

BONE HEALTH & YOU

WHAT YOU NEED TO KNOW ABOUT DIET, NUTRITION, SUPPLEMENTS, AND ACTIVITY

Bones are active, living, and complex tissues that serve a *structural function* by providing mobility, support, and protection for internal organs. They also serve a *reservoir function* as a storehouse for essential minerals. To maintain integrity, our bones are constantly being broken down and replaced. When creation of new bone can't keep up with the removal of old bone, problems may arise.

Osteoporosis, meaning "porous bone," is a serious bone disease affecting 54 million Americans. It is often referred to as a silent disease because you can't feel your bones weakening. While the incidence of osteoporosis is higher among women, more than 2 million American men suffer from this bone-weakening disease, according to the National Institutes of Health. It is estimated that one out of every two women and one in four men aged 50 and older will experience an osteoporosis-related fracture in their lifetime. While genetics and some medical conditions can increase your risk, there are also several lifestyle factors you can control to reduce your risk.

Diet and Nutrition

Calcium is the major nutrient needed to build bone mass during childhood and young adulthood and maintain bone mass in later years. Here is how calcium needs change at different stages of life:

Age	Dietary Reference Intake (DRI)
4 to 8 years	1,000 milligrams
9 to 18 years	1,300 milligrams
19 to 50 years	1,000 milligrams
51 to 70 (women)	1,200 milligrams (1,000 mg men)

It's easier than ever to get the calcium you need – even if you don't like milk or are lactose intolerant. Here are some of the best sources:

- Dairy products such as milk, yogurt, and cheese
- Fortified milk alternatives, such as soy, almond, rice, coconut, and hemp
- Canned sardines and salmon (with bones)
- Green leafy vegetables, such as kale, spinach, and broccoli
- Dry beans
- Almonds
- Tofu (made with calcium)
- Calcium-fortified orange juice

At the supermarket look for the claim "high," "rich in," or "excellent source of" calcium. This means the food contains at least 200 milligrams of calcium per serving, 20% of the Daily Value. A good source contains at least 100 milligrams of calcium per serving or at least 10% of the Daily Value. The Daily Value for calcium is 1,000 mg.

Vitamin D aids the body's absorption of calcium. Think of Vitamin D and calcium like a lock and key. Without adequate Vitamin D, calcium cannot get into our bones. Vitamin D is not found in many foods, which is why so many Americans are deficient. You can find Vitamin D naturally in salmon, sardines, mackerel, tuna, egg yolks, and mushrooms. Vitamin D is also added to some foods like milk, milk alternatives, yogurt, and orange juice.

Another way you can obtain Vitamin D is through exposure to sunlight. Vitamin D is known as the “sunshine vitamin” because the body can convert sunlight into the vitamin when the sun’s rays hit exposed skin. Sunscreen blocks our body’s ability to produce Vitamin D, so it is important to weigh out the benefits versus the risk of exposure to sunlight without sunscreen.

Protein is a building block of bone and important to bone integrity. While most Americans get plenty of protein in their diet, some may be falling short. If you are vegetarian or vegan, be sure to get adequate protein from plant sources in your diet. On the flip side, some scientists have argued that diets high in protein, especially animal protein, can be deleterious to bone. So how much protein is enough to ensure healthy bones? The answer is “not too much and not too little.” Protein intake optimal for bone health would probably range between the RDA of .8 grams per kilogram of body weight per day to an upper end of 1 to 1.5 grams of protein per kilogram of body weight per day (1 kilogram = 2.2 pounds; to find your weight in kilos, divide your weight in pounds by 2.2). For example, at 1 gram of protein per kilo, a 150-pound person would need 68 grams; at .8 grams per kilo, they would need 55 grams per day.

Activity: Bear the Weight for Healthy Bones

Regular exercise, especially weight-bearing and resistance exercise, can help build strong bones and slow down bone loss. Aim for at least 30 minutes a day on most days of the week.

- *Weight-bearing exercise* involves muscles and bones working against gravity and includes activities where your legs and feet carry the full weight of your body. *Examples: hiking, dancing, stair-climbing, yoga, skating, jogging, skiing, and racket sports.*
- *Resistance exercise* uses the force of muscle to pull on bone. When bones are stressed, bone-building cells are stimulated, making bones stronger. *Examples: weightlifting, either with free weights, machines, or large elastic bands to provide resistance.*

If you have osteoporosis or osteopenia talk to your health care provider before starting an exercise program.

Supplements

Supplements cannot take the place of what foods offer naturally, however, if you are falling short on certain nutrients, supplements can help fill in the gap. Here are some tips to guide you:

- Choose a calcium supplement that contains vitamin D or a bone formula with other bone-building nutrients including vitamin K, magnesium, and boron.
- Small doses of calcium (less than 500 milligrams) are better absorbed than large doses. Therefore, you may need to take 2 to 3 doses of calcium during the day.
- If you also take iron, take it at a different time than your calcium supplement since each mineral is better absorbed on its own.
- Avoid “natural” sources of calcium like bone meal, dolomite, and oyster shells. These sources may be contaminated with lead or other harmful metals.
- While scientists still don’t know what the optimal dose of vitamin D is, a good starting point is 600-800 international units (IU) each day. Always take a vitamin D supplement with a source of fat for best absorption. If you have been diagnosed with a deficiency, check with your doctor, as they may recommend a higher dose.

Sources: Academy of Nutrition and Dietetics, www.eatright.org; National Osteoporosis Foundation <https://www.nof.org>; National Institute of Health Office of Dietary Supplements <https://ods.od.nih.gov/factsheets>