

It's never too late to strengthen your bones. The author of *Better Bones, Better Body* tells what you can do now to help prevent osteoporosis later.

Better Bones at Every Age  
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Bone health is our birthright. Yet, today in the United States, 10 million individuals already have osteoporosis and 18 million more have low bone density, placing them at risk for the disease. In this country, 1.5 million osteoporotic fractures occur each year, 20% being potentially devastating hip fractures. Half of all American Caucasian women aged 50 and older in the United States and one out of eight men over 50 will suffer an osteoporotic fracture, the direct costs of which now reach \$10 to \$15 billion dollars a year.

How do we go about reclaiming lifelong bone health? At the Osteoporosis Education Project, which is a nonprofit corporation based in Syracuse, N.Y. that aims to rethink osteoporosis from an anthropological perspective, we implement a comprehensive “Better Bones, Better Body Program” at each stage of life. Although many people may think of osteoporosis as a woman’s disease, bone health is important to both sexes. Most recommendations listed here can be used for both genders with a few categorical exceptions that highlight special considerations for women.

### **Infancy (Ages 0 to 3)**

Infancy is the period of most rapid skeletal growth, and even at this early stage, environmental influences can make a difference. Inadequate prenatal nutrition can lead to low-birth-weight infants born with low bone mass. Studies also show that infants breast-fed three or more months have greater bone-mineral density than those not breast-fed or breast-fed for less than three months. Even early exposure to secondhand smoke can leave children with a tendency to later experience decreased peak bone mass.

Women should:

- Eat well during pregnancy and, if of normal weight, gain 25 to 35 lb.
- Avoid toxins and distress during pregnancy, especially cigarette smoking.
- Breast-feed their infants as long as possible.

### **Childhood and Adolescence (Ages 4 to 12)**

Early childhood is accompanied by a slowing in the bone growth rate, which reverses with the well-recognized adolescent growth spurt, when about half of peak adult bone mass is accumulated. During the period immediately before and after puberty, known as peri-puberty, bones are particularly responsive to mechanical loading. Thus, if adolescents are physically active, the skeleton adapts by growing stronger and denser. Even just a few years later, improvements in bone-mineral density are much more difficult to achieve. Taking advantage of this peri-puberty window of opportunity can make the difference between lifelong healthy bones and crippling osteoporosis in later life.

The adolescent body is also especially responsive to the benefits of supernutrition—and vulnerable to penalties of undernutrition. Bone-mineral density in children and young teens is directly related to their intake of the key bone-building nutrients like calcium, magnesium, zinc and vitamins C and D. Adolescents who consume the RDA of calcium have better bone-mineral density than those who consume less, while those consuming a few hundred milligrams more

than the RDA for calcium exhibit even greater bone-mineral density. Given these facts, experts now recommend that adolescents consume higher than RDA levels of calcium. Today, however, only 10% of girls and 25% of boys in the United States meet even the lower RDA for calcium.

- Encourage rigorous outdoor exercise each day.
- Introduce fresh fruits, vegetables, beans and nuts in abundance.
- Delay and limit exposure to sugar and processed foods.
- In adolescence, consider the use of a multivitamin/mineral and additional calcium and magnesium as needed.

### **The Teen Years (Ages 13 to 19)**

While it is not as easy to build bone during the teen years as during adolescence, this stage still offers substantial opportunity. A wholesome diet, strenuous and regular exercise and the avoidance of toxins are all especially important. Unfortunately, at this time more than ever, teens' diets tend to deteriorate; exercise, especially among girls, drops; dieting increases along with anorexia, menstrual irregularities and tobacco and recreational drug use.

While teens would benefit from supernutrition, minimal nutrition is more the standard. Teenage girls consume on average only 68% of the RDA for calcium, making it unlikely that many will reach their full genetic potential for bone-mass development. While teenage boys consume more calcium, many still underconsume a variety of essential bone-building nutrients. For example, 30% of all adolescents consume less than two-thirds the RDA for magnesium. Teenage girls consume inadequate amounts of manganese and average male intake is rather marginal.

- Consume at least the RDA of all essential nutrients. Use supplements as necessary to achieve this goal.
- Strive to consume 2 cups of vegetables for lunch and dinner and four servings of fruit a day.
- Avoid smoking, recreational drugs and excessive dieting.
- Seek the causes of conditions requiring steroid medications or chronic antibiotic use.
- Participate daily in regular outdoor physical activity.

