

Dem Bones

Exercise and nutrition are key to keeping your bones strong

BY JEANNE FAULKNER

Never underestimate the power of your bones. Strong, healthy bones can mean the difference between disability and independence for an aging population. The skeletal system provides a framework to support your muscles, skin and nerves, allows you to move, protects vital organs, produces blood cells and serves as storage for the minerals you need. More importantly, bones keep humans from looking like a shapeless pile of muscle.

Read on to “bone up” on the facts about osteoporosis and how to keep your bones healthy and strong.

Over time, our skeleton changes — sometimes becoming weak, brittle and dry. Osteoporosis is characterized by decreased bone mass and deterioration of bone tissue, which increases the risk for fractures, especially of the hip, spine and wrist.

Bone strength depends on a healthy network of three substructures:

1. **Collagen** – protein that gives bones their flexible framework.
2. **Calcium phosphate** – a mineral that makes bones hard and strong.
3. **Bone cells** that remove and replace damaged bone sections.

Under a microscope, healthy bone looks like Swiss cheese with small spaces separating bony structures. Bones afflicted with osteoporosis have larger spaces, making them look more like spider webs. The ratio of space to bone is called bone mass.

The National Osteoporosis Foundation (NOF) reports that 10 million Americans have osteoporosis while almost 34 million have low bone mass and are at increased risk for developing the disease. Eighty percent of those figures are women.

Even after children reach their full height, they continue to add bone cells faster than they lose them until about age 25. Once we’ve reached our peak bone mass, it gradually begins to diminish. Dr. Patrick List practices nonsurgical musculoskeletal and sports medicine at the Slocum Center for Orthopedics in Eugene and says, “That’s why it’s so important for children to get adequate calcium and vitamin D. The more bone mass they develop, the denser their bones will be. That reduces risks for developing osteoporosis later.”



Risk factors

“Testosterone supports bone density in both men and women. As we age and hormone levels decline, healthy bones lose structure,” explains Dr. Lee Michaels, a diagnostic radiologist at the Oregon Imaging Center. “Men traditionally do more weight-bearing work than women and that keeps their bones stronger. Women naturally have less bone mass than men to start with. They also live longer and are affected by the reduction of hormones with menopause, certain medications or surgical removal of the ovaries.” In addition, says Dr. List, “people who smoke, drink more than two alcoholic beverages per day, have a history of anorexia or take corticosteroids are also at increased risk.”

The NOF lists low body weight, a history of broken bones during adulthood and a family history of bone-related problems as additional risk factors. Several diseases may accelerate bone loss by disrupting calcium absorption and utilization. Treatment with medications like corticosteroids can also affect bone health. Diseases include celiac disease, depression, hyperparathyroidism, hyperthyroidism, inflammatory bowel disease, multiple myeloma, rheumatoid arthritis and organ transplants.

Preventing trouble before it starts

Osteoporosis is largely preventable with proper exercise and adequate calcium, vitamin D, protein and minerals.

“Our best defense is starting early to build and maintain bone mass by eating a healthy diet and doing weight-bearing exercises,” Dr. List says. “Working out with light hand weights or weight machines and walking 30 minutes, three to five times per week makes a significant difference.”

Calcium is a key nutrient for bone, muscle, nerve and cardiac health. We lose calcium daily through our skin, fingernails, hair, sweat and other bodily functions. The human body can't produce it on its own, yet few Americans consume enough. If we lose more than we need, our body takes it out of our bones. “Bones are like a calcium savings account. If we take out more than we put in, our bones lose strength,” says Dr. Michaels.

Vitamin D aids absorption of calcium. While the body can produce vitamin D, it needs sunlight to activate production. Most people obtain enough vitamin D with as little as five to 30 minutes of sun exposure twice a week but in certain seasons, climates and locales we can't count on getting



Dietary Sources for Calcium and Vitamin D

While many foods like dairy, fish, seafood, broccoli and kale are excellent sources for calcium and vitamin D, be aware that other foods and substances such as spinach, chocolate, caffeine, beans and nuts may prevent calcium from being absorbed.

Go to the National Osteoporosis Foundation Web site for more information about foods that help and foods that hinder: www.nof.org/prevention/calcium2.htm.

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How Much is Enough?

