

READE'S REVIEW

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Special points of interest:

- **Osteoporosis / Osteopenia**
- **Symptoms and Risks**
- **Early Detection**
- **Bisphosphanates**
- **Other Factors Effecting Bone Strength**
- **What Can Be Done - Naturally**

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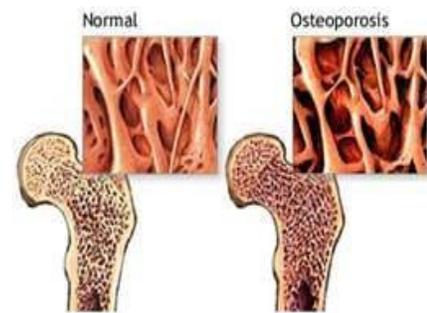
OSTEOPOROSIS AND OSTEOPENIA

Osteoporosis and osteopenia are conditions in which the bones become thinner, more porous and lose bone mass and density. The difference between the two is determined by the relative loss of bone mineral density (BMD). Osteopenia is basically an earlier stage of osteoporosis. Currently, a good screening test to determine your BMD is a test called Dual-energy X-ray Absorptiometry or simply DEXA. This test can detect as little as a 2% change in BMD. Regular x-rays are nowhere near the sensitivity of DEXA and are not a good screening tool.

It estimated that 44 million people in the United States

have abnormal low bone density, about 10 million have osteoporosis and 34 million have osteopenia. 55% of the US population aged 50 years and older have these conditions! These conditions are predominantly found in post-menopausal women. The average loss of bone density is 2-4% per year in the first 5-10 years after menopause. That comes out to a whopping 25-30% loss of bone density!

Some sobering statistics about osteoporosis: 50% of women and 25% of men will fracture a bone due to osteoporosis in their lifetime. The most common fracture usually occurs to the vertebrae and hip. 33% of those that have hip fractures are discharged to a nursing



facility within one year of the fracture. Again, about 33% never regain pre-fracture function of their hip. 20% of those who experience a hip or vertebral fracture will have another the year following the first fracture. There is a 24% risk of death due to complications of hip fractures for those over 50 years of age.

BASIC MECHANISM OF OSTEOPOROSIS

Your bone is active tissue that constantly is being built up and broken down in response to the mechanical and metabolic forces the bone experiences. This continuous process of bone changes is called remodeling.

There are two basic bone cells

responsible for this bone remodeling. The first are called osteoblasts and they build up bone and the second are called osteoclasts which break down bone tissue. Essentially, osteopenia and osteoporosis occur when the osteoclast activity exceeds the osteoblast

activity. The net result is decrease in bone density and strength.

There are many factors that influence these cells. Such factors as hormones, cytokine imbalances, physical activity and absorption of various minerals and other compounds.

OSTEOPOROSIS - SYMPTOMS AND RISK FACTORS

Unfortunately, most people do not know they have osteoporosis or osteopenia until they experience a fracture in their spine, hip or wrist. All people begin to lose bone mass after they reach maximum bone mineral density around age 30. So it is very important to have as dense a bone as possible prior to age 30 and afterwards.

RISK FACTORS:

1. Increasing age.
2. Having a small and/or thin stature.
3. Family history of osteoporosis.
4. Being of Asian or Caucasian descent.
5. Inactive lifestyle.
6. Smoking
7. Regular consumption of alcohol or cola/soft drinks
8. Poor or imbalanced diet.
9. Chronic inflammatory diseases such as rheumatoid arthritis, osteoarthritis or liver disease.
10. Gastrointestinal problems leading to improper absorption like celiac.
11. Medications for gastric reflux, depression, seizures, steroids, cancer or excessive thyroid hormone replacement.
12. Overactive adrenal, thyroid or parathyroid.
13. Low estrogen in women and testosterone in men.



This test is called Dpd and it measures with 95% accuracy whether the body is degrading bone tissue to rapidly

As mentioned earlier there is a special X-ray procedure called a DEXA scan that is the “gold” standard currently to detect bone mineral density (BMD). To make it simple often a patient is given a “T score” to determine the status of their bone density. This score is based on standard deviations below peak bone mass. If you have osteopenia you would score would be -1.0

to -2.5. If you have osteoporosis your score is -2.5 or more. The measurements are usually based on three areas, your spine, forearm and hip.

Another simple screen test to see if your body is breaking down bone excessively can be done at our office. It only requires a simple urine sample. This test is called Dpd test and it measures with 95% accu-

racy whether the body is degrading bone tissue to rapidly. We also strongly suggest a Bone Panel evaluation. This consists of obtaining a salivary sample. The sample is analyzed for several hormones in the saliva that reflect the free and active levels of several hormones that influence bone activity.

BONE ANATOMY 101

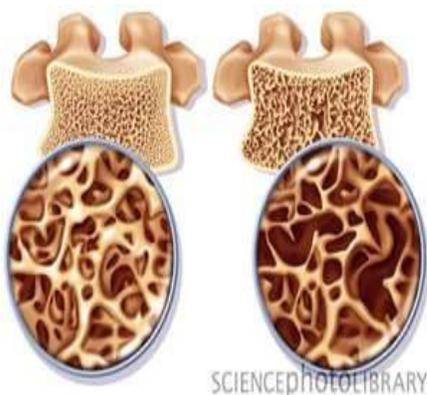
The bone is an interesting structure that is flexible but yet sturdy enough to withstand a lot of compression forces. The bone as seen to the far left consists of a dense outer portion called cortical bone and an inner area filled with a network of bone called the spongy bone. The spongy bone is filled with a network or lattice of bone called trabeculae. Someone with osteopo-

rosis would have a thinning of this area and it is represented on the right image of this vertebra. The normal bone is much thicker and it is the image on the far left.

