

American Medical Woman's Association
Position Paper on Calcium Supplements for Women and Girls
Marissa Orenstein, Parin Patel, Theresa Rohr-Kirchgraber, MD

A dietary supplement is any substance taken by mouth intended to augment the diet. It includes a range of substances, such as vitamins, minerals, and herbs, and is generally considered beneficial and nutritional.

Calcium is a naturally occurring mineral essential for blood vessel function, muscle contraction, nerve conduction, and other metabolic processes. Calcium is stored in the body in the bones and the teeth with circulating levels kept very tightly regulated. Calcium is found in many foods but dairy products are the main source for most Americans. More than 50% of Americans do not meet the US recommended daily allowance (RDA) (Ervin 2004).

Approximately 30% of ingested calcium is absorbed in the gastrointestinal tract with the rate of absorption dependent on age. Young children and infants absorb about 60% of their calcium intake while adults absorb only 15-20 % (Heaney 1989). Vitamin D increases calcium absorption while gastric pH altering agents, such as proton pump inhibitors (PPI), can decrease its absorption (O'Connell 2005).

Adequate dietary intake of calcium is always recommended as it improves bone health, protects the calcium reserves in the body, and helps to maintain adequate calcium levels for metabolic functions. The goal is 3-4 servings of dairy per day or its equivalent. When requirements cannot be met with diet, supplements are recommended for specific populations. Groups at highest risk for inadequate dietary intake include post-menopausal and estrogen deficient, amenorrheic women, such as female athletes, those who are lactose-intolerant, and vegetarians.

Calcium supplements for individuals in these groups are encouraged. In addition, since Calcium absorption in the small intestine is enhanced by vitamin D, vitamin D supplements are also recommended.

More information on the benefits of supplemental vitamin D can be found in AMWA's position paper on vitamin D.

Multiple controlled trials show that calcium supplementation deters bone loss at common fracture sites, including spine, hip, and forearm. The effect peaks at around 1000 mg of calcium per day. Significantly lower or higher doses actually contribute to bone loss (Nordin 2009). Most studies also demonstrate that calcium with vitamin D prevented bone loss for a longer period of time than just calcium alone. Nonetheless, calcium supplementation decreases bone loss and prevents fractures for at least several years (Nordin 2009).

While calcium supplementation may provide some benefit for bone health, recent studies suggest that calcium supplements may increase the risk of cardiovascular disease in postmenopausal women; however, this increase is believed to be insignificant (Lewis et al. 2011). However, in patients with risk factors for cardiovascular illnesses, some authors believe osteoporosis treatments other than calcium supplements, should be used (Lewis et al. 2011).

Others have reported calcium supplements to be linked to an increase in kidney stone formation; however, the current literature does not support a causal link between calcium supplementation and nephrolithiasis (Heaney 2008).

Calcium carbonate is the most common and cheapest calcium supplement and requires an acidic environment for absorption. It is best absorbed when taken with food. Calcium citrate can be used with or without food as it is absorbed equally as well (Straub 2007)

The AMWA recommends that all individuals, especially women and girls, understand the recommended daily allowance for their age group and routinely include calcium rich foods in their daily diets.

If calcium supplements are needed, one should follow physician recommendations.

Table 1: Recommended Dietary Allowances (RDAs) for Calcium [1]

Age	Male	Female	Pregnant	Lactating
0–6 months*	200 mg	200 mg		
7–12 months*	260 mg	260 mg		
1–3 years	700 mg	700 mg		
4–8 years	1,000 mg	1,000 mg		
9–13 years	1,300 mg	1,300 mg		
14–18 years	1,300 mg	1,300 mg	1,300 mg	1,300 mg
19–50 years	1,000 mg	1,000 mg	1,000 mg	1,000 mg
51–70 years	1,000 mg	1,200 mg		
71+ years	1,200 mg	1,200 mg		

