2nd Edition 08/24

Vitamin D and Bone Health

Vitamin D is needed to absorb calcium from the intestine to support healthy bones. Vitamin D also plays a role in supporting growth and maintenance of the skeleton and regulating calcium levels in the blood.

Sunshine and Vitamin D

In Australia the main source of vitamin D is from exposure to sunlight. Vitamin D is produced when our skin is exposed to ultraviolet B (UVB) light from the sun. Limited sun exposure is needed to maintain adequate levels of vitamin D. Exposure times are based on the season, location within Australia, skin type and the amount of skin exposed. Sun exposure for vitamin D should be balanced with skin protection.*
In line with Cancer Council Australia's recommendations, after limited sun exposurer for vitamin D, skin protection* is required when UV Index is 3 or above. See exceptions^ below.

Seasonal Changes

Refer to the seasonal maps (below and on next page) as a general guide and check the UV index (via the SunSmart app, myuv.com.au or Australian Bureau of Meterology website).

Guide to sun exposure for vitamin D based on location within Australia.

Summer

Australia (except Tasmania)

Skin Exposed	Time of Day
35%	10am-3pm
	Minutes ⏱
	Up to 5 minutes
	Frequency
	4 times per week

After limited sun exposure use skin protection* when UV index is 3 or above

Australia

Skin Exposed	Time of Day
10%	10am-3pm
	Minutes ⏱
	10-20 minutes
	Frequency
	4 times per week

After limited sun exposure use skin protection* when UV index is 3 or above

In Tasmania if 35% skin exposed up to 10 minutes closer to noon

For people with deeply pigmented brown to black skin, sun protection may not be required. Sunglasses are recommended to protect eyes. For this group to maintain Vitamin D:

35%

Location	Time of Day	Minutes	Frequency
Northern Latitudes (Darwin, Broome, Townsville)	10am-3pm	6-10 minutes	4 times per week
Brisbane	10am-3pm	6-20 minutes	4 times per week
Middle/Southern Latitudes (Perth, Sydney, further south)	10am-3pm	11-20 minutes	4 times per week

***Skin protection includes 5 ways** – Slip on clothing, Slop on sunscreen, Slap on a hat, Seek shade, Slide on sunglasses.

^**Exceptions:** for people with pale skin (which can burn easily) or for people with dark white, olive or brown skin with a personal or family history of melanoma or personal history of other skin cancers or lots of moles or uncommon moles on skin or who are taking immunosuppressant medication, then sun protection is recommended at all times when UV index is 3 or above. Discuss vitamin D needs with your doctor.

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Vitamin D and Bone Health cont.

Winter

People with darker skin (deeply pigmented brown to black)

Northern latitudes with 35% skin exposed

Minutes	Frequency
20-40 mins	4 times per week

In Middle/Southern latitudes a vitamin D supplement may be required. Discuss with your doctor.

Northern Latitudes

Skin Exposed	Time of Day
35%	10am-3pm
	Minutes 5-10 minutes
	Frequency 4 times per week

Middle Latitudes

Skin Exposed	Time of Day
10%	Midday
	Minutes 30-60 minutes
	Frequency 4 times per week

Southern Latitudes

Skin Exposed	Time of Day
10%	Midday
	Minutes 1 hour or more
	Frequency 4 times per week

For more detail refer to the following tables

For skin types fair to olive in summer:

SUMMER	Location	Includes:	35% skin exposed	Timing
		All of Australia except Tasmania		Between 10am-3pm Up to 5 minutes 4 times per week
		Tasmania		Midday Up to 10 minutes 4 times per week
		All of Australia	10% skin exposed	Between 10am-3pm 10-20 minutes 4 times per week

For skin types brown to black in summer:

SUMMER	Location	Includes:	35% skin exposed	Timing
		Darwin Broome Townsville Alice Springs		Between 10am-3pm 6-10 minutes 4 times per week
		Brisbane Geraldton		Between 10am-3pm 6-20 minutes 4 times per week
		Sydney Canberra Adelaide Perth Hobart		Between 10am-3pm 11-20 minutes 4 times per week

For skin types fair to olive in winter:

