

WHEN TO BE IN AND OUT OF THE SUN

Contrary to all we've been told about the dangers of the sun – and especially going out in it unprotected between 11am and 3pm – it turns out always avoiding sun in the middle of the day may in fact help **minimise** the production of vitamin D in the body and thus limit all its widely appreciated benefits. The midday sun may not always be our enemy after all – big doses, of course – but a few minutes is all we need, even in the height of summer.

Here's the story in a nutshell. Sunlight is composed of about 1500 wavelengths, but it's only the ultraviolet B rays or UVBs when shining on unexposed skin that will allow your body to make vitamin D. The UVBs from the sun have to pass through the atmosphere to reach where you are on the Earth; much is filtered out by our atmosphere. Due to the physics and wavelength of UVBs, they will only penetrate the atmosphere when the sun is above an angle of about 50° from the horizon. When the sun is lower than 50°, the ozone layer reflects the UVBs but lets through the longer UVA rays.

Other factors, such as ozone concentration, altitude, air pollution, ground covered by snow or ice, and cloud cover also affect how much UVB ultimately reaches your skin.

If you want to work out the days and times the sun is above 50° from the horizon (which I call high-in-the-sky sunshine) you can just use your eyes to measure the angle of the sun in relation to the ground. Or try this [table](#). For me in Sydney, Australia, the first days with the sun above 50° begin in early September (just a few minutes in the middle of the day), peaking in January (8am to 4pm Daylight Saving Time) and running through to early April (again just a few minutes in

the middle of the day). These are the optimal times when you can pick up UVBs. If it happens to be cloudy or raining, the clouds will also block the UVBs.

It doesn't make much sense to expose your skin to the sun when it's lower than 50° above the horizon because you will not receive any valuable UVBs, but you will expose yourself to the more dangerous UVAs. UVAs have a longer wavelength than UVBs and can more easily penetrate the ozone layer and other obstacles, such as clouds and pollution, on their way from the sun to the Earth. UVAs increase the risk of skin cancer and photoaging the skin. So while it will give you a tan, unless the companion UVBs are there you're likely doing more harm than good and should probably stay out of the sun to protect your skin.

Here's how to maximise your absorption of vitamin D while avoiding the risk of over-exposure to the more harmful UVA rays.

STARTING OUT

- For the **first few days**, limit your exposure to the sun to allow your body's melanocyte cells to increase their ability to produce a protective pigmentation that helps protect you against overexposure to the sun.
- If you're **fairly light-skinned** and tend to burn easily, you'll want to limit your exposure to two to three minutes anyway, especially if it's in the middle of summer. In general, in temperate climates, exposing your body to no more than a few minutes of high-in-the-sky sunshine is enough in summer. When you feel the slightest

SNAPSHOT

- **start out slow, and build up gradually**
- **your skin colour determines the length of exposure**
- **sunbathe for a few minutes most days when the sun is more than 50 degrees above the horizon**
- **don't wash your body with soap (except the groin and underarms) after sunbathing**
- **use coconut butter to moisturise**
- **don't get burnt**



hint of pink you'll know that's enough, at which point you've reached saturation and your body won't produce any more vitamin D. Try to expose at least 40% of your body to the sun and try to be in the sun for just a few minutes most days of the week.

● If you're **dark-skinned**, i.e., your immediate ancestors are from Africa, India or the Middle East, you could safely have a longer initial exposure, depending on skin pigmentation. In fact, if you are very dark, it's possible you may not even have to worry about the length of your exposure. It can take twice to six times longer – or up to an hour or two – to reach optimal exposure to UVB, depending on your pigmentation.

● Always err on the side of caution, however, and let it be your primary goal to **never get sunburned**. If you're ever sunburnt, ideally use the fresh gel of the aloe vera plant, which contains powerful glyconutrients – mannose, galactose and arabinose – to relieve the burn as well as help repair the skin.

● You can use something as simple as **organic coconut oil** to moisturise your skin as this will also benefit you metabolically. Remember, if the

moisturiser you use has an SPF value, it will block UVB rays and will not allow your body to produce any vitamin D. The rest of the day, you can spend in the shade, wear clothes, and, if you still plan or need to be in the open sun, cover up well, and that includes a broad hat.

