

It's more than just thin bone — the top 10 myths about osteoporosis

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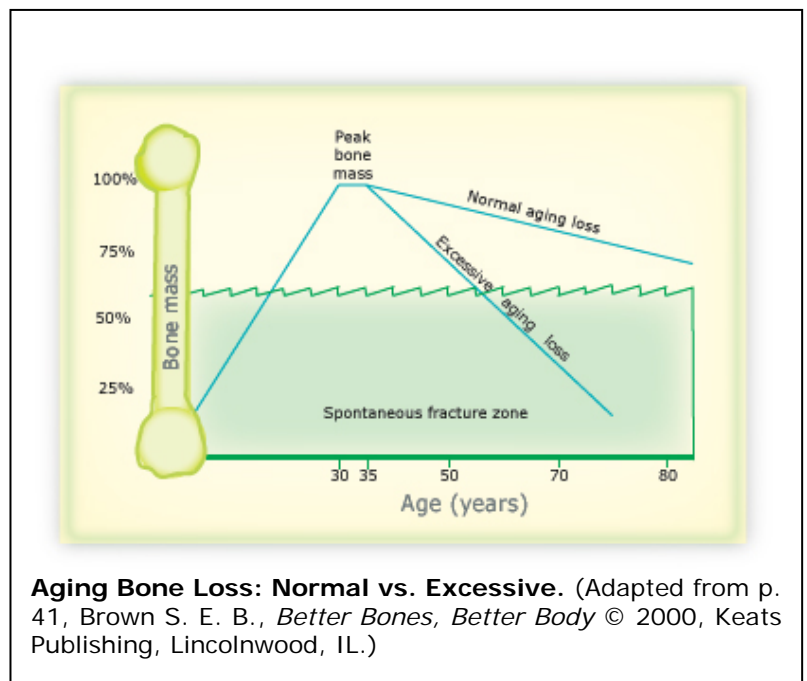
Lately we've heard a lot in the media about the rise in osteoporosis incidence and how this disorder affects more people, primarily women, than ever before. There are ads on television and in magazines warning us that we might be losing bone and recommending that we ask our doctors about this drug or that one to stop this erosion of our bones. Are our bones really breaking down? Do we really need medication to save our bones?

The challenge for many women who want to prevent bone loss is finding helpful information. When they go to the internet or to other information resources, they find lots of osteoporosis myths out there that only add to the overwhelming nature of the disorder and make it harder to understand how to maintain healthy bone. Osteoporosis is often portrayed as a problem that simply "arrives" in your body without clear causes, but this simply is not the case. Osteoporosis happens for specific reasons and it *can* be addressed, even significantly reversed.

If you've been confused about osteoporosis, don't be discouraged. Women have maintained healthy bone for centuries without prescription medication. There are many things we can do naturally to both improve our current bone health and prevent future bone loss *without using expensive and at times dangerous medications*. Let's take the first step in preventing, halting, and reversing osteoporosis by clearing up the facts.

Myth 1: Osteoporosis is a result of normal aging.

It's important to be clear about what we mean when we talk about osteoporosis. "Osteo" means bone, and "porosis" denotes porosity. Though the word literally means porous bone, the nature of the disease isn't this simple. Osteoporosis involves much more than thin bone. If we look at the research and the brilliance of the human body, it becomes clear that osteoporosis is a product of normal physiological functioning taken to extreme as the body attempts to compensate for factors interfering with its biochemical balance. But



when this balance is restored, the body builds and maintains lifelong healthy bones.

Cross-cultural studies show that throughout the world most individuals lose bone mass as they age.¹ The remaining bone is, however, healthy and capable of constant self-repair. This bone, though lower in mass, should be able to withstand the stresses and strains of daily activity.

In osteoporosis, bone loss goes beyond that of normal aging. It is a condition in which bone becomes excessively fragile due to a loss of both mineral and protein matrix. These problems can arise for a variety of reasons such as poor nutrition, lack of sunlight exposure and low vitamin D levels, high caffeine intake, lack of exercise, an acid-forming diet, the use of various medications and the like. *Regardless, osteoporosis is not the result of bone's normal aging.*

Myth 2: Osteoporosis is only a disorder of the elderly.

