

Vitamin D and Omega-3 Prevent Autoimmune Disease

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STORY AT-A-GLANCE

- › A study published in BMJ found that supplementing with vitamin D and omega-3 fats could significantly lower your risk of developing an autoimmune disease, including rheumatoid arthritis, psoriasis, thyroid diseases and more, as you get older
- › Participants took vitamin D3 (2,000 IU), omega-3 fats (1,000 milligrams) or a placebo daily and were followed for more than five years
- › Vitamin D supplementation for five years, with or without omega-3 fats, reduced autoimmune disease by 22%
- › Omega-3 fat supplementation with or without vitamin D reduced the autoimmune disease rate by 15%
- › For those taking both vitamin D and omega-3 fats, the risk of autoimmune disease decreased by about 30%, and when participants took vitamin D for at least two years, their risk of autoimmune disease decreased even more – by 39%
- › For optimal health, it's not enough to only increase omega-3s – you also need to cut down on omega-6s, particularly linoleic acid from “vegetable,” or seed, oils

Autoimmune diseases, in which your immune system mistakenly attacks healthy cells, have been on the rise for about four decades and are now increasing at a rate of between 3% and 9% a year, globally.¹ As a leading cause of death among women, and the third leading cause of morbidity in industrialized countries,² researchers have speculated that environmental and dietary factors may be to blame.

“Human genetics hasn’t altered over the past few decades,” James Lee, a scientist with London’s Francis Crick Institute, told The Guardian. “So something must be changing in the outside world in a way that is increasing our predisposition to autoimmune disease.”³

Changes in levels of vitamin D and omega-3 could be among them, and a study published in The BMJ suggests that supplementing with these compounds could significantly lower your risk of developing an autoimmune disease, including rheumatoid arthritis, psoriasis, thyroid diseases and more, as you get older.⁴

Vitamin D and Omega-3 Lower Autoimmune Disease Risk

Researchers from Brigham and Women’s Hospital, Harvard Medical School, used data from the vitamin D and omega-3 trial (VITAL), which involved 25,871 participants aged 50 (men) or 55 (women) and older, to investigate whether vitamin D and omega-3 fats from marine sources reduce the risk of autoimmune disease.

Participants took vitamin D3 (2,000 IU), omega-3 fats (1,000 milligrams) or a placebo daily and were followed for more than five years. They self-reported all autoimmune diseases that were diagnosed during the study period, and those taking vitamin D and/or omega-3s had a lower risk.

“Vitamin D supplementation for five years, with or without omega-3 fatty acids, reduced autoimmune disease by 22%, while omega-3 fatty acid supplementation with or without vitamin D reduced the autoimmune disease rate by 15% (not statistically significant),” the researchers wrote.⁵

For those taking both vitamin D and omega-3 fats, the risk of autoimmune disease decreased by about 30%.⁶ Further, when participants took vitamin D for at least two years, their risk of autoimmune disease decreased even more – by 39%.⁷

Vitamin D’s involvement in inflammation and both acquired and innate immune responses may explain why it appears to be beneficial for preventing autoimmune diseases.⁸ Vitamin D receptors are present in nearly all cells of the human immune

system, including monocytes/macrophages, T cells, B cells, natural killer cells and dendritic cells.

Vitamin D has multiple actions on the immune system, including enhancing the production of antimicrobial peptides by immune cells, reducing damaging proinflammatory cytokines and promoting the expression of anti-inflammatory cytokines.⁹ Likewise, the omega-3 fats eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) inhibit the production of C-reactive protein and inflammatory cytokines, and are known to help resolve inflammation.¹⁰

Study author Dr. Karen Costenbader, lupus program director at Brigham and Women's Hospital, explained that the findings are so powerful, she can now answer one of her patients' most common questions – “Which vitamins or supplements do you recommend?” She said:¹¹

“This was a question that my colleagues and I set out to answer in the Autoimmune Disease Prevention ancillary study in the VITAL trial.

Now, when my patients, colleagues, or friends ask me, I can point to our research findings, which suggest that for women age 55 years and older, and men 50 years and older, marine omega-3 fatty acids (fish oil) 1000 mg a day, and vitamin D 2000 IU a day – the doses used in VITAL – lead to a 22% reduction in all autoimmune diseases with vitamin D, and a 15% reduction in the same with fish oil supplementation over 5.3 years of randomized follow-up.

In the trial, these supplements were prescription grade and underwent rigorous quality testing. They were safe and well tolerated and no increase in adverse events was found.”

Low Omega-3 and Vitamin D Worsen COVID Outcomes

Ensuring you have optimal levels of omega-3 and vitamin D is a smart health move that will lower your risk of numerous diseases – not only autoimmune disorders. COVID-19

is among them. A study published in January 2021 evaluated 100 individuals' omega-3 index and compared that against their COVID-19 outcomes.¹²

The omega-3 Index is a measure of the amount of EPA and DHA in the membranes of your red blood cells (RBCs). Your index is expressed as a percent of your total RBC fatty acids. The omega-3 index has been validated as a stable, long-term marker of your omega-3 status, and it reflects your tissue levels of EPA and DHA.

An omega-3 index over 8%¹³ is associated with the lowest risk of death from heart disease, while an index below 4% places you at the highest risk of heart disease-related mortality. However, it may also be predictive of COVID-19 outcomes.

