

Calcium and Vitamin D

FOR HEALTH



WHY ARE CALCIUM AND VITAMIN D IMPORTANT FOR MY HEALTH?

Bones are living tissue, and they make calcium “deposits and withdrawals” daily. Without enough calcium and vitamin D, your body will take calcium from your bones to keep your blood calcium levels normal. As a result, bones may become weak, thin, and brittle, a condition known as osteoporosis.

Your body needs calcium for many reasons. It helps form bones and teeth and strengthens them to prevent breaks and decay. Calcium is important for muscle contraction, blood clotting, and sending nerve impulses. Research also suggests that getting enough calcium may help reduce blood pressure and lower the risk of colon cancer.

Without vitamin D, your body can't absorb and use calcium to make and keep strong bones. A diet low in vitamin D makes conditions such as osteoarthritis, hypertension, and cardiovascular disease worse for some people. Lack of vitamin D may also contribute to bone pain or chronic aches. Getting enough vitamin D may also decrease the risk of colon cancer.

WHERE DOES VITAMIN D COME FROM?

Vitamin D is found in fish oil and some types of saltwater fish and shellfish (such as salmon, halibut, herring, tuna, oysters, and shrimp). It is also added to foods like milk, cereals, and some juices, making them “vitamin D fortified.”

Your body also makes its own vitamin D after exposure to the sun's ultraviolet (UV) rays. Some people can get enough vitamin D from exposure to the sun, at least at certain times of the year.

However, studies have shown that many people don't have enough vitamin D in their bodies. So, taking vitamin D through foods or supplements every day is a good idea for everyone.

HOW MUCH CALCIUM AND VITAMIN D DO I NEED EACH DAY?

The amount of calcium and vitamin D you need depends on your age (see chart). For some age groups, there is a range rather than a single number. The low end of the range is the minimum required by most adults in that group. Your doctor may recommend the higher amount to help prevent osteoporosis or for other reasons, depending on your individual needs.

Age (yrs)	Calcium (mg/day)	Vitamin D (IU/day)
1-3	500	200
4-8	800	200
9-18	1,300	200
19-49	1,000-1,500	400-800
50-70	1,500	400-800
71+	1,500	600-800
Pregnant or breastfeeding women	1,000-1,300	400

Note: You should not consume more than 2,500 mg of calcium or 2,000 IU of vitamin D per day from foods and supplements.

FOOD SOURCES FOR CALCIUM	mgs of calcium
fat-free (skim) milk, 1 cup	306
soymilk or rice milk, calcium fortified, 1 cup	300
plain yogurt, non-fat, 6 oz. container	300
1% low-fat milk, 1 cup	290
buttermilk, low-fat, 1 cup	284
tofu, firm, made with calcium, 1/2 cup	253
fruit yogurt, lowfat, 6 oz. container	250
mozzarella cheese, part-skim, 1 oz.	207
cheddar cheese, 1 oz.	205
pink salmon, canned, with bone, 3 oz.	181
collard greens, cooked, 1/2 cup	178
molasses, blackstrap, 1 Tbsp.	172
spinach, cooked, 1/2 cup	146
feta cheese, 1 oz.	140
soybeans (edamame), green, cooked, 1/2 cup	130
turnip greens, cooked, 1/2 cup	124
ocean perch, Atlantic, cooked, 3 oz.	116
instant oatmeal, fortified, 1 packet prepared	100
white beans, canned, 1/2 cup	96
kale, cooked, 1/2 cup	90
okra, cooked, 1/2 cup	88
bok choy or Chinese cabbage, cooked, 1/2 cup	74
corn tortillas, two 6-inch	38
whole wheat bread, 1 slice	30
cream cheese, fat-free, 1 Tbsp.	28

FOOD SOURCES FOR VITAMIN D	IUs of D
halibut, cooked, 3 oz.	510
salmon, cooked, 3 oz.	360
oysters, cooked, 3 oz.	272
sardines, canned in oil, drained, 1¾ oz.	250
shiitake mushrooms, dried, 4	249
tuna, canned, 3 oz.	200
shrimp, cooked, 3 oz.	149
orange juice, vitamin D fortified, 1 cup	100
milk, vitamin D fortified, 1 cup	100
soymilk or rice milk, vitamin D fortified, 1 cup	100
yogurt, low-fat, vitamin D fortified, 6 oz.	80
margarine, fortified, 1 Tbsp.	60
ready-to-eat cereals fortified with vitamin D	40-50
egg, 1 whole	26

