



Osteoporosis & Women's Health

Martha Gore was raised to stand ramrod straight at all times. So when her husband told her she was slumping, she knew something was wrong. But her doctor brushed off her concerns. Just age, he told Ms. Gore, then in her early 60s. Luckily, Ms. Gore, a literary agent from Tucson, AZ, sought a second opinion. Sure enough, her bent posture wasn't due to age, but to osteoporosis, a disease of thinning and fragile bones.

Although Ms. Gore didn't know it, the vertebrae in her spine had most likely begun to fracture, a slow, often painless collapsing of bone called "microfractures," according to Laura Tosi, MD, chair of the Women's Health Issues Committee of the American Academy of Orthopedic Surgeons and chief of orthopedics at Children's National Medical Center in Washington, DC.

Ms. Gore's doctor said that parts of her skeleton resembled Swiss cheese more than solid bone, putting her at risk for additional fractures, which, depending on the extent of her disease, could come from such a simple action as pushing open a heavy door.

But Ms. Gore is one of the lucky ones. Today, at 76, after more than a decade of treatment with medication and lifestyle changes to make her bones healthier, she proudly states the fact that she hasn't had any more fractures and that her bone density has increased three percent.

She has a message for other women out there who, like her, never even considered they might have osteoporosis despite experiencing its classic symptoms: broken bones in their 50s, 60s or even 40s, increasing back or neck pain, or loss of height. "You have to become responsible for yourself by being aware of what your body tells you," she says. "Don't accept 'aging' as the reason."

Osteoporosis Defined

Osteoporosis is the most common bone disease affecting Americans. Called the "silent disease" because its progression is so subtle, it is an important risk factor for fractures in older people. "You can't see it happening," says Dr. Tosi, "But once it occurs, you can feel it and, sometimes, you can see it."

Just picture the stooped old woman who looks as if she's always bending over to pick up something. Her rounded back, sometimes referred to as dowager's hump, probably comes from multiple compression fractures in her vertebrae. As the bones of her spine collapse, she shrinks, rather like a building imploding onto itself, one floor pancaking onto the one below it.

I N S I D E

- 4 Risk Factors for Osteoporosis
- 5 Treating Osteoporosis
- 6 Ages & Stages: Bone Health Across the Lifespan
- 7 Ask the Expert: Common Questions About Osteoporosis
- 8 Lifestyle Corner: Staying Fracture-Free

Volume 25
Number 2

Published six times a year by
the National Women's Health
Resource Center
120 Albany Street, Suite 820
New Brunswick, NJ 08901

1-877-986-9472 (toll free)

www.healthywomen.org



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This issue was produced with the support of an educational grant from the Lilly Centre for Women's Health.

Subscriptions or bulk-issue and back-issue requests, change of address, payments, questions, or other inquiries, call: 1-877-986-9472 (toll free), email: info@healthywomen.org.

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OSTEOPOROSIS & WOMEN'S HEALTH continued from page 1

Although most are painless, about one third can "hurt like hell," says Dr. Tosi of these fractures.

Overall, one out of every two women and one in eight men over 50 will have an osteoporosis-related fracture in his or her lifetime, with American women four times more likely to develop the disease than men.⁵

In 2002, an estimated eight million women had osteoporosis, with an estimated 30 million women aged 50 and older either having or being at risk for developing the disease. Those figures will only increase as the nation ages, with an estimated 52 million men and women affected by 2010, and 61 million by 2020.¹

Small wonder, then, that osteoporosis is considered a major public health threat today, costing the nation's health care system approximately \$17 billion annually.¹ The costs aren't just economic, however. The disease, particularly once a fracture occurs, often results in depression and anxiety, significantly affecting the quality of life as it limits mobility and requires its victims to cope with deformity.

For instance, after her second foot fracture, Maurine Moglia, then 70, said she "felt like a woman of 90." "I was so scared," the 73-year-old Oakland, CA, woman recalls. She started walking more slowly and going out less, leading to isolation and depression.

Felicia Cosman, MD, clinical director for the National Osteoporosis Foundation, encounters women like Ms. Moglia all the time in her practice. "I consider it one of my most important jobs to try to reassure them. Even with very low bone density, the risk of fracture in any given year is still not that high and, more importantly, there are many changes which they

can make to try to improve their condition, from lifestyle to nutrition to medication," says Dr. Cosman, medical director of the Clinical Research Center at Helen Hayes Hospital in New York.

