

The case for omega-3 supplementation to lower aggression

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People who regularly eat fish or take fish oil supplements are getting omega-3 fatty acids, which play a critical role in brain function. Research has long shown a basis in the brain for aggressive and violent

behavior, and that poor nutrition is a risk factor for behavior problems.

Penn neurocriminologist Adrian Raine has for years been studying whether [omega-3](#) supplementation could therefore reduce [aggressive behavior](#), publishing five randomized controlled trials from different countries. He found significant effects but wanted to know whether these findings extended beyond his laboratory.

Now, Raine has found further evidence for the efficacy of omega-3 supplementation by conducting a [meta-analysis](#) of 29 randomized controlled trials. It shows modest [short-term effects](#)—he estimates this intervention translates to a 30% reduction in aggression—across age, gender, diagnosis, treatment duration, and dosage.

Raine is the lead author of a new paper [published](#) in the journal *Aggressive and Violent Behavior*, with Lia Brodrick of the Perelman School of Medicine.

"I think the time has come to implement omega-3 supplementation to reduce aggression, irrespective of whether the setting is the community, the clinic, or the criminal justice system," Raine says. "Omega-3 is not a magic bullet that is going to completely solve the problem of violence in society. But can it help? Based on these findings, we firmly believe it can, and we should start to act on the new knowledge we have."

He notes that omega-3 also has benefits for treating [heart disease](#) and hypertension, and it is inexpensive and safe to use. "At the very least, parents seeking treatment for an aggressive child should know that in addition to any other treatment that their child receives, an extra portion or two of fish each week could also help," Raine says.

This meta-analysis shows that omega-3 reduced both reactive aggression, which is behavior in response to a provocation, and proactive aggression,

which is planned.

The study included 35 independent samples from 29 studies conducted in 19 independent laboratories from 1996 to 2024 with 3,918 participants. It found statistically significant effects whether averaging effect sizes by study, independent sample, or by laboratory.

Only one of the 19 labs followed up with participations after supplementation ended, so the analysis focused on changes in aggression from beginning to end of treatment for experimental and control groups, a period averaging 16 weeks. "While there is value in knowing whether omega-3 reduces aggression in the short-term," the paper states, "the next step will be to evaluate whether omega-3 can reduce aggression in the long-term."

The paper notes several other possible avenues for future research, such as determining whether brain imaging shows that omega-3 supplementation enhances prefrontal functioning, whether [genetic variation](#) impacts the outcome of omega-3 treatment, and whether self-reported measures of aggression provide stronger evidence for efficacy than observer reports.

"At the very least, we would argue that omega-3 supplementation should be considered as an adjunct to other interventions, whether they be psychological (e.g., CBT) or pharmacological (e.g., risperidone) in nature, and that caregivers are informed of the potential benefits of omega-3 supplementation," the authors write.

They conclude, "We believe the time has come both to execute omega-3 supplementation in practice and also to continue scientifically investigating its longer-term efficacy."

More information: Adrian Raine et al, Omega-3 supplementation reduces aggressive behavior: A meta-analytic review of randomized controlled trials, *Aggression and Violent Behavior* (2024). [DOI: 10.1016/j.avb.2024.101956](https://doi.org/10.1016/j.avb.2024.101956)

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