has spent 20 years studying the basic biology of bone. He and his team have discovered how bone reacts to changes in levels of estrogen, an important female **hormone**. “We now understand how estrogen may be working on the bone,” Khosla says.

Partly as a result of NIH-funded discoveries like this, there are now several drugs that can block the breakdown of bone. Some are already available, and some are on their way to being approved for patient use.

“What’s needed is a new class of drugs that work by building bone back up,” Khosla says. “There’s hope for real reversal in osteoporosis in the foreseeable future.”

Your bones are so important. They support you and allow you to move. They protect your heart, lungs and brain from injury. They’re a storehouse for vital minerals you need to live. Your bones take care of you in so many ways. Learn to take care of them.