



Omega-3 supplements and Children's Health



Omega-3 fatty acids satisfy a wide variety of functions, from muscle activity to cell growth and must be part of our diet since our bodies cannot make omega-3 fatty acids. We obtain them through the food we eat or a dietary supplement.

Fish oil is a common dietary supplement we use to increase our omega-3 fatty acid intake. In light of growing evidence about the benefits of omega-3 fatty acids and the fact that the typical Western diet is deficient in these fatty acids, there exists increased interest in supplementation for children. Of particular interest is its ability to help reduce symptoms of certain neurodevelopmental disorders such as autism spectrum disorder and attention deficit hyperactivity disorder (ADHD).

Effects of Maternal and Infant Supplementation

The earliest exposure to omega-3 supplementation in children comes from maternal intake. During the third trimester of pregnancy, 50 to 60 mg per day of the mother's DHA stores is utilized by her fetus. The research to date on maternal supplementation with omega-3 fatty acids, particularly during the third trimester, suggests positive health outcomes in infants. Several studies have shown that greater levels of DHA in the womb and during lactation can improve visual acuity, vocabulary comprehension, and hand-eye coordination during the first year of life. Another study also found infants fed DHA enhanced formula for 17 weeks had improved cognitive function.

Brain and Neurological Effects

Phospholipids make up 25% of the dry weight of the human brain, and therefore polyunsaturated fatty acids (PUFAs) likely affect brain function, including the presence or absence of inflammation.

Developmental Coordination Disorder

Developmental coordination disorder (DCD), a deficit in motor function characterized by difficulties in learning, behavior, and

psychosocial adjustment, affects around 5% of school-age children. For years, scientists believed that low levels of PUFAs may play a role in DCD. A randomized controlled trial of PUFA supplementation in children, (Pediatrics, May 2005) involved 117 children aged 5 to 12 years randomized into parallel groups; with one group taking a supplement containing both omega-3s and omega-6s and the other group taking a placebo for three months. At the end of the three months, the placebo group began taking the supplement as well. The results showed all participants experienced significant improvements in reading, spelling, and behavior, with the children taking the supplement for the longest time having continuous improvements over six months.

ADHD

ADHD has been linked to low blood levels of DHA and high blood levels of omega 6s. Fatty acid supplementation represents a beneficial pathway for those seeking a non-pharmacologic treatment for ADHD.

A 2003 study found higher EPA and DHA levels were associated with reduced disruptive behavior in children with ADHD who received 480 mg per day of DHA and 80 mg per day of EPA for four months. Another study (Journal of Developmental and Behavioral Pediatrics, April 2007) enrolled 106 children with ADHD symptoms, but not necessarily an ADHD diagnosis. These children were divided into three groups: The first group took a multivitamin and mineral supplement plus a tablet containing 400 mg fish oil and 100 mg evening primrose oil, providing a total of 93 mg EPA, 29 mg DHA, 10 mg gamma-linolenic acid (GLA), and 1.8 mg of vitamin E. The second group took only the tablet containing the EPA, DHA, GLA, and vitamin E; and the third took a placebo of palm oil. The two groups that supplemented with omega-3s received significantly improved parent ratings in cognitive problems/inattention, restless-impulsive, inattentive, hyperactive-impulsive, and oppositional behavior subscales compared with the placebo group.

Autism Spectrum Disorder

In a study of 41 children and adolescents with autism between the ages of 7 and 18 years (36 boys, 5 girls) for 12 weeks, all participants were given 1680 mg DHA, 384 mg EPA, and 2556 mg pure evening primrose oil daily (European Journal of Clinical Nutrition, March 2015). Participants showed significant improvements on all scales of social responsiveness and social and attention problems. In addition, blood omega-3 fatty acid levels were significantly correlated with reductions in autistic symptoms. The authors believe that a larger sample size and longer-term study is warranted to advance knowledge about omega-3 fatty acids and their potential impact on children with autism.