

# Vitamin D

## Consumer guide



### The role of vitamin D

Vitamin D plays an essential role in bone health. By improving the absorption of bone-building calcium from the intestine, vitamin D is important to the growth and maintenance of a strong skeleton. Vitamin D also helps to control calcium levels in the blood and helps to maintain muscle strength.

### Vitamin D and sunshine

For most Australians, sunshine is the main source of vitamin D. Vitamin D is produced when our skin is exposed to ultraviolet B (UVB) light emitted by the sun. The amount of sun exposure required to produce adequate levels vitamin D is relatively low. However, many Australians do not have adequate vitamin D levels, especially during winter. Required sun exposure times will vary based on season, location, area of skin exposed and skin type.

In summer, exposure is best at mid morning or mid afternoon (outside peak UV times). In winter, longer exposure times are needed, preferably around midday.

It is important to balance the need for sun exposure to produce adequate vitamin D, at the same time avoiding the risk of skin damage from too much exposure.

The table below summarises how recommended sun exposure times vary between the seasons and different skin types. It is important to be aware of these differences.

#### Summary of sun exposure recommended for bone health

Skin type	Summer	Winter (depends on latitude)
<b>Moderately fair skin</b>		
How long?	5-10 minutes, most days	7-30 minutes (depending on latitude), most days
Body area exposed?	Arms exposed (or equivalent)	Arms exposed (or equivalent)
When?	At mid morning or at mid afternoon (at 10 am or at 2 pm standard time ie: 11 am or 3 pm daylight saving). Avoid peak UV times	Midday
<b>Darker skin*</b>		
How long?	15-60 minutes, most days	20 min – 3 hrs** (depending on latitude), most days
Body area exposed?	Arms exposed (or equivalent)	Arms exposed (or equivalent)
When?	At mid morning or at mid afternoon (at 10 am or at 2 pm standard time ie: 11 am or 3 pm daylight saving). Avoid peak UV times	Midday

Source: Vitamin D and Health in adults in Australia and New Zealand: Position Statement 2012.

Times are a general guide only, based on averages. Times can vary depending on weather conditions and individual responses and are only relevant for the particular times of day stated and for particular areas of skin exposed (eg: arms or equivalent). Exposure times will vary also depending on the season, skin type and latitude.

\* 3-6 times longer exposure times required for darker skin types.

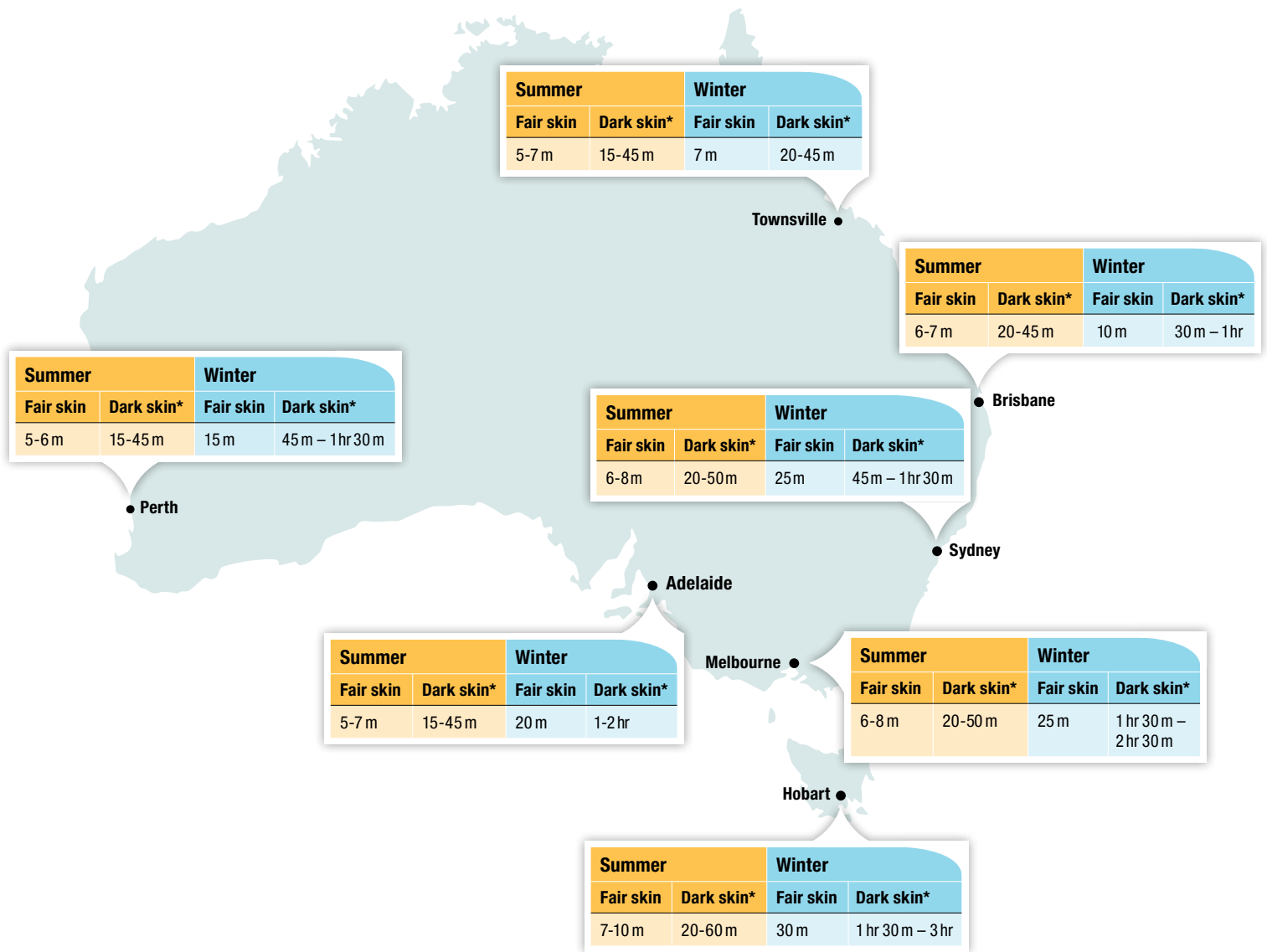
\*\* Wide range due to latitude and darker skin type – greater exposure time is required with darker skin in more southern latitudes.



