

Calcium

Consumer guide



Calcium and your bones

Almost 99% of the body's calcium is found in the bones. Calcium combines with other minerals to form the hard crystals that give your bones their strength and structure.

A small amount of calcium is dissolved in the blood; this calcium is essential for the healthy functioning of the heart, muscles, blood and nerves.

Bones act like a calcium bank. If you do not take in enough calcium from your diet to maintain adequate levels in the blood, the body reacts by 'withdrawing' calcium from your 'bone bank' and depositing it into the bloodstream. If your body withdraws more calcium than it deposits over a long period, your bone density (bone strength) will gradually decline and you may be at risk of developing osteoporosis.

FAST FACT:

Less than half of all Australian adults get their recommended daily intake of calcium.

Calcium requirements at different stages of life

The amount of calcium you need depends on your age and sex. The highest daily requirements are for teenagers (a period of rapid bone growth) and for women over 50 and men over 70.

We achieve our Peak Bone Mass – the point at which our bones are at their highest density – by our early twenties. Nearly 40% of our Peak Bone Mass is acquired during puberty. Achieving a high Peak Bone Mass during these younger years can help maintain better bone health throughout life, and an adequate calcium intake is therefore essential for children and teenagers.

In adulthood, adequate dietary calcium is vital to maintain bone strength. For women in particular, menopause is a time of more rapid bone loss – calcium requirements increase at this stage of life.

In older adults, calcium is absorbed less effectively from the intestine and more can be lost through the kidneys, so calcium intake needs to be maintained at a higher level.

Recommendations for adequate calcium intake

Category	Age (yrs)	Recommended dietary intake
Children	1-3	500 mg/day
	4-8	700 mg/day
Girls and boys	9-11	1,000 mg/day
Teens	12-18	1,300 mg/day
Adults: women and men	19+	1,000 mg/day
Increasing to:		
Women	Over 50	1,300 mg/day
Men	Over 70	1,300 mg/day

Source: National Health and Medical Research Council of Australia (2006) Nutrient Reference Values for Australia and New Zealand including Recommended Dietary Intakes.

The calcium content of selected foods



GOOD TO KNOW:

Low fat dairy products have just as much calcium (and sometimes even more) than regular varieties.

	Calcium/serve (mg)	Std serve	grams/serve	kJ/serve
Milk, reduced fat, calcium fortified	520	cup (250 ml)	–	382
Skim milk	341	cup (250 ml)	–	382
Reduced fat milk	367	cup (250 ml)	–	551
Regular milk	304	cup (250 ml)	–	762
Reduced fat evaporated milk	713	cup (250 ml)	–	908
Regular soy milk	309	cup (250 ml)	–	660
Reduced fat soy milk	367	cup (250 ml)	–	702
Low fat soy milk	367	cup (250 ml)	–	606
Tofu firm	832	cup (250 ml)	260	1378
Regular natural yogurt	386	tub	200	734
Low fat natural yogurt	488	tub	200	498
Cheddar cheese	160	1 slice	21	349
Reduced fat cheddar cheese (15%)	209	1 slice	21	233
Shaved parmesan	204		21	355
Edam cheese	176	1 slice	21	312
Pecorino	156	1 slice	21	318
Reduced fat mozzarella	200	1 slice	21	258
Camembert	121	1 wedge	25	322
Sardines, canned in water, no added salt	486	can	90	649
Sardines, canned in oil, drained	330	can	90	824
Pink salmon, canned in water, no added salt	279	small can	90	552
Pink salmon, canned in brine	183	small can	90	575
Red salmon, canned in water, no added salt	203	small can	90	734
Red salmon, canned in brine	175	small can	90	688
Mussels, steamed or boiled	173		100	503
Snapper, grilled, with olive oil	163	1 fillet	100	635
Oysters, raw	132		100	303
Tahini	66	1 tablespoon	20	543
Almonds, with skin	30	10 almonds	12	300
Dried figs	160	6 figs	80	866
Dried apricots	32	6 apricots	45	399
Brazil nuts	53	10 nuts	35	1,010
Curley parsley, chopped	12	1 tablespoon	5	6
Mustard cabbage, raw	91	1 cup, shredded	70	54
Bok choy, raw	65	1 cup	75	61
Watercress, raw	60	1 cup	70	77
Silverbeet, boiled	87	1/2 cup	100	82
Lebanese cucumber, raw	68	1 cup sliced	120	61
Celery, raw	31	1 cup, chopped	70	45
Broccoli, raw	15	2 florets	45	56
Baked beans in tomato sauce	43	cup	120	426
Chickpeas, canned	90	cup	200	898
Soy beans, canned	106	cup	200	844
Boiled egg	21	medium	55	321
Carob bar	56	1 bar	15	323
Licorice	34	1 stick	12	114
Vanilla ice cream, reduced fat	48	1 scoop	50	176
Vanilla custard, reduced fat	130	1 tub	100	359
Cheesecake	163	1 slice	125	1786

* Source: NUTTAB 2010.

Calcium from food

The best way to get your recommended calcium intake is to eat a diet rich in calcium. Nearly all people consume some calcium as part of their general diet, but calcium content in different foods varies significantly. It is important to consume 'calcium rich' foods on a regular basis, as part of a normal diet.

Osteoporosis Australia recommends 3-5 serves of calcium rich food daily.

