



**AMERICAN
BONE HEALTH**

BONESENSE *on*

Calcium and Vitamin D

Dynamic Duo for Bone Health

Calcium

Calcium is a mineral that helps build strong bones and teeth. While you need calcium throughout your life, the amount you need changes over time. Calcium is critical for kids during their growing years to build strong bones, a bit less is required during the middle years to keep bones strong, and much more calcium is needed later in life to prevent bone loss.

Your body stores 99% percent of its calcium in your teeth and bones. The other 1% is circulating in your blood and soft tissue. If you do not consume enough calcium through your diet or supplements, your body will take the calcium it needs from your bones. If your body continues to take calcium from your bones, over time, you will develop osteoporosis. Osteoporosis is a serious disease in which bones become fragile and therefore more likely to break.

The best way to get the right amount of calcium is to eat enough calcium-rich foods every day. Dairy products and calcium-fortified foods are the best sources of calcium. Certain fruit juices, cereals and breads have added calcium. Non-fat and low-fat dairy products have more calcium than whole milk.

Vitamin D

Remember rickets? Rickets (or osteomalacia when present in adults), the softening and malformation of the bones, is due to vitamin D deficiency. Recent evidence suggests that there is a growing epidemic of vitamin D deficiency in the US. Why? Our bodies have an efficient way to manufacture vitamin D when our skin is exposed to ultraviolet sunlight. However, because of the extensive use of sunscreen to protect against skin cancer and the indoor life many of us lead, we do not have sufficient sun exposure to produce the quantities of vitamin D we need.

There appears to be many health benefits to having adequate blood levels of vitamin D, but most importantly, vitamin D is necessary for the effective absorption of calcium by the intestine. Sufficient absorbed calcium is critical in maintaining bone health. Vitamin D is the "key" that unlocks the full value of calcium.

There is still some legitimate scientific disagreement about the right amount of vitamin D needed. American Bone Health recommends that in general, individuals with osteoporosis or any of the risk factors for osteoporosis take a minimum of 1,000 but not more than 2,000 international units of vitamin D supplements per day to maintain optimal levels of vitamin D.

BONESENSE

- ✓ *Consume calcium daily.*
- ✓ *Eat nutritious foods to meet your daily requirements.*
- ✓ *People at risk should take 1,000-2,000 IUs of vitamin D daily.*
- ✓ *Be smart about sun exposure.*
- ✓ *Do not take more than 500-600 mg of calcium supplements at one time.*
- ✓ *Pick a calcium supplement that you will take regularly!*

Daily calcium and vitamin D promotes bone health and helps prevent osteoporosis.
 Know what you need and how to get it.

Daily calcium requirements by age*

Age Group	Calcium - mg
Birth - 6 months	210
6 months - 1 year	270
1 - 3 years	500
4 - 8 years	800
9 - 18 years	1300
Women:	
25-50 years	1000
over 50 years with estrogen	1000
over 50 years without estrogen	1500
over 65 years	1500
pregnant and nursing	1200
Men:	
25-65 years	1000
over 65 years	1500

*Published by the National Institutes on Health (NIH) and the National Academy of Sciences Food and Nutrition Board (NFB) <http://www.ncbi.nlm.nih.gov/>

Good sources of calcium

Dairy	Serving Size	Calcium (mg)
Low fat yogurt	1 cup	415
Skim milk	1 cup	302
American cheese	1 oz.	175
Chocolate pudding	½ cup	140
Ice milk, ice cream, frozen yogurt	½ cup	90
Proteins		
Tofu (made with calcium sulfate)	4 oz.	250-370
Sardines (with bones)	3 oz.	370
Salmon (with bones)	3 oz.	180
Vegetables These vegetables contain calcium, but your body may not be able to absorb it all because they contain fiber, phytates and oxalates, which inhibit adequate calcium uptake.		
Turnip greens	1 cup	200
Bok Choy	1 cup	160
Broccoli	1 cup	136
Collard greens	1 cup	357
Other Foods		
Vegetable lasagna	1 piece	450
Cheese enchilada	1	324
Cheese pizza (10")	1 slice	290
Calcium-fortified orange juice	1 cup	300

Supplements

It is always best to try to get your nutrition in the foods you eat. However, that is not always possible. If you do not get your recommended daily calcium and vitamin D from food, you may need to supplement your diet.

