

Calcium and Vitamin D: Dynamic Duo for Bone Health

About Calcium

Calcium is a mineral that helps build and maintain 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 bones, a bit less is needed during the middle years to keep bones strong, and much more calcium is required later in life to reduce the rate of bone loss.

Your body stores 99% of its calcium in your teeth and bones. The other 1% circulates in your blood and soft tissues to be readily available for every nerve and muscle to function and for proper blood clotting. 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, your bones become fragile and more likely to break. This weakened bone state is called osteoporosis.

The best way to get the right amount of calcium is to eat enough calcium-rich foods every day. Non-fat and low-fat dairy products and calcium-fortified foods are the best sources of calcium.

About Vitamin D

Remember rickets? Rickets (or osteomalacia when present in adults) is the softening and bending of bones and is due to vitamin D deficiency. Vitamin D is necessary for calcium to be absorbed by the intestine, so it works with calcium to build and maintain bone health. Vitamin D is the “key” that unlocks the full value of calcium.

Lactose Intolerance

Milk and dairy products are one of the best sources of dietary calcium. However, some people have trouble with milk products because their body lacks an enzyme that digests milk sugar (lactose). 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% of all adult African Americans and Native Americans and 90% 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 that make milk products digestible

BONESENSE

- ✓ Consume calcium daily
- ✓ Eat nutritious foods to meet your daily requirements
- ✓ People at risk should take 25–50 mcg (1,000–2,000 IUs)
- ✓ 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!

How Much Calcium Do You Need?

Tables below show the new Recommended Daily Allowance (RDA) and the maximum you should take.

Calcium RDA for Adults with Healthy Bones

Life Stage Group	RDA (mg/day)	Do Not Exceed (mg/day)
19–50 years old	1,000	2,500
MEN: 51–70 years old	1,000	2,000
WOMEN: 51–70 years old	1,200	2,000
71+ years old	1,200	2,000

Calcium RDA for Kids and Pregnant Women

Life Stage Group	RDA (mg/day)	Do Not Exceed (mg/day)
Infants 0 to 6 months*	*	1,000
Infants 6 to 12 months*	*	1,500
1–3 years old	700	2,500
4–8 years old	1,000	2,500
9–18 years old	1,300	3,000
19–50 years old	1,000	2,500
14–18 years old, pregnant or nursing	1,300	2,000
19–50 years old, pregnant or nursing	1,000	2,000

*For infants, adequate intake is 200 mg/day for 0 to 6 months of age and 260 mg/day for 6 to 12 months of age.

Dietary Sources of Calcium

Dairy products have the most calcium per serving size. If you do not or cannot eat dairy products, meeting your daily requirement for calcium can be challenging. There are many options and tips to help you if you are lactose intolerant. **REMEMBER: Always read the food labels!**

The U.S. Department of Agriculture has a searchable database of foods that you can use. Here is a small sampling of calcium rich foods.

		Serving size	Range: Calcium (mg)
Dairy Products	Low fat yogurt	1 cup	350-400
	Milk	1 cup	250-300
	Cheese	1 slice	150-200
	Pudding	½ cup	55-140
	Ice milk, ice cream, frozen yogurt	½ cup	80-110
Proteins	Tofu (made with calcium sulfate)	4 oz.	350-400
	Sardine (with bones)	3 oz.	325-400
	Almonds	1 oz.	75-100
Vegetables*	Greens	1/2 cup	50-100
	Cabbage	1/2 cup	30-75
	Broccoli	1/2 cup	20-35
Other Foods	Vegetable lasagna	1 piece	350-450
	Cheese enchilada	1 piece	225-325
	Cheese pizza (10")	1 slice	300-400
	Calcium fortified juice	1 cup	180-300

*These vegetables contain calcium, but your body may not be able to absorb it all because they contain fiber, phytates and oxalates, which inhibit calcium uptake.

How Much Vitamin D Do You Need?

Tables below show the Recommended Daily Allowance (RDA) and the maximum you should take. The new (2020) nutrition label lists vitamin D in mcg rather than IU – 1 IU = .025 mcg.