The Building and Breaking Down of Bone

Think of bone as a stone wall, strong and solid. If you were to remove a few of those stones, however, the remaining rocks would no longer be as steady, and the wall would no longer be as strong, although it might still stand. Take away a few more, and the slightest pressure could cause it to crumble. But add more rocks, and you strengthen the wall. That's what happens with bone, which is constantly being built up and broken down in a process called remodeling. The cells responsible for these construction and demolition jobs are osteoblasts (which build bone) and osteoclasts (which break down bone). They do this, in part, to release calcium into the blood, where it's important for brain, muscle and nervous systems.

Bone health is defined in two ways: bone mass and bone quality. Bone mass, also called bone mineral density, refers to the mineral content of the bone and accounts for about half of what makes bone structure strong, says Dr. Tosi. Other factors involved in bone health include the architecture, turnover and accumulation of damage (such as those tiny little fractures called "microfractures"). While we can measure bone mass through DEXA (dual-energy x-ray absorptiometry) scans and ultrasounds of the heel, there is currently no good way to measure bone quality.¹

And while age is probably the greatest risk factor of osteoporosis, other contributing factors include juvenile

arthritis, diabetes mellitus and kidney and liver disease. Medications, such as anticonvulsants for epilepsy, corticosteroids for rheumatoid arthritis and asthma and immunosuppressive agents, can also contribute or even lead to the disease.¹¹

Calcium is Critical

Though you probably understand the importance of calcium to bone, you might not realize that the only way your body gets calcium is through your diet or from supplements; your body can't manufacture it. So if your body isn't getting enough calcium from your diet, it steals it from your bones. The process works like this: the parathyroid gland releases a hormone called, appropriately enough, parathyroid hormone, which tells osteoclasts to get to work breaking down bone to release calcium into the blood. Estrogen also plays a role. It actually slows down the osteoclasts, thus slowing the breakdown of bone. That's why bone tends to thin fastest after menopause.

Although calcium is important, it doesn't act alone. Without vitamin D, bone can't absorb calcium. In one large, observational study of 87,000 nurses, researchers found that the women who got the most vitamin D in their diets or through supplements were least likely to experience fractures.

But it's not easy to get vitamin D from food. The nutrient is found mainly in dark fish like salmon, mackerel, anchovies and sardines. Our greatest source is sunshine, and about 15 minutes daily of sunlight will probably give you

the vitamin D you need. It doesn't sound like much, but for people who spend most of their time indoors, even 15 minutes can be difficult to get. Also, as you age, your skin doesn't make vitamin D as efficiently as when you were young, so the need for oral vitamin D intake increases. Taking a multi-vitamin containing vitamin D is a good idea, says Diane Feskanich, ScD, an assistant professor at Harvard Medical School.

Fractures, Fractures, Fractures

Ms. Moglia was 70 when she tripped and broke her foot—twice in the same year. Ms. Gore had several bones break in her feet throughout her 50s. But neither woman's doctor suggested she have a bone density scan to test for osteoporosis. And that, say osteoporosis experts, represents one of the great failings of medicine today. "We feel like we're years behind in educating the doctors and the public that a fracture means something," says

Elliott Schwartz, MD, co-medical director of the Foundation for Osteoporosis Research and Education (FORE) in Oakland, CA.

The best predictor of a woman's (or man's) fracture risk is a previous fracture, particularly what's called a "fragility fracture," when your bone breaks without much force. These are the fractures that occur when you slip, trip on a step, or just fall from a standing height, says Dr. Tosi. "A fracture is a sentinel event," she says. "It should be an alarm going off saying, 'I'm in trouble.' Instead, women get their cast and go on home."

To address this, the American Academy of Orthopedic Surgeons is joining with numerous other medical groups, including the National Osteoporosis Foundation, to craft an advisory statement warning physicians that fractures in middle-aged and older women should be a red flag and that further investigation for other potential health problems should be pursued.

You might not realize that the only way your body gets calcium is through your diet or from supplements; your body can't manufacture it.

