



The Health Nugget

Meant to Last

There is a time for everything. There's "a time to break down and a time to build up" (Ecclesiastes 3:3). There's a time for construction and a time for demolition. This is truth, not only written in Scripture, but it is also found in the core of the human frame—the bones.

Bones are constantly going through a process of breaking down and rebuilding. New bone is being produced to replace old bone, bone that has been weakened by micro fractures. New construction strengthens bone that has been broken down. At any time, up to 5 percent of the skeleton is undergoing this remodeling process.

Three different cells are primarily responsible for this feat: the osteoclasts, osteoblasts, and osteocytes. We will refer to them as the clasts, blasts and cytes. The clasts we could say are the annihilators, the demolition crew. The blasts build. In a state of health, both work in tandem to achieve the same goal, strong bone. The cytes supervise the whole procedure. Problems occur when clasts become somewhat of a ball hog. If too aggressive or numerous, clasts will devour excessive amounts of bone. Their bingeing spree leaves deep gouges that the blasts are unable to completely fill with new bone. When too much time is spent breaking down and not enough time is given to building up, bone becomes weak and the doctor will eventually give the diagnosis of osteoporosis.

Literally, osteoporosis means porous bone. Porous bone is weak and can become quite fragile. Fragile bone seems somewhat of an oxymoron doesn't it? Bone was meant to be strong and to withstand wear and tear. The amazing ability of bone to maintain itself and

build itself up after trauma is the incredible balancing act of the clasts and blasts. Yet, weak bones are not rare. Fractures from osteoporosis are more common than heart attack, stroke and breast cancer combined! At least 1 in 3 women and 1 in 5 men will suffer from a fracture due to osteoporosis during their lifetime.

For bones to weaken, the state of balance between demolition and building up has been tipped to a state of breaking down, otherwise known as catabolism. In contrast, a positive state of tissue building activity is referred to as anabolism. Anabolism in general laces substances together, allowing the body to grow new cells and maintain all the tissues. Catabolism is not all bad either. It is through the process of catabolism that ATP is broken down and converted into energy in our bodies. But, if anabolism does not pick up the pieces and put them back together, we will run out of our energy source. In the case of osteoporosis, catabolism is, unfortunately, king of the mountain.

While it is true that calcium deficiency can be a factor in the development of osteoporosis, we limit our therapeutic options if we view osteoporosis as a disease of deficiency. "Bone can have so much calcium and phosphorus bonded to its matrix that it becomes brittle."¹ In this situation more calcium does not equate to strength.

In his book, *The Whole Body Approach to Osteoporosis*, Keith McCormick explains how chronic inflammation is a factor that causes clasts to become aggressive scavengers of mineralized bone, resulting in frenzied remodeling. In a state of chronic inflammation production of bone-devouring clasts

outnumbers blast production. Since inflammation tips the scale in favor of catabolism a main objective is to prevent or address this state. This calcium supplementation won't do.

Typically when we think of inflammation we think of swelling around a wound or arthritic joints. However, systemic inflammation appears to be closely linked to the digestive system. "Okay, a second clue: Having a health gut, devoid of inflammation and abnormal bacterial overgrowth, is one of the most important steps you can take to reduce systemic inflammation and regain healthy bone."²

Inflammation impacts the blasts as well. The precursor stem cell that eventually specializes to become a blast has two options when it grows up. It can become a fat cell or a bone-building blast. Inflammation has been found to flip the fat switch so that more fat cells than blasts are produced. This is not necessarily fat that can be seen. Instead this is fat found within the bone marrow of osteoporotic bone in thin individuals.

Chronic inflammation increases free radical activity, also known as increased oxidative stress. Free radicals are damaging to cells. A cycle is created as free radical damage increases inflammation and can lead to bone loss. Work with your health care specialist to verify and then identify causes of inflammation.

A number of factors can lead to a state of chronic inflammation. Smoking is one. Poor intestinal health is another. "Constant activation of the gut's immune defenses is a trigger for chronic inflammation."³ Bone suffers when there are digestive problems. Some foods have been found to be pro-inflammatory. Excessive sugar, red meat, hydrogenated fats, such as Crisco, and processed foods—like those that are deep-fried

and refined, increase the release of chemicals that act like the matches of inflammatory fires. A diet that has an abundance of saturated fat and vegetable oils, such as corn, soy and safflower, and not enough of the anti-inflammatory omega-3 fats or monounsaturated fats found in nuts, avocados and olive oil, promotes an inflammatory state. Hormonal imbalances, food allergens, microbial overgrowth in the gut, toxicity, and stress also attribute to inflammation and ultimately bone loss.

McCormick's recommendations for lowering inflammation make sense.

- Reduce stress.
- Eliminate food allergens and sensitivities. Gluten is an example.
- Reduce pro-inflammatory foods
- Increase anti-inflammatory foods that are rich in antioxidants, such as green leafy vegetables, berries and avocados.
- Supplement with substances such as curcumin found in turmeric, which have been found to have powerful antioxidant and anti-inflammatory ability. Supplement with probiotics to promote gut health.

Osteoporosis is a complicated disease with many facets. We've barely touched on one to emphasize that whole-body health needs to be addressed in our bone-preserving, bone-building quest.

Bone is living tissue that was designed to self-repair—it was meant to last a lifetime. Yes, there is a time for everything under the heavens, but on this earth the times are off, imbalanced, distorted. Thankfully, the grace of God will make "everything beautiful in its time.... Whatever God does endures" (Ecclesiastes 3:14, ESV). That is His design and purpose for you. You were meant to last.

¹ R. Keith McCormick D.C., *The Whole Body Approach to Osteoporosis*, p. 30.

² *Ibid.*, p. 83.

³ *Ibid.*, p. 86.

