

CALCIUM

Patient Information Fact Sheet

›What is calcium?

Calcium is the main component of bone. It makes up about 67% of human bone tissue with the remaining 33% being comprised of collagen fibers. Collagen gives the bone flexibility while calcium gives it strength and rigidity. Ninety-nine percent of calcium in the body is found in the bones and teeth.

Calcium is deposited by specialized bone cells that are controlled by a hormone from the thyroid gland. It is estimated that the whole skeleton is replaced every 7 to 10 years in adults and every 2 years in children, so a regular intake of calcium is required. Other cells in the body such as the heart, nerves and muscles also require calcium to function normally. If blood levels of calcium become low, the body will take calcium from the bones, which may result in weakened bones if this calcium is not replaced. Calcium deposits and bone density can be laid down in bones until about the age of 30. Whether or not you develop osteoporosis later in life can be dependent on the level of bone mass acquired during these early years.

›When is it necessary to take extra calcium?

Calcium supplements are necessary in a number of situations. For example, people with hypothyroidism, a condition in which the thyroid gland does not work effectively, may require calcium supplements. Children who suffer from milk allergies or multiple food allergies may also require additional calcium as they may not receive adequate amounts from their diet. Some strict vegetarians may also lack calcium as a result of dietary insufficiencies. Calcium requirements are greatest during growth periods, including pregnancy and lactation.

Lowered progesterone levels, such as occurs following menopause, can cause bone loss if dietary intake of calcium is low. Post-menopausal women are also often given calcium supplements. Osteoporosis is a condition in which the bones lose calcium and become porous and brittle as a result. This leads to an increased incidence of fractures, particularly in post-menopausal women. It is very important to ensure that sufficient calcium is taken before osteoporosis or bone weakness occurs; prevention is a continual process and should be a lifelong consideration.

›How much supplemental calcium is needed?

Ask your doctor about the amount of calcium it is necessary for you, as an individual, to take. Calcium is available as a number of different salts including **carbonates** (Os-Cal), gluconates, lactates and phosphates. Calcium supplements are available in a number of different formulations, including chewable tablets and “candies,” effervescent tablets, powders, and liquids. They are usually taken once a day. Calcium and vitamin D supplements have been proven to reduce the risk of hip fracture in older people. The only side effect of calcium supplements may be gastric irritation, so people with ulcers or other gastric problems may need careful observation.

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›Self-help measures

- Ensure you eat a balanced diet that includes enough calcium-containing foods (see recommended daily intakes above). Avoid eating excessive amounts of protein or salt as this can result in loss of calcium. Your salt intake should not exceed 6g per day.
- Do regular weight-bearing exercise (eg, jogging, walking, dancing). Exercise strengthens the bones and helps the body to store calcium.
- Increase calcium intake at particular times of life when calcium needs are greater, such as during pregnancy and breast feeding and after menopause. Women should ensure that they increase their calcium intake at these times so that calcium is not taken from their bones causing bone weakness.
- Avoid smoking, excess caffeine and excess alcohol—these can all interfere with calcium levels, particularly if the dietary calcium intake is low.
- Maintain a healthy body weight—being overweight is bad for your health in general while being underweight can increase the risk of broken bones if you fall.

›Further information

NIH Osteoporosis and Related Bone Diseases National Resource Center:
www.niams.nih.gov/Health_Info/Bone/Osteoporosis

Office of Dietary Supplements: <http://ods.od.nih.gov/factsheets/Calcium-HealthProfessional/>

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Recommended daily calcium intakes	
Children 1–3 years	700mg
Children 4–8 years	1,000mg
Boys 9–18 years	1,300mg
Girls 9–18 years	1,300mg
Adults (men and women, including pregnant women*)	1,000–1,200mg
*women who are breastfeeding may require additional calcium	

Selected Food Sources of Calcium

FOOD	MILLIGRAMS (MG) PER SERVING	PERCENT DV*
Yogurt, plain, low fat, 8 ounces	415	42
Orange juice, calcium-fortified, 6 ounces	261	26
Yogurt, fruit, low fat, 8 ounces	313–384	31–38
Mozzarella, part skim, 1.5 ounces	333	33
Sardines, canned in oil, with bones, 3 ounces	325	33
Cheddar cheese, 1.5 ounces	307	31
Milk, nonfat, 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
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
Instant breakfast drink, various flavors and brands, powder prepared with water, 8 ounces	105–250	10–25
Frozen yogurt, vanilla, soft serve, ½ cup	103	10
Ready-to-eat cereal, calcium-fortified, 1 cup	100–1,000	10–100
Turnip greens, fresh, boiled, ½ cup	99	10
Kale, fresh, cooked, 1 cup	94	9
Kale, raw, chopped, 1 cup	100	10
Ice cream, vanilla, ½ cup	84	8
Soy beverage, calcium-fortified, 8 ounces	80–500	8–50
Chinese cabbage, bok choy, raw, shredded, 1 cup	74	7
Bread, white, 1 slice	73	7
Pudding, chocolate, ready to eat, refrigerated, 4 ounces	55	6
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

Source: National Institutes of Health, Office of Dietary Supplements

* DV = Daily Value.

** Calcium content varies slightly by fat content; the more fat, the less calcium the food contains.

*** Calcium content is for tofu processed with a calcium salt. Tofu processed with other salts does not provide significant amounts of calcium.