

Bone-Up™

**240 capsules**

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Throughout life, cells known as osteoblasts construct bone matrix and fill it with calcium. At the same time, cells called osteoclasts work just as busily to tear down and reabsorb the bone. This fine balance is regulated by many factors, including systemic hormones and cytokines. Bone mass reaches its peak by the middle of the third decade of life and plateaus for about ten years, during which time bone turnover is constant, with bone formation approximately equaling bone resorption.<sup>1</sup>

As our bodies age, this fine balance is lost. As the relative hormone levels shift in midlife—more drastically in women than in men—the osteoclasts gain the upper hand and bone mass begins dwindling away. Some bone is already being lost by the time women reach menopause, but the rate of loss can increase as much as tenfold during the first six years after menopause.

From midlife onward, bone health is threatened by overactive osteoclasts. To add to the problem, the osteoblasts may become less active from age 60 onward. Whereas trabecular (spongy-looking) bone in the vertebrae and elsewhere was formerly at risk from excess osteoclast activity, now the cortical (dense) bone of the hip, shin, pelvis, and other sites becomes more prone to fracturing because osteoblasts do not make enough of it.

## References

Calcium is the most abundant mineral in the body where it is primarily found in bones and teeth. In bone formation, calcium forms crystals that provide strength to maturing bone. Peak bone mass is usually achieved when people are in their 20's.

Calcium is needed for more than just healthy bones. It is also important for muscle contraction, blood vessel contraction and expansion, the secretion of hormones and enzymes, and sending messages through the nervous system. A meta-analysis of 56 clinical trials demonstrated a significant impact on heart health resulting from increasing calcium intake by 1000 to 2000 mg/day.<sup>11</sup> In addition, recent evidence suggests that increased intake of calcium may help in weight control as well.<sup>12-15</sup>

Magnesium is one of the body's most important minerals. It is required as a co-factor in hundreds of enzymatic processes within cells.<sup>16</sup> It helps maintain normal muscle and nerve function, keeps heart rhythm steady, supports a healthy immune system, and keeps bones strong.\* Magnesium also helps to maintain blood sugar and blood pressure levels already within normal range, and is known to be involved in energy metabolism and protein synthesis.<sup>17,18\*</sup>

Magnesium is a major factor in relaxing the smooth muscles within the blood vessels, thereby reducing peripheral vascular resistance and promoting a healthy cardiovascular system.<sup>19-21\*</sup> Magnesium also affects circulating levels of norepinephrine and the synthesis of serotonin and nitric oxide.<sup>16,22-24</sup>

In bone mineral health, magnesium (or lack of) influences the bone mineral matrix and its ability to metabolize minerals needed for repair and rebuilding.<sup>25, 26</sup> The scientific literature documents the need for a wide range of minerals that are vital to maintaining strong, healthy bones.\*

Calcium and other minerals are best not taken with fiber, because fiber can interfere with their absorption.<sup>1-5</sup> There is evidence that calcium from supplements and dairy foods may inhibit iron absorption, although it has been very difficult to distinguish between the effects of calcium on iron absorption versus other inhibitory factors such as phytate.<sup>27</sup>

Therefore, if you are iron deficient, it may be best to avoid taking calcium with meals.<sup>28</sup> Calcium supplements are best administered at dinner and/or bedtime. They should always be taken with a full glass of water, juice, or other liquid to enhance solubility.<sup>29</sup> If calcium-containing formulas are taken only once daily they may be best taken in the evening.<sup>30</sup>

A problem overlooked by most doctors is that loss of bone density is associated with deficiencies of not just calcium, but a host of other nutrients including magnesium and vitamin D3.<sup>31-37</sup> In order for calcium to prevent bone loss, adequate amounts of vitamin D3, zinc, manganese and other nutrients should be available so that calcium, magnesium, and phosphorus can be incorporated into the bone matrix.<sup>38-46</sup> Another issue that many people are not aware of is that many forms of calcium do not absorb particularly well.<sup>47,48</sup>

Engaging in regular weight-bearing exercise, eating a variety of healthy foods, and avoiding tobacco and alcohol, can help maintain healthy bones. Foods that promote bone health include calcium sources—such as dark green leafy vegetables, broccoli, legumes, canned salmon, and sardines—and dairy products like milk and cheese.

This product provides 100% of calcium from microcrystalline hydroxyapatite (MCHA) from Australian bovine bone.

## References

## Supplement Facts

Serving Size 6 capsules

Servings Per Container 40

### Amount Per Serving

Vitamin C (as ascorbic acid)	200 mg
Vitamin D3 (as cholecalciferol)	1000 IU
Vitamin K1 (as phylloquinone)	100 mcg
MK-7 (vitamin K2 as menaquinone-7)	10 mcg
B12 (as methylcobalamin)	100 mcg
Microcrystalline Hydroxyapatite (MCHA)	4762 mg
Calcium (from MCHA)	1000 mg
Phosphorus (from MCHA)	510 mg
Protein (from MCHA)	1514 mg
Magnesium (as magnesium oxide)	500 mg
Zinc (as zinc monomethionate)	10 mg
Copper (as copper gluconate)	1 mg
Manganese (as manganese citrate)	1 mg
Potassium (as potassium citrate)	99 mg
Boron (as boron citrate)	3 mg

Other ingredients: magnesium stearate (vegetable source), and silicon dioxide.

Contains soy.

No wheat, no gluten, no dairy, no egg, no fish/shellfish, no peanuts/tree nuts.

## Dosage and Use

- Take one to six capsules per day with meals, preferably dividing the number of capsules equally with each meal to facilitate maximum absorption, or as directed by your qualified health care consultant.

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