### **Special Concerns for Women: Early Adulthood (Ages 20 to 45)**

By the early 30s, bone growth is generally complete, and the trick is to keep most of that bone mass. Many women will lose half of their spinal bone before menopause, with this loss beginning in their 30s. Poor nutrition, weight loss, menstrual irregularities, inactivity and even stress are the common bone-depleting factors for young adults. On the brighter side, with exercise and nutrition, it is still relatively easy to build bone mass in early adulthood.

Hormonal balance is ever-important, and frequently during this stage of life suboptimal progesterone levels threaten bone health. As discovered by University of British Columbia endocrinologist Jerilynn Prior, M.D., up to 25% of all young women with normal-appearing menstrual cycles actually are experiencing ovulatory disturbances associated with progesterone deficiency and bone loss. Depression, unhappiness and distress have also recently been linked to osteoporosis due likely to the bone-depleting effects of the stress hormones including cortisol, adrenaline and norepinephrine.

- Correct menstrual irregularities and ovulatory disturbances.
- Cultivate sources of emotional support, build self-esteem and happiness.
- Focus your diet on fruit, vegetables, beans, nuts and seeds.
- Use balanced, broad-spectrum nutritional supplements to bring your key bone-building nutrients to adequate levels.
- Exercise daily.

- Check your rate of bone resorption as necessary.

### **Special Concerns for Women: Perimenopause (Ages 46 to 53)**

For many women, perimenopause, those years around the last menstrual period, can be a time of dramatic hormonal fluctuations, not unlike puberty. These years can also be a time of considerable bone loss. As documented by Prior, many, if not most, perimenopausal women lose spinal bone mass at a rate of almost 2% per year.

Diet and balanced nutrient supplementation is essential now as before. Studies show higher bone-mineral density in perimenopausal women with greater zinc, magnesium, potassium and fiber consumption. Also, take care with dieting. A recent University of Pittsburgh study found that perimenopausal women who lost weight, even on a healthy program, lost two to three times the hip-bone mineral of comparable women who did not diet.

And for the raging hormones? While supplementation with natural progesterone might be useful for some women just before menopause, it is not a good time to add an additional estrogen burden. Unexpectedly, research shows while estrogen levels go up and down just before menopause, they are on the average high during perimenopause. When women decide to add supplemental estrogen, they run the risk of excessive estrogen exposure.

- Develop a mineral-rich alkaline diet if you have not already done so. (Alkaline-rich foods include fruits, vegetables, nuts, seeds and lentils.)
- Do regular strength-building exercise at least three times a week.
- Obtain baseline bone-density measurement if you suspect low bone density.
- Match that bone density with a urinary marker of bone breakdown to see if bone loss is ongoing or if your bone mass is likely stable.
- Adjust your supplements as needed.

### **Special Concerns for Women: Postmenopause (Ages 54 to 75)**

While allopathic medicine encourages the use of hormone replacement therapy (HRT) for postmenopausal bone protection, we at the Osteoporosis Education Project conclude that for the average woman the risks of HRT outweigh any benefits. Studies confirm that estrogen therapy, with or without a progestin, substantially increases a woman's risk of breast cancer. Additionally, the latest HERS Trial documents that estrogen therapy provides no benefits for those with heart disease.

For some women, stabilizing and even building bone might be as easy as taking moderate doses of selected key bone-building nutrients. In 1992, Guy Abrahams, M.D., found that postmenopausal women on estrogen replacement therapy gained no bone mass, while women on estrogen who supplemented with a broad-spectrum multivitamin/mineral containing 26 essential nutrients, including 600 mg of magnesium and 500 mg of calcium citrate daily, gained a reported 11% bone mass. Supplementing postmenopausal women with alkalizing potassium salts also appears to stabilize bone.

While any regular physical activity of four or more hours a week helps to maintain bone, strength-building exercises are the best bone-builders. Rigorous exercise for one hour, three times weekly, such as weight training and aerobics combined, can yield great benefits. One common, direct cause of osteoporosis is the use of steroid medications. A full 20% of all osteoporosis is attributed to steroid drug use, and these anti-inflammatory drugs are consumed mainly by women over 55 years of age.

- Undertake regular, strength-building exercise.
- Begin, or continue, an alkaline-forming diet, which will provide for a first morning urine pH measurement of 6.5 to 7.

- Use a high-potency multivitamin/mineral and a calcium/magnesium bone-building formula as necessary.
- If you use hormone therapy, have your saliva or blood levels checked to make sure the dose is not excessively high.
- Use the NTx Osteomark test for bone resorption to verify that you do not have high levels of bone breakdown byproducts.
- Follow up any weight-loss program with NTx bone-resorption tests to make sure you are not increasing bone loss while you diet.