Fast Facts About Bone Density Tests

Bone density tests are the only way to detect low bone mass. They can help predict the risk of a fracture, and monitor the effectiveness of osteoporosis treatments. The most commonly used test is a dual energy x-ray absorptiometry (DEXA) scan, which measures bone at multiple sites—the spine, hip and wrist—the most common fracture sites. The test is painless, taking about 15 minutes to complete.⁵ The U.S. Preventive Services Task Force recommends that women 65 and older be routinely screened for osteoporosis, and that routine screening begin at 60 for those women identified as high risk because of a lower body weight or because they're not using supplemental estrogen after menopause, which has been shown to reduce the risk of fractures.⁶ Here are more facts to know about bone density tests:

- Bone density results often are expressed as "T-scores," which measure how far your bone density deviates above or below the average bone density value for a young, healthy, Caucasian woman. Thus, a T-score at or below -2.5 results in a diagnosis of osteoporosis; while a T-score between -1 and -2.5 results in a diagnosis of osteopenia, or low bone density.
- Most health insurance companies cover bone density tests when ordered by your doctor.⁷
- Make sure you discuss your T-score with your health care professional; don't assume you do or don't have the disease. Many things can influence your results, including ethnicity, weight and age.

OSTEOPOROSIS & WOMEN'S HEALTH continued from page 3

Wondering what exercise to pursue?

Well, if you're walking, you're halfway there. . .

But to get the biggest bang for your exercise buck, try gardening.

Preparing for Prevention

Of course, the best way to deal with osteoporosis is not to get it in the first place. And that requires lifelong prevention beginning in childhood. (See “Ages & Stages,” page 6.) Still, it's never too late to change certain lifestyle habits that contribute to osteoporosis and adopt others shown to prevent fractures. These include:

- **Quitting smoking.** No one really knows why smoking is linked with an increased risk of osteoporosis, says Robert P. Heaney, MD, osteoporosis expert and professor of medicine at Creighton University in Omaha, NE, but the evidence is quite clear that it is.
- **Following a healthy diet and maintaining a healthy weight.** This means getting adequate amounts of calcium and vitamin D and it also means getting enough calories. (See “Lifestyle Corner,” page 8, for creative ways

of adding calcium to your diet.)

- **Remaining physically active with weight-bearing activities.** Bone mass is dependent on the stress, or weight, placed on bones. The more you use your bones—to walk, run, lift weights—the heavier and stronger your bones will be.² Physical activity also helps you maintain strong muscle, which provides support, so you're less likely to trip or fall.

Wondering what exercise to pursue? Well, if you're walking, you're halfway there. A study by Dr. Feskanich found that women who walked at least four hours per week had a 40 percent lower risk of hip fracture, compared with mostly sedentary women.³

But to get the biggest bang for your exercise buck, try gardening. When Lori Turner, PhD, RD, and her associates at the University of Arkansas in Fayetteville studied data on the nutritional and exercise

habits of 3,310 women aged 50 and older, yard work and weight training were most highly associated with reducing the risk for osteoporosis.⁴ The results surprised even the researchers, Dr. Turner recalls, until they all realized that pushing a lawnmower, thrusting a shovel into the ground, lifting heavy wheelbarrows filled with mulch and raking all were great weight-bearing exercises.

Fighting Back

The good news about osteoporosis is that the disease is very treatable today. With the right therapies and lifestyle adjustments (described on page 8), you can increase your chances for a long and healthy life. ✕

Osteoporosis Risk Factors

- Personal history of fracture after age 50
- Current low bone mass
- History of fracture in a first-degree relative
- Being female
- Being thin and/or having a small frame
- Advanced age
- A family history of osteoporosis
- Estrogen deficiency as a result of menopause, especially early or surgically induced menopause
- Abnormal absence of menstrual periods (amenorrhea)
- Anorexia nervosa
- Low lifetime calcium intake
- Use of certain medications, such as corticosteroids and anticonvulsants
- An inactive lifestyle
- Current cigarette smoking
- Excessive use of alcohol
- Being Caucasian or Asian, although African Americans and Hispanic Americans are at significant risk as well

Source: National Osteoporosis Foundation

RESOURCES

NIH Osteoporosis and Related Bone Diseases National Resource Center

800-624-2663

www.osteo.org

Provides resources and information on osteoporosis and other metabolic bone diseases.

National Bone Health Campaign

www.cdc.gov/powerfulbones

A multiyear campaign to promote optimal bone health in girls age nine to 12 years old, and reduce their risk of osteoporosis later in life.

National Osteoporosis Foundation

202-223-2226

www.nof.org

Offers information and resources on osteoporosis and bone health.

Foundation for Osteoporosis Research and Education (FORE)

888-266-3015

www.fore.org

A non-profit resource center dedicated to eliminating osteoporosis through our research, education and bone density testing programs.

Treating Osteoporosis

In 1995, there were 750 bone density machines in use in the United States. Today, there are between 12,000 and 14,000, says Elliott Schwartz, MD, co-medical director of the Foundation for Osteoporosis Research and Treatment (FORE).