More and more, we are finding that even the young are not free from the specter of osteoporosis. Among the groups most affected are anorexic individuals, training ballet dancers and other athletes who under-consume nutrients trying to remain slim, those with celiac disease and other serious digestive disorders, and people who have low body weight for any reason. Women who suffer from menstrual irregularities, particularly amenorrhea, those who have undergone ovary and/or uterus removal, and persons on long-term steroid therapy are also affected.

Fractures are also increasing among younger people. Forearm fractures are the most common fractures in children and the incidence of these fractures among children and young adults has increased by 32% in males and by 56% in females over the last three decades. Interestingly enough, obesity seems to be associated with the increased risk of forearm fracture.² Furthermore, prevention and treatment of osteoporosis in chronically ill children is becoming a topic of serious medical discussion.³

Myth 3: Women are physiologically predisposed to osteoporosis.

We hear all the time that osteoporosis is especially concerning for women — even that it's a “women's disease” that men don't really need to worry about. But let's look at the facts. An estimated ten million people in the United States have osteoporosis and another 34 million are at high risk for the disease due to low bone density.⁴ In the United States and other Westernized countries, more women have osteoporosis than do men, which is where this idea that osteoporosis is largely a disorder of women comes from. However, between one-quarter and one-third of all hip fractures occur in men.⁵ Overall it is estimated that 30% of all men over 50 will have an osteoporosis-related fracture during their

¹Garn, S. Nutrition and bone loss: Introductory remarks. *Fed. Proc.* Nov/Dec (1967): 1716.

²Kalkwarf, H. Breaking news: Forearm fractures in children and adolescents. *Nutrition Today* (2006) 41: 171–177.

³Munns, C.F.J., and Cowell, C.T. Prevention and treatment of osteoporosis in chronically ill children. *Journal of Musculoskeletal Neuronal Interactions* (2005) 5: 262–272.

⁴Department of Health & Human Services Bone Health & Osteoporosis, A Report of the Surgeon General 2004

⁵Agnusdei, D., R. Civitelli, et al. Age-Related Decline of Bone Mass and Intestinal Calcium Absorption in Normal Males, *Calcified Tissue International* 3 (1998): 197–201.



lifetimes.⁶ And in other cultures, men have an equal or even greater risk of fracture than women.⁷ Clearly, men too can develop osteoporosis, but in the West they do so with less frequency than do women. The difference lies largely in societal factors.

As women, we are inundated with messages like: “you can never be too thin” and “you’re not beautiful if you build muscle mass.” Low weight puts women at a much higher risk for osteoporosis. It is virtually impossible to consume the nutrients required for bone maintenance, much less those needed for bone growth, on a low calorie diet. During periods of inadequate nutrient intake, bone is robbed of precious minerals. Low muscle mass also puts women at a higher risk for osteoporosis. Strong muscles are a good indicator of strong bones and it takes strenuous activity to build strong muscles. Many more men engage in strenuous activity than do women.

Myth 4: Osteoporosis is caused by low estrogen.

The idea that a natural lowering of estrogen at menopause causes osteoporosis is worthy of further analysis. Such a proposal suggests that Nature made a mistake in her design of female physiology, and that women should have been provided with lifelong high estrogen levels. On the other hand, a broader anthropological perspective leads us to consider the idea that a woman’s estrogen production is gauged by her body’s needs. As such, the normal universal decrease in estrogen production after a woman’s reproductive years would be of survival benefit and not prove a detriment to her overall health. In fact, we see that less estrogen is produced because less is needed.

Myth 5: Osteoporosis is caused by low calcium intake.

We’ve all heard and read that osteoporosis is caused by low calcium intake. This, in fact, has been the opinion of Western researchers for decades. Because bone is composed largely of calcium, it might appear logical to link calcium intake with bone health. A true correlation between calcium intake and osteoporosis, however, is more difficult to establish. Even a glance at the cross-cultural data shows that most areas of the world have lower calcium intakes than we do, yet have lower rates of osteoporosis. In fact, it has been documented that the countries with the highest calcium intake have the highest hip fracture incidence.^{8,9}

All researchers agree that adequate calcium is absolutely essential for development and maintenance of bone health. The question, however, is just what comprises adequate calcium intake? Cross-cultural analysis indicates that there is no one standard ideal calcium intake, but that it varies based on a number of other coexisting factors. These include: intake of other bone building nutrients; consumption of potentially calcium-depleting substances like excess protein, salt, fat, and sugar; the use of some drugs, alcohol and tobacco; the level of physical activity; exposure to sunlight;

⁶Campion, J. M. and M. Maricic. Osteoporosis in Men, *American Family Physician* 67 (2003): 1521–1526.

