What About Bone Density?

By: Nicole Dehart, CrossFit Kids Magazine, March 2009

Bones are an incredible asset to the daily health and well-being of our lives. Bones are a storehouse for nutrients, they provide a protective barrier to vital organs, and they contribute to our overall quality of life. But bones can be unhealthy, just like the lungs of a smoker can be unhealthy. Bones can be brittle and may easily break or fracture. Bones can also become fragile from loss of tissue, typically from a deficiency of calcium or vitamin D, and can cause a person to obtain a medical condition known as “osteoporosis.” Having fragile and brittle bones can detract from a person’s quality of life and can significantly impact a person’s overall health. So how can we get our bones to be the healthiest they can be?

Numerous studies have shown a direct link between physical activity and an increase in bone mineral density. An increase in bone mineral density is critical to the wellness and strength of the bone. Granted, there are many factors that contribute to an increase in bone strength, like a person’s age, reproductive hormone status and nutritional status, but a large bearing on the bone strength is physical activity, with numerous studies showing a strong correlation between physical activity and an increase in bone mass. What is even more interesting is that studies have shown that exercise provides the best long-term benefits in bone mineral density when it is initiated before puberty. Why when initiated before puberty? Well, 50 percent of bone growth peaks before late adolescence. That is a large amount of bone growth in a fairly short period of time. By the time a people are in their 30s, they have all the bone they will ever have and will actually begin to lose it gradually. This means that there is a short window of opportunity for children to start early in developing strong, healthy bones. More and more evidence has shown that putting bone mass in the bank at a young age is one of the best preventive measures for osteoporosis. This is crucial because thousands suffer from bone fractures and medical conditions, like osteoporosis, yearly.

Now comes the question of what type of exercise helps increase bone density in children? In order for bone mineral density to be gained, an exercise needs to overload that bone, and the overloading must be greater than loading experienced during daily activities. A study was conducted at Oregon State University that found children can significantly increase bone mass through a weekly exercise program that includes “impact loading” exercises. The study was conducted on several children ages 7-8. The study lasted about seven months and had the children come in three times per week and jump onto a 24-inch box 100 times per visit. The results? The children who performed the impact-loading exercise of box jumps had 5 percent more bone mass than a control group who performed non-impact exercises. This 5 percent increase translates into a 30 percent decrease in the risk of these children having a hip fracture in adulthood. By just incorporating box jumps, these children were able to increase their bone mass in a relatively short time. That is amazing!

Another study was conducted with the objective being to examine how physical activity can change bone mass and structure in school-aged children. Fifty-one children participated in this study and three times per day did 10 counter-movement jumps. Dietary calcium, physical activity, physical performance and anthropometry were all taken into account during the study. The results? Intervention children gained significantly more bone mineral content at the proximal femur (2 percent) and the intertrochanteric region (27 percent) of the femur. These children had a significant increase in bone mineral content from engaging in a brief, weekly exercise program. Sound familiar?

Impact-loading exercises are crucial in helping children boost bone mass. There are numerous studies that discuss the bone-density gains made by gymnasts due to the continuous impact loading of their movements. It is also good to note that the bone-mass gains made in children and teenagers may be retained in adulthood, even if the program is discontinued. Therefore, exercise that includes impact loading, when initiated during the childhood and teenage years, is helping individuals “bank bone” for the wear and tear of adult years. CrossFit Kids has specifically programmed more impact-loading exercises into the workouts to help children bank bone for those later years. By incorporating impact-loading exercises (box jumps, broad jumps, tuck jumps, jump rope, etc.), we can help build stronger bones in children’s lives. This is a testament as to why CrossFit Kids is not simply a scaled-down version of CrossFit. It is absolutely, entirely CrossFit, geared and designed for a special population and the specific developmental needs of that population. Let us continue to forge the future of fitness within our children.
Sources