* Adequate Intake (AI) Food and Nutrition Board recommended daily allowances

Selected Food Sources of Calcium

Food	Milligrams (mg) per serving	Percent DV*
Yogurt, plain, low fat, 8 ounces	415	42
Mozzarella, part skim, 1.5 ounces	333	33
Sardines, canned in oil, with bones, 3 ounces	325	33
Yogurt, fruit, low fat, 8 ounces	313–384	31–38
Cheddar cheese, 1.5 ounces	307	31
Milk, nonfat, 8 ounces**	299	30
Soy milk, calcium-fortified, 8 ounces	299	30
Milk, reduced-fat (2% milk fat), 8 ounces	293	29
Milk, buttermilk, lowfat, 8 ounces	284	28
Milk, whole (3.25% milk fat), 8 ounces	276	28
Orange juice, calcium-fortified, 6 ounces	261	26
Tofu, firm, made with calcium sulfate, ½ cup***	253	25
Salmon, pink, canned, solids with bone, 3 ounces	181	18
Cottage cheese, 1% milk fat, 1 cup	138	14

Tofu, soft, made with calcium sulfate, ½ cup***	138	14
Ready-to-eat cereal, calcium-fortified, 1 cup	100–1,000	10–100
Frozen yogurt, vanilla, soft serve, ½ cup	103	10
Turnip greens, fresh, boiled, ½ cup	99	10
Kale, raw, chopped, 1 cup	100	10
Kale, fresh, cooked, 1 cup	94	9
Chinese cabbage, bok choy, raw, shredded, 1 cup	74	7
Tortilla, corn, ready-to-bake/fry, one 6" diameter	46	5
Tortilla, flour, ready-to-bake/fry, one 6" diameter	32	3
Sour cream, reduced fat, cultured, 2 tablespoons	31	3
Bread, whole-wheat, 1 slice	30	3
Broccoli, raw, ½ cup	21	2
Cheese, cream, regular, 1 tablespoon	14	1

* DV = Daily Value. DVs were developed by the U.S. Food and Drug Administration to help consumers compare the nutrient contents among products within the context of a total daily diet. The DV for calcium is 1,000 mg for adults and children aged 4 years and older. Foods providing 20% or more of the DV are considered to be high sources of a nutrient, but foods providing lower percentages of the DV also contribute to a healthful diet. For foods not listed in this table, please refer to the U.S. Department of Agriculture's [Nutrient Database Web site](#).

Source

U.S. Department of Agriculture, Agricultural Research Service. 2011. USDA National Nutrient Database for Standard Reference, Release 24. Nutrient Data Laboratory Home Page, <http://www.ars.usda.gov/ba/bhnrc/ndl>

References

Committee to Review Dietary Reference Intakes for Vitamin D and Calcium, Food and Nutrition Board, Institute of Medicine. Dietary Reference Intakes for Calcium and Vitamin D. Washington, DC: *National Academy Press*, 2010.

Clarkson PM and Haymes EM. "Exercise and mineral status of athletes: calcium, magnesium, phosphorus, and iron." *Med Sci Sports Exerc* 1995;27:831-43.

Heaney, RP. "Calcium supplementation and incident kidney stone risk: a systematic review." *J American College of Nutrition*. 2008;27.5:519-527.

Lewis, JR, J Calver, K Zhu, L Flicker, RL Prince. "Calcium supplementation and the risks of atherosclerotic vascular disease in older women: results of a 5-year RCT and a 4.5-year follow-up." *J Bone and Mineral Research*. 2011;26.1:35-41.

Nordin, BEC. "The effect of calcium supplementation on bone loss in 32 controlled trials in postmenopausal women." *Osteoporosis Int*. 2009;20:2135-2143.

Ervin RB, Wang C-Y, Wright JD, Kennedy-Stephenson J. Dietary intake of selected minerals for the United States population: 1999-2000. *Advance Data from Vital and Health Statistics, number 341*. Hyattsville, MD: National Center for Health Statistics, 2004.

National Institutes of Health. Optimal calcium intake. *NIH Consensus Statement: 1994;12:1-31*.

Heaney RP, Recker RR, Stegman MR, Moy AJ. Calcium absorption in women: relationships to calcium intake, estrogen status, and age. *J Bone Miner Res* 1989;4:469-75.

O'Connell MB, Madden DM, Murray AM, Heaney RP, Kerzner LJ. Effects of proton pump inhibitors on calcium carbonate absorption in women: a randomized crossover trial. *Am J Med*. 2005 Jul;118(7):778-81.

Straub DA. Calcium supplementation in clinical practice: a review of forms, doses, and indications. *Nutr Clin Pract*. 2007;22:286-96.