

Calcium and Vitamin D

CALCIUM

Adequate calcium is necessary for good health, and not just because it's a major component of our bones. It also plays a vital role in keeping our organs and skeletal muscles working properly. The body gets the calcium it needs for basic functions from our diet or by releasing calcium stored in our bones through bone remodeling—the process by which bone is constantly broken down and rebuilt.

Calcium deficiency can lead to decreased bone density as the body breaks down more bone to get the calcium it needs for daily metabolism. A minimum amount of calcium intake per day is required to avoid calcium deficiency. This amount depends on age, but for adult females is about 1,000 mg per day, or 3 servings of a dairy type food (milk, yogurt, cheese, cottage cheese). There are other food sources of calcium (canned sardines and calcium fortified plant milks for example).

Calcium and Fracture Risk

In the past two decades, several clinical trials involving thousands of postmenopausal women have sought to determine if high calcium intake affects the risk of hip fractures. Unfortunately, high calcium intake from either food or pills does not reduce hip fracture risk. This was the conclusion of a 2007 report by Swiss and American scientists who conducted an analysis of more than a dozen studies of calcium. The studies also revealed a downside to high levels of calcium supplementation, but not to calcium obtained through a regular diet -- there was an increased risk of kidney stones. In the Woman's Health Initiative, women taking a calcium–vitamin D combination had a higher risk of developing kidney stones than those who got placebo.

The Bone Health and Osteoporosis Foundation (BHOFF - formerly the National Osteoporosis Foundation) states that there is no evidence that calcium intake in excess of the daily requirement confers additional benefits. Intake in excess of 1,200 to 1,500 mg/day may increase the risk of developing kidney stones, cardiovascular disease, and stroke.

The take-home lesson: Some calcium intake daily is vital. Too much is bad and not helpful.

VITAMIN D

Vitamin D has a major role regulating the blood concentrations of calcium and phosphorous and promoting the healthy growth and remodeling of bone. It also has other effects, including some on cell growth, neuromuscular and immune functions, and reduction of inflammation. Vitamin D has a significant role in calcium homeostasis and metabolism.

Vitamin D is one of the "fat-soluble" vitamins (A, D, E and K). Our bodies can produce it with sun exposure, but most U.S. adults are deficient unless they take supplements. Since we can make it, some experts call it a hormone rather than a vitamin.

The BHOFF recommends an intake of 800 to 1,000 international units (IU) of vitamin D per day for adults age 50 and older. Vitamin D supplements should be taken in amounts sufficient to bring the serum Vitamin D level to approximately 30 ng/ml. A higher level is not helpful and might be harmful. In one study, they showed lower bone density with Vit D doses of 4,000 units/day!

The take-home lesson: Some Vit D intake daily is vital. Too much is bad and not helpful.

HOW MUCH CA and Vit D TO TAKE?

1. If minimal or no dairy in the diet, calcium intake daily should be about 1,000 mg per day. If there is some dairy in the diet, then 500 mg/day is enough.
2. Vit D intake daily should be about 1,000 units of D3. Very few people get enough Vit D from their diet or from sun exposure, so pretty much everyone needs Vit D supplementation.

CALCIUM IN FOOD AND BEVERAGES

<https://www.ucsfhealth.org/education/calcium-content-of-foods>

<https://www.osteoporosis.foundation/patients/prevention/calcium-content-of-common-foods>

Dairy

- 1 cup Cow's Milk (Whole, 2%, 1%): 300 mg
- 2 oz soft cheese: 100mg
- 2 oz hard cheese: 400mg
- 8 oz yogurt: 400 mg
- 4 oz cottage cheese: 65 mg

(FYI: 1 cup of cow's milk has about 125 units of Vitamin D, far less than most people think).

Non-Dairy

- 1 cup Almond Milk (unsweetened): 0 mg
- 1 cup Calcium Fortified Almond Milk: 480 mg
- 1 cup Rice Milk (unsweetened): 283 mg
- 1 cup Soy Milk (unsweetened): 19 mg
- 1 cup Coconut Milk Beverage (unsweetened): 41 mg

Foods

- Canned Sardines 3 oz: 300 mg
- Canned Salmon 3 oz: 200-300 mg (due to the edible bones)
- 1 cup cooked broccoli: 180mg
- 1 cup raw Kale: 55mg
- 1 cup spinach: 240mg
- 1 cup dried figs: 300mg

Many other foods contain calcium sesame seeds, almonds, tofu, fortified cereals, soybeans, okra, arugula. Note that calcium in vegetables is not as well absorbed as from dairy.