

## UNIVERSITY STUDENT HEALTH SERVICES • Fact Sheet

**CALCIUM & BONE HEALTH****WHAT IS CALCIUM?**

Calcium is a mineral that is essential to maintaining strong bones. Calcium is also needed by the body's muscles and nerves to function properly.

Adequate calcium intake during childhood and adolescence is critical for bone health. These are the years where bone is forming rapidly. 85-90% of adult bone mass is acquired by the late teens. After bone mass peaks around age 35, it will start to decrease gradually.

Most of your body's calcium is stored in the bones. If you are not getting enough calcium in your diet, your body will start taking calcium from your bones, which can weaken the bones and lead to osteoporosis.

A calcium-rich diet, along with vitamin D and weight-bearing exercise, are the keys to building and maintaining strong bones throughout life.

**WHAT IS OSTEOPOROSIS?**

Osteoporosis is a bone disease that results from a mixture of genetics and too little calcium in the diet. It leads to weak, brittle bones that are more likely to break, even with minor trauma. Fractures can result in loss of function, pain, deformity, and life-threatening conditions, like blood clots. Hip fractures in older adults can cause permanent disability and even death. Fractures in the spine can lead to a hunched-back appearance.

**WHO IS AT RISK FOR OSTEOPOROSIS?**

80% of adults with osteoporosis are women. While osteoporosis is most commonly seen in older women, it can affect young women with eating disorders and those who menstruate infrequently. Other risk factors include:

- ❖ Caucasian or Asian race
- ❖ Low body weight or small frame
- ❖ Family history of osteoporosis
- ❖ Lack of regular weight-bearing exercise
- ❖ Smoking
- ❖ High alcohol intake
- ❖ Hyperthyroidism
- ❖ Long-term use of oral steroid medications, some anticonvulsants, and some cancer therapies

In addition to adequate calcium and Vitamin D intake, decreasing the risk factors that you have control over will help prevent osteoporosis. For example, healthy habits like not smoking and limiting alcohol use are also important for bone health.

**HOW MUCH CALCIUM DO I NEED?**

The recommended calcium intake for adults 19-50 years of age is 1000mg a day.

**■ DIETARY SOURCES**

Calcium is best absorbed through a calcium-rich diet. However, the average American consumes only 500mg of calcium in their diet.

- ❖ 3-4 servings of high-calcium foods are needed to meet your daily calcium needs. Dairy products are great sources of calcium. A serving is equal to 8 oz of milk, 1 cup of yogurt, 1.5 oz of natural cheese (like Cheddar), or 2 oz of processed cheese (like American). Refer to the table at the end of this handout for a listing of common foods and their calcium contents.
- ❖ If you cannot eat dairy products, collard greens/kale/broccoli, tofu, beans, and fortified juice/soy milk are examples of alternative sources of calcium. If you are lactose intolerant, try Lactaid or lactase enzyme tablets to help digest dairy products.
- ❖ Read the Nutrition Facts label to figure out how many milligrams of calcium a particular food contains. Locate the calcium percentage on the food label, drop the % sign, and add a zero.

## ■ CALCIUM SUPPLEMENTS

Consider taking a supplement if you are not able to get enough calcium in your diet.

- ❖ Do not rely on a multivitamin for your calcium needs! Most multivitamins contain minimal amounts of calcium.
- ❖ Elemental calcium is the actual amount of calcium in a supplement. Make sure to calculate your intake based on the amount of elemental calcium listed on the bottle.

## WHICH CALCIUM SUPPLEMENTS ARE PREFERRED?

Common calcium supplements include the following:

- ❖ Calcium carbonate (Tums, Os-Cal, Caltrate, Viactiv) contains the most elemental calcium per tablet and is the least expensive. Because calcium carbonate requires stomach acid for absorption, it is best to take this form of calcium with food.
- ❖ Calcium citrate (Citracal) and calcium gluconate are more easily absorbed and can be taken on an empty stomach. They are preferred if you are taking an acid-blocking medication (eg. Zantac, Prilosec, Nexium, etc.) or have absorption disorders (eg. inflammatory bowel disease, etc.).
- ❖ Avoid “oyster shell” or “natural source” calcium supplements. These may be contaminated with lead or aluminum.

## TIPS FOR TAKING CALCIUM

- ❖ If you do not like to take pills, consider supplements that come in chewable forms, like Viactiv and many generic calcium supplements.
- ❖ If you need more than one supplement a day, take them at different times of the day. Calcium is best absorbed by the body when no more than 500mg of elemental calcium is taken at one time.
- ❖ Take your calcium supplement with meals, lactose (eg. a sip of milk), or vitamin D (also in fortified milk) to increase its absorption.
- ❖ Avoid taking calcium with iron, thyroid hormones, and the fluoroquinolone or tetracycline classes of antibiotics (eg. ciprofloxacin, levofloxacin, doxycycline, minocycline) since calcium interferes with their absorption.
- ❖ Consult your medical provider prior to increasing your calcium intake if your family has a history of calcium-containing kidney stones.
- ❖ Do not exceed 2000 mg/day of calcium. Calcium intake in excess of 1200-1500mg/day may have limited potential for benefit and may increase the risk of kidney stones, cardiovascular disease, and stroke. (Getting too much calcium from foods is rare. Excess intake is usually due to the overuse of calcium supplements.)

