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Heal Thyself—Putting Stress to the Test

By Matthew Solan

Wouldn't it be great if someone followed you around all day and tapped you on the shoulder whenever you were about to become stressed—a gentle reminder to take a moment to breathe and relax? You may find that reminder in biofeedback.

An effective, high-tech approach to stress management, biofeedback uses sensors, computers, and visual images to record your reaction to different stressors. Biofeedback teaches you how to recognize the signs of stress in your body—such as changes in breathing pattern, heart rate and rhythm, and perspiration—and how to control those responses.

“Biofeedback is about knowing how to properly react and ‘feed back’ better information to your body,” says Beth Golden, PhD, a board-certified biofeedback practitioner at The Therapeutic Body Center in St. Petersburg, Florida. Once you identify your unique “stress triggers,” you can use relaxation exercises to calm yourself. “This teaches your body what a relaxed state should feel like,” says Golden. Over time your body learns to shift to a relaxed state automatically whenever it senses stress.

Since ongoing stress can trigger an assortment of ailments, experts have used biofeedback to fight many illnesses and disorders in which stress plays a vital role, such as chronic pain, diabetes, migraines, and anxiety. It can even help treat health issues like compulsive eating and insomnia, which often worsen with stress.

Yet biofeedback offers more than stress management: It can also help increase your energy when you feel sluggish and unfocused. Celeste De Bease, PhD, program director of the Biofeedback Clinic and Certification Center at Widener University in Chester, Pennsylvania, compares it to the way you might tune a car engine. “When your car is revved too hot, you need to cool it down, and when it's too low you need to speed it up,” she explains. “It's the same with your nervous system. Sometimes it needs to be calmed down; other times it needs to be stimulated—biofeedback can teach you how to do both.”

Stress sessions

There are four common types of biofeedback: surface electromyogram, thermal, galvanic skin response, and electroencephalogram. Here's a look at each, how they work, and what science has found they can accomplish.

Surface Electromyogram (SEMG). An SEMG uses electrodes to measure muscle tension and alerts you either by a visual image or a sound when your muscles tense. SEMG has been used to treat muscle injuries and chronic pain like headaches, backache, neck pain, and TMJ (jaw) pain, as well as conditions such as asthma and diabetes, in which stress reduction helps to alleviate symptoms. For example, a recent study published in *Diabetes Care* discovered that type-2 diabetics were able to decrease average blood sugar levels and muscle tension when they used SEMG biofeedback and relaxation exercises for three months.

Thermal Biofeedback. Stress hormones cause the temperature in your hands and feet to drop. With thermal biofeedback, sensors attached to your fingers or feet read that temperature change and give you a chance to notice any clues your body gives as your skin temperature begins to drop, so that you can proactively manage your stress. Thermal biofeedback is most helpful for circulatory disorders. A recent study in *Complementary Therapies in Medicine* found that migraine sufferers significantly reduced the frequency, severity, and duration of attacks using thermal biofeedback and SEMG, along with recommended relaxation exercises, compared with those who relied on medication alone.

Galvanic Skin Response (GSR). With GSR, sensors placed on your skin measure your sweat gland activity. The more emotionally roiled you are, the more active your sweat glands. In other words, when you're stressed, you sweat.

The sensitivity of GSR helps determine the perspiration level on your skin before you would normally feel the full effects of stress, helping you become more in tune with your body's reaction to stressful situations. "Using GSR improves a person's ability to stay mentally focused and calm in the face of distress," says De Bease. "People learn to be less reactive emotionally without losing touch with their emotions." GSR is used to help treat many emotional disorders, such as phobias, anxiety, panic attacks, and stuttering.

Electroencephalogram (EEG). Also known as neurofeedback, EEG measures brainwave activity through electrodes placed on your head and ears. After being "hooked up," you play a video game and learn to control the action by changing your mental state. For example, by consciously entering an alert state (known as beta) or a low-energy meditative state (alpha), you can advance through the game, change its speed and pace, and receive rewards. This approach teaches you how certain thoughts and mindsets can influence and alter your emotional state. EEG has a long history of treating children with Attention Deficit Disorder (ADD). Preliminary findings suggest increased exposure to beta states may help depressed people with lethargy, which is common with depression, while alpha states induce feelings of hope and optimism.

Use what you learn

A painless and non-invasive therapy, biofeedback sessions usually last about 30 to 60 minutes. The cost varies by state but ranges from \$80 to \$150 an hour, according to Golden. The number and duration of sessions depend on your condition and progress, although Golden says people commonly see results in just four to six sessions, or even fewer.

Biofeedback teaches you to become hyper-aware of how your body responds to stress. Once you learn to recognize your body's stress signals through biofeedback sessions with a professional, you can then use relaxation techniques to calm yourself and stop a stress attack before it strikes. Those techniques vary from person to person: For some, meditation or breathing exercises do the trick, while others prefer physical exercise. What remains constant is the control biofeedback gives you in everyday situations.

Stress Less on Your Own

Along with meditation and exercise, other popular de-stressing techniques include:

>> **Guided Imagery:** A simple act like focusing on a relaxing place can be powerful, says Celeste De Bease, PhD. Choose a "special place" in nature that you associate with tranquility: a specific beach, a rock by a favorite lake, or a woodland trail. Think of that place every time you sense stress. "Take a deep breath, close your eyes, and take a mini-vacation in your mind," says De Bease.

>> **Single-Pointed Concentration:** Focus on an object for a minute or longer. It can be anything—a candle or photograph, for example. The point is to examine its minute details and allow the mind to rest in the present. For example, don't see just the flame of the candle, note its shades of blue and red and orange and how they touch each other.

>> **Restorative Pose:** Lie on the floor with your feet elevated on a chair or other prop so they rest above your heart. Stay in this quiet position, free from phones and other distractions, for 15 minutes. "This helps to balance the parasympathetic and sympathetic nervous systems and eliminate stress," says Beth Golden, PhD, CBT.

>> **Passive Muscle Relaxation:** Muscles tighten when you get physically or emotionally upset. Close your eyes and consciously relax individual muscle groups, one muscle at a time, from your head down to your toes. Begin at your third eye chakra above the center point between the eyebrows. Breathe into the area and concentrate on relaxing just the muscle there. Then move to your face and jaw and do the same. Continue downward to your neck and shoulders, then the arms, chest, back, legs, and, finally, the feet.