

## NUTRITION AND EXERCISE

### NUTRITION

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There are no clear recommendations as to the most appropriate diet for Attention Deficit Hyperactivity Disorder (ADHD), as research is only just developing in this area. However, recent studies do suggest possible effects of food on ADHD. Nutrition, like sleep and exercise, has a direct impact on our well-being and how well we function on a daily basis. Altering some of your child's eating patterns may improve their ADHD symptoms.

### PROTEIN AND CARBOHYDRATES

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It has been shown that **protein** triggers alertness inducing neurotransmitters dopamine and noradrenaline, while **carbohydrates** can make you drowsy. However, eating the right amount of complex carbohydrates may have a **calming effect** on those with ADHD by increasing serotonin levels, which may be deficient.

These findings support the popular belief that for people with ADHD, it is important to eat a high protein, low carbohydrate breakfast and lunch, which may help to increase the ability to focus during the most critical parts of the day. Breakfast is extremely important in helping your ADHD child stay focussed throughout the school morning. For example, a glass of milk, an egg, and an small piece of cheese or meat would be far better than a sugary cereal.

Consuming more **complex** carbohydrates (slow release of low GI) and fewer **simple** carbohydrates may help with ADHD symptoms. Complex carbohydrates are broken down more slowly and provide a steadier supply of energy, needed to help with focus. Examples of complex carbohydrates are whole wheat, brown rice, oatmeal and legumes such as beans and lentils.

Simple carbohydrates are broken down quickly and cause blood sugar levels to spike, making energy levels more erratic. Examples of these are pasta, bread and potatoes.

### SUGAR

Similarly, a diet high in processed foods and sugary soft drinks may lead to peaks and troughs in blood-sugar levels, triggering periods of hyperactivity. Despite the possibility that sugar may have an effect on some children, many studies (such as "Effects of Diets High in Sucrose or Aspartame on the Behaviour and Cognitive Performance of Children" (February 3, 1994) *New England Journal of Medicine*) still tend to discount behaviour being linked to either sugar or artificial sweeteners.

Nevertheless, it is also worth bearing in mind that sugar is high in calories and has very little nutritional value, meaning children who eat a lot of sweets may be missing out on nutrients that keep them calm and focussed. If meal times are delayed, **healthy snacks** can minimise their irritability, as well as support concentration and focus.

## FOOD ADDITIVES

The question of whether food additives, such as preservatives, artificial flavourings and artificial colourings trigger hyperactivity has been debated for many years. Generally, research does not support food additives as being influential to traits linked with ADHD, although some studies have found small effects. In 2007, for example, researchers from Southampton University found that the preservative sodium benzoate and several other commonly used artificial food colourings may exacerbate hyperactive behaviour in young children.

In the 1970s, Benjamin Feingold M.D., a paediatrician and allergist, introduced the Feingold diet, which he said could help to alleviate symptoms of ADHD. Artificial food colourings, flavourings, sweeteners and preservatives, as well as salicylates - naturally occurring compounds found in some fruits and vegetables are eliminated from the diet.

Recent studies suggest that the Feingold diet may be beneficial to the five percent or so of children with ADHD who seem to be sensitive to chemicals in food. One particular study, published in the December 2004 issue of the Journal of Developmental and Behavioural Pediatrics, analysed 15 previous studies and concluded that "artificial food colours lead to hyperactivity, irritability, and insomnia in **some** children with ADHD."

It is important to remember that although poor diet and eating habits may exacerbate symptoms of ADHD, they do not **cause** the condition.

## OMEGA-3 AND OTHER FOOD SUPPLEMENTS

Omega-3 is an **unsaturated** fatty acid which has a whole range of health benefits, but cannot be produced by the body itself. A growing number of studies are investigating omega-3, and it has been found that some people with ADHD have it in lower levels.

Taking omega-3 supplements often leads to a small enhancement of dopamine and serotonin in the brain when compared with a placebo. This has led to the suggestion that **lack** of omega-3 fatty acids may worsen symptoms of ADHD. As it is difficult to get adequate levels of the 'EPA' and

'DHA' forms of omega-3 from a normal diet, fish oil supplements may be beneficial.