The American Academy of Pediatrics recommends 400 international units (IU) of vitamin D daily for newborns, babies and children. The National Institutes of Health recommends the following guidelines for children's calcium intake:

Birth to 6 months: 210 mg

6 to 12 months: 270 mg

1 to 3 years: 500 mg

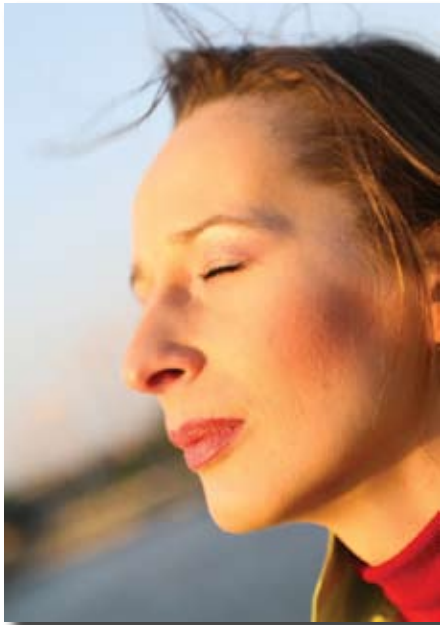
4 to 8 years: 800 mg

9 to 18 years: 1,300 mg

The National Osteoporosis Foundation recommends the following guidelines for adults:

Adults younger than 50 – 1,000 milligrams of calcium and 400 to 800 international units of vitamin D daily.

Adults older than 50 – 1,200 milligrams of calcium and 800 to 1,000 international units of vitamin D daily.



enough sun. That's why milk is usually fortified with vitamin D.

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Good sources

Dairy products are excellent sources of calcium. One 8-ounce glass of fortified milk contains 300 milligrams of calcium and 100 international units of vitamin D.

But the fact is most of us don't consume enough. Taking calcium supplements is an effective tool to help prevent bone loss. Choose supplements that list the amount of *elemental* or *bioavailable* calcium,

which is the amount available for your body to absorb, on the label and check serving sizes. Calcium is best absorbed in doses of 500 milligrams or less and may require taking several tablets, several times per day to meet your daily requirements. Calcium supplements can impair absorption of certain antibiotics and blood pressure medications so it's always a good idea to consult your doctor or pharmacist for advice before beginning a supplemental regimen.

Symptoms and screening

"Patients don't realize they have osteoporosis unless they receive routine screening by bone mineral density (BMD) testing or until they come in with a hump, broken hip, spine or wrist fracture," Dr. Michaels says.

The NOF recommends all women 65 and older and men older than 70 receive bone mineral density testing to measure their levels of calcium and other minerals important for bone health. Those with increased risk factors should consult their physician about getting a bone mineral density test at a younger age.

"The best test is a DEXA (dual energy X-ray absorptiometry) scan, which measures bone mineral density in your spine or hip," says Dr. Michaels. Other diagnostic imaging studies are available but DEXA remains the gold standard, he adds.

Treatment options

There are four types of medications to prevent and treat osteoporosis.

Biophosphonates slow down the bone loss cycle. Brand names you may be familiar with include *Fosamax*, *Actonel* and *Boniva* – oral medications taken weekly or monthly that can reduce bone loss by as much as 50 percent over two to four years. *Reclast*

is administered intravenously once a year.

"Most patients tolerate them well, though a few have side effects like gastric upset with oral medications," says Dr. List. "There have been rare cases of osteonecrosis of the jaw (death of bone cells) but these were associated with patients undergoing cancer treatment."

Estrogen and hormone therapy is sometimes prescribed for postmenopausal women but may increase the risk of blood clots, breast cancer and

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heart attack in a small percentage of cases.

Raloxifene (*Evista*) is a therapy that provides the benefit of estrogen without its potential disadvantages. Frequently prescribed for postmenopausal women with breast cancer, Raloxifene increases bone density and reduces the risk of spine fractures.

Parathyroid medication (*Forteo*) rebuilds bone and increases bone mineral density, but Dr. List says it's used as a last resort. "Forteo's an expensive daily injection patients give themselves."

Hip protectors such as the Hornsby Hip Saver cushion the impact of falls for at-risk elderly patients but aren't very popular.

"Prevention is the best treatment we have – better than any medication or device on the market," says Dr. List. ✨



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