



Remember Your Bones

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Osteoporosis Prevention Strategies
by Susannah Kent

*"Support your bones ... They support you."
(Slogan from the Massachusetts Osteoporosis Awareness Program)*

With more than 200 million people worldwide (1.4 million in Canada) suffering from osteoporosis or its precursor osteopenia, health professionals believe that we are in the midst of a "global osteoporosis epidemic."

Osteoporosis is a condition of decreased bone mass. The US National Institute of Health defines osteoporosis as "a skeletal disorder characterized by compromised bone strength predisposing to an increased risk of fracture." In other words, if you have osteoporosis your bones are less dense than they should be in order to support your body, protect your internal organs, and store the necessary amounts of calcium and other essential minerals needed to stay healthy.

The term "porosis" means spongy. This is the way osteoporosis bones appear when they are broken in half and the inside is examined. Normal, healthy bone marrow has small holes within it, whereas a bone with osteoporosis has much larger holes.

Osteoporosis is a progressive disease, and often there are no signs or symptoms until a fracture occurs. Quite deservedly, it has earned the moniker of "silent thief." My sister has fractured her wrist twice, and is still recovering from a fractured tibia and fibula a year after falling while walking the dog. Before these injuries she had no idea that she had this potentially crippling, even lethal disease. And she is not alone. According to the Osteoporosis Foundation, "even though one in two postmenopausal women will be affected by osteoporosis, a shocking 85% do not believe that they are personally at risk of developing the disease."

It used to be that the only way to detect osteoporosis was when a fracture occurred. Now the state of your bones can be determined with a special x-ray method called densitometry which will give accurate and precise measurements of the amount of bone (not their actual quality). This measurement is termed "Bone Mineral Density" or BMD. If you have been diagnosed with low bone mass or density with one of these x-rays, it means that your bones have less mineral per square inch than they should, when measured against the typical bone mass of a healthy, thirty-year-old Caucasian (the age of peak bone mass). This type of measurement allows everyone to be compared with a common baseline.

The World Health Organization has established criteria (T-scores) for making the diagnosis of osteoporosis, as well as determining levels which predict higher chances of fractures:

If your T-score is within one standard deviation of the average, ie. between +1.0 and -1.0, you have normal bone density.

If your T-score is -1.0 to -2.5 standard deviations below the average, you have low bone density, a condition known as osteopenia.

If your T-score is at least -2.5 or lower than the average, you have osteoporosis.

If your T-score is at least -2.5 or lower than the average and you have broken one or more bones, you have severe osteoporosis.

Even before testing, it is important to recognize whether you are at risk. If you fit the majority of the following characteristics, the chance of you developing osteoporosis or osteopenia is high: female, over fifty, Caucasian or Asian, small-boned, postmenopausal, taken high doses of thyroid medication or cortisone-based drugs, physically inactive, smoker, consume more than three glasses of alcohol, two cups of coffee or soft drinks a day, diet low in calcium, broken a bone after forty, frequent dieter, a family history of osteoporosis. During the first 20 years of life, the formation of bone is the most important factor, but after that point it is the prevention of bone loss which becomes crucial. Diet and exercise can play a pivotal role.



A Healthy Diet for your Bones Our bones are greatly affected by what we eat, and what our bodies absorb of what we eat. Conventional medical wisdom suggests that all we need do to keep our bones strong is increase our intake of calcium. But recent groundbreaking research, as cited in Sam Graci's *The Bone-Building Solution*, suggests that there is more to the story of healthy bone building than calcium.

While it is true that calcium is critical to bone density and bone strength, scientists are now discovering it is just one element of the bone-building process. For instance, micro-nutrients like Vitamin K help turn on a bone-building protein called osteocalcin. Silicon, a trace mineral, is proving to be an essential ingredient for targeting stronger bones, and may boost the benefits of calcium and bone calcification. Boron has properties that

help metabolize calcium and magnesium. Insufficient levels of copper have been associated with poor bone quality. And of course, there is the more widely known, all-important Vitamin D, which helps increase the body's ability to absorb calcium by as much as 80%. Once we are convinced of the importance of absorbable calcium and other micronutrients to our bone health, the question becomes – how do we include them in our diet? The most obvious source of calcium, at least to North Americans, is dairy products: milk, cheese and yogurt. However, "recent epidemiological research has shown that

populations throughout the world with the highest rate of osteoporosis (including Canada and the U.S.) also consume the highest amount of dairy foods. On the other hand, populations that do not drink milk but instead get their calcium from plant sources, have extremely low rates of osteoporosis." (The Bone-Building Solution) Moreover, some research has suggested that calcium absorption from milk is only 32%. In addition, there is the growing number of those who have milk sensitivities or allergies (lactose intolerance). Fortunately there are plenty of non-dairy foods that are rich in calcium: seafood (salmon and sardines with bones); vegetables (acorn, bok choy, broccoli, collard greens, kale, mustard greens and okra); nuts (almonds, Brazil nuts and hazelnuts); and beverages (mineral water, fortified orange or grapefruit juice, fortified rice milk). According to Graci, "studies about individual foods, vitamins, phytonutrients, antioxidants and minerals sometimes conflict, but scientists are very clear on the ten foods you need to eat daily to boost your bone-building health to the maximum." They are: water, colourful vegetables, colourful fruits and berries, animal and/or plant-based protein, whole grains and/or starchy vegetables, good fats, dairy and dairy substitutes, fermented foods, unsalted seeds and nuts, and "cell-friendly" herbs and spices. He also recommends taking a food-based "targeted" bone-builder supplement to improve bone function.