Calcium, magnesium, zinc, iron, and vitamins B3 and C are required in the metabolism of EFA's.

Research is now being carried out on food supplements in relation to ADHD. It has been found that iron deficiency, for example, is found in some children with ADHD. Individuals with iron-deficiency anemia can experience apathy, fatigue and even depression.

If you are concerned that your child may have a nutritional deficiency or underlying allergy, it may help to discuss this with your GP or a nutritionist, as it may affect ADHD symptoms.

## EXERCISE

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Current scientific evidence<sup>1</sup> supports the *potential* that physical activity improves ADHD symptoms but there are few clinical studies to draw upon.

The National Institute for Health and Clinical Excellence (NICE) currently recommends regular exercise for children, adolescents and adults with this condition.

Exercising leads to an immediate increase in the levels of the neurotransmitters dopamine, noradrenaline and serotonin. Therefore, in the short term, exercise can have an effect similar to various stimulant medications, such as Ritalin and Adderall, resulting in temporary improvements to attention and mood that are beneficial for people with ADHD. In the classroom, children will be less fidgety and tense, which will place them in a more positive state of mind for learning.

"Exercise also helps to 'wake up' the executive function (EF) component of the frontal cortex, which is under-stimulated in people with this condition", Dr John Ratey states, author of Spark!. EF is a complex construct that relates to planning, impulse control, cognitive flexibility and goal-directed behaviour. With this improved functioning, there is potential for better decision making. An individual is able to slow their thoughts down, giving them time to evaluate their options and consequently make better choices. Additionally, this reduces impulsivity and need for immediate gratification.

It is preferable that your child is involved in a sport or exercise that they find fun, so that they stick with it. Team activities or exercise with a social component are especially beneficial for some children, but others will prefer a more individual exercise such as gymnastics, which may improve co-ordination.

The type and amount of exercise will relate to many factors, including age, health and personal choice. Further information on the intensity of aerobic exercise, muscle development and bone strengthening activities can be found on the website NHS Choices.

Exercising can help to improve your child's sleep patterns, by tiring their body, which will help them sleep better and consequently be more focussed the next day, especially since those with ADHD often have trouble getting to sleep.

Along with relaxation, regular exercise can 'quieten the mind' and is thought to reduce the chance of depression. Moreover, it can improve eating habits and help with weight loss. Exercise also brings a sense of achievement and can improve your child's self-esteem.

## **WHERE CAN I FIND MORE INFORMATION?**

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ADHD Educational Institute - [www.adhd-institute.com/Treatment/Lifestyle-and-diet.aspx](http://www.adhd-institute.com/Treatment/Lifestyle-and-diet.aspx)

BBC Science & Nature Omega-3-  
[www.bbc.co.uk/science/humanbody/mind/articles/intelligenceandmemory/omega\\_three.shtml](http://www.bbc.co.uk/science/humanbody/mind/articles/intelligenceandmemory/omega_three.shtml)

Livestrong - [www.livestrong.com/article/114162-adhd-diet-children/](http://www.livestrong.com/article/114162-adhd-diet-children/)

Mayo Clinic - [www.mayoclinic.com/health/adhd/AN](http://www.mayoclinic.com/health/adhd/AN)

NHS Change4Life - [www.nhs.uk/Change4Life/Pages/healthy-eating.aspx](http://www.nhs.uk/Change4Life/Pages/healthy-eating.aspx)

NHS Choices - <http://www.nhs.uk/Livewell/fitness/Pages/physical-activity-guidelines-for-young-people.aspx>

"Spark!: The revolutionary new science of exercise and the brain". [Dr John J. Ratey](#).

Quercus Publishers 2010.

"The effects of physical activity on attention deficit hyperactivity disorder symptoms: the evidence"

Gapin JJ, Labban JD, Ethier JL. *Prev Med* 2011; 52 (Suppl 1): S70-S74.

National Institute for Health and Clinical Excellence (NICE) - [www.nice.org.uk/](http://www.nice.org.uk/)  
*ADHD: diagnosis and management of ADHD in children, young people and adults.*