### Recommended sun exposure for vitamin D based on location

<b>Summer:</b>	(December – January) At 10 am or at 2 pm (std time)^
<b>Winter:</b>	(July – August) at midday

- Exposure times based on season, location, skin type
- Arms exposed or equivalent area of skin
- Most days
- m = minutes



Source: Vitamin D and Health in adults in Australia and New Zealand: Position Statement 2012.

Times are a general guide only, based on averages which can vary depending on weather conditions and individual responses.

^ At 11 am or at 3 pm during Daylight Saving Time.

\* Darker skin: 3-6 times longer exposure times are required based on dark skin type (and more southern latitudes).

### Useful to know:

There is minimal transmission of UVB radiation through normal clear windows, so sun exposure should be outdoors.

## Vitamin D deficiency

Vitamin D deficiency is common in Australia – over 30% of Australians have a mild, moderate or even severe deficiency.

Vitamin D deficiency can have a major impact on bone health. In older people, it can increase the risk of falls and bone fracture. Low levels of vitamin D can also lead to bone and joint pain and muscle weakness. In infants and children, vitamin D deficiency can result in rickets, a condition that causes bone and muscle weakness and bone deformities. Vitamin D deficiency may occur in babies born to mothers who have low vitamin D levels and unless rectified, will have an ongoing impact on the child's normal bone growth.

You may be at risk of vitamin D deficiency if:

- You are elderly, particularly if you are housebound or are in institutional care.
- You are naturally darker skinned – the pigment in dark skin reduces the penetration of UV light.
- You avoid the sun for skin protection or due to medical advice for other medical reasons.
- You work indoors (includes office, factory, night shift workers).
- You cover your body for religious or cultural reasons.
- You have other medical conditions that may affect the way your body absorbs or processes vitamin D.
- Babies of vitamin D deficient mothers are also at risk of vitamin D deficiency.

## Testing for vitamin D

Your vitamin D level can be determined with a blood test. Your doctor will decide whether you require a blood test, based on your general level of sun exposure and a review of your other risk factors. Your body can store a certain amount of vitamin D. However, your vitamin D levels are likely to change throughout the year, with concentrations being highest in late summer and lowest at the end of winter.

As a general guide, Osteoporosis Australia recommends that most people should aim for a vitamin D level of no less than 50 nmol/L at the end of winter, which means people may have higher levels during summer of 60-70 nmol/L.





## Supplementation of vitamin D

For people who are low or deficient in vitamin D, a supplement may be required. Vitamin D supplements are available as tablets, capsules, drops or liquid. Most supplements come as 'vitamin D3', with the dose on the product shown in international units (IU).

Your doctor will advise you on the best dose for your needs – your pharmacist can also provide general advice on vitamin D supplements.

As a general guide only, Osteoporosis Australia recommends the following doses of vitamin D:

- For people who obtain some sun exposure but do not achieve the recommended level of exposure:
  - Under 70 years: at least 600 IU per day.
  - Over 70 years: at least 800 IU per day.
- For sun avoiders or people at risk of vitamin D deficiency (see 'Vitamin D deficiency' to find out if you may be at risk), higher doses may be required:
  - 1,000-2,000 IU per day.
- For people with moderate to severe vitamin D deficiency – (levels lower than 30 nmol/L):
  - 3,000-5,000 IU per day may be required for 6-12 weeks to raise the vitamin D level quickly, followed by a maintenance dose of 1,000-2,000 IU per day. This should be supervised by your doctor.

**Note:** It may take 3-5 months for a full improvement in vitamin D levels to be seen, so it is important to take supplements as advised.

## Can you take too much vitamin D?

Vitamin D is rarely harmful and problems have been reported only when very excessive doses have been taken (much higher doses than those mentioned). Large, single, yearly doses are not recommended.

However, in patients with severe vitamin D deficiency, higher than recommended monthly doses, administered by a doctor, can be effective.

## Vitamin D and food

Food cannot provide an adequate amount of vitamin D and most people are reliant on sun exposure to reach recommended levels. A limited number of foods contain small amounts of vitamin D (oily fish such as herring and mackerel, liver, eggs and some foods to which vitamin D has been added – fortified foods, for example, margarine, some milk). Australia has a low rate of vitamin D fortification of food compared to other countries such as the UK, Canada and the USA, where exposure to sunshine is often insufficient to achieve adequate levels of vitamin D. There is currently renewed debate in Australia about vitamin D fortification.