⁷Brown, S. E. *Better Bones, Better Body*. Keats Publishing, Lincolnwood IL (2000). p. 46.

⁸Abelow, B. J. Cross-cultural association between dietary animal protein and hip fracture: a hypothesis, *Calcified Tissue International* 50 (1992): 14–18.

⁹Frassetto, L., K. Todd, et al. Worldwide incidence of hip fracture in elderly women: relation to consumption of animal and vegetable foods, *Journal of Gerontology: Medical Sciences* 55A No. 10 (2000): M585–M592.

environmental toxins and stress; ovary and uterus removal; and many other factors that limit endocrine gland functioning.

Myth 6: Osteoporosis is common all over the world.

Looking at anthropological data from around the world, we see that osteoporosis occurs in some areas much more than in others. Just as the incidence of cancer, heart disease, and diabetes vary from one cultural to another. *The development of weak bones is not a natural artifact of aging as some may believe.* While the United States has one of the highest osteoporosis rates in the world, there are other areas where this disorder is relatively rare, even among the older segments of the population.

For example, the inhabitants of Singapore, Hong Kong, certain sectors of former Yugoslavia, as well as the Bantu of South Africa have traditionally held extremely low rates of osteoporotic fracture. In Japan, vertebral compression fractures among women 50-65 were so rare that many physicians doubt their existence, and the incidence of hip fractures among the elderly Japanese historically has been much less than half of Western countries.¹⁰ Africans and native peoples living traditional lifestyles have been classified as “almost immune” to osteoporosis.¹¹ Interestingly enough, today as these less technologically advanced countries become more westernized, their rates of osteoporotic fracture are steadily increasing.

Myth 7: Osteoporosis is caused by faulty bone metabolism.

Osteoporosis is really our magical body’s intelligent response to long-term imbalances and stressors. I like to call bone “the great giver of life” because it serves as a nutrient reservoir. When the blood is low on minerals, nutrients are drawn out of the bone to compensate. Without adequate blood levels of calcium, phosphorus, magnesium or sodium, the body cannot survive. Equally when other of the body’s alkali reserves run low, compounds are drawn from bone to buffer body acids and maintain our all-important pH balance. The immediate effect of drawing minerals and buffering compounds out of bone is a most positive one. Blood mineral levels are returned to normal and pH balance is maintained allowing the body to continue functioning. If the mineral compounds are not redeposited into bone, however, osteoporosis ensues as a long-term negative effect of such repeated, short-term, positive coping processes.

So osteoporosis is really the end product “disorder” of our body’s lifelong attempt to maintain a crucial internal “order.” In this light, osteoporosis is seen as a positive, life-supporting, coping mechanism which allows the body to maintain the necessary degree of internal balance under less than ideal, perhaps even life-threatening, circumstances.¹²

¹⁰Fujita, T., and M. Fukase. Comparison of osteoporosis and calcium intake between Japan and the United States, *Proceedings of the Society of Experimental Biology & Medicine* 200 (1992): 149–152.

¹¹ Luyken, R., and R. Luyken-Koning. Studies on the physiology of nutrition on Surinam VIII. metabolism of calcium, *Trop Geogr Med* 13 (1961): 46–54.

Chalmers, J. and K. Ho. Geographical variations in senile osteoporosis, *Journal of Bone and Joint Surgery* 52B (1970): 667–675.

Matkovic, V. et al. Bone status and fracture rates in two regions of Yugoslavia. *The American Journal of Clinical Nutrition* 32 (1979): 540–549.

¹²Bushinsky, D.A. Acid-base balance and bone health in *Nutrition and Bone Health*, Holick, M. F. and B. L. Dawson-Hughes, Eds. Humana Press, Totowa, NJ, pp. 279–304 (2004).