The reason for the explosion: drugs to treat osteoporosis. After all, what's the point in diagnosing a woman if there's nothing you can do for her? But in 1995, the U.S. Food and Drug Administration (FDA) approved Fosamax (alendronate), the first drug shown to increase bone mass and significantly reduce the risk of fractures in women who already have osteoporosis. It was followed a few years later by Evista (raloxifene), part of a new class of drugs called SERMs, or selective estrogen receptor modulators, compounds that provide estrogen's bone-protecting benefits without many of its cancer-

causing risks, and Actonel (risendronate) another drug in the same class as Fosamax, called bisphosphonates.

And a good thing, too, since that old standby for osteoporosis prevention and treatment—hormone replacement therapy—has been called into question in recent months as data from the Women's Health Initiative (WHI) trials found one form of estrogen slightly increased a woman's risk of invasive breast cancer and heart disease.⁸ Since then, the FDA has attached a warning to all estrogen products advising health care providers to prescribe them at the lowest dose and for the shortest possible duration.⁹

Still, the study did find that the combination estrogen/progestin protected women against hip fractures. But given the risks and clearly safer alternatives, few physicians are prescribing it today for bone health, says Felicia Cosman, MD, clinical director for the National Osteoporosis Foundation.

The newest drug for osteoporosis, approved in November 2002, is Forteo (teriparatide). Consisting of a portion of the human parathyroid hormone, which helps bone use calcium and phosphate, it is the first approved drug that not only reduces fracture risk, but actually stimulates new bone formation. "There are people who are so excited about the availability of Forteo they're talking about the 'cure' of osteoporosis," says Dr. Schwartz. It costs about \$6,000 a year, and requires daily injections. ✕

Once you enter menopause you can lose up to 20 percent of your bone mass. Here is where the bone you "banked" as a girl becomes so important.

PHARMACEUTICAL TREATMENTS FOR OSTEOPOROSIS¹⁰

Class of Medication	Bone Benefits	Additional Benefits	Potential Side Effects	Administration Information
Bisphosphonates. Brand name: Fosamax (alendronate) and Actonel (risedronate)	Reduces bone loss, increases bone density and reduces the risk of spine, wrist and hip fractures.	Also approved for treatment of glucocorticoid-induced osteoporosis in men and women. Fosamax approved for the treatment of osteoporosis in men.	Side effects are uncommon but may include abdominal or musculoskeletal pain, nausea, heartburn, or irritation of the esophagus.	Should be taken on an empty stomach with a full 6- to 8-ounce glass of water. Manufacturer recommends taking this medication first thing in the morning, at least 30 to 60 minutes before any food, beverages or medications. To minimize side effects remain in an upright position for at least 30 minutes after taking medication. Alendronate can be taken daily or weekly.
Selective estrogen receptor modulator (SERM). Brand name: Evista (raloxifene)	Increases bone mass and reduces the risk of spine fractures.	May reduce the risk of estrogen-dependent breast cancer by 65 percent over 4 years.	Uncommon but may include deep vein thrombosis and hot flashes associated with estrogen therapy.	Raloxifene is taken in pill form, once a day with or without meals.
Calcitonin. Brand name: Miacalcin	In women who are more than 5 years beyond menopause, calcitonin slows bone loss, increases spinal bone density, and, may relieve the pain associated with bone fractures.		Injectable calcitonin may cause an allergic reaction and flushing of face and hands, frequent urination, nausea, skin rash. Side effects for nasal calcitonin may include nasal irritation, backache, bloody nose and headaches.	Must be taken as either an injection or nasal spray.
Parathyroid hormone. Brand name: Forteo (teriparatide)	Stimulates new bone formation and increases bone mineral density. Fracture reduction noted in postmenopausal women.		Side effects include nausea, leg cramps and dizziness. The drug also carries an FDA "black box" warning: slightly increased risk of bone cancer in animals.	Self-administered as a daily injection for up to 24 months.

Bone Health Across the Lifespan

Doctors who specialize in osteoporosis know that, although the disease primarily affects women in their 60s and beyond, its seeds are sown back in childhood. Here's a look at bone growth through the ages—from birth to old age.

