NEURO
COGNITIVE
TRAINING

Treating ADD/ADHD without medication

For parents and teachers

It is estimated that 5-10% of children of school age in the western world are suffering from Attention Deficit Disorder; with or without Hyperactivity.

Teachers are constantly facing a challenge with children that seem to not have the ability to focus on their studies, do their homework or keep up with the materials learnt in class.

The parents experience it at home; they KNOW their child is bright and can achieve a lot, but the child just doesn't do well at school. If there is also hyperactivity in the picture, it just adds to everyone's frustration.

And the child? His/her difficulty is that they can't help themselves and feel misunderstood. They WANT to remember their school tasks, they WANT to do well at school, but they CAN'T concentrate. They feel like there is a fog in their head, masking everything else.

So what is happening?

They have an imbalance in their brainwave activity that makes it so difficult for them to focus.

Understanding what happens in the brain of an ADHD child will help parents and teachers guide, help and encourage the child.

By learning and applying tools from the following fields, we can take an active part at home and in school in the improvement of the child's behavior and achievements.

Understanding the brain

How old is your child?

Under 7

The brain develops and changes constantly from birth to the age of 7.

It is completely normal that a child's attention span will be short, that he will be mischievous and that he will spend most of his day floating around in his mind.

So when it comes to the brain, diagnosing ADD/ADHD should not be done before this age.

Mapping, assessing and training the brain starts at the age of 7

10-20 years old

In this vulnerable and dynamic stage of the child's brain, **adolescence,** some behaviours can be explained by the following facts:

- **The pre-frontal cortex (PFC) is not fully mature in this age.** It is the area responsible for *planning, prioritising and controlling impulses*.
- **Major changes in adolescent emotional centres in the brain** (limbic system) are happening in this age and there is no established link with the PFC, which means they express *difficulty in managing emotions and thinking ahead.*
- **Social aspects and interactions in school**: Adolescents with a history of being bullied or rejected, for example, show *different patterns of brain activation* to certain social information – their brains appear to be more sensitive to the experience of being left out.

