

Does sunscreen decrease vitamin D?

While sunscreens can decrease vitamin D production, they don't appear to do so to a large extent. You need not completely forgo sunscreen in order to maintain a healthy vitamin D level. Sun exposure can be bolstered with vitamin D rich foods and supplements to attain sufficient levels.

Our evidence-based analysis features [17 unique references to scientific papers.](#)



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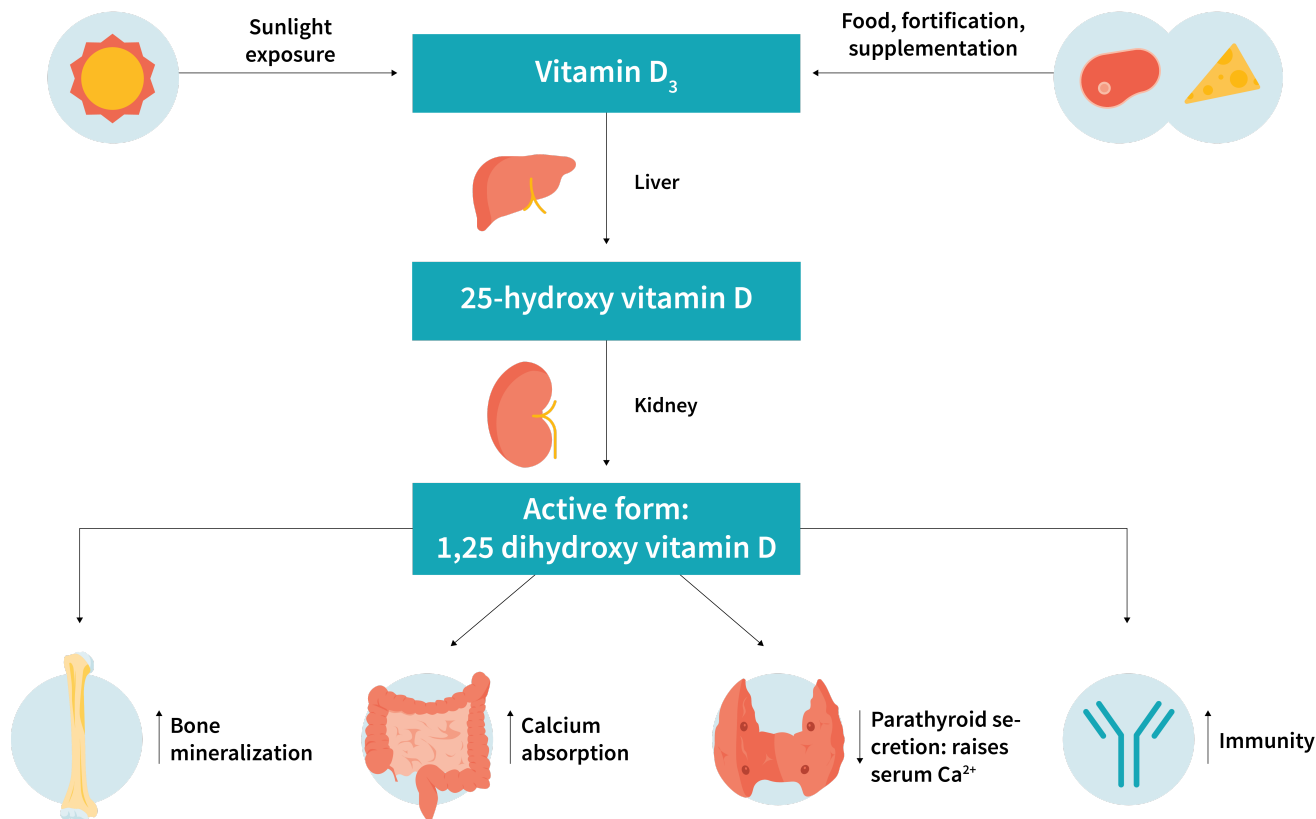
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Tags:

- [vitamin D](#)

Your body can produce [vitamin D](#) when the skin is exposed to ultraviolet B (UVB) rays^[1] Yet it is these rays that sunscreens are designed to primarily block.^[2] So will using sunscreen tank your vitamin D levels?

Vitamin D 101



Sunscreen and vitamin D production

Sunscreen can decrease vitamin D production under both controlled laboratory testing and real-world conditions.^{[3][4]} This decrease is most notable if sunscreen is used consistently and properly^{[5][6][7]} (i.e., when using a broad-spectrum sunscreen, the right *sun protection factor* (SPF), amount, and reapplication schedule).

Yet, the amount to which sunscreen decreases vitamin D production appears to be small — a counterintuitive finding.^[8] How could this be? Two factors have been proposed as possible explanations.^[8]

1. People may not be appropriately using sunscreen during periods of sun exposure (i.e., incorrect type, amount, SPF, or application frequency). If not used correctly, UVB rays could easily reach areas of your skin where sunscreen is absent or where coverage is not sufficient enough.
2. While sunscreen does a good job of blocking most UVB rays, it doesn't entirely block them. A high amount of exposure to UVB rays is not required to kickstart vitamin D production in the skin. So, it's possible that low amounts of UVB radiation could get past the sunscreen to initiate vitamin D creation.

