

Biofeedback

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Overview

Biofeedback is a type of mind-body technique you use to control some of your body's functions, such as your heart rate, breathing patterns and muscle responses. During biofeedback, you're connected to electrical pads that help you get information about your body.

You may not realize it, but when you have pain or are under stress, your body changes. Your heart rate may increase, you may breathe faster, and your muscles tighten. Biofeedback helps you make slight changes in your body, such as relaxing muscles, to help relieve pain or reduce tension. You may be able to decrease your heart rate and breathing, which can make you feel better. Biofeedback can give you the skills to practice new ways to control your body. This can improve a health problem or help make daily activities easier.

Types of biofeedback

A healthcare professional might use different kinds of biofeedback depending on your health problems and goals. Biofeedback types include:

- **Breathing.** During breathing biofeedback, bands are placed around your stomach and chest. Sensors on the bands check your breathing rate and patterns. You can control your breathing and feel better.
- **Brain waves.** During this type of biofeedback, an electroencephalograph (EEG) uses scalp pads to monitor your brain waves. There are certain brain waves that show different mental states, such as relaxation, wakefulness and sleep. With biofeedback training, you can see a change in the brain waves that improve your health.
- **Heart rate.** In this type of biofeedback, pads are placed on your chest, lower trunk or wrists. These pads are connected to an electrocardiogram (ECG) that measures your heart rate and how your heart rate changes. A sensor also can be placed on your finger to measure your heart rate. When you are relaxed, your heart rate may decrease.
- **Muscle activity.** A machine called an electromyograph (EMG) uses sensors to measure muscle tightening. This helps make you aware of muscle tension so you can take steps to control it.
- **Sweat gland activity.** Pads attached to the fingers, palm or wrist measure the activity of the sweat glands. The amount of perspiration on your skin warns you of nervousness.
- **Temperature.** Pads attached to your fingers or feet measure blood flow to your skin. Because your temperature often drops when you're under stress, a low reading can prompt you to begin relaxation methods. As you become more relaxed, your fingers and toes may become warmer.

Biofeedback machines

You can receive biofeedback training in physical therapy clinics, medical centers and hospitals. A growing number of biofeedback machines and programs are being marketed for home use, including:

- **Interactive computer programs or mobile devices.** Some types of biofeedback machines measure physical changes in your body. Changes i

your heart rate and skin are measured with pads attached to your fingers or your ear. The measuring pads plug into your computer.

Using computer pictures and cues, the machines then help you control nervousness by helping you:

- Manage your breathing.
- Relax your muscles.
- Think positive things about your power to deal with stress.

Studies show that these types of machines might help in dealing with stress and make you calmer.

Another type of biofeedback treatment involves wearing a headband that tracks your brain activity while you meditate. It uses sounds to let you know when your mind is calm and when it's active. This may help you learn to control your stress. Every time you do this, the information is stored on your computer or mobile device so you can track your progress over time.

- **Wearable devices.** One type involves wearing a measuring pad on your waist that monitors your breathing patterns using a downloadable app. The app can let you know if you're tense and give you breathing activities to restore calm.

The Food and Drug Administration (FDA) has approved a biofeedback machine, Resperate, for decreasing stress and lowering blood pressure. Resperate is a portable electronic machine that helps you have slow, deep breathing.

The FDA doesn't control many biofeedback machines made for home use. Before trying biofeedback therapy at home, talk about the different machines you can use with your health care team to find the best fit.

Be aware that some items might be falsely sold as biofeedback machines. Also, some people who teach biofeedback may not be certified or have enough training to help you.

Why it's done

Biofeedback, sometimes called biofeedback training, helps many physical and mental health problems, including:

- Nervousness or stress.
- Asthma.
- Attention-deficit/hyperactivity disorder (ADHD).
- Side effects from drugs to treat cancer.
- Long-lasting pain.
- Constipation.
- Loss of bowel control, also known as fecal incontinence.
- Fibromyalgia.
- Headache.
- High blood pressure.
- Irritable bowel syndrome.
- Raynaud's disease.
- Ringing in the ears, also called tinnitus.
- Stroke.
- Temporomandibular joint disorder (TMJ).
- Urinary incontinence and trouble passing urine.
- Depression.

Biofeedback appeals to people for a variety of reasons:

- There's no surgery involved.
 - It might lower or end the need for medicines.
 - It might make medicines work better.
 - It might help when medicines can't be used, such as in pregnancy.
 - It helps people feel more in control of their health.
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Risks

Biofeedback is generally safe, but it might not be right for everyone. Biofeedback machines might not work on people with some medical problems, such as heartbeat issues or some skin diseases. Be sure to talk with your health care provider first.

How you prepare

It's not hard to start biofeedback.

To find a person who teaches biofeedback, ask a healthcare professional to recommend someone who has experience treating your problem. Many biofeedback experts are licensed in another area of health care, such as psychology, nursing or physical therapy.

State laws regulating biofeedback teaching vary. Some biofeedback experts choose to become certified to show their extra training and experience in the practice.

Before starting treatment, consider asking the biofeedback expert a few questions, such as:

- Are you licensed, certified or registered?
 - What is your training and experience?
 - Do you have experience teaching biofeedback for my problem?
 - How many biofeedback treatments do you think I'll need?
 - What's the cost and is it covered by my health insurance?
 - Can you give me a list of references?
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What you can expect

During the treatment

During biofeedback, a therapist connects electrical pads or sensors to different parts of your body. These pads might be used to:

- Monitor your brain waves.
- Check the temperature of your skin.
- Measure muscle tightness.
- Monitor your heart rate.
- Monitor your breathing rate and patterns.

The pads send information to a nearby screen. The therapist uses that information and makes suggestions to help you control your body's responses. For example, if the pads sense tight muscles that may be causing headaches, you then learn how to relax those muscles.

A typical biofeedback treatment lasts 30 to 60 minutes. How many treatments you have and how long they last depend on your health problem and how quickly you learn to control your body's responses. The goal of biofeedback is to learn to use these methods at home on your own without a machine or sensor.

Insurance companies may not pay for biofeedback.

Results

If biofeedback works for you, it might help your health problem or decrease how much medicine you take. In time, you can practice the biofeedback methods you learn on your own. Don't stop the medical treatment for your problem without talking to a healthcare professional.

By Mayo Clinic Staff

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