

Bio-feedback Therapy

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Biofeedback is a treatment technique in which people are trained to improve their health by using signals from their own bodies. Physical therapists use biofeedback to help stroke victims regain movement in paralyzed muscles. Psychologists use it to help tense and anxious clients learn to relax. Specialists in many different fields use biofeedback to help their patients cope with pain.

Chances are you have used biofeedback yourself. You've used it if you have ever taken your temperature or stepped on a scale. The thermometer tells you whether you're running a fever, the scale whether you've gained weight. Both devices "feed back" information about your body's condition. Armed with this information, you can take steps you've learned to improve the condition. When you're running a fever, you go to bed and drink plenty of fluids. When you've gained weight, you resolve to eat less and sometimes you do.

Clinicians rely on complicated biofeedback machines in somewhat the same way that you rely on your scale or thermometer. Their machines can detect a person's internal bodily functions with far greater sensitivity and precision than a person can alone. This information may be valuable. Both patients and therapists use it to gauge and direct the progress of treatment.

For patients, the biofeedback machine acts as a kind of sixth sense which allows them to "see" or "hear" activity inside their bodies. One commonly used type of machine, for example, picks up electrical signals in the muscles. It translates these signals into a form that patients can detect: It triggers a flashing light bulb, perhaps, or activates a beeper every time muscles grow more tense. If patients want to relax tense muscles, they try to slow down the flashing or beeping.

Like a pitcher learning to throw a ball across a home plate, the biofeedback trainee, in an attempt to improve a skill, monitors the performance. When a pitch is off the mark, the ballplayer adjusts the delivery so that he performs better the next time he tries. When the light flashes or the beeper beeps too often, the biofeedback trainee makes internal adjustments, which alter the signals. The biofeedback therapist acts as a coach, standing at the sidelines setting goals and limits on what to expect and giving hints on how to improve performance.

Essentially it is how to read your own body and know how your body works, rather than relying on doctors. There is training to do this, and even therapies and forms of treatment for various ailments that rely on biofeedback. Doctors everywhere rely on biofeedback machines, devices we humans build to help us, machines for knowing our heart rate in neat little blips, machines for knowing our blood sugar levels, machines for seeing our innards and our bones, machines for everything, making us more and more in tune with our bodies and also reliant upon them. You've used biofeedback too, you've taken a temperature, you have looked on a scale to see what you weigh. It is also a form of alternative medicine, in that people train themselves to know responses to activities.

How this works is machines that monitor your condition and report them back to you in real time,

like your blood pressure, heart rate, skin temperature, your sweat and your muscle tension. The though is that by being able to see what it is on a machine you can train yourself to understand the feelings you receive - this is biofeedback at work.

An interesting result of someone being able to know their body's systems is that they can end up controlling more muscles than were previously thought to be controllable - they can see what happens and are able to gain control over such things as their own heart, and also problems with ADHD, and muscle tension. Being able to directly control hypertension has become something that has spawned great interest - as it may be able to eventually help prevent heart attack and heart disease. Biofeedback monitoring is done through several devices, such as skin temperature measuring tools, sweat glands monitors, and Electroencephalography (EEG) machines, which monitor brain activity.

The Beginnings of Biofeedback

The word "biofeedback" was coined in the late 1960s to describe laboratory procedures then being used to train experimental research subjects to alter brain activity, blood pressure, heart rate, and other bodily functions that normally are not controlled voluntarily. At the time, many scientists looked forward to the day when biofeedback would give us a major degree of control over our bodies. They thought, for instance, that we might be able to "will" ourselves to be more creative by changing the patterns of our brainwaves. Some believed that biofeedback would one day make it possible to do away with drug treatments that often cause uncomfortable side effects in patients with high blood pressure and other serious conditions.

Today, most scientists agree that such high hopes were not realistic. Research has demonstrated that biofeedback can help in the treatment of many diseases and painful conditions. It has shown that we have more control over so-called involuntary bodily function than we once thought possible. But it has also shown that nature limits the extent of such control. Scientists are now trying to determine just how much voluntary control we can exert.

How is Biofeedback Used Today?

Clinical biofeedback techniques that grew out of the early laboratory procedures are now widely used to treat an ever-lengthening list of conditions. These include:

Migraine headaches, tension headaches, and many other types of pain

Disorders of the digestive system

High blood pressure and its opposite, low blood pressure

Cardiac arrhythmias (abnormalities, sometimes dangerous, in the rhythm of the heartbeat)

Raynaud's disease (a circulatory disorder that causes uncomfortably cold hands)

Epilepsy

Paralysis and other movement disorders

Specialists who provide biofeedback training range from psychiatrists and psychologists to dentists, internists, nurses, and physical therapists. Most rely on many other techniques in addition to biofeedback. Patients usually are taught some form of relaxation exercise. Some learn to identify the circumstances that trigger their symptoms. They may also be taught how to avoid or cope with these stressful events. Most are encouraged to change their habits, and some are trained in special techniques for gaining such self-control. Biofeedback is not magic. It cannot cure disease or by itself make a person healthy. It is a tool, one of many available to health care professionals. It reminds physicians that behavior, thoughts, and feelings profoundly influence physical health. And it helps both patients and doctors understand that they must work together as a team.

