



The Truth about Bone Health

What really matters when it comes to strong bones?

By Mia James



Healthy bones are a fundamental part of living and aging well. By keeping our bones

strong, we decrease our chance of fractures and are able to perform daily tasks and enjoy our favorite activities. Although certain changes to our bone structure (such as osteoporosis—reduced bone mass and quality) are inevitable as we grow older, there is a lot we can do to stay strong.

Published recommendations for bone health include calcium and vitamin D supplementation and weight-bearing exercise, among others. As you consider your own strategy, you will want to understand what is likely to have a benefit and what is not, which approaches may or may not work for you, and which tactics might be more hype than help.

Calcium and Vitamin D

Calcium has long been part of the bone health conversation. More recently, discussions of how vitamin D may help the body absorb calcium have entered the discussion, and research findings are increasingly teaching us about how calcium and vitamin D may both work to benefit bones.

It appears that you are more likely to benefit from vitamin D if you take recommended dosages while also consuming a calcium-rich diet. In 2012 a study published in the *New England Journal of Medicine* found that women older than age 65 who took more than 800 international units (IU) of vitamin D per day were 30 percent less likely to experience hip fractures and 14 percent less likely to experience non-spine-related fractures.¹ On the other hand, those who took less than 800 IU of vitamin D per day had no significantly reduced risk of fracture.

Calcium is relatively easy to get through diet. We are all familiar with sources like dairy products, leafy greens, and assorted calcium-fortified foods such as orange juice.



When it comes to how calcium and vitamin D really work, however, there is some fine print. According to Christopher R. Shuhart, MD, MHA, CCD, from the Swedish Bone Health and Osteoporosis at Swedish Medical Center program in Seattle, for much of the population “calcium and vitamin D are the foundation for good bone health, but they’re not treatment.” He therefore encourages patients to avoid focusing on supplements and to instead find more ways to get these nutrients through a balanced diet. And because too much supplemental calcium may increase certain health risks, such as kidney stones, dietary sources are again preferable.

Calcium is relatively easy to get through diet. We are all familiar with sources like dairy products, leafy greens, and assorted calcium-fortified foods such as orange juice. Some people, however, might still benefit from supplements, says Dr. Shuhart. For example, patients diagnosed with osteoporosis are often prescribed 12,000 milligrams (mg) or more of calcium, an amount that is sometimes difficult to get through diet alone.

Vitamin D is not as easy to get through diet (fewer foods contain vitamin D than calcium), but the body will naturally form vitamin D with direct exposure to ultraviolet B sunlight. You need about 10 minutes of unprotected sun exposure to produce a day’s worth of it. This can be tricky, however, because direct sun exposure can increase the risk of skin cancer, and, depending on where you live, you may not have sun year-round. In such cases, foods such as fatty fish (salmon, mackerel, and tuna), eggs, and fortified foods can bridge the gap, as can supplementation.

Hormone Replacement Therapy

“Menopause is the biggest factor in bone loss over a woman’s adult life,”

says Dr. Shuhart. As estrogen production slows, rates of bone loss speed up. “Losing estrogen,” he explains, “is the biggest driver in a woman’s risk of osteoporosis.”

Some women choose to use hormone replacement therapy (HRT) with estrogen alone or estrogen plus progesterone to help them cope with symptoms of menopause, such as hot flashes, night sweats, and more. It also appears that HRT may help reduce fracture risk in postmenopausal women.

“Hormone replacement therapy has benefits for the right patients,” says Dr. Shuhart. Because there has been concern in the past that HRT may increase the risk of cardiovascular disease and breast cancer, the “right” patients tend to be women with low risk in these areas.

Calcium and vitamin D may also be helpful for women taking HRT. In 2013 researchers with the Women’s Health Initiative, a study of more than 30,000 postmenopausal women (many of whom were taking HRT), explored the effects of HRT, calcium, and vitamin D.² Participants included both women who took HRT and those who did not. Both groups were given either placebo (an inactive substitute) or 1,000 mg of calcium and 400 IU of vitamin D daily. They found that women who took the supplements along with HRT experienced a significantly reduced rate of hip fracture compared with those given HRT plus placebo.

The conclusion: If you are a postmenopausal woman, HRT may help protect your bones, and you may be able to boost its benefits with calcium and vitamin D.

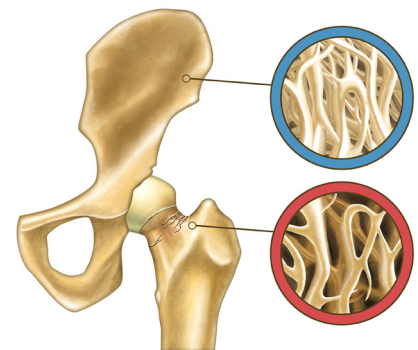
Obesity

We are well aware that obesity is a significant health risk for many serious conditions, including heart disease, cancer, and diabetes; now it appears that excess body fat can compromise our bone health as well.

