

Bone density testing (The Basics)

Written by the doctors and editors at UpToDate

What is bone density testing?

Bone density testing is one way doctors can check how strong your bones are.

As people age, their bones often become less dense. This means they are thinner and more fragile (figure 1). Over time, this can lead to a disorder called osteoporosis, which makes bones weak. People who have osteoporosis have bones that can break too easily. For example, people with osteoporosis sometimes break a bone just from falling down.

What is bone density testing used for?

Doctors do bone density testing for 2 reasons:

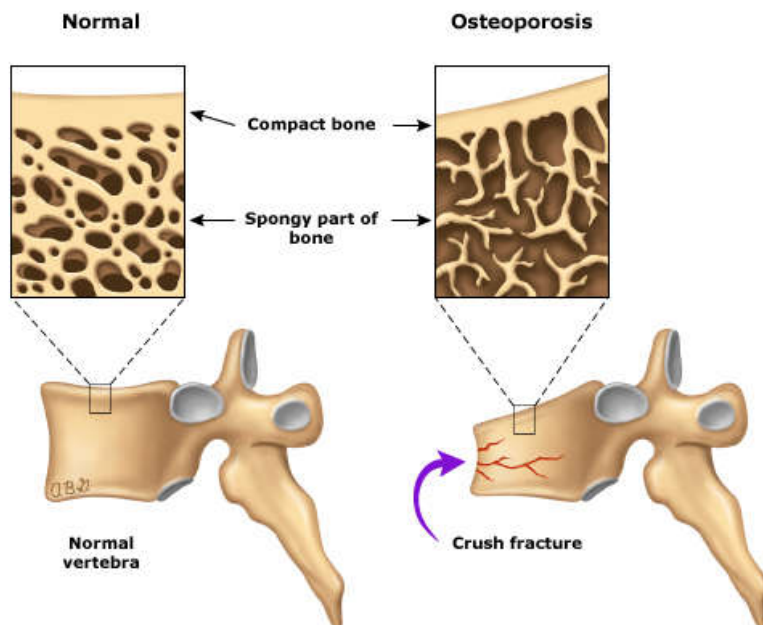
- To see if a person has osteoporosis or is at risk for it
- To see if treatments for osteoporosis are working

Who should get bone density testing?

All women age 65 and older should have bone density testing at least once. Bone density testing might also be appropriate for some men who are older than 70. Doctors sometimes check bone density in men and women who are younger than this if they are at high risk for breaking a bone. Things that increase your risk of breaking a bone include:

- Having already broken a bone as an adult
- Taking medicines called steroids for a long time
- Weighing less than 127 pounds
- Having rheumatoid arthritis
- Having a parent who broke a hip after a minor injury

Bones affected by osteoporosis



The bones in this picture are called "vertebrae." The one on the left is healthy. Its spongy center has lots of hard fibers that are connected to each other. The one on the right has osteoporosis. Its spongy center has fewer, thinner fibers that are no longer connected. The surrounding shell of compact bone is thinner. This makes the vertebra weak. That's why it got crushed under the weight it was holding.

Are there different types of bone density tests?

Yes. The different types of bone density tests include:

- Dual-energy X-ray absorptiometry (DXA) – This is the most useful and reliable bone density test. It is a special kind of X-ray that gives off very little radiation. DXA gives reliable measures of bone density in different parts of the body, such as the spine, hip, and wrist. DXA is the best test to diagnose osteoporosis, predict the chances that you will break a bone, and check how well treatment is working.
- Quantitative computerized tomography (CT) – This is another special kind of X-ray. It gives reliable measurements of bone density in the spine. It gives off more radiation than DXA. Doctors don't use this test to diagnose osteoporosis.
- Ultrasound testing – Ultrasound can be used to measure the bone density of the heel. This test can help find out a person's risk of breaking a bone. But doctors don't use this test to diagnose osteoporosis or to follow changes in bone density over time.

What happens during a DXA test?

During DXA, you lie on a table. Then an X-ray machine scans one of your bones. The test doesn't hurt or make you uncomfortable. You don't need to take any pills or get any shots. The whole thing takes 5 to 10 minutes.

Even though DXA is a type of X-ray, it gives off very little radiation. During a DXA you get about the same amount of radiation that an average person gets from the environment in one day. After the test, your bones get a "score."

What do the results mean?

The results of a bone density test are called "T" and "Z" scores. For men age 50 and older and for women who have gone through menopause (meaning they no longer have monthly periods), the T-score is more important.

- Normal bone density – People with normal bone density have a T-score between +1 and -1. People who have a score in this range do not usually need treatment. Still, it makes sense for them do things to prevent bone loss. For instance, they should eat foods rich in calcium and vitamin D, and do exercise.
- Osteopenia (also known as low bone mass) – Osteopenia is the medical term for bone density that is lower than normal but not as low as it gets with osteoporosis. A person with osteopenia does not yet have osteoporosis but is at risk of developing it. People with osteopenia have a T-score between -1.1 and -2.4. They usually need to do things to prevent bone loss. Sometimes that means taking medicines.
- Osteoporosis – People with osteoporosis have a T-score of -2.5 or less. If you discover that you have osteoporosis, there are lots of things you can do to lower the chances that you will break a bone. For instance, you can take osteoporosis medicines and calcium and vitamin D supplements. You can also exercise.

Do I need to have bone density testing again?

If your test shows that you do not have osteoporosis today, you might need to have the test again later. Ask your doctor or nurse if and when you should be tested again.
