

Nutrition Fact Sheet

Bone Health

Bone is a living and growing tissue that is constantly being built and broken down. Bones make up the skeleton, which supports the structure of the body, protects organs, and stores the minerals calcium and phosphorous. Calcium and phosphorous are released from bone and involved in essential functions including blood clotting, nerve transmission, and the movement of fluid in and out of cells. The body must have enough calcium and phosphorous from the diet to perform these functions, and if it doesn't, bone will be broken down to get it!

Bone grows in length and density during childhood and reaches maximum length during adolescence, 16-20 years. Bone reaches its peak density between the ages 20 to 30. After that age, more bone is broken down than is being built and bone becomes lighter and more brittle. It is important to build strong bones before the age of 30. After age 30 it is important to minimize bone loss. Two bone disorders, osteopenia and osteoporosis, have become a new problem for people living with the HIV. Osteopenia is when there is a loss of bone mass and bone density and osteoporosis is the diagnosed condition when there is a more severe loss of bone mass and bone density, resulting in weak and brittle bones that are more likely to break. It is unclear if this increase in osteoporosis for people living with HIV is caused by HIV or by the medications used to treat HIV.

Prevent your bones from becoming weak. Make sure to get enough calcium and vitamin D rich foods in your diet everyday to prevent bone loss and to maintain bone health. Good sources of calcium include dairy products and green, leafy vegetables such as broccoli and kale. Calcium fortified products like orange juice, soymilk, cereals, and breakfast bars are also good sources of calcium. See the table for examples of good food sources of calcium and compare it to the daily reference intake (DRI) recommended for calcium.

Good Sources of Calcium

Calcium sources	Serving Size	Mg of Calcium
Milk (whole, 2%, 1%)	1 cup	300
Yogurt, plain	1 cup	415
Cheese, Swiss	1 ounce or 1 slice	272
Mozzarella	1 ounce or 1 slice	185
Broccoli, frozen, cooked	1 cup	94
Kale, frozen, cooked	1 cup	179
Fortified orange juice	1 cup	300
Fortified soy drink	1 cup	180
Canned sardines with bones	3 oz	325
Cornflakes	1 1/3 cup	237
Tofu (check labels as calcium content varies)	1/2 cup	130-260

Daily Reference Intake (DRI) for Calcium

Age in years:	9-18	19-50	51-70	71+
Calcium:	1300 mg	1000 mg	1200 mg	1200 mg

For more information or to sign up for a nutrition class call:

Janelle L'Heureux MS RD: 213-201-1556 jlheureux@apla.org or go to www.apla.org & click on Calendar. APLA copyright © 2006. For persons with disabilities, reasonable accommodation may be provided upon request. Please call 213-201-1582 TTY (for voice, call California Relay Service first at 711, then give operator the TTY number) at least 5 working days in advance to ensure availability.

Vitamin D is important because it's the key that unlocks the door and allows the calcium you eat from foods and supplements to be absorbed into your bloodstream. Vitamin D is also made in the skin from sunlight exposure. Depending upon the time of the year and where you live, about 10-15 minutes in the sun with your hands, arms, and face exposed 2-3 times a week helps towards meeting your body's requirements for vitamin D. Vitamin D can be found in dairy products, egg yolks, fatty fish, fish liver oil, and breads and cereals fortified with vitamin D. See the table below for examples of Vitamin D rich foods and compare it to the daily reference intake (DRI) recommended for Vitamin D.

Good Sources of Vitamin D

Vitamin D sources	Serving Size	IU of vitamin D
Milk 1%	1 cup	97.6
Egg yolk	1 large	24
Fish liver oil	1 tablespoon	1360

Daily Reference Intake (DRI) for Vitamin D

Age in years:	9-18	19-50	51-70	71+
Vitamin D:	200 IU	200 IU	400 IU	600 IU

Physical activity is another necessary factor in bone health. Bones become stronger the more you use them, just like muscles. Weight-bearing and resistance exercise can help to:

- 1) Achieve peak bone mass in children and adolescents
- 2) Help to maintain or slightly increase bone density in adulthood
- 3) Help to minimize age related bone loss in older adults.

Weight-bearing activities are those in which bones and muscle work against gravity. Weight-bearing activities include running, dancing, soccer, and volleyball. Swimming and bike riding are not weight-bearing activities. For older adults, activities such as intense walking and low impact aerobics may be just fine. Resistance exercise, such as weight lifting, is another type of activity that strengthens both muscles and bones. It is important to keep an active lifestyle with a variety of activities to have healthy bones.

Alcohol and smoking In general, alcohol and smoking negatively affect bone health. In men and pre-menopausal women, alcohol affects certain hormones that cause calcium to be withdrawn from the bone and over time this can lead to a large loss in calcium from the bone. Alcoholics often have weak bones, tend to lose their balance, have trouble walking, and therefore are more likely to fall and break a hip. Smokers, more than non-smokers, have lower bone density and need to be concerned about their bone health. In post-menopausal women, moderate consumption of alcohol may have a positive affect of increasing bone density by increasing the conversion of testosterone into estradiol, a hormone that prevents bone loss.

To keep your bones healthy:

- 1) Eat foods rich in calcium, vitamin D and magnesium everyday.
- 2) Talk with your doctor about a supplement if you are not getting enough from food.
- 3) Be physically active, especially weight-bearing and resistance exercises
- 4) Do not smoke
- 5) Do not drink alcohol

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