After separating blood samples from the highest to lowest quartiles, they found there was only one death – a 66-year-old man who was admitted with a do-not-resuscitate order – in the group in which the omega-3 index measured 5.7% or greater. Within the other three quartiles, a total of 17% of the patients died.

When compared against older age, the researchers found the risk of death from COVID-19 in individuals who had lower levels of omega-3 fatty acids was at least as predictive as being 10 years older. Regarding vitamin D, in a meta-analysis of two data sets, a strong correlation was found between SARS-CoV-2 death rate and vitamin D level, such that mortality decreased significantly once vitamin D levels reached 30 ng/mL.¹⁴

Further, the researchers noted, “our analysis shows that the correlation for the combined datasets intersects the axis at approximately 50 ng/mL, which suggests that this vitamin D3 blood level may prevent any excess mortality.”¹⁵ Having a level below 20 ng/mL was associated with a 19.12 times higher risk of death, and a “majority of the COVID-19 cases with insufficient and deficient Vitamin D status died,” they added.¹⁶

Important for Heart Health, Too

Omega-3s and vitamin D are two major players in a healthy heart, adding to the many reasons why you don't want to be deficient. I firmly believe an omega-3 index test is one

of the most important annual health screens that everyone needs, and it's a more important predictor of your heart disease risk than your cholesterol levels.

In fact, research supported by the National Institutes of Health suggests that an omega-3 test is a good predictor of overall health and all-cause mortality.^{17,18} The study measured the omega-3 index in 2,500 participants and found that those with the highest omega-3 index had lower risks of heart problems and lower total mortality. Cholesterol levels, however, were not similarly related.

"When baseline serum cholesterol levels were substituted for the Omega-3 Index in the same multi-variable models," lead author William Harris, Ph.D., said, "the former was not significantly associated with any of the tracked outcomes whereas the latter was related to four of the five outcomes assessed."¹⁹

Vitamin D also plays a role in heart disease, as it improves circulation and may be beneficial for high blood pressure. In addition, due to its effects on endothelial function, vitamin D may also help improve or prevent heart failure, heart attack, vasculopathy, stroke and diabetes.²⁰

Why Cutting Down on Omega-6 Is so Important

Supplementing with omega-3 fats, or increasing your intake of omega-3-rich foods, is important, but it's not enough to reach optimal health. This is because most Americans are consuming so many omega-6 fats that it's throwing the important omega-6 to omega-3 ratio completely off balance.

Your omega-6 to omega-3 ratio should be about 1-to-1 or possibly up to 4-to-1, but simply increasing your omega-3 intake won't be enough to counteract the damage done by excessive omega-6s. You really need to minimize the omega-6 to prevent damage from taking place.

Industrially processed seed oils, often referred to as "vegetable oils," are at the root of the problem. Linoleic acid is the primary fatty acid found in these polyunsaturated fatty acids (PUFAs) and accounts for about 80% of the fatty acid composition of vegetable

oils. Linoleic acid drives chronic diseases because, once it's oxidized as it is in most processed foods, it degenerates into oxidized linoleic acid metabolites (OXLAMs).

OXLAMs are cytotoxic, genotoxic, mutagenic, carcinogenic, atherogenic and thrombogenic,²¹ so reducing them is key to protecting your health and reaping the full benefits that omega-3s have to offer.

Ideally, consider cutting linoleic acid (LA) down to 2 or 3 grams per day, which is close to what our ancestors used to get before all of these chronic health conditions, including obesity, diabetes, heart disease and cancer, became widespread. This means eliminating all of the following oils:

Soy	Corn	Canola
Safflower	Sunflower	Peanut

Other high-LA foods include chips fried in vegetable oil, commercial salad dressings and sauces, virtually all processed foods and any fried fast food, such as french fries. As an added bonus, cutting out fast foods and processed foods is also key for reducing autoimmune disorders. It's recently been suggested, for instance, that changes in our microbiomes caused by fast-food diets are triggering autoimmune diseases.²²

The take-home message is this: In addition to increasing your omega-3s, you also need to decrease your omega-6 – particularly linoleic acid from seed oils.

How Much Vitamin D Do You Need?

It's possible to optimize your vitamin D levels via sensible sun exposure, and this is ideal, as it's becoming increasingly recognized that there are many benefits to sun exposure even aside from vitamin D. However, if this isn't an option for you due to your location or lifestyle, then daily vitamin D3 supplementation of up to 10,000 units may be needed to reach a vitamin D level of 40 to 60 ng/mL.

Data from GrassrootsHealth's D*Action studies suggest the optimal level for health and disease prevention is between 60 ng/mL and 80 ng/mL, while the cutoff for sufficiency appears to be around 40 ng/mL. In Europe, the measurements you're looking for are 150 to 200 nmol/L and 100 nmol/L respectively.

The only way to gauge whether you might need to supplement, and how much to take, however, is to get your level tested, ideally twice a year – in the early spring and early fall – when your level is at its low point and peak, respectively. If you go the supplement route, make sure that your vitamin D intake is balanced with other nutrients, including vitamin K2 (to avoid complications associated with excessive calcification in your arteries), calcium and magnesium.

Sources and References

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