WINTER	Location	Includes:	35% skin exposed	Timing
		Darwin Broome Townsville Alice Springs Brisbane		Between 10am-3pm 5-10 minutes 4 times per week
		Sydney Canberra Adelaide Perth	10% skin exposed	Midday 30-60 minutes 4 times per week
		Melbourne Hobart		Midday 1 hour or more 4 times per week

For skin types brown to black in winter:

WINTER	Location	Includes:	35% skin exposed	Timing
		Darwin Broome Townsville Alice Springs Brisbane		Midday 20-40 minutes 4 times per week
		Sydney Canberra Adelaide Perth Hobart	10% skin exposed	In winter, in southern areas, it is hard to get enough vitamin D from sunshine. Vitamin D supplement may be needed. Discuss with your doctor.

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Vitamin D Levels

Vitamin D levels change throughout the year. Your levels are highest in late summer and lowest at the end of winter. Healthy Bones Australia recommends a vitamin D level of at least 50 nmol/L throughout the year.

Your doctor may test your vitamin D level (with a blood test) if you are at risk of vitamin D deficiency. People at risk include:

- Adults mainly indoors due to health or work
- Naturally dark skinned (darker skin reduces the penetration of UV light)
- Sun avoiders due to skin protection or medical advice
- Covering body for cultural or religious reasons
- Medical conditions which can impact the ability to absorb / process vitamin D
- Elderly, housebound or in residential care
- Pregnant or breastfeeding women

Vitamin D Deficiency

In Australia over 30% of adults have a mild, moderate or severe deficiency of vitamin D. Vitamin D deficiency can:

- Lead to osteoporosis
- Result in bone and joint pain
- Increase the risk of falls and related fracture in older people

In addition it can impact an unborn child in a vitamin D deficient mother, resulting in rickets (in severe cases) and can be linked to other diseases.

Vitamin D Supplements

For people with low vitamin D levels a supplement may be required as advised by your doctor or pharmacist. Low vitamin D levels can be easily corrected but may take several months to improve. Vitamin D supplements are available as tablets, capsules, drops or liquid. Most vitamin D supplements are vitamin 'D3' and the standard dose is in International Units (IU). Your doctor will advise you on the appropriate dose required and your pharmacist can provide general advice on vitamin D supplements.

Healthy Bones Australia recommends the following doses of vitamin D as a general guide only:

People who obtain some sun exposure but not at the recommended level	• Adults at least 600IU per day • Over 70 years at least 800IU per day
Sun avoiders or people at risk of vitamin D deficiency	• 1,000 IU - 2,000 IU per day • Higher doses may be required
Moderate to severe vitamin D deficiency	• 3,000 – 4,000 IU per day for 6-12 weeks to raise the level of vitamin D quickly, followed by a maintenance dose of 1,000 -2,000 IU per day • As advised by a doctor

Vitamin D and Food

Food does not provide an adequate amount of vitamin D. A limited number of foods contain small amounts of vitamin D such as egg yolks, liver, oily fish (salmon, tuna, mackerel, herring) and selected products fortified with vitamin D (eg milk powder, margarine and cereal).

Vitamin D and Bone Health cont.

Calcium and Exercise

Simple steps to help support your bone health in addition to adequate vitamin D intake.

Focus On	Recommended
Calcium	• 1,000 mg per day from the diet • Increasing to 1,300 mg for women over 50 years and men over 70 years • If dietary intake is low a supplement may be required
Exercise	• Specific mix of weight bearing, resistance training and balance exercises

Other Common Risk Factors

Review other common risk factors for osteoporosis. If any risk factors apply to you – discuss these with your doctor.

Personal History	Medical Conditions	Medications
Previous fracture (from minor bump or fall)	Coeliac disease	Certain treatment for breast cancer
Family history of osteoporosis (parent/sibling)	Overactive thyroid or parathyroid	Certain treatment for prostate cancer
Loss of height (3 cm or more)	Rheumatoid arthritis	Glucocorticoids (steroids)
Smoking/Excessive alcohol	Early menopause/Low testosterone	Anti-epilepsy treatment
Inadequate calcium, vitamin D or lack of exercise	Chronic kidney disease or liver disease	
Age 70 years and over	Diabetes	

For more information

Call our national toll-free number
1800 242 141

Visit our website
healthybonesaustralia.org.au

Talk to your doctor

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