

Support for Healthy Bone Density

Developed and reviewed by the clinical, chiropractic, and naturopathic members of the Standard Process team

The Physiology of Bone and the Importance of Bone Density

Bone's role in the human body goes beyond structure. It is a dynamic, metabolically active connective tissue that serves as a reservoir of calcium, phosphate, and other minerals that can be released or stored as needed to balance minerals in body fluids. Bone also houses blood cell production within the bone marrow.

Osteoblasts, the cells that are responsible for building and repairing bone, produce bone matrix which consists of both organic and inorganic compounds. Organic compounds in bone include collagen, phosphate, proteoglycans, and glycoproteins. Type 1 collagen makes up 90% of the bone matrix and provides both flexibility and strength to bones. Inorganic compounds in bone include hydroxyapatite crystals and minerals such as calcium, phosphate, magnesium, potassium, and sodium.

Bone density relies on nutrients and lifestyle factors that support bone building via osteoblasts and the resorption of damaged bone via osteoclasts, which are the cells that degrade bone as part of the remodeling process. Without adequate bone mineral density, patients are at higher risk for structural deterioration of bone, which can be detrimental to overall health and longevity. Deficiencies in calcium, phosphorus, vitamin D, and other nutrients can lead to bone loss. Because bone matrix adapts to physical loads placed upon it, a lack of weight-bearing activity can lead to bone loss and fragility.

Hormones like calcitonin, calcitriol, parathyroid hormone, estrogen, and testosterone also play important roles in healthy bone formation throughout the lifecycle.

Supportive Lifestyle Practices

- Recommend a comprehensive exercise routine that includes both weight-bearing aerobic exercise (jogging, walking, tai chi) and strength training to support bone density. These activities support healthy bone remodeling by osteoclasts and can reduce the risk of falls.^{1,2}
- Strongly encourage smoking cessation. Smoking reduces calcium and vitamin D absorption and can lead to a decrease in bone mass and increased bone turnover.³

Whole Foods Nutritional Recommendations

- Recommend adequate intake of calcium-rich foods to support bone growth. Dairy foods are the most bioavailable sources of calcium.⁴ Plant-based sources include soy, beans, lentils, almonds, and green leafy vegetables.⁵
- Advise patients to consume foods that contain vitamin D. Vitamin D promotes bone building and is found in salmon, herring, sardines, tuna, eggs, and dairy.⁶
- Recommend intake of collagen-rich foods like bone broth, meat, eggs, sardines, and anchovies. These foods are rich in the amino acids proline, glycine, lysine, and hydroxyproline. Collagen makes up 90% of bone matrix and is essential for the strength and flexibility of bone.⁷
- Recommend that patients add magnesium-rich whole foods to their diet such as spinach, nuts, chia seeds, pumpkin seeds, almonds, cashews, and black beans. Magnesium intake has been found to support healthy bone mineral density.⁸
- Encourage the consumption of foods high in protein like poultry, beef, eggs, legumes, nuts, fish, and dairy. Higher protein intake is protective against the risk of hip fracture and supports the maintenance of lean muscle mass.^{9,10}

Dietary Supplement Regimen



Bone Health Pack

Suggested Use: **Contents of 1 pack each morning and evening**

The Bone Health Pack is a convenient daily packet of supplements for adults combined to provide convenient maintenance support to keep bones strong and healthy.*

Each box includes a 30-day supply of individual packs. Each pack contains:

- Calcifood® (three wafers)— Provides calcium*
Special Information: This product should be chewed then swallowed.
- Cataplex® D (one tablet)—Supports and maintains healthy bone density*
- Cruciferous Complete™ (one capsule)—Supports bone health*
- Ostrophin PMG® (two tablets)— With a proprietary PMG™ blend



Bone Complex

Suggested Use: **1 tablet 3 times daily**

Bone Complex contains Epimedium, Kudzu, Red Clover and Black Cohosh to support healthy bones.* These herbs have been traditionally used in herbal preparations to help mature women (age 40-60) to:

- Support healthy bone tissue, in conjunction with weight-bearing exercise and a healthy diet containing food sources of calcium and vitamin D*
- Support and maintain healthy bone density*
- Beneficially influence normal bone remodeling*

Assessment of Bone Health

- Imaging: DEXA Scan
- Key labs: 25-hydroxy vitamin D, comprehensive metabolic panel (CMP), thyroid panel, and bone turnover markers in appropriate patients

In Office/Physical Exam

- Physical exam: Assess mobility, balance, and lean muscle mass
- Consider health history, family history, and ethnicity

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