



Susan E. Brown, PhD ■ The Center for Better Bones

## THE REAL SECRET TO STRONG BONES

### It Is Not What You Think

Contrary to popular belief, the degenerative bone disease *osteoporosis* is not an inevitable result of aging.

**New research:** An important but overlooked cause of osteoporosis is an acid-forming diet.

*Bottom Line/Women's Health* spoke with Susan E. Brown, PhD, author of *Better Bones, Better Body*, to learn more about this important research. *Her insights...*

#### THE ACID/ALKALI BALANCE

For survival, the body must maintain a balance between acids and alkalis, with good health depending on slight alkalinity. If the body's alkali reserves run low—a condition called *chronic low-grade metabolic acidosis*—alkaline mineral compounds are drawn from bones to buffer excess acids in the blood. The immediate benefit is that the body's *pH* (a measure of acidity or alkalinity) is balanced. But over time, if bone mineral compounds are not replenished, osteoporosis develops.

Bone-depleting metabolic acidosis is easily reversible through diet. Yet the average American diet is woefully deficient in many of the nutrients needed to balance pH.

**To protect bones:** Follow the dietary suggestions on this page. It's generally best to get nutrients from food. However, to help ensure adequate intake, take a daily multi-vitamin/mineral plus the other supplements

noted...and consider additional supplements as well.

**Before you start:** Gauge your pH with a urine test kit, such as those sold in some pharmacies...or use the Better Bones Alkaline for Life pH Test Kit. *Cost:* \$29.95 ([www.BetterBones.com](http://www.BetterBones.com), click on "Visit Our Store," or call 888-206-7119). An ideal first morning urine pH is 6.5 to 7.5. The lower your pH is, the more helpful supplements may be. As with any supplement regimen, talk to your doctor before beginning.

#### BONE-SUPPORTIVE DIET

For a diet that builds bones...

- Emphasize vegetables (particularly dark, leafy greens and root vegetables), fruits, nuts, seeds and spices—these are alkalizing.

**Daily targets:** Eight servings of vegetables...three to four servings of fruit...two servings of nuts or seeds...and plentiful spices.

- Consume meat, poultry, fish, dairy, eggs, legumes and whole grains in moderation—they are acidifying.

**Daily targets:** One serving of meat, poultry or fish...one serving of eggs or legumes...one to two servings each of dairy and whole grains.

- Minimize sugar, refined grains and processed foods...limit coffee to two servings daily...limit alcohol to one serving daily. All these are very acidifying.

- Fats neither increase nor decrease blood acidity—but for overall health, keep fat intake moderate and opt for those that protect the heart, such as olive oil.

**Important:** It's not the acidity of a food itself that matters, but rather its metabolic effects. For instance, citrus fruits taste acidic, yet once metabolized, they are alkalizing.

#### MINERALS THAT BONES NEED MOST

Bone is composed of a living protein matrix of collagen upon which mineral crystals are deposited in a process called *mineralization*. Key minerals, in order of importance...

**POTASSIUM** neutralizes metabolic acids and reduces calcium loss.

**Daily goal:** 4,000 milligrams (mg) to 6,000 mg.

**Sources:** Avocados, baked potatoes, bananas, beet greens, cantaloupe, lima beans, sweet potatoes.

**MAGNESIUM** boosts absorption of calcium and production of the bone-preserving hormone calcitonin.

**Daily goal:** 400 mg to 800 mg.

**Sources:** Almonds, Brazil nuts, kelp, lentils, pumpkin seeds, soy, split peas, whole wheat, wild rice.

**CALCIUM** gives bones strength.

**Daily goal:** 1,000 mg to 1,500 mg.

**Sources:** Amaranth flour, broccoli, canned sardines with bones, collards, dairy, kale, mustard greens, sesame seeds, spinach.

**Also:** Supplement daily, at a two-to-one ratio, with calcium citrate or calcium citrate malate plus magnesium—increasing calcium intake

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without also increasing magnesium can exacerbate asthma, arthritis and kidney stones.

**ZINC** aids collagen production and calcium absorption.

**Daily goal:** 20 mg to 30 mg.

**Sources:** Alaskan king crab, cashews, kidney beans, meat, oysters, sesame seeds, wheat germ.

**MANGANESE** helps form bone cartilage and collagen.

**Daily goal:** 10 mg to 15 mg.

**Sources:** Beets, blackberries, brown rice, loganberries, oats, peanuts, pineapple, rye, soy.

**COPPER** blocks bone breakdown and increases collagen formation.

**Daily goal:** 1 mg to 3 mg.

**Sources:** Barley, beans, chickpeas, eggplant, liver, molasses, summer squash.

**SILICA** increases collagen strength and bone calcification.

**Daily goal:** 30 mg to 50 mg.

**Sources:** Bananas, carrots, green beans, whole grains.

**BORON** helps the body use calcium, magnesium and vitamin D.

**Daily goal:** 3 mg to 5 mg.

**Sources:** Almonds, avocados, black-eyed peas, cherries, grapes, tomatoes.

**STRONTIUM** promotes mineralization.

**Daily goal:** 3 mg to 20 mg.

**Sources:** Brazil nuts, legumes, root vegetables, whole grains.

#### VITAL VITAMINS

The following vitamins enhance bones' self-repair abilities...

**VITAMIN D** is essential because, without adequate amounts, you cannot absorb enough calcium. Many people do not get adequate vitamin D from sunlight. Vitamin D deficiency accounts for up to 50% of osteoporotic fractures.

**Daily goal:** 1,000 international units (IU) to 2,000 IU.

**Best source:** A daily supplement of *cholecalciferol* (vitamin D-3)—foods that contain vitamin D (fatty fish, fortified milk) do not provide enough and are acidifying.

**VITAMINS K-1 AND K-2** boost bone matrix synthesis and bind calcium and phosphorous to bone.

**Daily goal:** 1,000 micrograms (mcg) of K-1...and 90 mg to 180 mg of K-2.

**Sources:** Aged cheese, broccoli, Brussels sprouts, collard greens, kale, spinach, green tea.

**If you supplement:** For vitamin K-2, choose the MK-7 form.

**Caution:** Vitamin K can interfere with blood thinners, such as *warfarin* (Coumadin)—so talk to your doctor before altering vitamin K intake.

**VITAMIN C** aids collagen formation, stimulates bone-building cells and helps synthesize the adrenal hormones vital to postmenopausal bone health.

**Daily goal:** 500 mg to 2,000 mg.

**Sources:** Cantaloupe, kiwifruit, oranges, papaya, pink grapefruit, red peppers, strawberries.

**VITAMINS B-6, B-12 AND FOLATE** help eliminate *homocysteine*, an amino acid linked to fracture risk.

**Daily goal:** 25 mg to 50 mg of B-6...200 mcg to 800 mcg of B-12...800 mcg to 1,000 mcg of folate.

**Sources:** For B-6—avocados, bananas, brown rice, oats, turkey, walnuts. For B-12—beef, salmon, trout. For folate—asparagus, okra, peanuts, pinto beans.

**VITAMIN A** helps develop bone-building osteoblast cells.

**Daily goal:** 5,000 IU.

**Sources:** Carrots, collard greens, pumpkin, sweet potatoes.

**If you supplement:** Choose the beta-carotene form. ■ ■