Brown, S., and R. Jaffe 2000 Acid-alkaline balance and its effect on bone health *International Journal of Integrative Medicine* 2. No.6 (2000):

Frassetto, L., R. C. Morris, Jr., et al. Long-term persistence of the urine calcium lowering effect of potassium bicarbonate in postmenopausal women *Journal of Clinical Endocrinology & Metabolism* 90(2005): 831–834.



Myth 8: Osteoporotic fractures occur because of low bone density.

For decades it has been assumed that thin bone was the sole cause of osteoporotic fractures. The assumption was that once bone reached a certain level of thinness, it became subject to fracture more easily. It is now clear, however, that this is not the full story. Bone does not fracture due to thinness alone; that is, osteoporosis by itself does not cause bone fractures. We know this by the simple documented fact that many of the people with thin osteoporotic bones, in fact, never fracture! On the other hand, over half of all fractures occur in people who do not have an “osteoporotic” bone density.¹³

What, then, distinguishes the thin osteoporotic bones that do fracture from those that do not? The answer to this question concerns two factors: bone architecture and the self-repair capability of bone. When analyzed from a structural-architectural point of view we find that Nature in all her wisdom has provided each of us with plenty of surplus bone. We have such a large bone mass safety reserve, in fact, that even with an osteoporotic bone density, we still have enough bone mass to withstand the stresses and strains of daily activity without ever fracturing a single bone.¹⁴

Bones that fracture are weak because they lack the ability to repair themselves properly from the micro fractures that regularly occur due to normal stress and strain. Thus, bone which fractures isn't only thin, but also of poor quality with diminished self-repair capability. Self-repair can be inhibited by many factors, including lack of nutrients and exercise, an acid-forming diet, various medications, an overload of chemicals and pollutants, and the like.¹⁵

Myth 9: Once bone loss occurs, it is impossible to rebuild bone.

Bone is dynamic, living tissue that constantly repairs itself as bits of old, worn-out bone are replaced by fresh new bone. Tiny microfractures occur daily and are healed through a several-week process of bone repair. When full fractures occur, our bones spontaneously heal and generate new bone. Equally, we have a capacity to rebuild lost bone mass.

This ability of bone to regenerate itself is clearly seen in people who are severely malnourished (as in anorexia), or who have had a prolonged illness or lengthy immobilization. While all of these conditions cause a great loss of bone mass, this bone can be rebuilt with the normalization of proper nutrition and regular physical activity. This regenerative capacity of bone is especially potent in both females and males before midlife, when hormonal levels are still high. Nonetheless, substantial rebuilding of lost

¹³Wainwright, S. A., L. M. Marshall, K. E. Ensrud, et al. Hip fracture in women without osteoporosis, *Journal of Clinical Endocrinology & Metabolism* 90(2005): 2787–2793.

Siris, E. S., Y. T. Chen, T. A. Abbott, et al. Bone mineral density thresholds for pharmacological intervention to prevent fractures, *Arch Intern Med*, 164 (2004): 1108–1112.

Siris, E. S., S. K. Brennan, E. Barrett-Connor, et al. The effects of age and bone mineral density on the absolute, excess, and relative risk of fracture in postmenopausal women aged 50-99: Results from the National Osteoporosis Risk Assessment (NORA). *Osteoporosis International* 17 (2006): 565–574.

¹⁴Frost, H. Safety factors in bone strength, *Calcified Tissue International* 53 (1993): S68–74.

¹⁵Brown, S. E. *Better Bones, Better Body*. Keats Publishing, Lincolnwood IL (2000).

bone has been documented at all life stages. Even nursing home residents, average age of 81, were shown to build bone mass doing light exercises and taking calcium and vitamin D daily.¹⁶

Unfortunately, the common misconception that lost bone is lost *forever* has led many people to turn to bisphosphonate drugs such as Fosamax, which fall into the class of osteoporosis medications known as “anti-resorptive drugs.” These medications dramatically reduce bone loss by bringing premature death to *osteoclasts*, the cells that break down and recycle old, worn-out segments of bone. Bone breakdown and bone build-up, however, are tightly coupled, so that just as bone breakdown is dramatically reduced by Fosamax, so too is new bone formation also decreased. In fact, studies show that the bone-forming surface of bone is suppressed by 60-90% with the usual dose of bisphosphonates. As Dr. Susan Ott notes, “Many people believe that these drugs are ‘bone builders,’ but the evidence shows they are actually bone hardeners.”¹⁷