Work It to the Bone There is no question that the more active we are, the stronger our bones will be. The important thing to know about your bones is that stress on them is crucial. When we walk, for example, an electrical impulse travels up the bone every time our heel hits the ground, causing a reaction in the bone that stimulates the bone cells, strengthens the bone crystals, and improves blood flow, thereby providing the essential nutrients, including calcium, to be deposited on the bone. According to the American College of Sports Medicine, "maintaining a vigorous level of physical activity across the lifespan should be viewed as an essential component of the prescription for achieving and maintaining good bone health." They recommend high-intensity, high-impact activities to help children and adolescents build bone, and moderate-to-high intensity weight-bearing activities to assist adults in maintaining bone mass and strength. The best types of exercise for children and adolescents are impact activities such as gymnastics and jumping activities combined with moderate resistance training (weight lifting or other strength-building exercises). The exercise should be high-intensity for two or more 10 to 20 minute sessions at least three days per week. Adults should combine weight-bearing endurance activities like tennis, walking or jogging with weight lifting or other strength-building exercises. It should last from 30 to 60 minutes, with weight-bearing activity three to five times per week, and resistance training two to three times a week. In addition, your bone workout should include activities that improve balance (for fall prevention) such as yoga, Pilates, or Tai Chi.

If you have osteoporosis, or are at risk, you might like to try Bones for Life® classes. This unique, safe and gentle workout for bones was created by Master Feldenkrais practitioner, Ruthy Alon (one of Moshe Feldenkrais' first students). Bones for Life® classes are meant

to improve function and bone health by teaching you how to stimulate bone strength, experience greater security and strength, coordinate a springy, dynamic walk, align posture for safe weight-bearing, and develop skills in restoring balance. These weight-bearing movements (there are over 60) challenge your bones to be strong and sturdy while improving balance and coordination. A variety of positions are employed during a Bones for Life® class: lying or sitting on the floor, sitting in a chair, and standing. Simple tools are used to facilitate the development of controlled resistance to pressure, such as using a strip of cloth wrapped around the body like a harness. This harness holds the body together, “giving it the reliable strength of an axis,” ensuring that each joint is in good functional alignment, increasing the body’s ability to withstand pressure. Another method used in Bones for Life® classes is pushing the wall with the feet while lying. This allows for a safe, more efficient way of transmitting pressure throughout the skeleton. Light hand and ankle weights are also used to challenge and increase strength. According to Alon, “at the end of a movement process that is specifically designed for the purpose of strengthening the bones, the body chooses a more ideal posture on its own. The head rests on top of the spine and, in walking, the movement flows in harmony and liveliness.”



I recently attended a Bones For Life® class at The Feldenkrais Centre, taught by its Director, Marion Harris. It was a challenging yet soothing experience. With Marion’s verbal cues and non-judgmental hands-on directions, I completed the class feeling loose, relaxed, and as if I had become a smarter mover. I am also sure that my bones were thanking me for taking notice of them in a new and different way. After class, I spoke with another participant, Barbara, who has been attending for three years. She has

issues with osteoporosis and believed she could profit by taking these classes. She said they have been invaluable. Of particular importance to her is the increase in strength, as evidenced by the ability to lift many things she could not manage before participating in the Bones For Life® program. She also appreciates the variety that the classes offer. **Bones for Life® Sample Exercise** For this “Steering Wheel, Standing” exercise, do all movements slowly, paying attention to the quality of your body’s response. 1. Stand with one foot a little forward of the other. 2. Place hands on breast bone in dove-tail position with elbows out to the side, forearms parallel to the floor forming a triangle. Keep your head and pelvis stationary in forward position. 3. Tilt the triangle of your arms to the left (left elbow tilts down while right tilts up). Return to neutral position. Repeat 3-4 times. Lower arms, pause and repeat to the right. Drop arms and rest. 4. Reposition hands in dove-tail position as above and alternate the move left to right. Notice the quality of the movement and how the ribs move in accordion-like fashion. Lower arms and pause. 5. Once again position hands in dove-tail form and now turn

triangle first to the left 3-4 times and then to the right and finally slowly alternate. Drop arms and rest. 6. Same as above only now as the shoulders (triangle shape) turn to the left, turn your head to look over the right shoulder. Then turn your shoulders right and look over your left shoulder. Repeat a few times and then after a brief pause turn your head with the shoulders. Notice the difference in range and quality of the movement. 7. Repeat #3 and notice the improvement in the ability of the ribs to bend. Results from my own first bone density test have made me acutely aware that I need to do more for my bones. Luckily our bones are very much alive, and like all living tissue they constantly repair and renew themselves. But like all living things they need to be nurtured. If we are to keep our "lovely bones" supporting us for a lifetime, we need to supply them with smart bone-building foods and supplements, as well as dynamic, bone-boosting physical activity.

Resources:

Marion Harris, Director of The Feldenkrais Centre, Toronto, and certified teacher and trainer of Bones for Life® (416) 928-3505 / www.FeldenkraisCentre.com

Sam Graci (with Dr. Carolyn DeMarco & Dr. Leticia Rao), The Bone-Building Solution, John Wiley & Sons, Mississauga, Ontario, 2006

Mayo Clinic, Mayo Clinic on Osteoporosis, Rochester, Minnesota, 2003

Dr. Leon Root & Betty Kelly Sargent, Beautiful Bones without Hormones, Gotham Books, New York, 2004

Miriam Nelson, Strong Women, Strong Bones, Berkley Group, New York, New York, 2000

StrongWomen™ Preventing Osteoporosis, DVD, Gaiam Americas, Inc., 2008