Nutrition and Health Info Sheet: Calcium

For Health Professionals

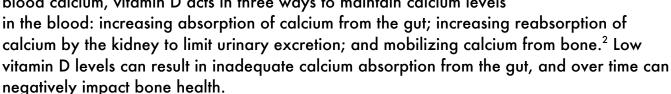
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What function does calcium have in the body?

Calcium is a mineral used for numerous functions, including building bones and teeth, muscle contraction, blood clotting, maintenance of cell membranes, and nerve transmission. Because most of the calcium in the body is found in the skeleton, calcium's critical function in maintaining bone health receives much attention.

How is vitamin D important in calcium metabolism?

Calcium in the blood is tightly regulated; Vitamin D plays an important role in maintaining calcium homeostasis.² In response to a drop in blood calcium, vitamin D acts in three ways to maintain calcium levels





Adequate intake of calcium is essential for maximizing bone density. Therefore, an inadequate intake of calcium can adversely influence bone formation and may contribute to



osteoporosis. Osteoporosis is a decrease in bone density and strength that results in increased susceptibility to bone fractures. It is a debilitating disease most commonly found in postmenopausal women; however, men are also at risk for this disease. In the United States, 8 million women and 2 million men are estimated to have osteoporosis.³ Osteoporosis cannot be cured; it can only be prevented or its progression delayed. The best ways to prevent the disease are to build strong bones early in life by eating a well-balanced, calcium-rich diet, and by making weight-bearing exercise a regular routine.







Who is at risk for inadequate calcium intake?

Calcium is considered a nutrient of concern by the Dietary Guidelines for Americans, as it is under consumed by a large proportion of the population.⁴ Calcium consumption is below the Estimated Average Requirement (EAR) for over 40 percent of Americans above the age of 2 years. At elevated risk for inadequate intake are preadolescent and adolescent girls, pregnant women, and women who are middle-aged or older.⁴ Inadequate intake of vitamin D

also presents a problem with regards to calcium, due to the importance of vitamin D in calcium absorption. More then 80 percent of Americans over the age of 2 consumed below the EAR for vitamin D. Individuals who are non-Hispanic black are at the greatest risk for vitamin D deficiency.⁴

How much calcium should be consumed each day?

The Dietary Reference Intakes (DRIs) for calcium aim to ensure that individuals will be able to maximize peak adult bone mass, maintain adult bone mass, and minimize bone loss in later years. Table 1 shows the current recommendations for calcium intake.

Table 1. Current recommendations for calcium intake for various age groups^{1,5}

Age Group and Pregnant or Lactating Women	USDA MyPlate Dairy Group Recommendations (per day)	Current Calcium Recommended Daily Allowance	Tolerable Upper Intake Level (per day)
Infants			
birth to 6 mo	No recommendation	200 mg	1,000 mg
7-12 mo	No recommendation	260 mg	1,500 mg
Children			
1-3 yr	2 cups (children 2 and older)	700 mg	3,000 mg
4-8 yr	2 ½ cups	1000 mg	3,000 mg
Adolescents			
9–13 yr	3 cups	1,300 mg	2,500 mg
14-18 yr	3 cups	1,300 mg	2,500 mg
Adults			
19-30 yr	3 cups	1,000 mg	2,500 mg
31-50 yr	3 cups	1,000 mg	2,500 mg
51-70 yr (Women)	3 cups	1,200 mg	2,000 mg
50-70 yr (Men)	3 cups	1,000 mg	2,000 mg
>70	3 cups	1,200 mg	2,000 mg
Pregnant women			
<u><</u> 18 yr	3 cups	1,300 mg	3,000 mg
19-50 yr	3 cups	1,000 mg	2,500 mg
Lactating women			
<u><</u> 18 yr	3 cups	1,300 mg	3,000 mg
19-50 yr	3 cups	1,000 mg	2,500 mg

Is it risky to consume too much calcium?

It is difficult to consume too much calcium through food sources. In fact, most people do not consume adequate amounts of this nutrient; however, it is best to obtain calcium through dietary sources and to limit supplements so that the DRIs are not exceeded. The DRI committee also established Tolerable Upper Intake Levels (ULs), listed in table 1. At calcium intakes above the UL, serious side effects may occur, including severe renal damage and abnormal calcium deposition in the body's soft tissue. Some individuals may also develop hypercalcemia (excessive amounts of calcium in the blood) or hypercalciuria (excessive amounts of calcium in the urine). It should be stressed that the UL is not an intake goal; rather, it is recognized to be the maximum intake that the body can safely tolerate. Serious side effects may occur at higher levels. Consuming calcium in excess of the DRI is unnecessary and may interfere with the absorption of essential nutrients, such as iron, and with the efficacy of medications such as tetracycline.

What are good sources of calcium?

Dairy products (milk, cheese, yogurt, etc.) are the most concentrated food sources of calcium (e.g. one cup of milk contains approximately 271 mg of calcium). As shown in Table 2, tofu is the most concentrated source of nondairy calcium. Even individuals who are lactose

intolerant are usually able to eat small amounts of dairy products such as yogurt, cheese, and lactase-treated milk, especially when eaten as part of a meal. Those who avoid dairy products due to allergies may select nondairy foods that contain calcium, such as beans, tofu (if processed with calcium sulfate), broccoli, kale, and canned fish with bones. However, it is difficult to absorb the same amount of calcium from these nondairy alternatives as from dairy products because the overall calcium concentrations and bioavailabilities are lower. Calcium-rich foods and calcium-fortified foods are the preferred choices for obtaining calcium because additional nutrients (e.g. vitamin D in milk) can contribute to bone development and the prevention of osteoporosis. Check food labels to find out the percentage of calcium in processed foods. Every 10 percent of calcium listed on the label is equivalent to



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approximately 100 mg of calcium. For those who are unable to attain sufficient calcium through their diet, supplements such as calcium citrate or calcium carbonate are recommended.¹

What are some food sources rich in calcium?

Table 2. Calcium-rich food sources 6

	Serving size	Calcium (mg)	Calories
Dairy foods			
Milk (2% milk fat)	1 cup	271	122
Cottage cheese (2% milk fat)	1 cup	156	203
Mozzarella cheese (part skim, low moisture)	1 oz	222	72
Cheddar cheese (natural, not processed)	1.5 oz	303	170
Cream cheese (regular, plain)	1 oz	23	99
Yogurt (plain, skim milk)	8 oz	452	127
Nondairy foods			
Tofu (firm, only if processed with calcium sulfate)	1/2 cup	861	183
Sardines (with bones, in oil, drained)	3 oz	324	177
Salmon (pink, with bones, in water, drained)	3 oz	181	118
Orange juice (calcium fortified)	1 cup	253	137
Broccoli (fresh, steamed)	1 cup	88	19
Kale (scotch, fresh, chopped, steamed)	1 cup	172	36

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