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Increased intake of Omega-3 fatty acids improves children's reading and behaviour

A new study by the University of Oxford has shown that daily supplements of omega-3 fatty acids (Docosahexaenoic acid, or DHA) improved the reading and behaviour of underperforming children in mainstream primary schools. The researchers worked with children aged between seven and nine who had underperformed in standardised reading tests.

The research suggests that DHA supplementation is a simple and effective way to improve reading and behaviour in healthy but underperforming children. DHA is a key omega-3 fatty acid found in fish and seafood, but in this study the source was algae, making it suitable for vegetarians.

The DHA Oxford Learning and Behaviour (DOLAB) study, which compared daily supplements of omega-3 DHA with placebo, will be published in the journal *PLOS ONE* on Thursday 6 September.

Dr Alex Richardson, a senior research fellow at the Centre for Evidence-Based Intervention at Oxford University, said: 'Our results showed that taking daily supplements of omega-3 DHA improved reading performance for the poorest readers (those in the lowest fifth of the normal range) and helped these children to catch up with their peer group.'

Paul Montgomery, Professor of Psychosocial Intervention at the Centre for Evidence-Based Intervention at Oxford University, said: 'Previous studies have shown benefits from dietary supplementation with omega-3 in children with conditions such as ADHD, Dyslexia and Developmental Coordination Disorder, but this is the first study to show such positive results in children from the general school population.'

The researchers worked with Oxfordshire County Council's Education Department to identify 362 healthy children from mainstream state schools in Oxfordshire, aged between seven and nine, who underperformed on a standardised reading test.

The treatment was a fixed dose of 600 mg/day of omega-3 DHA from algal oil. For 16 weeks, the school provided the capsules to the children on school days with the parents giving them to their children at all other times.

Although no significant treatment effect on reading was found in the overall study sample (children whose initial reading placed them in the lowest third of the normal range), supplementation with DHA did significantly improve the reading of children whose initial performance fell within the lowest fifth of the general population range.

In the 224 children initially reading at or below the 20th centile, the improvement in reading over the trial period was 20 percent greater than would normally be expected. In the subgroup of 105 children whose initial reading was below the 10th centile, the improvement in reading was nearly 50 percent greater than would be expected.

Children's reading ages would normally be expected to increase by four months over the 16-week treatment period. The children whose initial reading was below the 20th centile gained an additional 0.8 months in reading age if they received DHA rather than placebo. Those below the 10th centile gained an additional 1.9 months from the active treatment.

In addition to the improvements in reading seen in those children whose initial performance in this area was lowest, parents also reported an overall improvement in behaviour.

The study used validated assessment measures that typically screen for Attention-Deficit Hyperactivity Disorder (ADHD). Although average scores for these children were within the normal range before treatment, significant benefits were reported for the children taking omega-3 DHA compared with placebo on eight of 14 scales assessing a wide range of ADHD-type symptoms. For example, in the children who received the DHA supplement, parents reported significantly less hyperactivity and defiant behaviour than parents of children in the control group.

The DOLAB trial is an independent study conducted at the University of Oxford, and was conducted in collaboration with Oxfordshire County Council Education Department. It was funded by a grant from DSM Nutritional Products, who also provided the active and placebo supplements.

The study was a parallel group, fixed-dose, randomised, double-blind, placebo-controlled trial. A follow-on study is currently underway at the University of Oxford to explore the effects of DHA supplementation in a larger sample of underperforming children.

Advance copies of the full paper can be made available to media on request. The full paper will go live when the embargo lifts on Thursday at <http://dx.plos.org/10.1371/journal.pone.0043909>

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