

Calcium, Vitamin D and Osteoporosis

What is osteoporosis?

Osteoporosis is a disease in which the bones become fragile and brittle. They fracture more easily than normal bone. Even a minor bump or fall can cause a serious fracture. Half of all women and one-third of men over 60 in Australia will have a fracture due to osteoporosis.

Calcium and bones

Calcium is important for building strong bones in childhood and helping protect us from developing osteoporosis later in life.

Having osteoporosis means we are more likely to fracture a bone, particularly at the wrist and hip. Osteoporosis can also cause fractures in the bones (vertebrae) of the spine. These are called 'crush' fractures and they cause the spine to shrink, making a person lose height.

In the first 30 years of life, our bones are at their strongest. Getting enough calcium is especially important in childhood and adolescence. Later in life, when the body loses calcium, there's an increased need for calcium, especially for women around menopause. As men also lose calcium as they get older, they need to get enough calcium too.

Getting enough vitamin D is important too – it helps the body absorb calcium from the diet.

Vitamin D and bones

Vitamin D deficiency in older adults can increase the risk of osteoporosis, falls and fractures.

In Australia, the main source of vitamin D is sunlight. Most people get enough vitamin D during typical day-to-day outdoor activities. To get enough sunlight for your body to make vitamin D, you need to expose your hands, face and arms (or equivalent area of skin) to sunlight for about 5-15 minutes 4-6 times a week. Elderly people and people with darker skins need more sunlight exposure – about 15 minutes 5-6 times a week.

However, it's important to stay out of the sun between 10am and 2pm in the summer months (11am-3pm in daylight saving time) because of the risks of sunburn and skin cancer. This outweighs any possible benefits from vitamin D production.

Many people in Australia are deficient in vitamin D, especially older people living in residential care.

Vitamin D deficiency in children can result in rickets, a condition causing bone and muscle weakness and bone deformities. Low levels of vitamin D in adults may lead to fractures caused by osteoporosis, as well as bone and joint pain, muscle weakness and falls.

How much calcium and vitamin D do you need?

Calcium

Dairy products are a good source of calcium. There are also small amounts in other foods including breads, cereals, fruits and vegetables, fish with edible bones (e.g. tinned salmon and sardines), tahini, almonds, figs and foods fortified with calcium. If you find it difficult to get enough calcium from food ask your doctor or dietitian about taking a calcium supplement.

If you can't tolerate dairy products or don't enjoy them, there are some calcium-enriched products available such as calcium-enriched orange juice, cereals and soy milk. However calcium added to soy drinks may not be as well absorbed as from dairy foods, so you may need larger servings of soy drinks.

People need different amounts of calcium at different ages – the food table at the end of this fact sheet shows you how to get calcium from food.

- **Children (5 to 11 years)** - 2 to 3 serves of calcium rich foods each day (600-1000 mg daily from high calcium foods).
- **Adolescents (11 to 18 years)** - at least 3 serves of calcium rich foods each day (800-1000 mg daily from high calcium foods).
- **Women after menopause** -at least 3 serves of calcium rich foods each day (1000 to 1300 mg daily from high calcium foods),
- **Other adults** - at least 3 serves of calcium rich foods each day (1000 to 1300 mg daily from high calcium foods).
- **Adults over 70** - at least 3 serves of calcium rich foods each day (1300mg daily from high calcium foods).

Vitamin D

We need at least 400 to 600 IUs (international units) of vitamin D daily. If you don't get enough exposure to sunlight, you need a vitamin D supplement of at least 400 IUs daily. If you think you may be deficient in vitamin D, talk to your doctor.

Some calcium supplements and multivitamin preparations contain vitamin D, but their levels maybe too low to treat vitamin D deficiency.

There are small quantities of vitamin D in a few foods, such as fatty fish (salmon, herring and mackerel). It is also in liver, eggs and fortified foods such as margarine. There are very small amounts in some low-fat milks.

Most people are unlikely to get enough vitamin D from diet alone. Cod liver oil contains vitamin D but also vitamin A. This can be toxic in large amounts, and may even increase the risk of fracture.

Always discuss calcium or vitamin D supplements with your doctor before taking them.

Who is most at risk of vitamin D deficiency?

- elderly people - especially those who are housebound or in residential care
- people with certain skin conditions who need to avoid the sun
- people with dark skin
- women who wear veils and cover most of their bodies
- people with diseases which make it difficult to absorb enough vitamin D

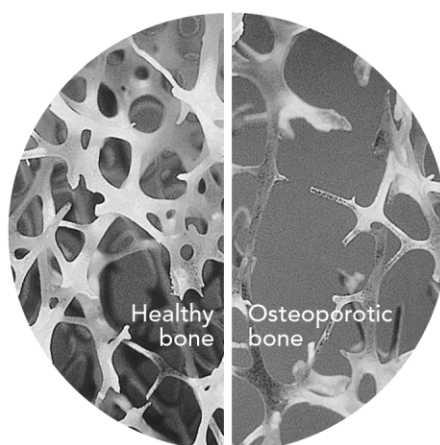
Food	Standard Serving Size	Calcium (mg)	Kilojoules
Rump Steak (lean)	100g	5	883
Apples	1 medium (156g)	7	323
Lamb Chop (lean)	100g	8	1000
Bread – mixed grain	30g (slice)	15	272
Bread – wholemeal	30g (slice)	16	282
Chicken – roasted no skin	100g	16	783
Broccoli	60g	18	61
Strawberries	1 cup (145g)	19	118
Eggs – boiled	1 large (48g)	21	303
Baked Beans	100g	34	285
Oranges	1 medium (122g)	35	190
Apricots – dried	50g	35	410
Spinach	100g	50	80
Tahini	20g (1 tbsp)	65	520
Soy beans (boiled)	100g	76	540
Custard	100g	100	393
Almonds	50g	110	1235
Ice Cream	100g	133	800
Tofu (calcium set)*	100g	150	479
Salmon – tinned, red	100g	220	814

Food	Standard Serving Size	Calcium (mg)	Kilojoules
Sardines – canned	100g	380	951
Cheese	40g (piece)	300	676
Cheddar (reduced fat)	40g (2 slices)	323	548
Cheddar Cheese	40g (2 slices)	327	575
Parmesan Cheese	40g (piece)	460	740
Haloumi Cheese	40g (piece)	248	408
Feta Cheese	40g (piece)	130	468
Yogurt – Flavoured	200g (std tub)	316	738
Yogurt – Plain	200g (std tub)	390	716
Milk – Reduced Fat	250ml (std glass)	352	525
Milk – Regular	250ml (std glass)	285	698
Milk - Skim	250ml (std glass)	320	377
Milk – calcium fortified	250ml (std glass)	353	523

*Not all tofu is set with calcium – check the nutrition panel to make sure the product contains calcium, or contact the manufacturer.

* Foods such as rice, pasta, beans and lentils do not contain significant amounts of calcium.

Tip: You can add a calcium ‘boost’ to soups, smoothies, curries and sauces by adding skim milk powder.



Healthy bone

Osteoporotic bone