

A Blood Test for Sports Head Trauma?

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Wouldn't it be nice to have a simple blood test to alert clinicians when an athlete may be getting into trouble with head injuries? Wouldn't it be nicer to have a nutritional supplement to lessen the risk of neurologic damage from sports? Read on.

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Source: Oliver JM, Jones MT, Kirk KM, et al. Effect of docosahexaenoic acid on a biomarker of head trauma in American football. [Med Sci Sports Exerc. 2016;48\(6\):974-982](#); doi:10.1249/MSS.0000000000000875. See [AAP Grand Rounds commentary by Dr. Joy Weydert](#) (subscription required).

PICO Question: Among National Collegiate Athletic Association football athletes, do serum neurofilament light levels increase with the number and magnitude of head impacts, and does docosahexaenoic acid attenuate this increase?

Question type: Interventional

Study design: Randomized controlled trial

The football team at Texas Christian University in Fort Worth is in the study spotlight here. Players had serial determinations of a potential biomarker for traumatic brain injury (TBI), called the neurofilament light (NFL; how's that for an ironic acronym here!) protein. Players were randomized, in a double-blind fashion, to receive either placebo or 1 of 3 different dosages of docosahexaenoic acid (DHA), which is a long-chain unsaturated fatty acid in brain tissue. Animal studies suggested DHA could mitigate neurologic injury in animal models of TBI.

The authors found a positive effect of DHA in reducing NFL concentrations in players throughout the study period, which lasted from summer conditioning training through training camp and most of the regular playing season. They started with 130 players in the study, down to 81 by the end of the study with dropouts due to refusal of informed consent, poor compliance with study medication, or injury or concussion. It's a higher dropout rate than I'd like to see in a randomized controlled trial, but they were spread relatively equally among the 4 treatment groups.

Most of the results leave little to quibble about. The higher doses of DHA didn't seem to substantially improve benefit in NFL lowering compared to the lowest dose, perhaps suggesting a saturation effect. The numbers in each group were small; more studies will be necessary to look at optimal dosing in college football players. Of course, what we always need to know about any biomarker is how closely it is tied to an outcome we'd all care about, such as clinical brain injury, and whether it correlates with other likely biomarkers, such as number of head impacts and neuroimaging findings. If NFL is closely tied to these "POEMs" (Patient-Oriented Evidence that Matters), then maybe we've got something here.

I saw 2 red flags with this study that should temper our optimism somewhat. The authors decided not to report NFL concentrations in the subgroup of players who were "nonstarters," meaning those who were third-stringers or lower and didn't play much in games, because that group didn't show elevation of NFL concentrations as the season progressed. Why not just report the effect of DHA in that group? This was information they were collecting anyway, and might have served as a bit of a control population. The second red flag is that this study was funded in part by the DHA supplement company, and 3 of the 10 study authors appear to have a financial stake in the NFL diagnostic test kits, I'm a bit worried that they are selectively reporting only data that casts their products in a good light. As we've mentioned in these posts repeatedly, studies with commercial funding tend to be biased in favor of the product being studied, compared to studies with "unbiased" funding.

This is clearly a very preliminary study, I wouldn't jump to recommending DHA supplementation for your

patients participating in contact sports. Still, I'm intrigued and hope to see more about NFL, DHA, and TBI in sports.

One final note: readers of a certain age and temperament may have caught the musical nod at the start of my post. I guess something about summer makes my mind wander back to the Beach Boys "Wouldn't It Be Nice," and perhaps the [most significant American pop music album of all time](#).

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