Patients' Responsibilities

Biofeedback places unusual demands on patients. They must examine their day-to-day lives to learn if they may be contributing to their own distress. They must recognize that they can, by their own efforts, remedy some physical ailments. They must commit themselves to practicing biofeedback or relaxation exercises every day. They must change bad habits, even ease up on some good ones. Most important, they must accept much of the responsibility for maintaining their own health.

Biofeedback Techniques

Biofeedback is the technique, but there are many kinds of different approaches to biofeedback, self monitoring, and self control of your body's systems and functions. Most of the body's internal functions were thought to be autonomous (meaning that we had no control over them in any capacity except through exercise and outside influences - not direct mental control). As it turns out, using biofeedback devices can train you to control your body's heart rate, your muscle tension, your gastrointestinal tract, your blood pressure, and your responses to stress. The training involves being monitored in real time, and the most common of course is EMG monitoring of muscle tension. As you watch the results you can actually correlate what you feel to them, and eventually you learn to control them (much like riding a bike or learning to balance well after much trial and work). Eventually you get to the point that you can have complete control over your body's muscular systems.

Thermal biofeedback lets you see your body's skin temperature and control your stress through seeing your responses to it - the less stress you have and the more you are able to keep it from effecting you is likely to help with blood pressure and in turn help in controlling your circulatory system - keeping it from developing unhealthily with high blood pressure that puts you at risk for

heart disease and other physiological problems. Finally, there is Neuro-feedback - aka EEG, which measures the brain waves and the brains activity.

In a normal session with any and all of these forms electrodes or sensors are attached to the skin - these then send information to a monitoring device that translates the information into a tone that varies, or an on scree display. It all depends on what you use and what you see, through practice people will learn to control and identify the mental activities that will bring about the desired physical and physiological changes.

Neuro Biofeedback

Neuro-feedback, or Neuro Biofeedback is the process of measuring and monitoring the electrical activity in the brain, and is translated into "brain-waves". It's really just the electrical output of the human brain at different states of conscious levels, and can be useful in diagnosing some conditions or in the case of epilepsy. Neuro-biofeedback requires the attachment of several small sensors to the cranium and then viewing the recorded levels of brain activity on a computer screen.

By doing this you can eventually learn how to modify your mental state, and is so doing you can modify your energy and mood levels, along with brain functionality and activity. The kinds of brain-waves (signal pulses from the brain) are as follows: 14-24hz are called Beta Waves, and are detected with high level of mental activity which is used during problem solving and decision making. 12-14htz are called SMR waves, and are detected when the mind is at attention, storing and sequencing information that is later used, and can also be seen as optimal for when playing sports. 8-12htz are called Alpha waves, it is usually found in an alert state of mind, but at rest. 4-8htz is called theta waves, and they are found at a state of mind associated with mental creativity and inspiration, when an inventor gets to thinking and gets his idea, or a painter gets the idea for a painting. Anything at 4htz or less is called Delta waves, and they are found during deep relaxation.

Neuro Biofeedback and Neuro feedback are also used in the treatment of diseases and disorders - like ADHD and ADD, along with depression and other mental disorders (OCD's). Modern mainstream medicine monitors brain waves during conative exercises to determine the efficiency of one's mind after an accident or to see what state of mind someone is in.

Biofeedback Equipment

The equipment used in biofeedback can range from a simple cheap thermometer to a highly expensive EEG machine to monitor your brain activity. The most common biofeedback monitors are for heartbeat, blood pressure, skin temperature, sweat glands, brain activity, and muscle tension - which is by far the most common biofeedback equipment used today.

To monitor muscle tension they use an EMG machine, or better known as an Electromyogram. By using the EMG biofeedback equipment you can learn to control tension and the feeling of it - which means you can make it go away through control - it is mainly used as a relaxation tool to help ease muscles in people who have back aches, head aches, and bruxism.

To monitor your skin temperature using biofeedback equipment you will need is relatively simple - you can feel how warm your skin is, and when your skin cools you know that your body is constricting your blood vessels and is a sign of stress, although there are always special thermometers you can use.