However, this only represents more of the mineral portion of the bone. The bone also is very flexible and contains a number of fibers made out of collagen and other tissue. The

combination of the mineral portion and the collagen fibers increases the bones strength and resistance to fractures.

Unfortunately, DEXA scans can not measure the flexibility and strength of bone. It only measures the bone mineral density. Currently other studies are being done to find tests that better evaluate bone strength and flexibility.



TRADITIONAL TREATMENTS - BISPHOSPHANATES

Most physicians usually will treat osteopenia and osteoporosis with estrogen replacement, Vitamin D, calcium supplement and eventually a group of medications called bisphosphonates. These medications go by the names : Fosamax, Actonel, Boniva and Reclast.

These medications are not without side effects. The most common side effects are heartburn, headaches, constipation, diarrhea and joint pain.

Studies do show a significant increase in BMD with taking these medications. However, longer term usage of more than 4-5 years is questionable. The Journal of American

Medical Association of Aug. 2010 noted that these medications do significantly increase the risk of esophageal cancer. At the annual meeting of American Academy of Orthopedic Surgeons it was found that long term usage reduces structural integrity of the femoral (hip) shaft. This explains atypical hip fractures that occur in long term users of 4 years or more. These fractures resemble fractures seen with malignancy or metabolic bone disease. A study using 200,000 post-menopausal women using oral bisphosphonates for 5 years or more are 2 times more likely to experience fractures as women who take the same medication briefly.

Bisphosphonates taken intravenously have been associated with bone degeneration of the jaw. Many dentists are very cautious about performing dental surgeries with patients on these medications due to possible bone complications.

Bisphosphonates accumulate and stay in the bone for years. The normal balance between osteoclast and osteoblast activity is disrupted. The new bone even though appears more dense from a mineral density standpoint is actual not as strong or flexible. This is probably why with continued usage that risk of fracture increases again. Furthermore, these medications are linked to irregular heart rhythms.



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OTHER FACTORS EFFECTING BONE STRENGTH

There are 5 other major categories of imbalances that could typically effect most men and women who are experiencing significant bone loss.

1. **Hormonal imbalance:** It is essential that there is not only a proper level of estradiol (an estrogen) but there also needs to be proper balance of progesterone and testosterone to maintain bone strength and density. To measure these hormones often a salivary hormone assessment or a blood level measuring the free portions of these hormones will give you a good idea of hormonal balance.
2. **Dysglycemia:** Blood sugar imbalances along with imbalances of other hormones that influence blood sugar can have tremendous effects on bone density and strength. Hormones such as insulin, cortisol and leptin should be evaluated. This is often done with a salivary test called the Adrenal Stress Index which is available at our office.
3. **Fatty Acid Imbalance:** Omega 3 and Omega 6 fat imbalances can cause the bone to more rapidly lose strength and density as it effects fatty hormones called prostaglandins, that can cause inflammation.
4. **Cytokine imbalances:** Increases in IL-1, IL-6 and TNF alpha cause increased bone loss and inflammation. In the Journal of Clinical Endocrinology Metabolism, 2001 Increased IL-6 is a major predictor of bone loss in menopausal women. These cytokines can be measured by a specific blood test.
5. **Subclinical Infection/Inflammation:** Yes, these problems along with food intolerances can also lead to bone loss.





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Bringing you Natural Healthcare Information

Our mission is to help inform and educate the public about alternative treatments that are less invasive and employ more natural therapeutics. We in no way are suggesting that regular medical treatments should not be sought and with some conditions we will suggest a referral to the appropriate specialist.

We wish to provide hope to those people suffering and especially to those with chronic conditions. It is our purpose to provide you with knowledge that is helpful and can provide better health.

WHAT CAN BE DONE TO HELP - NATURALLY

Bone is basically a protein matrix that is loaded with minerals and laid out in certain types of patterns. Therefore, the first thing to think about is to make sure you have adequate protein levels. The next is to make sure there are proper minerals available, since by weight bone is 70% mineral. Proper levels of calcium, phosphorus, magnesium, zinc, sulphur, copper, boron, vanadium and silica are essential. Silica is often overlooked. It is essential to make sure bone has proper flexibility to avoid fractures. We carry several products that specifically contain the proper

minerals and silica to help bone strength and flexibility.

Vitamins such as Vitamin D, K, C and B6 are also essential for proper bone balance. Vitamin D helps with calcium absorption from your digestive tract, helps place calcium in bone, but has also been found to convert bone marrow stem cells into bone building osteoblasts.

The next group of compounds are antioxidants. They help reduce inflammation which helps bone growth, some of them are: Vitamin E, Vitamin C, lycopene, bioflavonoids, quercetin, alpha lipoic acid,

pycogenols and many others.

Fish oils, krill oil, flaxseed, walnuts and other omega 3 fats are very important for bone health and reduction of inflammation.

Lastly, there are several products available that help balance hormones, blood sugar and brain regulation of hormones. In Nutritional Review, 2003, they found a soy protein called genistein to be as effective as hormone replacement in preventing early postmenopausal bone loss. We do have these available as well.