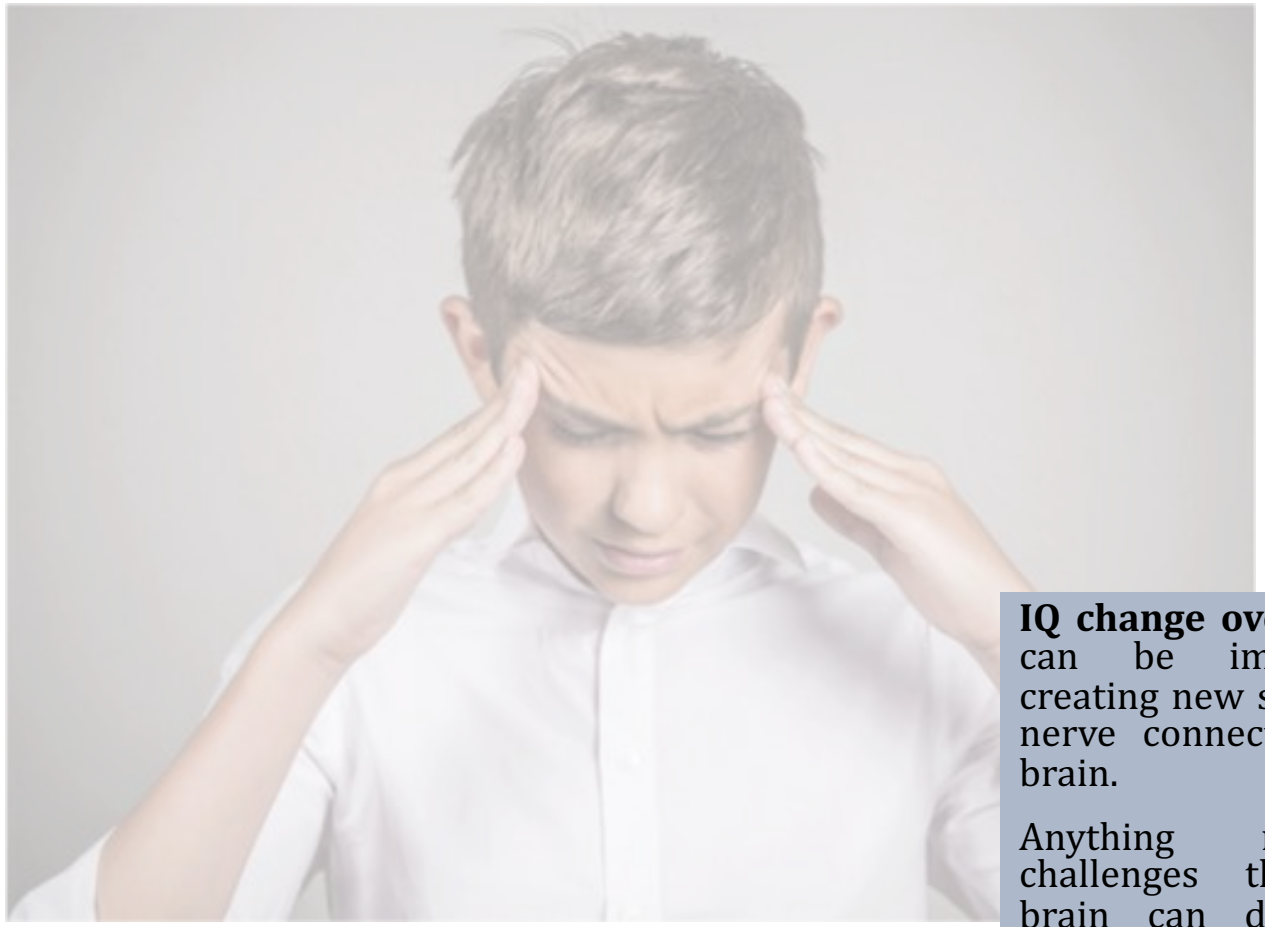
The brain waves of concentration

Things to keep in mind when going through a challenging time with your child

Many individuals with ADHD show a pattern of brain electrical activity referred to as "**cortical slowing**". This is characterised by an elevation of low frequency theta waves and a reduction of higher frequency beta waves in the prefrontal cortex.

To put it in general terms:

Theta = unfocused, inattentive state
Beta = Focused state



IQ change over time, and can be improved by creating new synapses and nerve connections in the brain.

Anything new that challenges the thinking brain can develop new neural pathways.

The brain waves of concentration

This, and many other aspects that can be found in their brain activity, mean that:

- ADHD is not a learnt behaviour
- ADHD child is not a child that has been spoiled or has discipline problems
- The child is not being difficult on purpose, nor does he just have a bad temper.
- The child is not using ADHD as an excuse to not be doing well in school

- ADHD is a brain disorder that is affected by the electrical and chemical functions. Unless it is balanced, the child is constantly experiencing challenge to self-confidence and self-esteem because their brain is struggling to do the impossible: the fight to stay focused.
- The plasticity of the brain means that it's never too late to get children involved in learning.

The child's diet

NO.

Considerable evidence suggests that dietary factors are associated with childhood behavioural disorders such as ADHD:

- **Low levels of copper, iron, zinc** (reviewed in Arnold & DiSilvestro, 2005)**, magnesium** (Kozielec & Starobrat-Hermelin, 1997), and **omega-3** fatty acids (Spahis et al., 2008) have been reported in children with ADHD
- Sugar, **artificial food colourings, and preservatives** are associated with an increased risk of ADHD.

1

A study with adolescents reported that a Western-style dietary pattern, characterised by high intakes of fat, refined sugars, and sodium and low intakes of fibre, folate, and omega-3 fatty acids, was associated with increased odds of an ADHD diagnosis, **whereas a healthy dietary pattern, with high intakes of fibre, folate, and omega-3 fatty acids, was not correlated with the diagnosis of ADHD.**

(ADHD is associated with a "Western" dietary pattern in adolescents. *Howard AL, Robinson M, Smith GJ, Ambrosini GL, Piek JP, Oddy WH J Atten Disord. 2011 Jul; 15(5):403-11.*)

The child's diet

2

Wash and peel your fruit and vegetables (pesticides)

Children with higher levels of organophosphate (**pesticides**) in their urine, had higher ADHD rates.

