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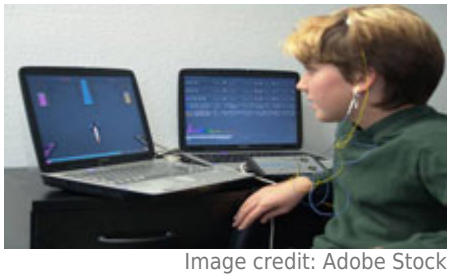
Neurofeedback: Information for Individuals and Families



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Summary: Our brains consist of billions of neurons that use electricity to communicate with each other. When our synapses are firing, they create electrical activity that can be measured as “brain waves”. In many conditions, our brain waves are disrupted and not functioning properly. Thus we can have too many of some types of brain waves or not enough of others. Neurofeedback is a type of therapy that can help individuals to better control their brain waves.

What is Neurofeedback?

Our brains consist of billions of neurons that use electricity to communicate with each other. When our synapses are firing, they create electrical activity that can be measured as “brain waves”.

In many conditions, our brain waves are disrupted and not functioning properly. Thus we can have too many of some types of brain waves or not enough of others.

Neurofeedback is a type of therapy that can help individuals to better control their brain waves, which may thus be helpful for various brain conditions.

What is the Evidence for Neurofeedback?

Evidence suggests that neurofeedback may be useful for a variety of brain conditions, including:

- Post-traumatic stress disorder (CADT, 2014; Hammond, 2015)
- ADHD (Lofthouse, 2011; Moriyama, 2012)

Note however, that at this time, although neurofeedback appears to be promising, there is nonetheless a lack of evidence for neurofeedback, particularly for mood and anxiety disorders (CADT, 2014).

How Does it Work?

Neurofeedback starts by seeing a professional with expertise in neurofeedback, such as a psychologist, for an assessment.

As part of this assessment, it is usually recommended to do an electroencephalogram (EEG) assessment that involves placing sensors on the patient’s scalp, and measuring the unique brain wave patterns of the patient. Based on this EEG assessment, a custom treatment intervention can be developed.

During treatment, sensors are placed on the patient’s scalp. The patient is encouraged to control a video game or movie with their minds (through focus and relaxation). Since the brain is very adaptable (through plasticity), it

does not take long for the mind to start regulating itself so that the patient can succeed in the video game. As the brain develops more normal brainwave patterns, the patient's symptoms start to improve.

How Many Sessions?

Depending on the issue and what the assessment shows, patients usually train either twice a week for half an hour, or once weekly for an hour.

The number of sessions is really dependent upon the person's response and the complexity of the training protocol.

Like learning any new skill, it takes time. In general, people should be prepared for 20 hours of treatment at a minimum. Benefits may appear after just a few sessions, but to make sure that the benefits "stick", it takes a bit more time.

What Parents Can Tell their Children/Youth

If you are going to bring your child/youth to neurofeedback, this is what you can tell them:

Do you have a moment? We have some really exciting news for you.

The bad news is that you've been having troubles with ____ (insert issue here, e.g. focusing, feeling anxious, etc.)

Here's the good news. There is a powerful way to help you with this, called neurofeedback.

Neurofeedback is a really cool way of helping your brain be able to ____ (insert issue here, e.g. focus better, feel calmer (i.e. less anxiety), etc.

How does it work? There's this neat video game you can play and as you 'win' in the video game it is teaching your mind how to stay nice and calm. To do this, we will take you to a doctor that does neurofeedback. They will put little sensors on your scalp using some sticky stuff, and those sensors read your brain waves. Using the readings, they will make a video game for you. It's a game that involves things like space ships or boats or a pac man. What's really cool is that you will learn to completely control whether or not the spaceship moves and wins. You don't have any controllers to play this game. You get to play it with your mind! As you start to win at the game, your brain is learning how to stay calm so that you feel better.

Other Types of Biofeedback

Neurofeedback is a type of 'biofeedback'. In addition to neurofeedback, there are other forms of biofeedback, such as HeartMath (which regulates heart rate variability), thermal biofeedback, muscle biofeedback and other forms. Some forms of these biofeedbacks can be purchased and delivered at home. A professional with expertise in biofeedback can help you determine which type of biofeedback might be the best for your child.

Do It Yourself Self-Regulating Activities

You can also incorporate other activities and practices into life which can as a by-product help regulate their brain and body. These include activities, such as:

- Yoga
- Meditation
- Spiritual practices that focus on mindfulness, and acceptance, including Buddhist practices
- Physical exercise
- Being in nature
- Puzzles, colouring, etc

All of these activities encourage a mind and body connection which is our healthiest brain state.

Resources in Canada for Neurofeedback

To find a qualified biofeedback provider, visit the website for the Biofeedback Certification International Alliance (BCIA), and click on “Find a Practitioner”. There you will find board certified practitioners of neurofeedback and other forms of biofeedback. www.bcia.org

References

Lofthouse et al.: Review of Neurofeedback Treatment for Pediatric ADHD, J. Attention Disorders, July 2012, Vol 16(5): 351-372. Review which concluded that neurofeedback for paediatric ADHD was “probably efficacious.”

Moriyama T: Evidence-Based Information on the Clinical Use of Neurofeedback for ADHD. Neurotherapeutics 2012 Jul; 9(3): 588-598. “In conclusion, NF is a valid option for the treatment of ADHD, but further evidence is required to guide is use.”

Hammond D: Neurofeedback with Anxiety and Affective Disorders, Child Psychiatry Clinics, 14(1): January 2005. “A robust body of neurophysiologic research is reviewed on functional brain abnormalities associated with depression, anxiety, and obsessive-compulsive disorder. A more recent neuroscience technology, elec- troencephalographic (EEG) biofeedback (neurofeedback), seems to hold promise as a methodology for retraining abnormal brain wave patterns. It has been associated with minimal side effects and is less invasive than other methods for addressing biologic brain disorders.”

About this Document

Written by the eMentalHealth.ca Team. Special thanks to Dr. Michelle Presniak, Ottawa Neurofeedback Centre for content expertise.

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