

BIOFEEDBACK

WHAT IS BIOFEEDBACK?

Clinical biofeedback emerged as a discipline in the late 1950's. Since that time, its clinical usefulness and applicability to an array of health conditions have been appreciated by a growing number of practitioners. Early laboratory experiments with biofeedback showed concretely the strong link between the mind and body. Subjects of these investigations demonstrated the ability to alter body functions such as brain waves and heart rate, which were previously believed to be outside of conscious control.

Simply stated, biofeedback is a process through which people are taught to improve their health and performance by using signals from their own bodies.

EVERYDAY EXAMPLES OF BIOFEEDBACK

Outside of the lab or the clinical setting, we all have ample experience with various forms of biofeedback. For example, a thermometer is a simple biofeedback device that allows "feedback" information from the body (bio) to come back to us. This feedback changes our behavior as we use the information to guide our actions. For instance, taking our temperature may lead us to take a medication, call in sick, or go on with our activities as planned. Another form of everyday biofeedback is the bathroom scale. We might learn that we have put on a few pounds and use that feedback to adjust our nutrition and exercise practices. Pedometers or Fitbits may inform us that we are under our "10,000 steps," leading us to take that extra walk around the block to meet our daily exercise goal.

In the above everyday examples, the feedback is given visually in the form of numbers. Modern biofeedback therapy, on the other hand, often utilizes devices that provide such feedback on elaborate, engaging computer games that have been programmed to reward users as they learn to control a desired physiological response in their body. For example, a person might learn to lower muscular tension in the jaw by observing an image of a lake's surface, or a teen might learn to enhance certain brain wave patterns by engaging in a biofeedback-based game.

TYPES OF BIOFEEDBACK TYPICALLY USED TODAY

Clinical measures that are most typically used include respiration, heart rate, muscle tension (surface electromyography), sweating (Galvanic skin response), skin temperature, and brain waves (electroencephalography). The process of feeding back brainwaves is referred to as neurofeedback. Clinically, biofeedback might be combined with other treatments, such as relaxation techniques and cognitive behavioral therapy, as part of a multi-faceted intervention. Biofeedback can frequently enhance the effectiveness of other treatments by helping individuals become more aware of their own role in influencing health and disease.

DOES BIOFEEDBACK WORK?

The effectiveness of biofeedback in the treatment of physical and mental health problems has undergone considerable scientific scrutiny. A rating system for the efficacy for biofeedback was created and adopted by the Boards of Directors of the Association for Applied Psychophysiology (AAPB) and the International Society for Neuronal Regulation (ISNR).[1] The five levels are listed below from strongest to weakest efficacy.

LEVEL 5: EFFICACIOUS AND SPECIFIC

The investigational treatment must be shown to be statistically superior to credible sham therapy, pill, or alternative bona fide treatment in at least two independent research settings.

Includes:

- Urinary incontinence in females was assigned to this category.

LEVEL 4: EFFICACIOUS

Six criteria had to be met in order for this level of efficacy to be assigned.

1. In a comparison with a no-treatment control group, alternative treatment group, or sham (placebo) control using randomized assignment, the investigational treatment is shown to be statistically significantly superior to the control condition or the investigational treatment is equivalent to a treatment of established efficacy in a study with sufficient power to detect moderate differences.
2. The studies were conducted with a population treated for a specific problem, for whom inclusion criteria are delineated in a reliable, operationally defined manner.
3. The study used valid and clearly specified outcome measures related to the problem being treated.
4. The data are subjected to appropriate data analysis.
5. The diagnostic and treatment variables and procedures are clearly defined in a manner that permits replication of the study by independent researchers.
6. The superiority or equivalence of the investigational treatment has been shown in at least two independent research settings.

Meeting these criteria were:

- Anxiety
- Attention Deficit Disorder
- Headache-Adult
- Hypertension
- Temporomandibular Disorders
- Urinary Incontinence in Males

LEVEL 3: PROBABLY EFFICACIOUS

This designation requires multiple observational studies, clinical studies, wait list controlled studies, and within subject and intra-subject replication studies that demonstrate efficacy.

Includes:

- Alcoholism/Substance Abuse
- Arthritis
- Chronic Pain
- Epilepsy
- Fecal Elimination Disorders
- Headache-Pediatric Migraines
- Insomnia
- Traumatic Brain
- Injury
- Vulvar Vestibulitis

LEVEL 2: POSSIBLY EFFICACIOUS

This designation requires at least one study of sufficient statistical power with well identified outcome measures, but lacks randomized assignment to a control condition internal to the study.

Includes:

- Asthma
- Cancer and HIV
- Effect on Immune Function
- Cerebral Palsy
- Chronic Obstructive Pulmonary Disease
- Depressive Disorders
- Diabetes Mellitus
- Fibromyalgia
- Food Ulcers
- Hand Dystonia
- Irritable Bowel Syndrome
- Mechanical Ventilation
- Motion Sickness
- Myocardial Infarction
- PTSD
- Raynaud's Disease
- Repetitive Strain Injury
- Stroke
- Tinnitus
- Urinary Incontinence in Children

LEVEL 1: NOT EMPIRICALLY SUPPORTED

This designation includes applications supported by anecdotal reports and/or case studies in non-peer reviewed venues.

Includes:

- Autism
- Eating Disorders
- Multiple Sclerosis
- Spinal Cord Injury

For further information regarding the criteria for rating system, refer to the [Association for Applied Psychophysiology and Biofeedback](http://www.aapb.org) (AAPB) www.aapb.org website.

WHICH PROVIDERS USE BIOFEEDBACK?

Biofeedback is provided by qualified professionals from many disciplines, including psychology, psychiatry, medicine, dentistry, nursing, social work, occupational and physical therapy, and other allied health professionals. Because biofeedback is a multidisciplinary modality, psychologists, physicians, or allied health professionals can use it to treat problems or disorders that are stress related.

FINDING CERTIFIED BIOFEEDBACK PROVIDERS

Most experts would agree that it is best to obtain biofeedback from a qualified health care professional. Information about certified biofeedback professionals can be obtained from the organizations listed below:

- [The Association for Applied Psychophysiology and Biofeedback](http://www.aapb.org) (AAPB), www.aapb.org.
- [The Biofeedback Certification Institute of America](http://www.bcia.org). The BCIA was established as an independent agency to provide national certification for biofeedback providers, www.bcia.org.
- [International Society for Neurofeedback & Research](http://www.isnr.org) (ISNR), www.isnr.org.

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REFERENCES

1. International Society for Neurofeedback & Research International Society for Neurofeedback & Research website. www.isnr.org. Accessed August 3, 2016.