



MICRONUTRIENTS FOR MAINTAINING HEALTHY BONE



The human skeletal system is made up of bones and joints. It provides support and mobility, and protects the body's organs. We are born with more than 300 bones. Many of them fuse together during childhood and an adult human being eventually has 206 bones. The largest bone in the human body is the femur (thigh bone) and the smallest bones in the human body are the three bones of the middle ear. Maximum bone growth occurs during childhood and puberty and tapers off at 16-18 years of age. While the bones do not grow in size after 18-20 years, they are not stagnant, hard, and inert structures. A continuous metabolic process called bone remodeling occurs within the bones throughout our life. This is an essential lifelong process during which the bone is resorbed and formed again by specialized cells in the skeletal system. Osteoclasts break down mineralized bone and participate in the bone reabsorption process, and osteoblasts build bone. Our entire skeleton is renewed every few years and it is estimated that at any time about 20% of an adult bone is undergoing remodeling.

Bones are mostly made of protein collagen and minerals are deposited on collagen fibers hardening the entire structure. Therefore, overall bone health depends upon the production of healthy collagen. In addition to providing structural framework for the body, the bones act as storage for minerals, acting as reservoirs for calcium and phosphorus. Collagen provides the framework for the bones and minerals such as calcium and magnesium and provides structure and strength to the bones. Calcium and phosphorus are required for essential life functions, such as maintaining heartbeat. The bone marrow is the site of production of various blood cells. Certain lipids are stored in bone marrow acting as energy storage.

Micronutrient synergy is critical for optimal performance of every cell in the body. The variety of cells within our bones requires micronutrients to support us throughout our lifetime. However, contrary to the popular belief that the bones need only calcium and vitamin D, they need many other micronutrients. Vitamin D is essential for optimum absorption of calcium which is the most important mineral in bones. Vitamin C and the

amino acids lysine and proline are critical as well and they synergistically help in building strong and healthy collagen tissue which is essential for bone health. Collagen forms the foundation of our bones and more than 90% of the bone matrix is made of collagen. The alignment of collagen fibers determines how calcium and other minerals are deposited and assures metabolic stability and strength of the bones. Other micronutrients that build maximum bone mass include the B-group of vitamins, vitamin K, and minerals such as copper, phosphorus, magnesium, boron, and zinc.

A healthy diet and regular exercise, along with proper micronutrients are essential to maintain healthy bones. A chronic deficiency of micronutrients can lead to mineral depletion and weakening of the bones. A net bone loss occurs when the rate of bone dissolution is higher than bone formation and leads to conditions such as osteoporosis (thinning bones) or osteomalacia (failure of mineralization of bones) which can cause deformities. Due to our modern lifestyle, conditions such as osteoporosis are not only a disease of ageing. Women as young as 25 are also reported to have initial stages of osteoporosis. Other factors affecting bone health include hormonal imbalances. For example, estrogen, testosterone, or parathyroid hormone imbalance can affect bone metabolism by impairing absorption of calcium and other minerals required for healthy bones.

Most of the supplements recommended for bone health contain mainly calcium with or without vitamin D and focus on the forms of calcium for better absorption. However, if collagen is not properly formed, then calcium and other minerals cannot be optimally incorporated in the bone and optimum strength and stability of bone tissue cannot be assured. A synergistic combination of micronutrients is essential for bone cells to produce collagen and retain bone density and stability of the entire skeletal system. Therefore, it is vitally important for your health to pay attention to the ingredients and proportions in bone supporting supplements.

This information is provided to you by the Dr. Rath Research Institute a leader in the breakthrough of natural health research in the field of cancer, cardiovascular disease and other common diseases. The Institute is a 100% subsidiary of the non-profit Dr. Rath Foundation.

The ground-breaking nature of this research poses a threat to the multi-billion dollar pharmaceutical "business with disease". It is no surprise that over the years the drug lobby has attacked Dr. Rath and his research team in an attempt to silence this message. To no avail. During this battle, Dr. Rath has become an internationally renowned advocate for natural health. Says he: "Never in the history of medicine have researchers been so ferociously attacked for their discoveries. It reminds us that health is not given to us voluntarily, but we need to fight for it."

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