

POTS TREATMENT CENTER

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Introduction

Thank you for your interest in the non-invasive program that includes **biofeedback**. I hope the information contained in this document will further your understanding of what is done in a biofeedback treatment program.

Applied biofeedback consists of a group of therapeutic procedures that utilize electronic instruments to measure, process and "feed back" to individual's information about their neuromuscular and autonomic activity. Thus, biofeedback can be like a mirror for individuals to help them become aware of their psychophysiological processes. A person is given immediate information about their own biological conditions, such as: muscle tension, skin surface temperature, brain wave activity, galvanic skin response, blood pressure, blood flow, and heart rate. Diaphragmatic breathing is a very important skill taught in successful clinical biofeedback treatment. An individual who can voluntarily control breathing can easily learn to calm the mind and body to relax at any time and place. Currently, there are four major biofeedback treatments:

1. Thermal Biofeedback:

The Sympathetic Nervous System (SNS) controls the smooth muscles in the blood vessel walls and therefore the diameter of the blood vessels. Stress increases activity of the Sympathetic Nervous System whose basic function is to mobilize the body to meet emergency. SNS impulses to the adrenal medulla increase the secretion of epinephrine and norepinephrine (NE). These hormones supplement and prolong many sympathetic responses that result in the fight-or-flight reaction. This causes the vascular smooth muscle to produce vasoconstriction. As a result

of this constriction of the peripheral blood vessels or arterioles the blood is forced back to the heart which increases heart rate. The blood is also sent to the head causing the face to feel hot and the hands get cold. When the person relaxes, the Parasympathetic Nervous System (PNS) takes over which causes vasodilatation. The SNS activity decreases, the muscle relaxes and blood vessels dilate. This brings the body back to normal. Blood flows freely to the peripheral blood vessels and the hands feel warm again, while heart rate and blood pressure decrease. As a result the body returns to Homeostasis.

The purpose of Temperature training is to increase the patient's ability to discriminate between different levels of emotional activity. Low levels of temperature may be related to undesirable emotional and physical symptoms. Thermal biofeedback has been successfully applied in the treatment of essential hypertension, Raynaud's disease and migraine headaches.

2. Electromyographic (EMG) Biofeedback:

EMG muscle scanning is a diagnostic tool which makes it possible to locate areas of excessive or asymmetrical muscle activity throughout the periphery of the body. Muscle tension and relaxation can be measured and fed back by the EMG, electromyograph. Sensors placed on the skin over a muscle will detect electrical activity of the muscle. The patient can be trained to lower muscle activity to normal or near normal levels. The purpose of electromyographic training is to increase the patient's ability to discriminate between different levels of muscle tension. High levels of muscle tension may be related to undesirable emotional and physical symptoms.

EMG biofeedback is extensively applied in neuromuscular re-education, stroke, temporomandibular joint disorder, trigeminal neuralgia, bruxism, tension headaches and other syndromes.

3. Galvanic Skin Response (GSR) Biofeedback:

During this treatment, arousal changes due to SNS changes, are measured by the galvanic skin response. It measures changes in sweat gland activity on the surface of the skin, usually the hand.

The GSR sensor is placed on the surface of the skin, usually wrapped around the finger. Relaxed hands are dry and therefore there is no moisture to conduct electricity. Lower conductivity means higher resistance. In this case the GSR measurements are low.

The reverse is also true: High Sympathetic activity stimulates sweat gland secretion and the hands get wet. Since moisture is a good conductor there is an increase in conductivity and consequently a decrease in resistance. This means high GSR measurements. GSR is effective in the treatment of gastrointestinal problems and anxiety related to a medical condition.

4. Electroencephalographic (EEG) Biofeedback:

Brain wave patterns can be measured and analyzed by an EEG instrument. The EEG measures small microvoltages of electrical activity of the brain cortex. Sensors placed on the scalp measure electrical activity which is converted and analyzed into particular brain wave frequencies and amplitudes.

EEG Biofeedback incorporates the monitoring and separating of the EEG into different brain wave patterns and then, via visual feedback, trains the individual to produce more of the desired frequency. EEG has been proven effective in the remediation of PMS, Depression, Chronic Pain Syndromes, Migraine and Epilepsy.

Goal of Biofeedback Treatment:

The goal of the biofeedback program is to help patients modify inappropriate responses and regulate their physiological processes in order to achieve Homeostasis. It simply is counterproductive to brace muscles, accelerate heart rate and raise blood pressure in the presence of an unchangeable stressor. I believe that my biofeedback clinical system is the most advanced that is available. It is totally computerized and can provide feedback for muscle activity, electrodermal responses and vascular changes; heart rate and blood pressure changes. All of these indices are related to the stress response and, by teaching the patient to regulate these responses, we are in a true sense teaching the patient to control stress. The best part of the procedure is that it can reduce the need for medication provided the patient is compliant with the program. I believe that by changing the external factors that can be changed and then modifying inappropriate responses to those that remain, we are doing most of what can be done with a stressed individual.

Medical Weight Loss & Biofeedback:

Medical Biofeedback and Pain Control Center,
7515 Greenville Avenue, Suite 1005, Dallas, Texas 75231. (214) 369-8717.

Medical Weight Loss is included within the biofeedback program, upon request of either the patient or the patient's treating doctor. In this program, the patient is supported in his/her weight loss journey educated on the importance of maintaining a healthy lifestyle and is provided motivation for losing weight and keeping it off. This program is an effective support system in terms of providing proper nutrition, motivation, changing lifestyle and eating habits permanently. The patient is able to develop will power and self-control that become second nature to his/her personality to help lose the weight and keep it off. The stress management aspect of this program enhances weight loss by inhibiting those stress chemicals that can also be responsible for the weight gain.

**CONDITIONS FOR WHICH BIOFEEDBACK
HAS BEEN SHOWN TO BE EFFECTIVE**

ANXIETY:

Anxiety -- Depression
Pain) Generalized
Back Anxiety -- Acute Stress Reaction
Agoraphobia -- with Panic Attacks
Agoraphobia -- without Panic Attacks
Simple Phobia

GASTROINTESTINAL DISORDERS:

Colitis
Duodenal Ulcer (without obstruction)
Cluster
Irritable Bowel Syndrome
Peptic Ulcer (Stress/Site Unspecified)
(Non-organic Origin)
Stomach ulcer (without obstruction)

MUSCLE DISORDERS: (Other than Back)

Spasms
Parkinson's Disease
Spasmodic Torticollis
Tourette's Disease (Motor-Verbal Tic)
Urinary Incontinence (Sphincter Muscle Re-education)

OTHER DISORDERS:

Arthritis
Diabetes

Insomnia (Non-organic Origin)
Pain, Psychogenic
Trigeminal Neuralgia
Stuttering
Attention Deficit Disorder
Weight Problems (stress related)

DENTAL:

Temporomandibular Joint Syndrome
Myofacial Pain

BACK/NECK PROBLEMS:

Cervicalgia (Neck
Muscle Spasms in the
Low Back Pain Syndrome
Lumbosacral/Sacroiliac

HEADACHES:

Cephalgia (Headache Pain,
Source unknown)
Migraine
Muscle Contraction/Tension

SKIN DISORDERS:

Dermatitis

RESPIRATORY DISORDERS:

Asthma
Respiration, Disorders of
Respiratory Distress-Muscle

CARDIOVASCULAR:

Tachycardia
Essential Hypertension
(High Blood Pressure)
Raynaud's Disease
P.O.T.S. (Postural
Orthostatic
Tachycardia Syndrome)