

[IMAGE]

Fruit May Boost Bone Health in Young Girls

Osteoporosis is a major public health problem that is growing in importance as the population ages.

Augmenting bone mass during adolescence has been suggested as a strategy to prevent osteoporosis because this stage of life may be the last chance to substantially increase bone mass before skeletal consolidation.

Bone Mineral Density (BMD) is affected by genetic, endocrine, mechanical and nutritional factors. The nutritional factors are considered to be especially important because they have the potential to be modified.

One element of diet is its ability to influence the body's acid-base balance. Most people consume a diet that generates metabolic acids, which can lead to a reduction in the concentration of systemic bicarbonate and a decrease in pH. The decrease in pH is thought to stimulate osteoclasts to resorb bone. Researchers in Northern Ireland recently conducted a study to determine whether usual fruit and vegetable intakes reported by adolescents have any influence on BMD.

In the study, BMD was measured by using dual-energy X-ray absorptiometry at the non-dominant forearm and dominant heel in a random sample of 12-year-old boys (324), 12-year-old girls (378), 15-year-old boys (274) and 15-year-old girls (369).

Usual fruit and vegetable intake was evaluated by an interviewer-administered diet history method.

Relations between BMD and fruit and vegetable intake were assessed using a number of different methods, including a photographic food atlas of known portion sizes, measuring spoons, and other household measuring items.

Different sized bowls and glasses were provided to the subjects who were then asked to measure out a typical serving of a beverage or breakfast cereal. All cereals and beverages were measured to the nearest gram. Food containing fruits and vegetables were also measured. For example, if a student consumed stew, inquiries were made as to how much of the various vegetables were included and were coded separately when the information was entered.

Fruit juice was also included in the fruit intake. Lifestyle data, which included the amount of physical activity and smoking habits, were also taken into consideration.

Results: Using multiple linear regression to adjust for the potential confounding influence of physical and lifestyle factors, it was observed that 12-year-old girls who consumed high amounts of fruit had considerably higher heel BMD than the moderate fruit consumers did. No other associations were observed

between fruit intake and forearm BMD or between vegetable intake and either forearm or heel BMD. High intake of fruit may be important for bone health in girls. It is possible that fruit's alkaline-forming properties mediate the body's acid-base balance. However, intervention studies are required to confirm the findings of this observational study.

Reference:

McGartland CP, Robson PJ, Murray LJ, et al. Fruit and vegetable consumption and bone mineral density: the Northern Ireland Young Hearts Project. *American Journal of Clinical Nutrition*, 2004;80(4):1019-1023.

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