STRATEGIES TO MEET YOUR DAILY NEEDS FOR CALCIUM AND VITAMIN D

- Eat three to four servings of high-calcium foods every day. Options include low-fat or fat-free dairy products, fortified orange juice, and fortified soy or rice milk.
- Complement your diet with other foods that contain calcium such as fortified cereals, tofu made with calcium sulfate (check the ingredients), and leafy greens like kale. See the calcium chart for more ideas.
- Make soups, smoothies, puddings, parfaits, and dips with low-fat or fat-free dairy products.

- Eat fish containing vitamin D regularly. See the vitamin D chart for more ideas.
- Choose dairy products, juices, and cereals that are fortified with vitamin D.

LACTOSE INTOLERANCE

Lactose is a sugar in milk that some people have trouble digesting. They may have stomach cramps, gas, bloating, or diarrhea when they eat dairy products. If you think this is happening to you:

- Try eating smaller amounts of milk or other dairy products at a time.
- Figure out which foods work for you. For instance, some people have trouble with milk, but not with cheese or yogurt.
- Consider products such as lactose-reduced milk, lactase drops or tablets.
- Use non-dairy sources of calcium such as fortified cereals, juices, soymilk, and rice milk.

WHAT ELSE CAN I DO TO MAINTAIN HEALTHY BONES?

To maintain strong bones and reduce the risk of osteoporosis, you should:

- Have a good daily intake of dietary calcium and vitamin D at every age.
- Be physically active. Studies show that weight-bearing activities can help build and maintain bone in people at all ages. Weight training, walking, dancing, jogging, and racquet sports are examples.
- Avoid tobacco use and excessive use of alcohol.

SHOULD I TAKE A CALCIUM OR VITAMIN D SUPPLEMENT?

Food should be the primary source of calcium and vitamin D. But many people do not consume enough of these nutrients, especially if they are at risk for osteoporosis. If this applies to you, your doctor may recommend a supplement.

- You can find vitamin D in most multivitamins or as an individual supplement of up to 400 mg. Higher doses are available by prescription.
- There are several types of calcium supplements.
 - Calcium carbonate and calcium citrate are the most common. The body absorbs both well. You need to take calcium carbonate with food, but calcium citrate can be taken on its own. If you take any medicines that block acid, like those used for ulcers or acid reflux (heartburn), don't take calcium carbonate.
 - Calcium citrate malate is found in some juices. It is easily absorbed.
 - You may also find calcium gluconate, lactate, and phosphate as supplements to certain foods.

If a vitamin or supplement causes constipation, gas, or other digestion problems, talk with your health care professional about what may work better for you.

Your body uses calcium best when the dose is less than 500 mg. If you are taking 1,000 mg of calcium a day, try to take it in two separate doses. For example, take 500 mg in the morning and 500 mg in the evening.

Other sources of calcium such as coral calcium and dolomite are not recommended. They may contain unsafe levels of lead, mercury, or arsenic and may not be easily absorbed by your body. If you have shellfish allergies, don't take coral calcium.

Some medicines don't mix well with calcium. These include thyroid hormones, tetracycline, corticosteroids, or iron pills. If you take any of these medicines, talk with your doctor before taking a calcium supplement.

OTHER RESOURCES

- Connect to our Web site at kp.org to access health and drug encyclopedias, interactive programs, health classes, and much more.
- Check your *Kaiser Permanente Healthwise Handbook*.
- Contact your Kaiser Permanente Health Education Center or Department for health information, programs, and other resources.

This information is not intended to diagnose health problems or to take the place of medical advice or care you receive from your physician or other health care professional. If you have persistent health problems, or if you have additional questions, please consult with your doctor.

© 2004, The Permanente Medical Group, Inc.
All rights reserved. Regional Health Education.