

## BIOFEEDBACK

Biofeedback is a training technique that teaches us to stay relaxed, thus reducing our stress levels whilst improving our health, well-being and performance. Biofeedback is commonly utilized for relaxation and stress management.

Stress causes our muscles to tense and tighten, which in turn can produce other aches and pains. Biofeedback can offer relief for people suffering from

- ✚ migraines and tension headaches
- ✚ depression
- ✚ anxiety and
- ✚ hypertension.

Biofeedback is a non-invasive type of therapy. Sensors or electrodes are attached to the body, which provide feedback displayed on a computer screen about

- ✚ muscle tension
- ✚ heart rate
- ✚ breathing and
- ✚ stress level.



Biofeedback teaches us to use our brainpower to develop greater control over our bodies, resulting

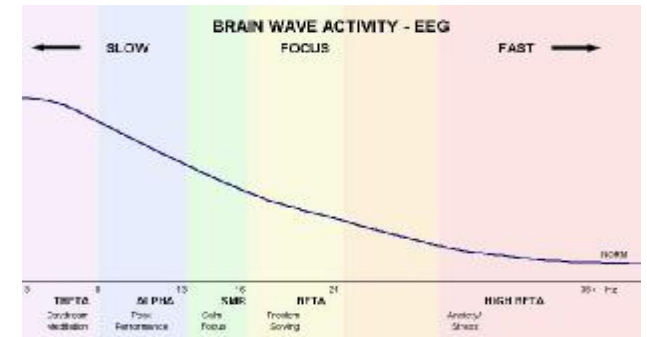
in feelings of relaxation and improved motor control. Through biofeedback we learn to recognise, understand and interpret our stressors, as well as our physiological response patterns.

## BRAINWAVES

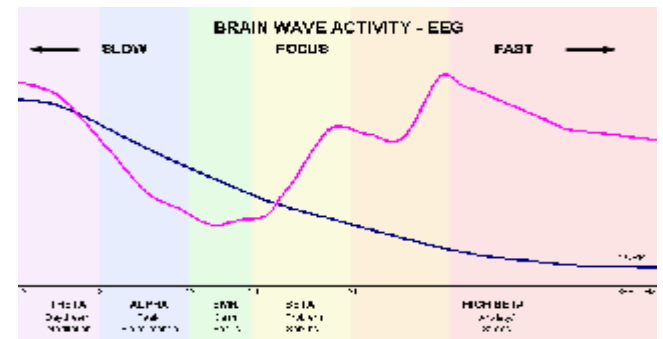
Our brain functions and communicates with our bodies through electrical impulses, called brainwaves. Brainwaves move at different frequencies, categorised as indicated below. Each category is associated with certain functions and moods, namely:

- ✚ Beta - Anxiety, stress, problem solving
- ✚ SMR - Calm, relaxed, focused
- ✚ Alpha - Peak performance, daydreaming
- ✚ Theta - Meditation, creativity, insight
- ✚ Delta - Sleeping

Our SMR (Low Beta) brainwaves have the additional function of self-regulation so that we can produce the appropriate brainwaves for any given situation. Ideally, we want to have a lot of Slow Alpha and Theta waves - associated with relaxation and the production of serotonin and endorphins - and plenty of SMR and Midrange Beta waves which are good for concentration. To the contrary, we want very little fast High Beta waves, associated with too much adrenalin. Ideally, our brainwave profile should look similar to the following:



The next graph is a typical brainwave profile of a person who has problems with stress and anxiety - strong fast High Beta waves. The weak Slow Theta and Alpha waves make it hard to relax. The SMR and Midrange Beta waves are fairly weak, causing problems with concentration. The dip in the SMR frequency range indicates a very low level of self-regulation.



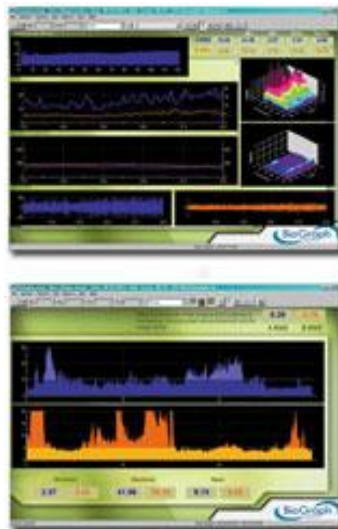
## NEUROFEEDBACK

Neurofeedback is a non-invasive, painless, user-friendly procedure by which brainwave activity is detected and analysed. The purpose of Neurofeedback or Neurotherapy is to train the brain to achieve a healthier brainwave profile. It can increase brainwave activity, resulting in significant improvement in attention and

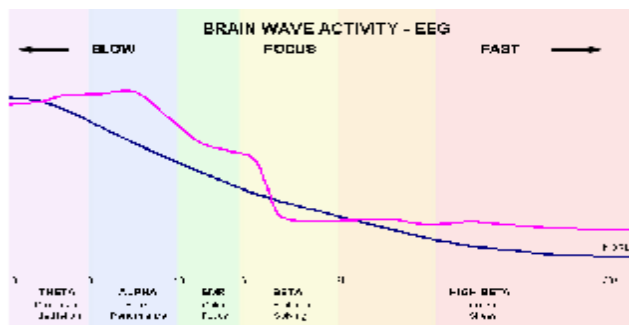
concentration. It is used for many conditions and disabilities in which the brain is not working appropriately. In cases such as seizures, traumatic brain injuries, strokes and autism, it organises the brain to function better in the context of whatever injury or loss exists. To control our brain functions is clearly the key to achieve optimal intellectual, academic and athletic performance, to deal with issues related to attention, concentration, impulsivity and movement disorders like Parkinsonism and dystonia.



In order to measure the brainwave frequencies, electrodes are attached to the scalp. The brainwave activity is then graphically displayed on a computer screen. A specially designed computer program is utilised to give feedback when the brain is producing the desired frequencies.



This feedback is similar to playing a computer game and involves sound and graphic animation. The following is the brainwave profile of a client after a course of Neurotherapy:



The fast High Beta waves are much weaker, and the slow Theta waves are much stronger. The peak in the Alpha wave frequencies indicates increased creative ability and the strong SMR waves show greatly improved self-regulation. Neurotherapy can result in a significant improvement in an individual's attention and concentration and can therefore be of great assistance in treating

Attention Deficit Disorder and Attention Deficit Hyperactive Disorder.

### OPTIMAL PERFORMANCE

As soon as we have learnt to self-regulate our brainwaves and to accomplish desired brainwave states at will we are ready to proceed to the next step in this process, namely Optimal Performance, which means that we are able to sustain an ideal brainwave pattern for extended periods of time. This is called the "Awakened Mind" profile and is characterised by the optimum amount of every frequency for the brain to function optimally. There is an open flow of information between the conscious (Beta), subconscious (Alpha) and unconscious (Theta) minds when the brainwaves flair into a brief Awakened Mind state. This is what is called an "ah-ha" or eureka moment characterised by insight and creativity. Information learnt through the utilisation of Beta waves can then instantaneously be transferred to the subconscious and unconscious minds to be processed and stored in long term memory.

Biofeedback and Neurofeedback are tools that assist individuals in learning self-regulation skills that improve their functioning. Bio- and Neurofeedback training can be combined, because relaxed concentration is an optimal state for learning.

# Bio- & Neurofeedback



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