Galvanic skin responses can be monitored with a biofeedback device known as a GSR2, or even common lie detectors can be used, but equipment is always needed - it monitors the sweat glands in your skin and shows you the results which is supposed to train you to be able to control your feelings and responses to stress, and also your sweat responses.

Monitoring the brain is done through electroencephalography, or EEG, and this biofeedback equipment does not come cheap. The EEG monitors the activity of brain waves when linked to different areas and mental states, able to see how you are when you are awake, relaxing, calm, or sleeping. This is the least common form of biofeedback as the biofeedback equipment is the most costly and is very technical, requiring much training to use.

Biofeedback Training

Biofeedback Training is the process of training yourself to see the signs of different things from your body, being able to detect changes in muscle tension, brain function, skin temperature, stress levels, and bodily functions in such a way that your autonomous systems can be controlled by your mind directly rather than being uncontrolled. Training sessions usually involve you sitting in front of any number of machines for any kind of task, and gradually learning how your body works. Many CEOs and sports professionals take biofeedback training courses and one on one training sessions with expensive machines in order to improve themselves and their abilities when thinking - although modern science sees it as somewhat fallacious in claims. Some areas biofeedback training do work, and are proven, while others seem to be on a case by case basis for effectivity.

Usually in the case of a muscular monitoring for biofeedback your body will be monitored by sensors, and an output display will be in front of you. As you react you see the monitoring change and the output change, eventually you being to see what you are doing, and feel it. The same is true for other methods, brain wave, sweat glands, skin surface heat, and an assortment of other things that can be thought of. As you learn these responses you gain control, and with control you can in theory loosen tensed muscles, relieve your own headaches, and get rid of moods that do not benefit you. In the case of brain monitoring you learn how to switch from one mode to another

mode, that is, switch from one pattern to another to give you optimal ability of tasks in front of you and to improve your overall thinking and problem solving abilities. Many places offer biofeedback training, however it can be pricey depending on the equipment they use.

How Does Biofeedback Work?

Scientists cannot yet explain how biofeedback works. Most patients who benefit from biofeedback are trained to relax and modify their behavior. Most scientists believe that relaxation is a key component in biofeedback treatment of many disorders, particularly those brought on or made worse by stress. Their reasoning is based on what is known about the effects of stress on the body. In brief, the argument goes like this: Stressful events produce strong emotions, which arouse certain physical responses. Many of these responses are controlled by the sympathetic nervous system, the network of nerve tissues that helps prepare the body to meet emergencies by "flight or fight."

The typical pattern of response to emergencies probably emerged during the time when all humans faced mostly physical threats. Although the "threats" we now live with are seldom physical, the body reacts as if they were: The pupils dilate to let in more light. Sweat pours out, reducing the chance of skin cuts. Blood vessels near the skin contract to reduce bleeding, while those in the brain and muscles dilate to increase the oxygen supply. The gastrointestinal tract, including the stomach and intestines, slows down to reduce the energy expended in digestion. The heart beats faster, and blood pressure rises. Normally, people calm down when a stressful event is over especially if they have done something to cope with it. For instance, imagine your own reactions if you're walking down a dark street and hear someone running toward you. You get scared. Your body prepared you to ward off an attacker or run fast enough to get away. When you do escape, you gradually relax.

If you get angry at your boss, it's a different matter. Your body may prepare to fight. But since you want to keep your job, you try to ignore the angry feelings. Similarly, if on the way home you get stalled in traffic, there's nothing you can do to get away. These situations can literally make you sick. Your body has prepared for action, but you cannot act. Individuals differ in the way they respond to stress. In some, one function, such as blood pressure, becomes more active while others remain normal. Many experts believe that these individual physical responses to stress can become habitual. When the body is repeatedly aroused, one or more functions may become permanently overactive. Actual damage to bodily tissues may eventually result.

Biofeedback is often aimed at changing habitual reactions to stress that can cause pain or disease. Many clinicians believe that some of their patients and clients have forgotten how to relax. Feedback of physical responses such as skin temperature and muscle tension provides information to help patients recognize a relaxed state. The feedback signal may also act as a kind

of reward for reducing tension. It's like a piano teacher whose frown turns to a smile when a young musician finally plays a tune properly.

The value of a feedback signal as information and reward may be even greater in the treatment of patients with paralyzed or spastic muscles. With these patients, biofeedback seems to be primarily a form of skill training like learning to pitch a ball. Instead of watching the ball, the patient watches the machine, which monitors activity in the affected muscle. Stroke victims with paralyzed arms and legs, for example, see that some part of their affected limbs remains active. The signal from the biofeedback machine proves it. This signal can guide the exercises that help patients regain use of their limbs. Perhaps just as important, the feedback convinces patients that the limbs are still alive. This reassurance often encourages them to continue their efforts.

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