

## Study: Higher-protein diets support weight loss, but may lower bone density in postmenopausal women

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Overweight and moderately obese postmenopausal women using diets based on higher protein intake also need to be aware of potential bone loss, according to new research from Purdue University.

"We know that when overweight, postmenopausal women reduce their energy intake to successfully lose weight, they can lose less lean body mass when they consume higher amounts of protein and include lean meats, such as pork loins, ham, beef and chicken, in their diet," said Wayne W. Campbell, professor of foods and nutrition. "However, we also found that these older women lost [bone mineral density](#) faster than women who consumed normal protein diets that did not contain any meats. This finding is of concern for this age group that is susceptible to osteoporosis."

Campbell and doctoral student Minghua Tang analyzed data from two controlled diet studies. In the first study, they reduced 28 women's individual daily diets by 750 calories to achieve a one-and-one-half-pound weight loss each week for 12 weeks. These postmenopausal women ranged in age from 43-80. Fifteen women consumed meat-free diets with protein from vegetarian, dairy and egg sources, comprising 18 percent of each woman's energy intake. This amount of protein was comparable to the recommended dietary allowance of 0.36 grams of protein per pound of body weight per day.

The diets for the other 13 women were composed of 30 percent of energy from protein with 40 percent of the protein from lean pork, such as loin and ham, and 60 percent of the protein from vegetarian, dairy and egg sources. The women, on average, lost about 19 pounds each, but those who ate the higher-protein, meat-containing diet lost bone mineral density.

In the second study, 43 postmenopausal women each ate a 1,250-calorie diet for nine weeks. All participants consumed the same 1,000-calorie vegetarian diet, but 15 women received 250 calories from chicken breast meat, 14 women received 250 calories from beef tenderloin and 14 women received 250 calories from shortbread cookies and sugar-coated chocolates. Another 11 women served as the control group. The researchers saw again that all of the women who ate the energy-reduced diets successfully lost weight, but the groups that consumed the higher-protein meat-containing diets also lost bone mineral density compared to the control group.

The bone mineral density was measured using a dual-energy X-ray absorptiometer.

The findings are published online in the *Journal of Gerontology: Medical Sciences* and will be printed in September.

"Purposeful, moderate weight loss is an effective way for overweight [postmenopausal women](#) to improve their health and well-being," Campbell said. "However, research shows that older women are at risk of losing bone when they lose weight, and our findings highlight that amount and sources of protein are important to consider when choosing a weight-loss diet. Each individual needs to evaluate, or consult with a dietitian about how to achieve and sustain a healthy body weight and body composition, including muscle and bone."

Campbell and Tang indicate that more research is needed to better understand how different amounts and sources of protein impact bone when people lose weight.

"The impact of dietary protein on bone remains controversial, and information about dietary protein and bone from studies with weight-stable subjects might not be applicable to weight loss," Campbell said. "We know that bone is constantly forming and breaking down, and how fast these two processes occur determines the density of your bones. We don't have the data at this time to know the mechanisms involved with these changes in bone density.

"It is also important to note that these two studies were relatively short, nine to 12 weeks, so studies to evaluate how protein intakes impact body composition and bone beyond the period of active [weight loss](#) would be helpful."

Provided by Purdue University

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