

Melbourne Performance Psychology

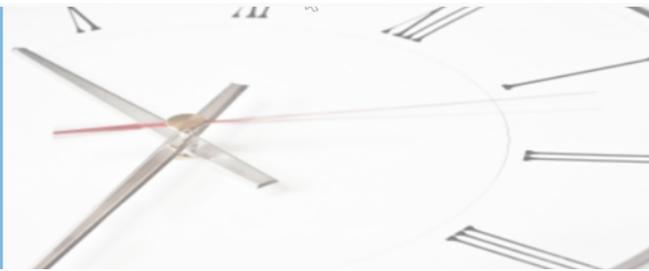
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Neurofeedback Explained

Neurofeedback is a form of biofeedback. What is **Biofeedback**? It is a simple concept, one with which we are actually very familiar from everyday life. The idea is: If you can sense it, you can change it. Biofeedback uses machinery to extend sensory perception into areas where we would normally be unaware. Normal activities of life depend on sensory feedback, eg. Balance, walking, holding objects.

Biofeedback gives the trainee ongoing immediate information about some body function. Knowing the information allows the trainee to modify the body function. Traditional biofeedback works with such things as muscle tension, finger temperature, skin conductance, heart rate, breathing rate, heart and breathing synchronisation, blood pressure.

Neurofeedback or EEG Biofeedback is a specific form of biofeedback which gives the trainee moment-to-moment information about the rhythmic electrical activity from various places in the brain (EEG), and challenges the brain to modify certain components of it.

Similar to training other biological measures, the trainee is soon able to induce changes in the brain wave patterns. These changes lead to improved flexibility and stability of the brain waves in general, which leads to improved flexibility and stability of behaviour in response to external demands on the person in the course of day-to-day activity.

Scientific studies indicate that Neurofeedback is able to produce significant improvement in symptoms of epilepsy, ADHD and drug addictions. There is considerable evidence in clinical practice that neurofeedback can improve a large variety of disorders, including panic reactions, depression, sleep disorders and mild traumatic brain injury.

The brain functioning model adopted by most neurofeedback practitioners looks at three underlying patterns of dysregulation: **Overactivation, underactivation and instability**. Disorders belonging in the overactivation pattern include: impulsiveness, overactivity, high anxiety, anger and rage reactions, obsessive-compulsive symptoms, tic disorders, and difficulty falling asleep at night. Underactivation involves such disorders as inattention, low energy depression, and early morning awakening. Instability involves disorders such as seizures, migraine and panic attack.

Training begins after an initial evaluation taking approximately 2 hrs, (including a brain EEG recording and some brain symptom checklists). When Dr Dan Riddle provides Neurofeedback (NFB) training this usually occurs within the normal 1 hr consultation. Dan will spend 30 minutes using standard Cognitive-behavioural psychological training/counselling and will administer 15-20minutes of NFB during the one hour session. Treatment may be split over two half hour sessions within a single week to ensure adequate NFB treatment. Optimal treatment using NFB varies according to the symptoms being treated. Some studies have shown positive results in limited sessions treating depression in approximately 10 sessions, ADHD in 20-40 sessions. It is preferable to aim for a loading of treatment of 5 -10 sessions within 5 or 6 weeks if possible and then continue for a further 5-10 sessions to stabilise. Some clients may need more and others less to produce lasting positive benefits. Change may occur within 5 sessions for some clients. Treatment must be tailored to each individual.

Behaviour problems, especially defiance and aggression, tend to improve with neurofeedback training. However, they are complex social responses and appear for a variety of reasons which may be related to brain overactivation (ie., impulsiveness, high energy level) as well as to the person's social environment. For example, the person may have a long-standing habit of being oppositional or aggressive. They may have few, if any, alternative behaviours (such as talking through or negotiation) when dealing with frustration. Also, many people who are aggressive or oppositional use these behaviours manipulatively to get what they want. When children who are stubborn, defiant or aggressive are seen for neurofeedback, it is usually necessary to have ongoing counselling with parents and the child in order to help the family deal more effectively with the child's behaviour, while at the same time helping the child develop more adaptive ways of coping with frustration and stress. In these cases, neurofeedback makes the child more available for counselling and behaviour change, and allows behavioural solutions to work more effectively.

Outcomes: On an objective (hands-on) test of attention and impulse control, approximately 90% of a group (40 of 45) of people with ADHD showed significant improvement by the end of training. Parent and self-report measures of change were in high agreement with the hands-on test results. The positive changes were highly significant. **Followup:** A 14 month followup study of 18 people with ADHD indicated that 14 actually improved in the 14 months after training, and another 3 maintained the improvement shown in training. These results indicate that following neurofeedback training, people can expect to continue to improve.

