

Study finds omega-3 supplements reduce genetic risk of high total cholesterol, LDL and triglyceride levels

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Fish oil supplements are a multi-billion dollar industry in the U.S. and abroad, with about 2 out of every 25 people popping the popular

omega-3 pills.

And a [new study](#) from the University of Georgia published in *The American Journal of Clinical Nutrition* might encourage a new population to start looking into the supplements as well: people with a [genetic predisposition](#) to high cholesterol.

Using [genetic data](#) from more than 441,000 participants, the researchers calculated a score to predict the genetic likelihood of high levels of total cholesterol, high LDL cholesterol (which is often referred to as "bad" cholesterol), triglycerides and HDL cholesterol (or "good" cholesterol).

"Recent advances in [genetic studies](#) have allowed us to predict someone's genetic risk of high cholesterol," said Yitang Sun, a recent doctoral graduate from UGA's Department of Genetics. "But the current prediction has room for improvement because it does not consider [individual differences](#) in lifestyles, such as taking fish oil supplements."

The researchers found that participants who reported taking fish oil supplements have lower blood lipid levels than predicted, especially for total cholesterol, LDL cholesterol and triglycerides.

"Our study shows that considering lifestyles will improve genetic prediction," said Kaixiong Ye, corresponding author of the study and an assistant professor of genetics in UGA's Franklin College of Arts and Sciences. "Our findings also support that [fish oil supplements](#) may counteract the genetic predisposition to high cholesterol."

Fish oil counters effect of family history of high cholesterol

It's no secret that high cholesterol is bad for the body. Arteries start to

harden, and the risk of heart attack or stroke increases.

While a [healthy diet](#) and exercise can help prevent it, the Centers for Disease Control and Prevention estimates that more than 86 million American adults—or about 1 in 4—have high cholesterol.

Millions more are at risk of developing high cholesterol due to a variety of factors including one they can't control: genetics.

For people whose families have a history of [high cholesterol](#), the study's findings offer another possibility to help safeguard their health.

"Taking fish oil is associated with a shift toward a healthy lipid profile," Ye said.

The researchers also analyzed the effects of fish oil on HDL cholesterol and found the supplements are beneficial in raising the so-called "good" cholesterol.

More information: Yitang Sun et al, Fish oil supplementation modifies the associations between genetically predicted and observed concentrations of blood lipids: a cross-sectional gene-diet interaction study in UK Biobank, *The American Journal of Clinical Nutrition* (2024). [DOI: 10.1016/j.ajcnut.2024.07.009](https://doi.org/10.1016/j.ajcnut.2024.07.009)

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