

# How to Reach Optimal Bone Health

Bones go through a constant state of loss and regrowth. The greatest time of bone growth is before the onset of your first period. As a person ages, more bone loss than bone growth occurs. This can lead to osteoporosis. Then bone then become thin and fragile and can fracture or break easily. Osteoporosis is a pediatric condition with post-menopausal consequences.

## WHAT YOU CAN DO

### Normal bone development

Bone is made up of **calcium** and **protein**. There are two types of bone—compact bone and spongy bone. Each bone in the body contains some of each type. Compact bone looks solid and hard and is found on the outer part of bones. Spongy bone is filled with holes, just like a sponge, and is found on the inside of bones. The first signs of osteoporosis are seen in bones that have a lot of spongy bone, such as the spine and hip.

Once made, bone is always changing. Old bone is removed in a process called **resorption**, and new bone is formed in a process called **formation**. From childhood until age 30 years, bone is formed faster than it is broken down. The bones become larger and more dense. After age 30, the process begins to reverse: **bone is broken down faster than it is made**. This process continues for the rest of your life. A small amount of bone loss after age 35 years is normal in all women and men. Most of the time, it does not cause any problems. However, too much bone loss can result in osteoporosis.

### What is osteoporosis?

With osteoporosis, bones become thin and brittle because more bone is lost than formed. Although the bones are still the same size, the outside walls of compact bone become thinner, and the holes in spongy bone become larger. These changes greatly weaken the bone.

Osteoporosis poses a special threat to women. Estrogen—a female **hormone**—protects against bone loss. As a woman nears **menopause**, her body produces less **estrogen**. However, bone loss begins to happen long before menopause. Often, by the time symptoms occur, a great deal of bone loss has already occurred.

Osteoporosis affects at least 10 million Americans—mostly women. Each year, more than 1.5 million fractures related to osteoporosis occur in the US. One in two women older than 50 will have a fracture related to osteoporosis in their lifetime.

### Exercise

Exercise increases bone mass before menopause and slows bone loss after menopause. To help prevent bone loss, the exercise should be **weight-bearing**, such as low-impact or step aerobics, brisk walking, and tennis. A little bit of exercise is better than none at all.

### Diet

Bone loss can increase if your diet is low in calcium. **Calcium** slows the rate of bone loss. If the amount of calcium in the bloodstream is too low, it will be taken from the bones to supply the rest of the body.

Food sources of calcium are best. This includes dairy, such as milk and yogurt, dark, leafy greens, almonds and juices and cereals that are fortified with calcium. Recommended daily intake of calcium is 1,000 mg for young women and 1,200–1,500 mg per day for women aged 51 years and older. If you do not consume enough calcium in your diet then a supplement is recommended.

**Vitamin D** helps your body absorb calcium and also prevents weakness, which may lead to a fall and fracture. Recent data about vitamin D reveals its growing importance in bone health. The main source is from the sun but due to sunblock there is decreased production of D in our skin (but decreased skin cancer!). Food sources are rare and unpopular (oily fish and organ meats) so a supplement is highly recommended. 1,000-2,000 IU of vitamin D is a good daily amount.

We recommend *\*nutraMetrix Calcium Complete* which also contains vitamin D as well as *\*nutraMetrix Isotonix® Vitamin D with K2* containing 5,000 IU per serving (the upper limit of tolerability).

### Avoid smoking and excessive alcohol

These habits can decrease your estrogen levels leading to decreased bone density. Excessive alcohol use can also lead to falls and accidents causing fracture.

*\*nutraMetrix offers a full line of isotonic vitamins and supplements. They come in powdered form and are mixed with water. As a liquid they are absorbed within 5-10 minutes. For more information about the vitamin and dietary supplements mentioned above, go to [www.nutraMetrix.com/DunneDeLashoMDs](http://www.nutraMetrix.com/DunneDeLashoMDs)*



## What are symptoms of osteoporosis?

**Symptoms** of osteoporosis are back pain or tenderness.

**Signs** include a loss of height (greater than what is expected for your age group), and a slight curving of the upper back (often called a “dowager’s hump”!)

## What are risk factors for osteoporosis?

- Personal history of fracture
- Family history of osteoporosis
- Caucasian race
- Dementia
- Poor nutrition
- Low body weight
- Early menopause (<45 y/o)—Bone loss increases after menopause because the **ovaries** stop making estrogen, which protects against bone loss.
- Removal of ovaries—If a woman has her ovaries removed before menopause, the sudden decrease in estrogen can result in rapid bone loss unless she takes a preventive treatment, such as estrogen.
- Prolonged **amenorrhea** before menopause (more than 1 year)
- Diet low in calcium (lifelong)
- History of falls
- Lack of exercise
- Alcoholism
- Vision problems
- Certain medications—anticonvulsants, aluminum, immunosuppressants (ie. Steroids), excessive thyroid hormone, blood thinners, lithium, anti-cancer medications

## Detection

You should have a physical exam once a year during which your height is measured. All women aged 65 years and older or younger women who have had a bone fracture should be tested every 2 years. Testing also may be suggested for postmenopausal women younger than 65 years who have one or more risk factors for osteoporosis.

A test also can help determine whether you have osteoporosis and your risk of future fracture.

## Dual-Energy X-ray Absorptiometry (DXA)

DXA is used most often to measure the bone density of your spine or hip. It is currently the most accurate test available.

During the test, you lie down for 3–10 minutes while an arm-like device (an imager) scans your body. With this test you are exposed to a very small amount of radiation—less than the amount in a normal chest X-ray.

After the test, you will be given a T-score. This is a number that is calculated when your DXA test results are compared to the average bone density of a healthy 30-year-old. A negative score means you have thinner bones than an average 30-year-old. A positive score means your bones are stronger and thicker than an average 30-year-old.

If your T-score is -1 to -2.5, you have low bone mass and are at increased risk for osteoporosis. A score of -2.5 or lower means you have osteoporosis. A low T-score may mean that you also are at increased risk of a bone fracture. In rare cases, low T-scores are caused by other medical conditions.

## Treatment

There are many treatment options available to help reduce the risk of fracture. Some are taken daily, while others are used weekly or monthly. There is also an option of getting a yearly injection. No matter what method you choose, the earlier treatment is started, the better it works.

### Bisphosphonates

Bisphosphonates (Fosamax, Boniva, Actonel) are medications used to prevent and treat osteoporosis. In cases of prevention, they are used to slow bone breakdown. To treat osteoporosis, they are used to help increase bone density and reduce the risk of fractures. These medications must be taken on an empty stomach. Although rare, side effects may include nausea, stomach pain, and digestive problems. Injectable forms will have less GI effects. Long-term use is controversial!

### Selective Estrogen Receptor Modulators

Selective estrogen receptor modulators (SERMs) help prevent or treat some of the bone problems that can occur during menopause. Raloxifene (Evista) may be a good choice for women who need protection from osteoporosis, but cannot or do not want to take hormone therapy. They also offer a preventative effect in breast cancer but may cause hot flashes or vaginal dryness.

### Hormone Therapy

Starting estrogen at any time after menopause can help prevent bone loss. It can be a good choice for women who also have symptoms of menopause. However, it only protects bones for as long as you use it. When you stop taking hormone therapy, bone loss resumes. You and your doctor should decide whether this treatment is right for you.

### Other Options

Another medication used to slow the breaking down of bone is called calcitonin. It can be given by injection or nasal spray. Parathyroid hormone also may be used to increase bone density and reduce the risk of fractures.

Discuss all of your options with your doctor before choosing a treatment.