What's the best calcium supplement to take?

The simple answer is...pick a supplement that you will take regularly! Getting daily calcium is the key. Calcium carbonate and calcium citrate are the most common types of calcium supplements. **Calcium carbonate** may be less expensive and requires the acid in your stomach to break it down. So be sure to take it with food. **Calcium citrate** absorbs more easily and is generally more expensive.

Some people experience constipation with calcium. Be sure to drink adequate amounts of water. Taking a calcium that includes magnesium may help.

There are many chewable forms of calcium available that may be more convenient for children and older adults. Supplements are sold under brand names and as generics. Many common antacids also contain calcium. Between the food you eat and your supplement.

Read the label for the amount of "elemental calcium" per tablet. Elemental calcium is the actual amount of calcium in the supplement that will be made available to your body. This will help you determine how many tablets you need to take to get your daily dose. Also, **look for the USP mark** to make sure the supplement meets governmental standards for purity and quality.

Taking your calcium supplement

- **Avoid taking calcium with high fiber meals** or with bulk-forming laxatives. The fiber can bind with the calcium and reduce the amount for your body to use.
- **Take small amounts of calcium throughout the day.** Avoid taking more than 500-600 milligrams of elemental calcium at one time. This may mean you need to take supplements 2-3 times during the day.
- **Avoid taking calcium and iron supplements at the same time** because each interferes with the other's absorption.

Vitamin D

There are two basic kinds of vitamin D supplements available D3 and D2. Most doctors today recommend D3 because it is more potent. **D3 is also called cholecalciferol.** D2 is called ergocalciferol. Many calcium and multivitamin supplements now include vitamin D. Remember to calculate all of the vitamin D you are taking to ensure you are meeting the daily requirement that is right for you.

Lactose Intolerance

Milk and dairy products are one of the best sources of dietary calcium. However, some people have trouble digesting milk products because their body lacks lactase, the enzyme that digests milk. People who are lactose intolerant experience gas, bloating or stomach cramps when they eat dairy foods. As many as 50 million Americans are lactose intolerant and this condition occurs more often in certain ethnic groups. In fact, up to 75 percent of all adult African Americans and Native Americans and 90 percent of Asian Americans consider themselves lactose intolerant.

There are a number of ways to meet calcium requirements if you are lactose intolerant:

- ◆ incorporate non-dairy, calcium-rich foods or lactose-reduced dairy products into the diet
- ◆ take calcium supplements
- ◆ use lactase pills or drops which make milk products digestible

Tips for Tolerance

New research finds that most people who are lactose intolerant can enjoy some dairy foods daily. Try these tips to help you comfortably consume dairy foods.

- **Reduce it** - Look for lactose-reduced or lactose-free milk in the dairy case at your store. These products have all the nutrients of regular milk.
- **Start small** - Try small portions of dairy foods and gradually increase the serving size. This allows whatever lactase is present to do its job of digesting the lactose before it starts causing problems. When you notice symptoms, that may be your personal limit for the amount of lactose you can tolerate at one sitting.
- **Pair the Dairy** - Drink milk with other foods, rather than on an empty stomach. Solid foods slow down the digestive process and allow your body more time to digest the lactose – which helps decrease or eliminate symptoms.
- **Now you're cooking** - Start adding milk to your favorite recipes for soups and sauces. Research has shown that your body actively adjusts to the presence of lactose, and symptoms will gradually decrease over as little as 10 days.
- **Older is wiser** - That's true with cheese! When milk is processed into cheese, most of the lactose is removed in the whey, or liquid. Aged hard cheese, such as Cheddar, Colby, Swiss and Parmesan are particularly low in lactose.
- **Get a little "culture"** - Look for cultured milk products such as yogurt or buttermilk. These products contain friendly bacteria that help digest lactose.
- **Make it easy** - Look for dairy digestive supplements (lactase caplets). These supplements can help you digest lactose easily. Then you can enjoy dairy foods, in any amount, and get all the nutrients they provide.
- **Go to the pros.** These tips may not apply to everyone. Talk to your doctor or a registered dietician if you are unsure or want more information better suited to your personal needs.

Text adapted from "Tips for Tolerance," National Dairy Council, 2008

<http://www.nationaldairyCouncil.org/NationalDairyCouncil/Press/Alert/Alert2003/TipsForTolerance.htm>