The number of serves needed will depend on the calcium content of the particular food.

For most Australians, dairy foods are the main source of calcium and an easy way to obtain adequate calcium. Milk, yoghurt and most cheeses are particularly high in calcium (this includes reduced fat and low fat options). Three serves of dairy food per day will generally provide adequate calcium.

Individuals with lactose intolerance (not allergy) are often able to eat yoghurt and cheese, as the lactose in these foods has been broken down. People who dislike or are intolerant to dairy products require more serves of other high calcium-containing foods; for example, calcium rich vegetables, tinned sardines or tinned salmon (including the bones), calcium rich nuts and fruits, or calcium fortified foods.

Practical tips for getting more calcium

- Calcium is more concentrated in dairy products than most other food groups, and is easily absorbed. Try to include 3 serves of dairy per day in your normal diet. A serving size is equivalent to a glass of milk (250 ml), tub of yoghurt (200 g) or a slice of cheese (40 g).
Note: hard cheeses such as parmesan have a higher concentration of calcium than softer varieties such as ricotta.
- Consider eating the bones that are present in canned fish (salmon and sardines), as this is where most of the calcium is concentrated.
- Add milk or skim milk powder to soups or casseroles.
- Use yoghurt in soups, salads and desserts.
- Soy does not contain a significant amount of calcium. However, calcium is added to many soy-based products such as calcium set tofu and several brands of soy milk. The calcium in these products is as easily absorbed as it is from other products that naturally contain calcium.
- Include more broccoli, mustard cabbage, bok choy, silverbeet, cucumber, celery, chick peas in your regular diet.
- Eat more almonds, dried figs and dried apricots.
- Products fortified with calcium, such as breakfast cereals and some breads and fruit juices, can help improve your calcium intake.

How much calcium does the body absorb?

Not all the calcium we consume is used by the body – some is not absorbed by the digestive system. It is normal for a small amount of calcium to be lost in this way, and this is taken into consideration when setting the recommended level of calcium intake (1,000 mg per day for adults generally). However, there are some factors that can lead to an abnormally low absorption of calcium:

- Low vitamin D levels.
- Excessive caffeine and alcohol.
- Diets high in phytates or oxalates. Phytates (found in some cereals and brans) may reduce the calcium absorbed from other foods that are eaten at the same time. Oxalates (contained in spinach and rhubarb) only reduce the calcium absorbed from the food in which they are present.
- Certain medicines; for example, long term corticosteroid use (eg: prednisone, prednisolone).
- Certain medical conditions for example, coeliac disease, kidney disease.

These factors can impact on bone health and should be discussed with your doctor.





Calcium supplements

Osteoporosis Australia recommends that you obtain your required calcium intake from your diet. When this is not possible, a supplement may be required, at a dose of 500-600 mg calcium per day. The most common supplements are calcium carbonate, calcium citrate or hydroxyapatite. Supplements may take the form of oral (swallowed) tablets, chewable tablets, effervescent tablets or soluble powder.

It is best to talk to your doctor and pharmacist about when and how to take supplements. If you do take a supplement, it is important that you take it in the correct way:

- Calcium carbonate requires stomach acid in order to be absorbed, so these supplements should be taken with meals.
- Calcium citrate is not dependent on stomach acid, so can be taken at any time.
- If you are also taking oral bisphosphonates (a type of osteoporosis medication), the calcium supplement and osteoporosis medicine should be taken at least 2 hours apart, otherwise the absorption of one medicine interferes with the other.

Possible side effects of calcium supplements

Calcium supplements are usually well tolerated.

Some people may experience bloating or constipation. If this occurs, talk to your doctor or pharmacist. While rare, calcium supplements may cause kidney stones in people who are predisposed to developing problems with their kidneys, or in people who are already taking in a high level of calcium through their diet (1,200 mg per day or more).

Some recent studies (and subsequent media reports) have suggested an increased risk of heart attack in people who take calcium supplements. This is an area of ongoing research and discussion. Osteoporosis Australia stresses the importance of achieving the recommended daily intake of calcium and continues to recommend calcium supplements at a dose of 500-600 mg per day when dietary calcium is low. The use of calcium supplements at this level is considered to be safe and effective.

Only take supplements as directed, and consult your doctor or pharmacist.

Calcium and osteoporosis

If you have osteoporosis and have experienced a fracture, calcium alone is not sufficient to prevent further fractures; you will also require a specific osteoporosis treatment. However, most clinical trials have shown that calcium supplementation, especially when it is combined with vitamin D, not only reduces the rate of bone loss and fracture in people who do not get enough calcium through their diet, but improves the effectiveness of osteoporosis medicines in people who have already been diagnosed with osteoporosis.

Calcium and the elderly

People of advancing age often do not consume enough calcium through their diet, or are unable to absorb calcium properly. If you are elderly, there are some specific factors that you and your doctor should consider when discussing your calcium intake and your bone health:

- Factors that have an impact on your diet, such as poor appetite, illness, or social or economic problems. Any of these may make it hard for you to eat well.
- Poor absorption of calcium in the intestine (made worse if your vitamin D levels are low).
- Less frequent exposure to sunlight, which is needed to make vitamin D (this is particularly the case if you are house-bound or have limited mobility).
- Poor kidney function, leading to increased loss of calcium in the urine.

