

Bone Health

About Bone

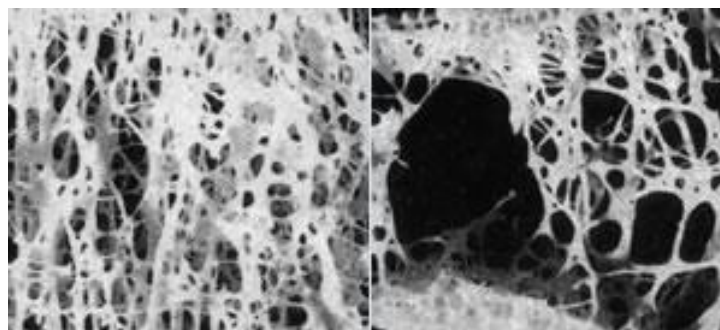
Our bones are created and maintained by a process called *remodeling*, a continual build up and break down of bone tissue. Over about 10 years of remodeling, most of our skeletal tissue is replaced.

- **Osteoclasts** are large cells that dissolve the bone. They come from bone marrow and are found on the surface of bone, next to dissolving bone.
- **Osteoblasts** are cells that form new bone. They also come from the bone marrow. They work in teams to build bone. They produce new bone called "osteoid" which is made of bone collagen and proteins. They also control the deposit of calcium and minerals. They are found on the surface of the new bone and respond to hormones by making proteins that 'turn on' the osteoclasts.
- **Osteocytes** are cells inside the bone. They are formed from osteoblasts in the process of making new bone. Osteocytes send out long 'branches' that connect them to other osteocytes. They can sense pressures or cracks in the bone and work to get osteoclasts to areas where bone needs to be dissolved.

Your genes and your environment contribute to bone health. Though as much as 80% of bone health is related to aging, which we can't control, there are some external factors we can control such as diet, exercise, and smoking. In addition, hormones, calcium and phosphorus levels, and nutritional deficiencies can also affect bone health.

What are Osteopenia and Osteoporosis?

The strength of your bones is measured by BMD – Bone Mineral Density. When the BMD dips below normal, the condition is called osteopenia. You may hear the condition called thinning or weak bones. Osteoporosis is a disorder that causes your bones to lose mass, resulting in fragile and weakened bones. It can occur in men and women. This lower BMD can lead to fractures in any bone, including the spine, hip, or wrists. Bone loss can occur from chemotherapy or other medications, cancer that has spread to the bones, or natural or surgically-induced menopause.



Normal bone

Bone with osteoporosis

Who gets Osteoporosis?

- Over 10 million Americans are diagnosed with osteoporosis; 8 million women, and 2 million are men.
- Osteoporosis can affect anyone, but Caucasian and Asian women are at the highest risk.
- As we age, our risk goes up (though osteoporosis can occur at any age).

Am I at Risk?

The more risk factors you have from the list below, the more likely you are to develop osteoporosis. Some factors you cannot control (age, sex, family history), but there are other areas where you can make changes, and help lower your risk. These are known risk factors for developing osteoporosis:

WHO?	RISK FACTORS
Women	These factors can increase a woman's risk of osteoporosis. <ul style="list-style-type: none">• Being female.• Being postmenopausal (periods have stopped for at least 1 year).• Menopause was sudden, brought on by chemotherapy treatments or surgery.
Men	These factors can increase a man's risk of osteoporosis: <ul style="list-style-type: none">• Having prostate cancer, breast cancer, or multiple myeloma.• Receiving androgen deprivation therapy (ADT).
Everyone	<ul style="list-style-type: none">• A family history of osteoporosis or broken bones.• Having breast cancer or multiple myeloma.• Cancer that has spread (metastasized) to your bones. Also raises risk for fractures and spinal cord compression.• Having a small, thin frame.• Drinking alcohol excessively. (Women: average is more than 1 drink per day. Men: average is more than 2 drinks a day).• Eating a poor diet (particularly lack of calcium and Vitamin D).• Not being physically active.• Smoking.• Having diabetes and/or rheumatoid arthritis (RA).• Take steroid medications (prednisone, dexamethasone), Protein Pump Inhibitors (PPI) ulcer or GERD medication (omeprazole, lansoprazole, pantoprazole), anti-seizure medication (phenytoin), antacids that contain aluminum, barbiturates, or thyroid hormones

5 Steps to Maintain Good Bone Health and Prevent Osteopenia and Osteoporosis	
Diet	Take recommended daily amounts of calcium and Vitamin D.
Exercise	Do weight-bearing and muscle strengthening exercises regularly.
Healthy lifestyle	Stop smoking and avoid excessive alcohol.
Consult your doctor	Talk to your healthcare provider about bone health.
Get tested	Have a bone density test and take medication if prescribed by your doctor.

Calcium and Vitamin D

How Much Should I Take?

- The daily recommendation for calcium is **1200 milligrams (mg) total in 1 day**. Take in divided doses. Do not take more than 600 mg at one time. Calcium is available as calcium carbonate (take with food) and calcium citrate (consider using this form if you take medication to reduce stomach acid).
- The daily recommendation of vitamin D is 800 to 1,000 units of D₃ a day.

Calcium and Vitamin D Products

- Caltrate 600 + D (600mg calcium carbonate & 400 units Vitamin D₃)
- NatureMade with Vitamin D (600mg calcium carbonate & 200 units Vitamin D₃)
- Citracal Regular (250mg calcium citrate & 200 units Vitamin D₃)

Bisphosphonates

If your bone density test is low, your doctor may consider adding a type of prescription medication called a **bisphosphonate**. These medications may be given by mouth or intravenously. They slow or stop the natural process that dissolves bone tissue. As a result, your bone density and strength is maintained or increased.

Both men and women may take these medications.

- Fosamax® (alendronate) oral tablet
- Actonel® (risendronate) oral tablet
- Boniva® (ibandronate) oral tablet
- Aredia® (pamidronate) intravenous injection
- Reclast® (zolendronate) intravenous injection

Additional Resource: National Osteoporosis Foundation: www.nof.org