

Calcium

The average adult's weight is made up of about two per cent calcium. Most of this is found in the skeleton and teeth; the rest is stored in the tissues or blood. Calcium is vital for healthy teeth and bones. It also plays a crucial role in other systems of the body, such as the health and functioning of nerves and muscle tissue.

Good sources of calcium include dairy foods and calcium fortified products such as soymilk and breakfast cereals. People at different life stages need different amounts of calcium – young children, teenagers and older women all have greater than average requirements.

According to the Australian Nutrition Survey, about 90 per cent of women and 70 per cent of children do not achieve the recommended dietary intake (RDI) for calcium.

The role of calcium

Calcium plays a role in:

- Strengthening bones and teeth
- Regulating muscle functioning, such as contraction and relaxation
- Regulating heart functioning
- Blood clotting
- Transmission of nervous system messages
- Enzyme function.

Calcium and dairy food Australians receive most of their calcium from dairy foods. If milk is removed from the diet, it can lead to an inadequate intake of calcium. This is of particular concern for children and adolescents, who have high calcium needs. Calcium deficiency may lead to disorders like osteoporosis (a disease of both men and women in which bones become fragile and brittle later in life).

Too little calcium can weaken bones

If the body notices that not enough calcium is circulating in the blood, it will use hormones to reduce the amount put out by the kidneys in the urine. If not enough calcium is absorbed through the gastrointestinal tract, calcium will be taken from the bones.

If your dietary intake of calcium is constantly low, your body will eventually remove so much calcium from the skeleton that your bones will become weak and brittle.

Calcium needs vary throughout life

The recommended dietary intake of calcium is different for people of different ages and life stages:

- **Babies** – from 7–12 months, babies are estimated to need 270mg per day if breastfed and 350mg per day if bottle fed. The calcium in infant formula may not be absorbed as efficiently as that found in breast milk. For children aged 1–3 years, the amount needed rises to 500mg per day.
- **Young children** – skeletal tissue is constantly growing, so young children have high calcium needs. Children aged 4–8 years need around 700mg per day. This rises to 1,000mg per day for those aged 9–11 years.
- **Pre-teens and teenagers** – puberty prompts a growth spurt. This group needs more calcium, with a recommended dietary intake of 1,300mg per day for both boys and girls between the ages of 12 and 18 years.
- **Peak bone mass years** – from before the onset of puberty to around the mid-20s, the skeleton increases its bone mass. If the skeleton is strengthened with enough calcium during these years, diseases like osteoporosis in the later years are thought to be less likely. During mid-life, women and men both need around 1,000mg per day.

- **Pregnant women** – although a developing baby needs a lot of calcium and this is taken from the mother’s bones, most women rapidly replace this bone loss once the baby has stopped breastfeeding. There is no additional dietary calcium requirement for pregnancy, except for the pregnant adolescent, who requires an additional 1,300mg per day of calcium to meet the requirements of both her own growth and the foetus.
- **Breastfeeding women** – there is no increased requirement for calcium during breastfeeding, except for the breastfeeding adolescent, who needs an additional 1,300mg per day.
- **Elderly people** – as we age, the skeleton loses calcium. Women lose more calcium from their bones in the five years around the age of menopause. However, both men and women lose bone mass as they grow older and need to ensure an adequate amount of calcium in their diet to offset these losses. While a diet high in calcium cannot reverse age-related bone loss, it can slow down the process. The recommended dietary intake for calcium is 1,300mg per day for women over the age of 50 years and men over the age of 70 years.
- **Non-Caucasian populations** – populations with smaller frame sizes may need less calcium than Caucasian populations, who have larger frame sizes and higher intakes of animal foods, caffeine and salt.

Good sources of calcium

- Good dietary sources of calcium include:
- **Milk and milk products** – milk, yoghurt, cheese and buttermilk. One cup of milk, a 200g tub of yoghurt or 200ml of calcium fortified soymilk provides around 300mg calcium. Calcium fortified milks can provide larger amounts of calcium in a smaller volume of milk – ranging from 280mg to 400mg per 200ml milk.
- **Leafy green vegetables** – broccoli, collards, bok choy, Chinese cabbage and spinach. One cup of cooked spinach contains 100mg, although only five per cent of this may be absorbed. This is due to the high concentration of oxalate, a compound in spinach that reduces calcium absorption. By contrast, one cup of cooked broccoli contains about 45mg of calcium, but the absorption from broccoli is much higher at around 50–60 per cent.
- **Soy and tofu** – tofu (depending on type) or tempeh and calcium fortified soy drinks.
- **Fish** – sardines and salmon (with bones). Half a cup of canned salmon contains 402mg of calcium.
- **Nuts and seeds** – brazil nuts, almonds and sesame seed paste (tahini). Fifteen almonds contain about 40mg of calcium.
- **Calcium fortified foods** – including breakfast cereals, fruit juices and bread:
 - 1 cup of calcium fortified breakfast cereal (40g) contains up to 200mg of calcium
 - ½ cup of calcium fortified orange juice (100ml) contains up to 80mg of calcium
 - 2 slices of bread (30g) provides 200mg of calcium.

Calcium supplements

It is much better to get calcium from foods (which also provide other nutrients) than from calcium supplements. If you have difficulty eating enough foods rich in calcium, you might consider a calcium supplement, especially if you are at risk of developing osteoporosis. It’s a good idea to discuss this with your health care professional.

If you do take calcium supplements, make sure you don’t take more than the amount recommended on the bottle (usually 600–1,500mg per day). Too much calcium may cause gastrointestinal upsets, such as bloating and constipation.

Lifestyle can affect bone strength

Some of the factors that can reduce calcium in your bones and lower bone density (weaken bones) include:

- High salt diet
- More than six drinks per day of caffeine-containing drinks – for example coffee, cola and tea (although tea has less caffeine)
- Excessive alcohol intake
- Very low body weight
- Very high intakes of fibre (more than 50g per day, from wheat bran)
- Low levels of physical activity
- Low levels of vitamin D – this may be an issue for people who are housebound or for women who cover their bodies completely when they are outside, as they do not get enough sunlight on their skin.

Where to get help

- Your doctor
- An accredited practising dietitian, contact the Dietitians Association of Australia
- Nutrition Australia www.nutritionaustralia.org

Things to remember

- The average adult's weight is made up of about two per cent calcium.
- Good sources of calcium include dairy foods, calcium fortified foods (such as soy products) and, to a lesser degree, some leafy green vegetables.
- If you don't have enough calcium in your diet, you may be at increased risk of developing osteoporosis.

This page has been produced in consultation with, and approved by:

Deakin University - School of Exercise and Nutrition Sciences

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