Choosing the right bone-building supplement can be a bit tricky. To improve bone health and reduce fracture risk, Americans have been taught to focus on calcium supplements and bone mineral density (BMD). Many experts, however, look elsewhere. They draw a distinction between bone quality (which concerns reduced risks of fracture) and bone quantity (which is concerned exclusively with bone mineral density, or BMD). One reason for this distinction is that for the vast majority of women, BMD is not statistically significantly related to fracture risk. BMD only captures a small component of the totality that is bone health. Bone quality, not merely quantity, is important. Calcium, the major component of BMD measurements, does not add greatly to bone’s resistance against the most dangerous types of mechanical stresses. Calcium alone does not do much to improve bone quality. It is the other 28 percent of the bone, the collagen and other components found in the bone matrix, and that are active in bone formation, that give a degree of flexibility and resilience to bone, hence primarily helping to reduce fracture risk. Bone-Up®, which is more than just a calcium supplement, is one option for maintaining and improving bone quality, as has recently been shown in a clinical trial conducted at Ohio State University.

Bone-Up long has been established as the superior calcium formula with microcrystalline hydroxyapatite. The focus of this product is as much on preserving bone quantity. The difference, in a nutshell, is whether a product promotes bone formation rather than merely preventing bone loss. Current medical treatments with bisphosphonates focus only on preserving or increasing bone quantity (BMD) by preventing remodeling by osteoclasts. Even the usual remedy of calcium plus vitamin D really only aims at reducing calcium loss. Bone-Up does more because it activates bone formation.

In a soon-to-be released study, female students at Ohio State University who had not done recent, regular resistance exercise followed an eight-week resistance exercise program and also consumed either placebo or Bone-Up. At the end of the study, Bone-Up treatment, but not the placebo, was found to have produced statistically significant positive changes in markers of bone resorption, markers of bone formation and plasma parathyroid hormone (a hormone that affects bone metabolism and is affected by calcium nutritional status). Not only was bone resorption reduced (i.e., there was support for maintaining BMD or bone quantity), but also two major bone formation markers were improved. In other words, in just two months the bone building activity of the bone matrix had been activated.

The Bone-Up formula contains more than just calcium and vitamin D because it is apparent that minerals other than calcium play significant roles in maintaining bone health. The trace mineral boron, for instance, plays a role...
in estrogen metabolism. Potassium has been shown to reduce calcium loss from the body. Magnesium helps to keep calcium in the bones, where it belongs, rather than in the lining of the arteries, where it does not. Zinc stimulates bone formation and reduces bone resorption.

There are other factors, as well. Vitamin K maintains lumbar bone and reduces new fractures. MK-7 or vitamin K2 is even more powerful in this regard. Folic acid reduces homocysteine levels because high levels have been linked to osteoporosis. Vitamin C, copper, manganese, and glucosamine are all important for supporting the activities of the bone matrix, the most active site of bone repair.

Still, it is the hydroxyapatite that is the star of the show. It has been proven in clinical trials to increase bone mass. Hydroxyapatite is the actual form of calcium found in bone tissue. It produces a more prolonged calcium balance than do soluble calcium salts because it can cause the bone osteoblasts (bone forming cells) to become receptive to its components and to build bone tissue. Hydroxyapatite microcrystals provide both the organic and inorganic constituents found in bone. It has been proposed that the bone-building process is enhanced by the presence of the proteins (the organic matrix) or that the microcrystalline structure provides a large surface area from which the minerals may be released from the organic matrix in the intestines. But that is theory and hypothesis. In practice, the hydroxyapatite and other ingredients in Bone-Up work to support bone health and renewal. That is all that most of us care about.

**Selected references:**