A key point in the body weight-

bone health conversation is body composition: if muscle constitutes more of your weight, you are more likely to have healthy bones; if extra pounds are due to fat, your bones may be at risk. Though there may be other biological factors at work, Dr. Shuhart explains that body fat is likely associated with poorer bone health, in part due to lower physical activity among people with excess fat. And because less activity can translate into less time outdoors and therefore less sun exposure, this population may not be getting enough natural vitamin D from the sun, either.

Excess body fat can also increase levels of bone marrow fat, which increases the risk of osteoporosis. Researchers in a 2013 study deter-



HOW IS YOUR BONE HEALTH? Find Out with a Bone Density Test

Other than a fracture, it can be difficult to determine the health of your bones without a bone mineral density (BMD) test—which, we can all agree, is a better alternative than discovering a weakness through injury. Your doctor can use a BMD test to detect osteoporosis and determine if you are at risk for fractures. The test measures levels of calcium and other minerals that indicate bone density. They are performed most commonly with a dual-energy X-ray absorptiometry (DEXA) scan.

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mined that obese participants, though otherwise healthy, who had more fat in their blood, muscle, and liver also had higher levels of fat in their bone marrow, which causes bones to weaken.³ The link between bone marrow fat and weak bones is found in the process that makes bones larger and stronger: resorption and formation (the continuous removal of old bone and addition of new bone). Though researchers do not understand exactly how obesity interferes with this process, it seems that fat either triggers cells to break down bone too quickly or to overpopulate it with fat cells.

Alcohol Consumption

Drinking moderate amounts of alcohol (10 to 20 grams of alcohol per day, or one or two standard drinks) may help prevent osteoporosis in older women. While this may sound too good to be true, findings suggest that raising your glass to bone health may be a valid measure.

Researchers in a 2012 study followed 40 postmenopausal women who were considered moderate drinkers.⁴ None of these women were using HRT, so it was not a factor in their bone health. Using blood markers, the researchers monitored the rate of bone turnover among participants, as increased turnover is a risk for osteoporosis. They found that when the women stopped drinking alcohol for two weeks, bone turnover increased. When they started drinking again, turnover returned to previous levels, possibly due to an estrogen-like effect that alcohol may have in reducing bone turnover.

“Alcohol consumption may have a short-term impact on bone metabolism that might be beneficial to bone health,” explains Dr. Shuhart. He says that while this study looked at young postmenopausal women, researchers have made similar findings in the general population—giving more credence to the link between alcohol and bone health.

While this is great news among women who already enjoy moderate amounts of alcohol, the evidence isn't strong enough to suggest that you should take up drinking to prevent osteoporosis because there are long-term alcohol-related health risks (liver damage, for example) to consider. But if you do drink, enjoy that glass a little more knowing that it is likely not harming—and maybe even helping—your bones.

Exercise

Along with the well-known stress and weight management benefits that physical activity provides, moving our bodies also plays an important role in bone health.⁵ Specifically, weight-bearing exercise, or activities where we are on our feet, can help keep bones strong by stimulating them to produce more bone tissue.

“Genetically, our bodies are designed to be physical,” says Dr. Shuhart. Our bones need a certain amount of stress to stay strong, which modern life doesn't naturally provide for everyone. “The more stress bones get, the stronger they get,” he explains.

To create this stress (which our ancestors generated through daily life as they carried out agricultural

and other physically challenging tasks), we must turn to exercise—but not just any activity. “Not all exercise is created equal when it comes to bones,” Dr. Shuhart says. “To slow bone loss, you need activities with added load, resistance, and impact, but all of these activities have to be performed safely in osteoporosis patients.”

While you might enjoy activities that are not considered weight bearing—such as swimming or cycling, which certainly have cardiovascular and other wellness benefits—adding weight-bearing, resistance, and impact exercise to your routine will help maintain strong bones. Fun and accessible examples include running, walking, hiking up and down stairs or hills, yoga, weightlifting, and many more.

What You Can Do

Study do's and don'ts and fads and facts aside, the takeaway message is that there is plenty you can do in your daily life to help keep your bones strong: eat a calcium-rich diet, get your vitamin D (through sun exposure, diet, or supplements), exercise (including weight-bearing, resistance, and impact activities), consume alcohol moderately (if you do drink), and maintain an ongoing dialogue about bone health with your healthcare team. ❀

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