● The beauty of getting your vitamin D from healthy exposures to sunshine is that your body has a **built-in feedback loop** that prevents you from overdosing on it. Once you reach the limit, however, you're only increasing your chances of getting burnt. There is no extra benefit staying in the sun any longer; you only risk damaging your skin. Your body can only produce a limited amount of vitamin D every day.

PROTECT THE FACE AND EYES

The skin around your eyes and over your face is typically much thinner than other areas on your body and is a relatively small surface area so will not contribute much to vitamin D production. It's strongly recommended to protect this fragile area as it's at a much higher risk for cosmetic photo-damage and premature wrinkling. You can wear a cap that always keeps your eyes in the shade.

AFTER SUNBATHING, BE CAREFUL ABOUT SHOWERING

Vitamin D3 is an oil-soluble steroid hormone that forms when skin is exposed to UVB radiation from the sun. When UVB strikes the surface of your skin, your skin converts a cholesterol derivative in your skin into vitamin D3.

However, the vitamin D3 formed on the surface of your skin doesn't immediately penetrate into your bloodstream. It can take up to 48 hours before most of it is absorbed!

So, **if you shower with soap, you'll simply wash away much of the vitamin D3 your skin has generated**, and reduce the benefits of your sun exposure. So to optimise your vitamin D conversion, you need to delay washing your body with soap for about two full days after sun exposure. If need be you can still use soap underneath your arms and your groin area; you just want to avoid soaping up the larger areas of your body that were exposed to the sun.

This might be why surfers in Hawaii, who are in the sun and water continuously, don't have vitamin D levels comparable to lifeguards who don't go in the water. Surfers typically have levels in the 70-range ng/ml* while the lifeguards and others who are in the sun as much without going into the water can have vitamin D levels around 100ng/ml*.

AVOID SITTING IN THE SUN THROUGH A CLOSED WINDOW

Because UVAs have a longer wavelength, they penetrate materials more easily, such as the Earth's atmosphere and window glass, which effectively filter out the majority of UVB radiation, while only minimally filtering out UVAs.

When you're exposed to sunlight through windows – in the office, home, car, bus or train window – you get the UVAs but virtually none of the beneficial UVBs.

While vitamin D3 is formed from exposure to UVBs, UVA radiation destroys vitamin D; it's one of the body's protective mechanisms that allows you to avoid overdosing on vitamin D when you're outside. This helps keep your body in balance. Apart from destroying vitamin D3, UVAs also increase oxidative stress. It's the UVAs that cause you to tan, but a tan isn't necessarily an indicator that you're receiving enough to make vitamin D. You can get vitamin D without significantly darkening your skin, because the UVB wavelength does not stimulate the melanin pigment to produce a tan.

Normally, of course, when you get tanned from outdoor sun exposure during the times when the sun is high in the sky, you're getting both UVA and UVB at the same time, so it's not a problem. However, when you're indoors but exposed to sunlight filtered through window glass, you're increasing your risk of skin cancer, because the UVAs are effectively destroying your vitamin D3 levels while you're getting none of the benefits from UVB.

TESTING YOUR BLOOD

If in doubt as to your current vitamin D level, you can have your blood level checked to confirm that your sun exposure is sufficient. If it isn't, or if sun exposure is not a practical option for you, then you should consider supplementing with oral vitamin D3. (You want to avoid vitamin D2 as it's inferior to D3.)

*As a rough guide, using the 25-hydroxyvitamin D test, if you're level is below 50ng/ml that is considered deficient, 50-70ng/ml is optimal, with 70-100ng/ml used to treat cancer and heart disease and above 100ng/ml is in excess.

SOURCE

Adapted from *Little Sunshine Mistakes that Can Give You Cancer Instead of Vitamin D* by Dr Joseph Mercola
http://articles.mercola.com/sites/articles/archive/2012/03/26/maximizing-vitamin-d-exposure.aspx?e_cid=20120326_DNL_art_1

FURTHER READING ON UVA AND UVB WAVELENGTHS

http://uvb.nrel.colostate.edu/UVB/publications/uvb_primer.pdf