

# Teenage boys who eat fish at least once a week achieve higher intelligence scores

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Fifteen-year-old males who ate fish at least once a week displayed higher cognitive skills at the age of 18 than those who ate it less frequently, according to a study of nearly 4,000 teenagers published in the March issue of *Acta Paediatrica*.

Eating fish once a week was enough to increase combined, verbal and visuospatial [intelligence scores](#) by an average of six per cent, while eating fish more than once a week increased them by just under 11 per cent.

Swedish researchers compared the responses of 3,972 males who took part in the survey with the cognitive scores recorded in their Swedish Military Conscription records three years later.

"We found a clear link between frequent [fish consumption](#) and higher scores when the [teenagers](#) ate fish at least once a week" says Professor Kjell Torén from the Sahlgrenska Academy at the University of Gothenburg, one of the senior scientists involved in the study. "When they ate fish more than once a week the improvement almost doubled.

"These findings are significant because the study was carried out between the ages of 15 and 18 when educational achievements can help to shape the rest of a young man's life."

The research team found that:

- 58 per cent of the boys who took part in the study ate fish at least once a week and a further 20 per cent ate fish more than once a week.
- When male teenagers ate fish more than once a week their combined intelligence scores were on average 12 per cent higher than those who ate fish less than once a week. Teenagers who ate fish once a week scored seven per cent higher.
- The verbal intelligence scores for teenagers who ate fish more than once a week were on average nine per cent higher than those who ate fish less than once a week. Those who ate fish once a week scored four per cent higher.
- The same pattern was seen in the visuospatial intelligence scores, with teenagers who ate fish more than once a week scoring on average 11 per cent higher than those who ate fish less than once a week. Those who ate fish once a week scored seven per cent higher.

"A number of studies have already shown that fish can help neurodevelopment in infants, reduce the risk of impaired cognitive function from middle age onwards and benefit babies born to women who ate fish during pregnancy" says Professor Torén.

"However we believe that this is the first large-scale study to explore the effect on adolescents."

The exact mechanism that links fish consumption to improved [cognitive performance](#) is still not clear.

"The most widely held theory is that it is the long-chain polyunsaturated fatty acids found in fish that have positive effects on cognitive performance" explains Professor Torén.

"Fish contains both omega-3 and omega-6 fatty acids which are known to accumulate in the brain when the foetus is developing. Other theories have been put forward that highlight their vascular and anti-inflammatory properties and their role in suppressing cytokines, chemicals that can affect the immune system."

In order to isolate the effect of fish consumption on the study subjects, the research team looked at a wide range of variables, including ethnicity, where they lived, their parents' educational level, the teenagers' well-being, how frequently they exercised and their weight.

"Having looked very carefully at the wide range of variables explored by this study it was very clear that there was a significant association between regular fish consumption at 15 and improved cognitive performance at 18" concludes lead author Dr Maria Aberg from the Centre for Brain Repair and Rehabilitation at the University of Gothenburg.

"We also found the same association between fish and intelligence in the teenagers regardless of their parents' level of education."

The researchers are now keen to carry out further research to see if the kind of fish consumed - for example lean fish in fish fingers or fatty fish such as salmon - makes any difference to the results.

"But for the time being it appears that including fish in a diet can make a valuable contribution to cognitive performance in male teenagers" says Dr Aberg.

More information: Fish intake of Swedish male adolescents is a predictor of cognitive performance. Aberg et al. *Acta Paediatrica*. 98.3, pp 555-560. (March 2009).

Source: Wiley

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