● **Early childhood.** The bones of a fetus and newborn are primarily composed of cartilage, the rubbery material of noses and earlobes. During childhood, liquid crystals of calcium within this cartilage solidify through a process called “mineralization,” kind of like water freezing into ice.^{11,12} For that mineralization to occur and keep occurring throughout childhood, however, it's vitally important that children get enough exercise, calcium and vitamin D, says Laura Tosi, MD, chief of Orthopedics at Children's National Medical Center in Washington, DC. That isn't easy these days. Outside play, once a staple of childhood, has given way to video games and television. And if kids don't play outside, they often don't get enough sunlight to make adequate vitamin D (especially if, when they are outside, they're slathered in sun lotion), she says.

Also, kids are much more likely to drink soda or juice these days than milk, which remains one of the best sources of calcium and vitamin D in early life (300 mg of calcium in one 8-ounce glass). In fact, variations in the amount of calcium kids get may account for a five to 10 percent difference in adult bone mass and a 50 percent difference in the hip fracture rate later in life.¹

● **Puberty.** Chalk up that adolescent growth spurt to the fact that the majority of bone is laid down in adolescence. This “speeding up” of bone formation begins around age 11 (in girls) and 12 or 13 (in boys). Unfortunately, this is also the time when girls begin to significantly reduce their calcium intake. In fact, over 80 percent of girls age nine to 19 don't get the recommended average daily amount of calcium.¹ Adolescent girls are also at greater risk for anorexia and other eating disorders than boys, which can play havoc with estrogen levels, leaving some young women with the fragile bones of an 80-year-old by the time they're 20.¹¹

Other factors also play a role in adolescent bone formation. Poor activity levels, smoking, even a significant illness that requires prolonged bed rest can interfere with a girls' complete acquisition of bone.¹¹ And adolescent girls

are hardly hitting the playing fields in droves. In 2001, 38 percent of female high school students reported a level of physical activity that did not meet the criteria for the recommended amount of either moderate or vigorous physical activity.¹³

● **Menopause.** Once you enter menopause (from age 45 to 60 or beyond) you can lose up to 20 percent of your bone mass. Here is where the bone you “banked” as a young girl becomes so important. But it doesn't mean you're off the hook when it comes to lifestyle. Nutrition, exercise, and quitting smoking are still just as important. Unfortunately, adult women are no more likely to get enough exercise than their children are, with 39 percent of adults reporting in 2000 that they didn't engage in physical activity during leisure time. The older you are, the less likely you are to exercise, with more than half of Americans 75 and older (who were not institutionalized) saying they got no physical activity during leisure time. Even worse: at nearly all ages, women were less physically active than men.¹⁴ ✕

RECOMMENDED CALCIUM INTAKE*

Ages	Amount mg/day
Birth to 6 months	.210
6 months to 1 year	.270
1 to 3 years	.500
4 to 8 years	.800
9 to 18 years	1,300
19 to 50 years	1,000
51 and older years	1,200
Pregnant & Lactating*	1,000
*14 to 18 years	1,300

Sources: National Osteoporosis Foundation, National Academy of Sciences

RECOMMENDED VITAMIN D INTAKE

AGES	AMOUNT in IUs (International Units)
Early childhood for healthy children	200 IU daily
Adolescents	200 IU daily
Adults, up to age 50	200 IU daily
Adults, ages 51-70	400 IU daily
Adults, ages 70 and older	600 IU daily

Source: U.S. Centers for Disease Control and Prevention

Common Questions About Osteoporosis

Q What kind of doctor should I see about getting an osteoporosis evaluation?

A A variety of specialists treat osteoporosis, including endocrinologists, rheumatologists, gynecologists, internists and other primary care physicians. The most important criterion is their knowledge about osteoporosis, bone density testing and osteoporosis medications. Thus, a knowledgeable, interested internist might be a better choice than an uninterested gynecologist.

Q I've always been active but I don't want to risk breaking another bone. How can I exercise safely if I have osteoporosis?

A Very few bones are broken while in controlled exercise programs. I favor first working with a physical therapist. Even if you've had fractures, you need a well-directed exercise program as part of your rehabilitation and prevention program. You most likely will need to participate in a weight-bearing exercise, 30 to 40 minutes a day, three to four times a week. This could consist of

walking, using a treadmill, a Stairmaster or elliptical machines. We have the greatest amount of information on the fracture-preventing benefits of walking, however. If you're using weights, don't focus on increasing the pounds; focus on the number of repetitions. I tell my patients I'd rather they lifted 10 pounds, 10 times, than 100 pounds, once. And make sure you work with a certified exercise trainer at your health facility, if you join one, who understands the physical ramifications of the disease.

