

HEALTH AWARENESS: BONE HEALTH



Bone is a hard substance made up of the protein collagen, reinforced with mineral deposits that are made up of mostly calcium, with some phosphorus and minor amounts of other minerals. Bone has some amazing properties, including its ability to remodel. When bone is under stress, like when the tendon of a muscle is under load (think picking up a chainsaw or other heavy object), the tension on the collagen fibers initiates the laying down of more calcium, to strengthen the bone so that it can withstand the heavy load. There is also a downside to this process – when your boots don't fit well and the heel always rubs, the bone can thicken to the point where a painful bone spur grows. Forensic scientists can even figure out a lot about how a person lived, just from examining where their bones are thickened.

When people are sedentary and don't use their muscles the opposite of this process occurs, some of the calcium is reabsorbed and the bone weakens. Removing calcium from areas that aren't loaded up regularly keeps bone from getting so thick and heavy that it would be tough to move, but it can also cause problems, as weak bones are more easily fractured. If bone loses too much calcium, it can become porous, fracture easily and develop into a disease known as osteoporosis.

These processes of laying down and removing bone are governed by hormones, with testosterone and estrogen having a very strong influence on bone deposition. When men and women age, the natural production of these hormones declines, (especially once women reach menopause), and gradually bone begins to weaken. This is one of the reasons why it's so important for children to get lots of calcium and Vitamin D (this vitamin allows us to absorb dietary calcium and stimulates bone deposition). The more calcium laid down, the higher the peak bone density and the stronger the bone. Since both men and women will lose bone after the age of 30 years, the higher the starting point the more likely it is that bone will remain strong enough to withstand the rigors of daily life throughout the lifespan.

In addition to age, hormonal status, peak bone density, calcium and Vitamin D intake and physical activity level, there are a number of other factors that can increase the risk of developing osteoporosis. Smoking, alcohol and high caffeine intake are all linked to lower bone density. There is also a genetic component; if you've had a parent with osteoporosis you are more likely to develop the disease. Some medications and other diseases can also increase the risk of developing osteoporosis. If you have any of these risk factors, or are concerned about bone density check with your health care provider. Early detection of low bone density is very important to prevent the disease and the frailty that comes from weak bones.

Facts:

- 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 over the age of 50 years will break a bone due to osteoporosis.
- Osteoporosis is most common over the age of 50 years. Men have an increased risk of fracture due to osteoporosis over the age of 65 years, for women the risk increases after menopause.

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- If caught early, osteoporosis can be treated. However, once the bone has become fragile it is much harder to prevent serious outcomes.
- The most common sites for osteoporotic fractures are in the hip, spine and wrist.
- Osteoporosis is sometimes confused with osteoarthritis but they are very different diseases. Osteoporosis occurs when the bone loses its strength and fractures easily, osteoarthritis occurs when the cartilage in a joint is damaged and no longer cushions the bone.

What to expect:

- Often osteoporosis is not diagnosed until a fracture occurs and the disease is advanced.
- Almost all people over 60 years who fracture a hip have osteoporosis (70 to 90%).
- Osteoporosis in the spine causes the vertebrae to collapse and put pressure on the spinal cord, resulting in pain and disability. A loss of more than 6 cm or 2½ inches in height from peak height at young adulthood is suggestive of osteoporosis.
- 37% of Canadian men and 28% of Canadian women who fracture their hip will die within one year.
- A broken bone resulting from a standing fall without additional force indicates low bone density

What you can do:

- Make sure to get enough calcium in the diet throughout the lifespan: aged 19-50 years 1000 mg daily, over the age of 50 years 1200 mg daily. It is **not** recommended that adults take more than these amounts.
- The best sources of calcium are dairy products: one cup of milk, one three-cm cube of hard cheese, or ¾ cup of yogurt each have about 300 mg of calcium. Almonds have about 100 mg calcium per ¼ cup and legumes have about 200 mg calcium per cup.
- Increase your intake of Vitamin D. You can make Vitamin D in skin exposed to UV light (5-30 minutes to arms and legs or back several times/week), but in Canada during the winter most people don't get this amount and should consider taking a supplement.
- People aged 19-50 years need 400-1000 IU of Vitamin D daily, over the age of 50 years, 800-2000 IU. The best sources are milk (100 IU/cup), fatty fish, fortified orange juice (check the label to see if Vitamin D has been added), or a supplement.
- Stop smoking, as both current and a past history of smoking increases the risk of developing osteoporosis.
- Limit your intake of alcohol to less than 3 servings per day, and your intake of caffeine to less than 4 servings per day.
- Get some strength training and do weight bearing exercise every week.
- If you have any of the risk factors for developing osteoporosis be sure to discuss it with your health care provider.

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What supervisors and employers can do:

- If an employee fractures a bone from a simple fall, or suffers frequent bone fractures encourage them to ask their health care provider about getting a bone density test.
- Consider having a public health professional or dietitian give a talk at one of your training events, and ask them to include bone health as a topic.
- Offer smoking and alcohol cessation counseling to employees.
- Set up a health corner in the employee locker or lunch room where you can put up the posters from the health awareness series.

More information:

Osteoporosis Facts www.healthandbone.ca/en/osteoporosis-faqs/

Osteoporosis Canada osteoporosis.ca/bone-health-osteoporosis/

Risk of osteoporosis in men osteoporosis.ca/about-the-disease/what-is-osteoporosis/men-and-osteoporosis/

Vitamin D article in Forest Safety News

www.bcforestsafesafe.org/files/ForestSafetyNewsletter_2018June_HealthandWellness.pdf