### **The Elder Years (Ages 76 and Up)**

Within the next 50 years, 25% of the U.S. population will be aged 65 and above. Indicative of our true regenerative potential, William Evans, M.D., working at Tufts University found that through strength-building exercises that they could make a 95-year-old as strong as a 50-year-old and a 65-year-old as physically fit as a healthy 30-year-old. Furthermore, osteoporosis can be stopped, even if one has already fractured a bone. Women with an average age of 84 gained hip density (2.7%) and reduced their hip fracture rate by 43% on 1,200 mg tricalciumphosphate and 800 IU vitamin D. Similar control patients lost 4.6% hip density and had 67% more fractures.

Nutrient needs change as we age; most notably, the need for vitamin D increases with age. Vitamin D deficiency is common among the elderly, and up to 80% of all hip fracture patients may exhibit vitamin D deficiency. The elderly living in northern climates and those exposed to little sunlight require from 800 to 1,000 IU of vitamin D a day. In addition, all elderly should keep their intake of calcium and other key bone nutrients at least at RDA levels.

- Eat at least one serving of flesh food per day, or two servings of beans.
- Get daily direct sunlight if possible and use daily supplemental vitamin D (800 to 1,000 IU).
- Use a balanced multivitamin/mineral and additional calcium as necessary.
- Be physically active. Exercise, even if from a wheelchair.
- Do that which provides a sense of well-being and joy.

### **New Calcium Recommendations**

<b>Age</b>	<b>Milligrams Calcium Per Day</b>
Birth to 6 months	400 mg
Infants 6 to 12 months	600 mg
Children 1 to 5 years	800 mg
Children 6 to 10 years	800 to 1,200 mg
Adolescents and young adults (11 to 24)	1,200 to 1,500 mg
Women 25 to 50	1,000 mg
Pregnant or lactating women	1,200 to 1,500 mg
Postmenopausal women on ERT	1,000 mg
Postmenopausal women not on ERT	1,500 mg

Source: NIH "Optimal Calcium Intake" Nutrition (1995); 5: 409-417

### **Take Care With Medications**

An estimated 11% of all hip fractures are attributed to the use of mood-altering medications, which cause falls. Those using long-acting

psychotropic drugs like Valium and Librium run a 70% to 80% greater risk of hip fracture. It is wise for the elderly to take care with medications, enhance fitness for better balance and make household environmental changes to reduce falls. It is never too early or too late to enhance bone health. Because bone health is intimately linked to overall health, osteoporosis can be best seen as an invitation to not only build better bones, but a better body at any age.

## **Men and Osteoporosis—Fast Facts**

### **Bone-Density Decline**

As they age men, just as women, begin to lose bone. This loss accelerates after age 50 and is associated with lower calcium absorption, lower vitamin D and declining sex hormone levels.

### **In Europe**

A recent, large European study found 12% of both men and women to have spinal deformity indicative of osteoporosis.

### **Hip Fractures**

An estimated 30% of hip fractures worldwide occur in men. Mortality in men after a hip fracture is considerably higher than in women, with gender being a strong predictor of mortality.

### **U.S. Costs for Men**

Approximately 20% of the total cost of osteoporosis in the United States is attributed to fractures in men.

### **Other Factors**

Two-thirds of men with osteoporotic fractures have one or more secondary causes of metabolic bone disease, including low testosterone and steroid use.

### **Bone Tests**

While the DEXA bone density scan is the standard means of assessing bone density, the new urine tests for bone breakdown can estimate the likelihood that you are currently losing bone. These tests are:

- The NTx Osteomark test, which reports N-Telopeptides of Type 1 collagen. These collagen fragments appear in the urine as bone is broken down.
- The deoxypyridinium collagen crosslinks test. These collagen crosslinks are also excreted in the urine when bone is broken down. In adults, high levels of these bone breakdown byproducts suggest current excessive bone loss.

## **Top Bone-Building Nutrients for Adults**

<b>Nutrient</b>	<b>Dosage</b>
Calcium	800 to 1,200 mg
Phosphorus	800 to 1,200 mg
Magnesium	350 to 600 mg
Silica	100 to 1,000 mg
Zinc	15 to 20 mg
Manganese	5 to 15 mg
Copper	3 to 4 mg
Boron	3 to 4 mg
Vitamin D	400 to 800 IU
Vitamin C	500 to 3,000 mg

Vitamin A	5,000 to 10,000 IU
Vitamin B6	5 to 50 mg
Vitamin K	70 to 300 mcg
Vitamin B12	10 to 100 mcg

For children and young adults, follow recommended daily allowances (RDA) and dietary reference intakes (DRIs) specific to each age.

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