Vitamin D RDA for most Adults+

<u>Life Stage Group</u>	<u>RDA mcg/day (IU/day)</u>	<u>Do Not Exceed mcg/day (IU/day)</u>
19–50 years old	15 mcg (600 IU)	100 mcg (4,000 IU)
MEN: 51–70 years old	15 mcg (600 IU)	100 mcg (4,000 IU)
WOMEN: 51–70 years old	15 mcg (600 IU)	100 mcg (4,000 IU)
71+ years old	20 mcg (800 IU)	100 mcg (4,000 IU)

Vitamin D RDA for Kids and Pregnant Women

<u>Life Stage Group</u>	<u>RDA mcg/day (IU/day)</u>	<u>Do Not Exceed mcg/day (IU/day)</u>
Infants 0 to 6 months**	**	25 mcg (1,000 IU)
Infants 6 to 12 months**	**	38 mcg (1,500 IU)
1–3 years old	15 mcg (600 IU)	63 mcg (2,500 IU)
4–8 years old	15 mcg (600 IU)	75 mcg (3,000 IU)
9–13 years old	15 mcg (600 IU)	100 mcg (4,000 IU)
14–18 years old, pregnant or nursing	15 mcg (600 IU)	100 mcg (4,000 IU)
19+ years old, pregnant or nursing	15 mcg (600 IU)	100 mcg (4,000 IU)

**For infants, adequate intake is 10 mcg (400 IU)/day for 0 to 6 months and 6 to 12 months of age. Breast milk does not contain any vitamin D therefore breast-fed babies should be supplemented.

Dietary Sources of Vitamin D

Your best food source for vitamin D is fish, particularly fatty fish, like salmon. Increasingly, more foods are being fortified with vitamin D, but as you can see from the chart below, the amounts are quite small. Most of us can benefit from a vitamin D supplement. **Remember: Always read the food labels!**

		<u>Serving size</u>	<u>Range: Vitamin D mcg (IU)</u>
Fish	Salmon, cooked	3 oz.	10-12 mcg (400-500 IU)
	Salmon, canned with bones and liquid	3 oz.	10-12 mcg (400-475 IU)
	Mackerel cooked	3 oz.	7-12 mcg (300-500 IU)
	Sardines, canned	3 oz.	4-6 mcg (150-250 IU)
Dairy	Milk, fortified with vitamin D	1 cup	3 mcg (100-125 IU)
Other Foods	Fortified cereals	1 cup	1-3 mcg (40-100 IU)
	Fortified juices	½ cup	1-2 mcg (50-75 IU)

Special Considerations

The 2010 Institute of Medicine recommendations apply to individuals with healthy bones. Individuals in the groups listed below should talk with their doctor about the appropriate amount of daily calcium and vitamin D.

1. **Girls age 9-18**, most of whom are not getting enough calcium;
2. **People over age 70**, because of difficulties absorbing calcium; and,
3. **People who are at risk for bone disease and fractures**, who need extra support.

Do you need a calcium supplement?

Before you take a daily calcium supplement, know how much calcium you are eating in your diet. Use the **CALCIUM RULE OF 300**.

1. Start with the number of servings of dairy or fortified juices you get each day.
2. Multiply that by 300.
3. Add 300 if you eat a well-balanced diet.
4. The total is your calcium intake from diet.
5. Determine your RDA and add a supplement—if necessary—to reach your goal.

Note: you might be able to reach your recommended daily allowance by adding another serving of dairy or calcium fortified juice!

CALCIUM RULE OF 300	No. of Servings	X 300 mg	Total
Dairy or fortified juices			
For example: 1 cup low-fat milk or yogurt, 1½ slices of cheese, 1 cup calcium-fortified juice.	<input type="text"/>	X 300 mg =	
Calcium from a balanced diet		+	300
My total calcium from diet		=	<input type="text"/>

The Bottom Line: only take calcium supplements to make up the difference between what you get in your diet and your RDA.

About Calcium Supplements

Pick a supplement that you will take daily. Calcium carbonate and calcium citrate are the most common types of calcium supplements. Calcium carbonate requires the acid in your stomach to break it down. So be sure to take it shortly after eating. Calcium citrate absorbs without stomach acid.

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

There are many chewable forms of calcium that may be more convenient for children and older adults. Many common antacids contain calcium. Watch for vitamin K in some chewables if you are on blood thinners.

Read the label for the amount of calcium per tablet. This will help you determine how many tablets you need to take to reach your RDA. The new (2020) nutrition label displays calcium in mg/day rather than "% Daily Value."

- Avoid taking calcium with high fiber meals or with bulk-forming laxatives. Fiber can bind with calcium and reduce the amount your body will be able to use.
- Take small amounts of calcium throughout the day. Avoid taking more than 500-600 mg of calcium at one time. This may mean you need to take supplements 2-3 times during the day.
- Avoid taking calcium and iron supplements together, each interferes with the other's absorption.

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