Women with higher levels of organophosphate in their urine were more likely to have a child with ADHD.

High prenatal organophosphate exposure has been associated with adverse outcomes related to ADHD symptomatology (Rauh et al., 2006).

3

Keep your gut bacteria happy (probiotics)

Microbial medicine in mental health:

A good rule of thumb is a healthy microbiome (gut bacteria) is a diverse microbiome, containing a wide variety of different species living all over our bodies.

The food we eat, the pets we have, the drugs we take, how we're born… all alter our microbial inhabitants. Lifestyles that weaken our gut bacteria, such as a diet low in fibre, can make us more vulnerable to disease and disorders.

The microbiome is the fundamental future of personalised medicine. So much so that it is estimated that in the next 5-10 years, when you go to your doctor for your cholesterol and blood testing, you'll also get your microbiome assessed, and psychiatrists will be prescribing a probiotic cocktail of healthy bacteria - to boost our mental health.

Why wait until then? Keep your digestive system happy by having probiotics in your diet.

At home and in school

At least one hour of physical activity a day. Afterschool activities, exercise and meditation can benefit cognitive systems in the brain.

No more than one to two hours of total **screen time a day** (TV, computers, video games)

Find ways to de-stress and sleep. At least **9 hours sleep** for teenagers at night.

At home and in school

Positive feedback is a reward that the brain is very sensitive to in ADHD children. This can help with **motivation and improving specific behaviours.** It is important to be as specific as you can with your feedback. Relate to every detail of the rewarded behaviour so the child will understand what exactly is encouraged to be repeated in the future.

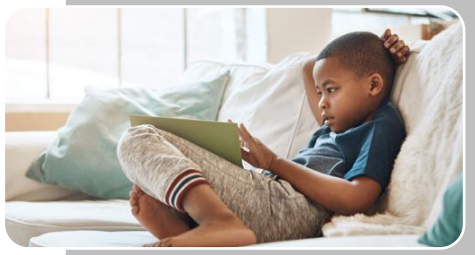
Give encouragement and praise for the effort- more so than the result!

Allow choices when giving the child the freedom to choose, but don't give him too many options to choose from. This will confuse the decision-making process and result in indecisiveness or stress-related avoidance.

Give short, clear and precise instructions or directions, with a clear finish point. Let the child know when his task will finish and what happens after (he can have a break, he gets a reward…). Use short sentences, so he can maintain his listening focus.

At home and in school

Give significance to the task the child is requested to do. Explain to him what the purpose of it is. It is important that the child feels involved and with control over his schedule and not pushed to doing something he does not understand.



Make changes to the child's environment – change lighting, change your tone of speech, the music in the background or their sensory experience. In other words, avoid monotonous environment.

Help the child understand the consequence of his actions by reflecting the feedback as close to the action as possible. Especially when trying to teach them what behaviour to avoid.

At home and in school

When doing school work with your child, **allow frequent breaks** to allow him to run around or be physically active.

Use a timer when working on tasks. This will give the child the sense of how much time is left for him to stay focused.

Encourage the child to do art: sculpting, pottery, carpentry… help him or her *focus on the process* and not just the result.

At home and in school

Connect instructions with a visual gesture: count with your fingers, point on an object, write it on a board…

Keep eye contact when speaking or listening to your child. This has been found to minimise destructiveness.

Limited intake of sugar

Drinking plenty of water. Yes, water- limit or eliminate sugary drinks

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The tips and advice for coping with ADD/ADHD children come in addition to proper treatment.

nctNeurofeedback training changes the brain, changes behaviour, and improves concentration and scholastic ability.

The North London nctNeurofeedback Clinic

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