

Diet affects sperm competitiveness

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It's well known that omega-3 long-chain polyunsaturated fatty acids (n-3 LC-PUFA) can help to prevent heart disease but new research has found that these essential fatty acids can also increase the chance of paternity success.

The results published today in the Royal Society journal *Biology Letters* looked at the guppy *Poecilia reticulata*, a live-bearing fish with a highly promiscuous mating system in which sperm typically compete for fertilisations.

Controlled artificial insemination was used to show that males fed diets with long-chain omega-3 PUFA sired a significantly higher proportion of offspring when competing against sperm from males fed nutritionally

impaired diets.

The co-author author from The University of Western Australia, evolutionary biologist Professor Jon Evans, said the result might have broad implications among a variety of species, where n-3 LC-PUFA is associated with a number of traits linked to reproduction.

"There is already speculation that the global decline in the production of [omega-3 fatty acids](#) by marine phytoplankton, which is the world's primary source of these essential [fatty acids](#), may have important implications for animal health. Any further decline could see a trend towards impaired diets in modern animals, including humans. This, in turn, may impact health, fertility and ultimately influence future population and community dynamics," Professor Evans said.

The results conclude that further investigation is required to determine the effects in other species and the possible implications for patterns of sexual selection in affected populations.

More information: Rahman M, Gasparini C, Turchini G, Evans J (2014) "Data from: Experimental reduction in dietary omega-3 polyunsaturated fatty acids depresses sperm competitiveness." *Dryad Digital Repository*. [dx.doi.org/10.5061/dryad.pv5tq](https://doi.org/10.5061/dryad.pv5tq)

Provided by University of Western Australia

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