

A Handful of Prunes Each Day May Help Support Healthy Bones

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STORY AT-A-GLANCE

- › Protecting your bones is crucial as they are your core framework. Nutrition influences bone health and researchers have found prunes can lower the inflammatory response that helps preserve bone mineral density
- › Reductions in inflammatory cytokines were observed in people who ate five to 12 prunes daily. Prunes are also high in fiber, which helps prevent constipation and supports gut microbiome diversity
- › A healthy gut microbiome is crucial to human survival and affects nearly all physiological systems. A healthy gut microbiome also plays an important role in protecting bone health
- › Eating a small snack of clean carbs before bed can improve your sleep quality, and sleep quality is also linked to bone health
- › Other strategies that support bone health include optimizing your levels of vitamins D and K2, calcium and magnesium, weight-bearing exercise and getting sufficient amounts of collagen

Your bones provide the core framework for your body. So, protecting your bones helps protect your overall health. A study¹ published in the Journal of Nutrition by scientists from Pennsylvania State University found that eating prunes daily may help lower inflammatory markers connected to bone loss in postmenopausal women.

Several factors impact bone density and increase the risk of osteoporosis and osteopenia. Interestingly, healthy bones are not solid. The interior is created in a honeycomb structure that improves bone strength while reducing weight. With bone mineral loss, the holes in the honeycomb structure get larger and the outer walls become thinner.

With lower bone density, your risk for fractures is higher. However, low bone density has also been associated with several other health conditions unrelated to your musculoskeletal system. For example:

- In 2018,² researchers found patients with chronic heart failure also had lower bone mineral density.
- A 2022 study³ looked at bone mineral density in children with congenital cyanotic heart disease. The researchers found that 15.4% of the children had bone mineral density reduction and another 33.3% had a Z-score between -1 and -2, indicating bone mineral loss.
- Another 2022 study⁴ looked at the causal association between bone mineral density and heart failure from a two-sample bidirectional Mendelian randomization study. The data suggested a causal relationship of heart failure with low total body bone mineral density, but the reverse was not found.
- In 2024,⁵ a study found an association between bone mineral density and incident dementia.

The sum of the research suggests that low bone mineral density affects far more than just your musculoskeletal system.

Prunes May Support Bone Health and Lower Inflammation

The featured study⁶ from Pennsylvania State University suggests prunes may significantly reduce inflammatory cytokines and activated monocytes that drive chronic inflammation. It was a secondary analysis in the Prune Study, a single-center, 12-month

randomized controlled trial of postmenopausal women. A group of 235 women aged 55 to 75 were recruited and 183 completed the study.

The women were assigned to one of three groups. The control group did not eat prunes, while the two intervention groups ate either 50 grams or 100 grams of prunes per day. Prunes are dried plums, and one pitted prune is approximately 9.5 g.⁷

The researchers took blood samples at baseline and again at 12 months to measure C-reactive protein, pro-inflammatory cytokines and several other metrics, including activation of circulating monocytes. "Bone loss is a significant issue impacting more than 50% of women over age 50, and there is no cure," said Principal Investigator Mary Jane De Souza, Ph.D., Professor, Department of Kinesiology, Pennsylvania State University, adding:⁸

"While medications and hormone therapies are available, they often require lifelong management and come with risks. It's important to have a better understanding of how non-pharmacological approaches – like lifestyle and dietary choices – can also impact the progression and mitigation of bone loss."

The reductions in inflammatory cytokines were observed in people who ate five to 12 prunes daily. Those who consumed 50 g of prunes had lower levels of tumor necrosis factor alpha and those eating 100 g of prunes each day had a reduction in interleukin-1b, interleukin-6 and interleukin-8, as well as activated monocytes.

These reductions in oxidative stress markers help preserve bone health.⁹ The participants also received daily supplements of 1,200 mg of calcium and 800 IU of vitamin D to meet the recommended dietary allowance. In a press release, De Souza commented on these findings and a previous study, saying:

"These findings add to a growing body of research and interest investigating the role of 'food as medicine' and complement other studies I have conducted using the same data."

For example, the previous study I led showed connections between hip bone integrity and daily consumption of prunes – where postmenopausal women who did not eat prunes lost 1.5% of their hip bone density compared to women who ate 5-6 prunes daily. Collectively, these findings have significant practical importance given the prevalence of bone loss among this population."

Other Benefits of Prunes

There is 7.1 g of fiber in 100 g of prunes or roughly 10 prunes.¹⁰ According to the U.S. Department of Agriculture,¹¹ the average American consumes just 16 g of fiber each day while the daily adequate intake for fiber is set at 25 g for women and 38 g for men.

However, when you add more fiber to your diet, it's important to do it gradually and include plenty of drinking water. Without sufficient hydration, the added fiber may lead to constipation.

According to a 2020 paper,¹² chronic idiopathic constipation affects between 9% and 20% of adults in the U.S. That is a significant portion of the population affected by infrequent bowel movements, which in 2010, triggered 2.8 million ambulatory and emergency room visits.

Several factors influence the development of constipation, such as dehydration, low-fiber diet, certain medications or frequently avoiding the urge to have a bowel movement, which increases the risk of developing dry hard stool.

Prebiotic, fiber-rich foods^{13,14,15,16} such as prunes and many other fruits and vegetables also help nourish friendly gut bacteria by giving them the nutrients they need to survive and thrive, and a healthy gut microbiome has also been shown to play a role in preventing the development and progression of bone disorders, such as osteoporosis, osteoarthritis and rheumatoid arthritis.¹⁷

Ripe fruit, raw honey and maple syrup are healthy or "clean" carbohydrates. In a 2023 interview with Georgie Dinkov, he suggested that **eating a small amount of healthy carbs** before bed can help lower a nighttime rise in cortisol and improve sleep.

But not all fruit is created equally. Pineapple and bananas, for instance, contain serotonin, and bananas contain tryptophan, which is used in the synthesis of serotonin. Serotonin is an antimetabolite, which means it suppresses your body's ability to create energy in the mitochondria. You become fatigued, your metabolic rate slows and you gain weight.

Prunes might be the perfect evening snack as they are high in fiber, low in calories, provide clean carbohydrates to promote quality sleep, lower your inflammatory response and protect your bone health through several pathways.

Other Strategies to Protect Bone Health

Interestingly, improving your [sleep quality can also improve your bone density](#). A 2020 study¹⁸ of postmenopausal women found that women who slept only five hours or less per night had lower bone density than those who slept seven or more hours. Short sleepers had lower density in the whole body, hip, femoral neck and spine. Other strategies that can help prevent osteoporosis and support bone health include:^{19,20}

- **Vitamin D, calcium, magnesium and vitamin K2 MK-7** — As I describe in "[Vitamin K2 Is Important for Vascular Health](#)," this combination of vitamins and minerals improves your absorption and distribution of calcium in the body. This supports calcium reaching the bones and teeth instead of being deposited in the arterial system, where it increases your risk of vascular disease.
- **Exercise** — Weight bearing exercises and [strength training](#) will improve both muscle and bone strength.
- **Lifestyle choices** — Choices that negatively affect bone health include smoking, excessive consumption of alcohol and soft drinks, and a sedentary lifestyle.
- **Protein, including collagen** — While protein is more commonly associated with building muscle mass, it is also crucial to support bone health. As a general guideline, you want approximately 15% of your daily calories to be protein, and one-

third of that (5%), should be collagen. About 30% of your bone is collagen, making it an essential dietary component to prevent osteoporosis (age-related bone loss).

Your muscle fibers also contain loads of collagen, not to mention your tendons and ligaments, so you can't build muscle either if you don't have enough collagen.

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