Also keep in mind pre- and postmenopausal women respond differently to exercise. Most older postmenopausal women don't do enough exercise to actually increase their bone density, but they can still do enough to improve their coordination, agility and balance. Thus, they fall less and fracture less.

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Q I've been diagnosed with osteoporosis, but have never had any fractures. What kind of lifestyle changes should I make to compensate and cope with the disease?

A If you had a bone density test and someone said you have a low value, then you should do the following: Get serious about improving your nutrition. Of course, you've known you needed to do something about calcium and vitamin D, but never did. But now it's personal. So try to get 1,500 mg of calcium daily, and 1,000 IU of vitamin D. Also, do all you can to remain physically active, to walk vigorously, to do whatever you can. You also need to talk to your doctor about whether any interventions might be necessary. This might be a fine time to talk about either hormone therapy or the use of a SERM such as raloxifene (Evista), which would help protect the bones you have right now. ✕

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Lifestyle Tips for Staying Fracture-Free

A diagnosis of osteopenia or osteoporosis is not a death sentence. Rather, it's a warning that you have to pay more attention to your lifestyle habits and your surroundings. For women don't die from osteoporosis; instead, they die from complications related to the fractures that occur with severe osteoporosis.

You've received a lot of advice throughout this newsletter about exercise and nutrition. Now I want to talk to you about the kind of changes you should make in your environment to protect yourself from falls and those life-threatening fractures.

Your Home

The U.S. Centers for Disease Control and Prevention estimates that 60 percent of fatal falls in older adults occur in the home. Make sure you don't stumble into that category by checking the following:

- **Stairways.** Make sure they are well lighted and don't have any loose boards or carpet on them that could cause you to trip. Install handrails on both sides of the stairs.
- **Bathrooms.** Install grab bars on the walls around the tub, make sure you have a non-skid rug on the floor, and use a rubber mat or adhesive strips to prevent falls in the shower. Also make sure it's well lighted, and add a night light for extra security when you get up at night.
- **Bedrooms.** Put a lamp and flashlight near your bed, keep the floor clear of clutter, and

make sure you have a clear route to the bathroom.

- **Living areas.** Make sure throw rugs are tacked or taped down securely. Keep pathways clear of electrical wires and loose objects that could trip you. And don't use chairs or stools to stand on to reach high places.

Your Lifestyle

- **Exercise.** Although physical activity is critical for bone strength and development, it's just as important in maintaining strong muscle, flexibility and balance, all of which will help prevent falls. Try to avoid activities that require twisting your spine or bending forward from the waist, such as regular sit-ups, toe touches, or swinging a golf club.
- **Hip pads.** One of the best tools for reducing hip fractures is hip protectors, kind of like helmets for hips. Clinical trials find these padded undergarments (pads on the hips, of course) are 95 percent effective at preventing hip fractures during falls. The brand used most often in most clinical trials is Hip Saver, available at www.hipsaver.com, or by calling 1-800-358-4477.
- **Shoes.** Choose shoes with

rough or rubber soles, not slippery or smooth ones.

- **Posture.** Sit and stand tall, avoiding any slouching when you're standing, walking or sitting at a desk. Instead, keep your head erect and your eyes forward. Lift your breastbone and keep your shoulders back, lightly "pinching" your shoulder blades. Tighten your abdominal muscles and buttocks. Also make sure you bend from the hips and bones, not the waist, especially when lifting. And, to quote an old cowboy: don't make any sudden moves. It might throw you off balance. ✕

Getting Enough Calcium and Vitamin D

So the last time you drank a glass of milk Jimmy Carter was in the White House. Never fear; you can get your calcium from other sources, both supplements and food.

The "best" supplement is the one that meets your needs based on tolerance, convenience, cost and availability. In general, choose brand name supplements with known reliability. And take your calcium throughout the day in doses of 500 mg or less; your body will absorb it better.

Good Sources of Dietary Calcium

Source	Amount of Calcium
One, 8-ounce serving of yogurt	300 mg*
1 1/2 cup of part-skim ricotta cheese	337 mg
3.75 oz. canned sardines, including bones	351 mg
One cup cooked collard greens	226 mg
1/2 cup tofu (bean curd), with calcium	434 mg
One cup dried figs	287 mg

Get creative! Sprinkle half a cup of diced figs over your yogurt and, if you're an adult, you'll meet more than half your daily calcium needs right there! Other ways to increase the calcium in your food is by adding nonfat powdered milk to soups, casseroles and drinks, buying juices, cereals, breads and rice fortified with calcium and drinking bottled water with calcium.

**in most commercial brands*