

Vigorous Physical Activity Increases Bone Mass

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Osteoporosis is characterized by abnormally low bone mass, micro-architectural deterioration of bone tissue leading to increased bone fragility, and a consequent increase in fracture risk. The term osteoporosis is widely used clinically to mean generalized loss of bone, or osteopenia, accompanied by relatively atraumatic fractures of the spine, wrist, hips, or ribs. It is manifested clinically as fractures, and, on noninvasive quantitative imaging tests, as low bone density. Osteoporotic fractures, particularly in aging women, represent a major health problem in industrialized nations. In the United States, approximately 150,000 hip fractures occur annually in women over age 65, with 15 percent to 25 percent of these women experiencing excess mortality or needing long-term nursing home care. While a certain amount of bone loss seems inevitable with the passage of time, the process is not entirely beyond our control. Dietary and lifestyle measures can, to some degree, help maintain bone health. Poor nutrition and other health habits such as smoking, alcohol abuse, and physical inactivity contribute to bone loss. Exercise, especially through activities like walking that put pressure on the weight-bearing bones, stimulates bone remodeling.

A study published in the *Journal of Clinical Endocrinology and Metabolism* evaluated the effects of physical activity on bone mass in adolescents. The study included 1,748 boys and girls with an average of 15.5 years. The teens were asked to wear an activity monitor for a week and the information collected was then compared to bone thickness and size of the shinbone. It was found that vigorous activity, which was defined as jogging, running and playing sports, was related to greater tibial size and thickness. Those who were vigorously active had measured bone size that was 7mm greater than those with the least amount of vigorous activity. Researchers also found that light to moderate activity, which included walking, was not associated with increased bone mass. These findings suggest that promoting childhood physical activity to improve future bone health is only beneficial if the children participate in high-impact, vigorous activities.¹

¹Savers A, Mattlocks C, Deere K, et al. Habitual Levels of Vigorous, But Not Moderate or Light, Physical Activity Is Positively Related to Cortical Bone Mass in Adolescents. *J Clin Endocrinol Metab.* Feb2011.