Study shows how to lose weight without losing bone

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A higher-protein diet that emphasizes lean meats and low-fat dairy foods as sources of protein and calcium can mean weight loss without bone loss--and the evidence is in bone scans taken throughout a new University of Illinois study.

The research, which compared the results of a high-protein, dairy-intensive diet with a conventional weight-loss diet based on the food-guide pyramid, was published in this month's *Journal of Nutrition*.

"This is an important finding because many people, especially women in mid-life, are concerned with both obesity and osteoporosis," said Ellen Evans, a U of I associate professor of kinesiology and community health and member of the U of I Division of Nutritional Sciences.

"Furthermore, treating obesity often increases risk for osteoporosis. Many people lose bone mass when they lose weight," she said.

Study co-author Donald Layman, a U of I professor of nutrition, has previously reported that protein-rich weight-loss diets preserve muscle mass, help lower blood sugar and lipids, and improve body composition by targeting weight carried in the abdomen.

In the recent study, Layman's diet prescribed approximately 30 percent of all calories from protein, with an emphasis on lean meats and low-fat dairy products.

The scientists recruited and randomized 130 middle-aged, overweight persons at two sites—the U of I and Pennsylvania State University. Participants then followed either the higher-protein weight-loss diet or a conventional higher-carbohydrate weight-loss diet based on the food-guide pyramid for four months of active weight loss followed by eight months of weight maintenance.

"Essentially we substituted lean meats and low-fat milk, cheese, yogurt, etc., for some of the high-carbohydrate foods in the food-pyramid diet. Participants also ate five servings of vegetables and two to three servings of fruit each day," Evans said.

Bone mineral content and density were measured with DXA scans of the whole body, lumbar spine, and hip at the beginning of the study, at four months, at eight months, and at the end of the 12-month period.

"In the higher-protein group, bone density remained fairly stable, but bone health declined over time in the group that followed the conventional higher-carbohydrate diet. A statistically significant treatment effect favored the higher-protein diet group," said Matthew Thorpe, a medical scholars (MD/PhD) student who works in Evans's lab and was the primary author of the study.

"The combination and/or interaction of dietary protein, calcium from dairy, and the additional vitamin D that fortifies dairy products appears to protect bone health during weight loss," he added.

Because higher-protein diets have been associated with elevated urinary calcium levels, some scientists have feared that these diets cause bone demineralization.

The U of I team measured these levels at the beginning and eight months into the study. Although the researchers did note increased amounts of

urinary calcium in the higher-protein group, they attributed the source of the increased calcium to improved intestinal absorption of calcium rather than bone loss.

"Other recent studies using radiolabeled calcium have shown that the higher urinary calcium levels associated with higher-protein diets are not coming from bone as some researchers had believed," Thorpe said.

The U of I scientists will soon begin a similar study contrasting higher-protein, dairy-rich diets with conventional weight-loss diets in older, mildly frail women.

"We'll measure bone and muscle outcomes in the two groups after six months of weight loss. Ultimately we want to know if a higher-protein weight-loss diet that emphasizes lean meats, whey protein, and low-fat dairy consumption can reduce the risk for osteoporosis and muscle loss.

"We also want to learn how these changes in body composition will affect balance, gait, and other measures of physical function in this population known to be at high risk for osteoporosis and physical disability," she said.

Source: University of Illinois at Urbana-Champaign