## VITAMIN D

- ❖ Your body needs vitamin D to absorb calcium. Vitamin D also helps your immune system function effectively and reduces inflammation.
- ❖ Vitamin D is made naturally by the skin after exposure to sunlight.
  - You can get enough Vitamin D just by being out in the sun for 10-15 minutes a day (except during winter months in northern parts of the US). Remember to put on sunscreen after those few minutes to protect your skin from sun damage.
  - People with darker skin need more sun to make adequate amounts of vitamin D.
  - Vitamin D production by the skin also decreases with age.
- ❖ Experts recommend that adults consume at least 600-800 IU of vitamin D per day. Some experts recommend 1000-2000 IU per day.
- ❖ The best source of dietary vitamin D is fortified cow's milk, which contains approximately 100 IU per 8 oz cup. Vitamin D is also found in egg yolks, salmon, tuna, and fortified cereals/juices/dairy products.
- ❖ Supplements are recommended if you are not getting enough Vitamin D through your diet. Do not take doses higher than recommended by your medical provider.
  - Many experts prefer Vitamin D3 (cholecalciferol) over Vitamin D2 (ergocalciferol) supplements. However, Vitamin D2 supplements are a good option for vegetarians because they are derived from plant sources.
  - Most multivitamins contain 400 IU of Vitamin D per dose.

## HEALTHY HABITS FOR STRONG BONES

In addition to getting enough calcium and vitamin D, other healthy lifestyle choices are important for building and maintaining strong bones throughout life.

- ❖ **Engage in regular weight-bearing exercises.** This means exercises that involve gravity and muscle tension on the bone.
  - Examples include running, walking, stair climbing, jump roping, and other impact-producing activities.
  - Resistance training (eg. weight lifting) is also great for bone health.
  - Swimming, biking, and exercising on machines (eg. elliptical trainers) are great cardiovascular workouts but have less impact on bone health.
- ❖ **Avoid smoking.** Recent studies have shown a direct relationship between smoking and decreased bone density. Smoking may increase the risk of fractures, as well as decrease estrogen levels needed to maintain healthy bones.
- ❖ **Limit alcohol consumption to 1 drink per day.** One drink is equivalent to 12 oz of beer, 5 oz of wine, or 1.5 oz of liquor. Excess alcohol use can interfere with the absorption of nutrients needed for strong bones.
- ❖ **Avoid consuming large amounts of sodium and caffeine.** Higher levels of these substances can lead to greater loss of calcium through the urine.
- ❖ **See your medical provider if you are premenopausal and having infrequent menstrual periods.** Your estrogen levels may be low, which can increase your risk of developing osteoporosis.

CALCIUM CONTENT OF FOODS						
400 MG CALCIUM	300 MG CALCIUM	200 MG CALCIUM	150 MG CALCIUM	100 MG CALCIUM	50 MG CALCIUM	25 MG CALCIUM
Yogurt (plain, nonfat, low-fat), 1 cup	Milk (nonfat, low-fat, lactose-reduced, whole, goat's milk), 1 cup	Cheddar, gruyere, mozzarella (part skim), muenster, swiss cheeses, 1 oz	Oatmeal (instant), 1 packet	Ice cream, ice milk, frozen yogurt, ½ cup	Cottage cheese, ½ cup	Whole wheat or white bread, 1 slice
Evaporated skim milk, ½ cup	Fortified soy and rice milks, 1 cup	Burrito (chicken/beef with cheese & beans), 1	Cheese pizza, 1 slice	Almonds, 1.5 oz (36 nuts)	Hummus, ½ cup	Tortilla (flour), 6"
Nonfat dry milk powder, ¼ cup	Fortified orange juice, 1 cup	Enchilada with cheese & beans, 1	Nachos with cheese and beans, 4	Spinach, ½ cup	Baked beans, ½ cup	Tortilla chips, 10
Mackerel (canned), 5 oz	Macaroni and Cheese, ¾ cup	Lasagna, 2.5" x 4" piece	Bok choy, 1 cup	Turnip greens (frozen, cooked), ½ cup	Kale, mustard greens (frozen, cooked), ½ cup	Egg (hard boiled), 1
Sardines in oil, 4 oz	Grated parmesan cheese, 1 oz	Tofu, 1 cup	Rhubarb (frozen, cooked), ½ cup	Crab, 3 oz	Orange, 1 medium	Refried beans, ½ cup
	Ricotta cheese (part-skim, nonfat), ½ cup	Soybeans (cooked), 1 cup		Clams, 3 oz	Tortilla (corn), 6"	Broccoli, ½ cup
	Collard greens (frozen, cooked), 1 cup	Figs (dried), 10			English muffin, 1	Raisins, ½ cup
	Salmon (baked, broiled), 6 oz				Oatmeal muffin, 1 medium	