Does Neurofeedback work? The best research evidence on the effectiveness of Neurofeedback is for the treatment of Attention Deficit problems. In 2012 the American Academy of Paediatrics declared that Neurofeedback is a Level 1 evidenced based practice for ADD & ADHD. Substantial scientific study *does* shows positive effects for many of other conditions including PTSD, Depression, Anxiety, Migraine and even some forms of epilepsy. It is wrong however to claim it can "fix" all these conditions and research is occurring throughout the world to establish where it is most effective. **If it works why is it not being offered more and why don't Australian doctors recommend it?** Without meaning to be critical of anyone, it is likely that many practitioners in Australia may be slightly conservative (rather than progressive) and prefer to stay with mental health techniques they are 'comfortable' with (rather than trying new emerging techniques such as Neurofeedback which is more widely available in North America and Europe). Some practitioners prefer to use medication because the results might be faster (despite the fact that Neurofeedback may produce more lasting benefits with no ongoing side effects like medication). Medication is often vital in many mental health problems however drug companies and practitioners probably over-depend on medication. The fact that Neurofeedback equipment and training is expensive may also stop many interested practitioners offering it.

Recommended Reading: Getting Rid of Ritalin: How Neurofeedback Can Successfully Treat Attention Deficit Disorder Without Drugs. Robert W. Hill, PhD & Eduardo Castro, MD. Hampton Roads Publishing Company Inc., Charlottesville, VA 2002. (Available from Dr. Perl)

A Symphony in the Brain: The Revolution of the New Brain Wave Biofeedback. Jim Robbins. Atlantic Monthly Press, New York. 2000.

ADD: The 20 Hour Solution. Mark Steinberg & Siegfried Othmer. Robert D. Reed Publishers. Bandon Oregon 2004.

Scientific Reviews: The entire issue of Clinical Electroencephalography, Journal of the EEG and Clinical Neuroscience Society (ECNS). Vol 31 No. 1. January 2000. Authors include Frank Duffy, MD; Norman Moore, MD; J Peter Rosenfeld PhD; David L Trudeau MD; John Gruzelier PhD; John K Nash PhD; Robert Thatcher, PhD; M Barry Sterman, PhD.

Efficacy of Neurofeedback Treatment in ADHD: the Effects on Inattention, Impulsivity and Hyperactivity: a Meta-Analysis Martijn Arns, et al, Journal of Clinical EEG and Neuroscience, 2009, Vol 40, No. 3, pp 180-189.

Neurofeedback in Psychological Practice. Masterpasqua, Frank; Healey, Kathryn N. Professional Psychology: Research and Practice December 2003 Vol. 34, No. 6, 652-656 ISSN: 0735-7028 Number: pro346652 (at <http://www.alertfocus.com>)

Gevensleben, H., Holl, B., Albrecht, B., Vogel, C., Schlamp, D., et al. (2009). Is neurofeedback an efficacious treatment for ADHD?: A randomized controlled clinical trial. *Journal of Child Psychology and Psychiatry*, 50, 780–789

What happens in Neurofeedback Training

EEG biofeedback requires placement of surface electrodes on the scalp for the purpose of recording EEG and the use of this signal to provide video displays and audio signals. When the clients brain waves meet the requirements or 'criteria' set by the computer the video display (movie being watched) produces a 'brighter' image or provides a rewarding sound or both. If the brain waves do not meet the 'criteria' the computer does NOT give these rewards to the person's brain. Over several 'training sessions' the person's brain 'learns' how to operate better because the brain waves are 'taught' to have more or less strength!! The positive effects of Neurofeedback include improved alertness, less distractibility, greater calmness, greater ease at getting to sleep and a feeling of greater restfulness following sleep. At the start of treatment a person may notice a range of minor temporary adverse affects such as mild headache, mild nausea or sleeplessness. These side effects provide important information that allow the clinician to personally adjust the treatment protocols for greatest effectiveness. As Neurofeedback training continues some client's report this may affect the body's response to medications. If this occurs medications should not be stopped or altered without consulting with a physician/psychiatrist. If new symptoms develop, it is the client's responsibility to inform the health care providers and clinicians at *Melbourne Performance Psychology*. It is the client's responsibility to monitor the subjective effects of training.

Neurofeedback is based on the input of the client's report from day to day sessions as well as from the initial assessment and depends on the full participation of the client, i.e., his/her feedback about the effects of the training. The research literature indicates that some individuals will not respond to the training. Accordingly, the client is encouraged to evaluate progress after about ten sessions to determine if further training is indicated. Discussion is invited at this point or any time during the training. No representation is made that every individual client will improve from training. There is some indication that some client's improvement may fall off after the cessation of training. These individuals would benefit from periodic follow up or booster sessions. The training is non-invasive and appears to be a harmless procedure as far as is known or reported in the literature. More information on Neurofeedback may be found at eegspectrum.com and at isnr.org.

Cancellation Policy

If, for some reason you need to cancel or postpone the appointment, please give me at least 24 hours notice, otherwise you may be charged half the cost for the session.

I, (*print name in Block Capitals*)....., have read and understood the above Consent Form. I agree to the psychological service and neurofeedback training provided for myself or for my child.

Signature Date

RELEASE OF INFORMATION

Communication with health professionals or teachers may be required during treatment

I, hereby give consent for clinicians from Melbourne Performance Psychology to liaise with medical/health care professionals if required.

Client/guardian Signature:.....

Date: Date:.....