One important caveat — studies to date have generally been conducted on people with less skin pigmentation (i.e., those with [Fitzpatrick skin types](#) 1–3). A different result may be seen in those with Fitzpatrick skin types 4–6.

While sunscreen can decrease your body's ability to produce vitamin D, in real-life usage scenarios it appears to only do so to a small degree.

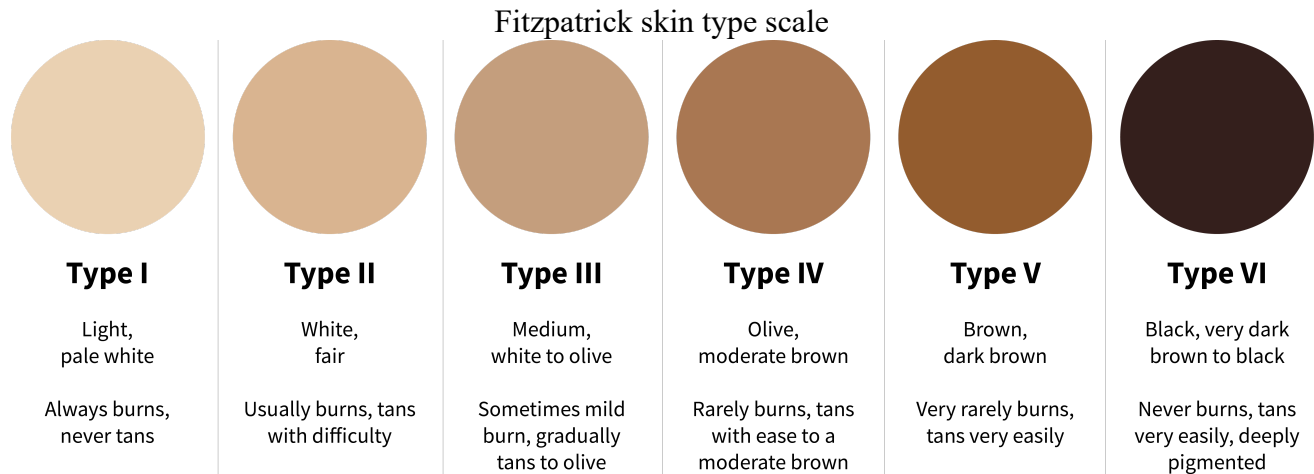
How much sun do I need for vitamin D production?

Generally speaking, 5 to 30 minutes of unprotected sun exposure to the hands, face, and arms at least three times a week between 11 a.m. and 3 p.m. is considered enough to keep [blood vitamin D levels](#) out of the deficient range (<30 nmol/L or <12 ng/mL).^{[9][10]}

When determining how much sunlight you might need, there are two basic factors to consider.

- The [UV index](#) (a measure of UV radiation intensity, from 0 to 11+)
- Your Fitzpatrick skin type (a measure of how your skin responds to UV rays, from 1 to 6)

When the UV index forecast [in your area](#) is 3 or higher, people with Fitzpatrick skin types 1 or 2 should keep unprotected sun exposure to less than 10 minutes; skin types 3 or 4, less than 15 minutes; and skin types 5 or 6, less than 30 minutes. [\[11\]\[12\]](#)



Keep in mind that longer periods of unprotected sun exposure don't necessarily lead to higher vitamin D production, as the UVB rays will eventually cause the vitamin D in your skin to degrade to an inactive state. [\[13\]](#) This is a safety mechanism that helps protect your body against [vitamin D toxicity](#).

Don't stop using sunscreen just to get your vitamin D levels up — a balance can be struck here. In addition to an appropriate dose of sun exposure, you can increase vitamin D [through diet](#) and [supplementation](#). Diet and supplementation strategies will be particularly important for those who live in areas of low sun exposure or at latitudes where the sun's rays may not be as potent for vitamin D production (37 degrees north and south of the equator).

Tip: Calculate your safe UV exposure for a healthy vitamin D status

How much UV exposure you need to maximize your body's vitamin D production depends on a number of factors: time of year, location, skin type, weather conditions, and more. Fortunately, the [Norwegian Institute for Air Research](#) has developed a calculator, based on peer-reviewed research, [\[14\]\[15\]\[16\]\[17\]](#) that takes these factors and more into account. This tool allows you to calculate UV exposure times to obtain optimal vitamin D synthesis without burning your skin.

You can try the easier [simplified model](#) or the more complex [full model](#).

Bottom line

Sunscreen can decrease your body's ability to produce vitamin D, but generally to a small degree.

Depending on the UV index and your skin type, 5–30 minutes of unprotected sun exposure to the hands, face, and arms at least three times a week between 11 a.m. and 3 p.m. should be enough to keep your vitamin D levels out of the deficient range.

To increase your vitamin D levels, you can combine an appropriate amount of sun exposure to dietary sources of vitamin D and supplementation.

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