

# Fish oil supplements have no effect on type 2 diabetes

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Omega-3 fats have little or no effect on risk of Type 2 diabetes according to new research from the University of East Anglia.

Increased consumption of omega 3 fats is widely promoted globally because of a common belief that it will protect against, or even reverse, conditions such as diabetes.

But a [systematic review](#) commissioned by the World Health Organization and published today in the *British Medical Journal*, finds that omega 3 supplements offer no benefit.

Despite over 58,000 participants being randomised into long-term trials, and 4 per cent of those participants developing diabetes, the people who were randomised to consume more long-chain omega-3 fats ([fish](#) oils) had the same risk of diabetes diagnosis as the control group who did not take more [fish oil](#).

Blood glucose, insulin and glycated haemoglobin, measures of how well our bodies handle sugars ([glucose metabolism](#)) and important measures of diabetes risk, are also similar in people taking and not taking additional fish oils. There was a consistent lack of effect of fish oils (long-chain omega-3 fats) on any of these factors related to diabetes risk.

However, there was some (weak) evidence that when people take high doses of fish oils they may experience worsening glucose metabolism.

Omega 3 is a type of fat. Small amounts are essential for good health and can be found in the food that we eat.

The main types of omega 3 fatty acids are alpha-linolenic acid (ALA), eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA).

ALA is normally found in fats from plant foods, such as nuts and seeds (walnuts and rapeseed are rich sources). EPA and DHA, collectively called long-chain omega 3 fats, are naturally found in fatty fish, such as salmon and fish oils including cod liver oil.

Omega 3 fats are also readily available as over-the-counter supplements and they are widely bought and used.

The research team assessed the effects of long-chain omega-3 fats, ALA, omega-6 and polyunsaturated fatty acids (PUFAs) - taken as supplementary capsules, or via enriched or naturally rich foods.

The systematic review combines the results of 83 randomized controlled trials involving 121,070 people with and without diabetes, all of at least six months duration.

Participants included men and women, some healthy and others with existing diabetes, from North America, South America, Europe, Australia and Asia, in studies published from the 1960s until 2018.

The research assessed the effects of increasing long-chain omega-3 fats, ALA, omega-6 and polyunsaturated [fatty acids](#) (PUFAs) on diabetes and glucose metabolism.

Participants were randomly assigned to increase their polyunsaturated fats or to maintain their usual intake for at least six months. There was clearly no effect of increasing long-chain omega-3 fats on diabetes, but there was insufficient information from trials of ALA, omega-6 or total polyunsaturated fats to assess either protective or harmful effects.

The reviewers double-checked their data using sensitivity analyses. For example, they checked that the results did not alter when only the very highest quality trials (those at least risk of bias) were included. They used subgrouping to check whether results differed with different doses of long-chain omega-3 (not finding different effects at different doses except a suggestion of harm at doses over 4.4 grams per day) or by trial duration (there was no suggestion of different effects in longer or shorter trials).

The results show that increasing long-chain omega-3 had little or no effect on diabetes diagnosis or glucose metabolism, but high doses, at levels found in some supplements, could worsen glucose metabolism.

Lead author Dr. Lee Hooper, from UEA's Norwich Medical School, said: "Our previous research has shown that long-chain omega 3 supplements, including fish oils, do not protect against conditions such as heart disease, stroke or death. This review shows that they do not prevent or treat diabetes either.

"Omega-3 supplements should not be encouraged for diabetes prevention or treatment. If people do choose to take supplementary fish oil capsules to treat or prevent diabetes, or to reduce levels of triglycerides in their blood, then they should use doses of less than 4.4 grams per day to avoid possible negative outcomes.

"This large systematic review included information from many thousands of people over long periods. Despite all this information, we don't see protective effects.

"The most trustworthy studies consistently showed little or no effect of long-chain omega 3 fats on diabetes."

Joint first author, Dr. Julii Brainard also from Norwich Medical School, said: "Oily fish can be a very nutritious food as part of a balanced diet, but we did not find enough trials that encouraged participants to eat more oily fish to know whether it is useful in preventing diabetes or improving glucose metabolism.

"What we did find is that there is no demonstrable value in ordinary people taking omega 3 oil supplements for the prevention or treatment of diabetes.

"We would also have liked to find out whether taking more omega-3 might be useful in those people with low omega-3 intakes—as giving more omega-3 is more likely to be useful in adults with low intakes. But unfortunately most trials didn't report omega-3 intake levels of participants at the start of the trial, so we still don't know.

"Future trials need to measure and assess baseline omega-3 intakes, and assess effects of eating more oily fish—not just supplements," she added.

'Omega-3, omega-6 and total dietary polyunsaturated fat for prevention and treatment of type 2 [diabetes](#) mellitus: systematic review & meta-analysis of randomised controlled trials' is published in the journal *BMJ* on August 21, 2019.

**More information:** Omega-3, omega-6, and total dietary polyunsaturated fat for prevention and treatment of type 2 diabetes mellitus: systematic review and meta-analysis of randomised controlled trials, *British Medical Journal* (2019). [dx.doi.org/10.1136/bmj.l4697](https://doi.org/10.1136/bmj.l4697)

Provided by University of East Anglia

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