The reason for the confusion is that in bone density tests, Fosamax often appears to increase bone density. As Dr. Ott explains, “This is because the bone is no longer remodeling, and so there is not much new bone. The older bone is denser than the newer bone; there is less water and more mineral in the bone, and the radiographic techniques thus measure the higher density.” While this looks like added new bone tissue, it is not. Anti-resorptive drugs like Fosamax and Actonel, as their very name implies, simply halt bone breakdown — they do not actually build new bone.¹⁸

Myth 10: Osteoporosis is an isolated condition.

Osteoporosis does not stand alone. It is not an isolated disease process that happens to fully healthy people. Excessive bone thinning and the development of weak bones occurs with due cause. And the due cause of osteoporosis is often associated with other health problems. Lifelong patterns of poor eating, little exercise, smoking, irregular periods, surgeries, and medication use, toxic exposure, excessive stress and the like take their toll on the whole body, not just the bones.

A 1994 study done on 10,000 older American women found an increased risk of hip fracture among those who rated their own health as fair to poor and indeed were less fit than others of their age. Interestingly, the following risk factors were found to raise a woman’s risk regardless of her bone density:

- Being unable to rise from a chair without using one’s arms
- Being on one’s feet for less than four hours a day
- Not walking for exercise as opposed to walking for exercise
- Having poor depth perception and/or poor contrast sensitivity.

¹⁶Smith E. L. Jr., W. Reddan, and P. E. Smith. Physical activity and calcium modalities for bone mineral increase in aged women, *Medicine and Science in Sports and Exercise*, 13 (1981): 60–64.

Viapiana, O., D. Gatti, R. Dalle Grave, et al. Marked increases in bone mineral density and biochemical markers of bone turnover in patients with anorexia nervosa gaining weight, *Bone*, 40(2007): 1073-1077.

¹⁷Ott, S. New treatments for brittle bones, *Annals of Internal Medicine*, 141 (2004): 406–407 [letter].

¹⁸Chavassieux, P. M., et al. Histomorphometric assessment of the long-term effects of alendronate on bone quality and remodeling in patients with osteoporosis. *Journal of Clinical Investigation*, 100 (1997): 1475–1480.

Eirksen, E. F., et al. Effects of long-term risedronate on bone quality and bone turnover in women with postmenopausal osteoporosis. *Bone* 31 (2002): 620–625.

Ott, S. M. Long term safety of bisphosphonates. *Journal of Clinical Endocrinology and Metabolism*, 90 (2005): 1897–1899.



- Having a resting heartbeat of 80 or greater beats per minute¹⁹

Several studies document that individuals with osteoporosis and fragility fractures often experience other health problems. For example, the coexistence of osteoporosis and cardiovascular disease has been frequently noted, as has the association between declining kidney function and osteoporosis. The more closely we look and the more variables we study, the more interesting becomes the osteoporosis story.²⁰

Know the facts about osteoporosis

Bone loss is not a “mistake” made by your body. It is, in fact, the long term end result of a protective mechanism developed to maintain balance in the short term. Bones only become fragile if they haven’t been given the nutrients and support they need. If you eat an imbalanced diet and live an imbalanced lifestyle, you’ll get imbalance in your body, and osteoporosis will develop as your body looks to your bones to supply the minerals and other nutrients it needs to sustain life. And the opposite is true as well: the more balanced your diet and lifestyle, the more balanced your body will be, resulting in a decreased need to sacrifice bone for the maintenance of critical chemical homeostasis.

¹⁹ Cummings, Steven, et al. Risk factors for hip fracture in white women. *New England Journal of Medicine* 332 (1995): 767–774.

²⁰Masse, P.G., C. C. Tranchant, J. Dossy, and S. M. Donovan. Coexistence of osteoporosis and cardiovascular disease risk factors in apparently healthy, untreated postmenopausal women, *International Journal of Vitamin and Nutritional Research*, 75 (2005): 97–106