

Effects of Biofeedback on Stress

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### Abstract

This study will explore whether practicing biofeedback actually reduces a person's stress level.

We will monitor an individuals' heart rate before, during, and after a biofeedback breathing exercise. Heart rate will reduction will show that biofeedback is an effective way of dealing with stress.

### Effects of Biofeedback on Stress

It is a widely accepted fact that stress threatens a person's health. This information helped therapists and doctors come up with the idea of biofeedback. It is implied that people who practice biofeedback have more of a stress tolerance than those who do not.

To understand biofeedback, one must first understand what biofeedback is. Biofeedback, also known as neurotherapy, is a progressive relaxation and self-regulation technique used to control one's own stress level (Wenk-Sormaz, 2005). It works by simply preventing illness through stress management techniques. This treatment promotes the quality of life and sharpens coping skills (Baum, Herberman, & Cohen, 1995). In other words, it is a psychophysiological technique used to promote the overall wellness in the mind and body.

One idea of biofeedback is to reduce stress via self-control (Cassel, 1985). As mentioned earlier it uses defined techniques to reduce tension. These techniques include decision making competency, twilight learning/permissive concentration and autogenic feedback training. If a person can use these techniques to gain self-control they have a better chance of overall wellness. The practice of biofeedback can help reduce chronic pain symptoms (Turk, Swanson, & Tunks, 2008) along with stress symptoms (Clayton, 2005), and serve as an alternative method of healthcare as opposed to drugs. If biofeedback proves beneficial it is often preferred over prescription drugs due to the high cost of the medication and its possibility of dependency (Wolf, 1992).

Many previous studies have shown that biofeedback does indeed work, especially in children and young adults (Smith, & Womack, 1987). A study focused in a college setting showed beneficial to students who practice the biofeedback technique. They attended workshops and worked in individual sessions. Along with attending workshops they also kept a daily diary

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along with a stress-control log, and changed their sleeping patterns. The information was collected and assessed and the students who participated increased their focus and GPA considerably (Valdes, 1988). Another case study which focused on biofeedback as a form as relaxation training also reduced stress in its participants. The group of volunteers was measured on a self-report scale along with temperature and an EMG. Although the temperature had no effect, the volunteers retained their improvements weeks after their biofeedback training (Schilling, 1983).

Biofeedback can focus on a number of different things. In this study biofeedback is going to focus on reducing stress. Stress can be anything emotional, mental, or physical that is straining a person. It must also be noted that biofeedback works better on those who are willing to try it and willing to see it as an alternative source of healthcare. Reported information about a student's stress level will be taken from students who willingly practice biofeedback methods and information about stress from a student who does not practice biofeedback leading to the following hypotheses:

- Practicing biofeedback will effectively reduce an individual's stress level

## **Method**

### **Participant**

I will study on one individual in our PSY 110 class who chooses to volunteer. This person may be between the ages 18-60 and may be either male or female.

### **Materials and Apparatus**

In order to successfully complete this study I will need a Biopac MP40 (White, Holmes, & Bennett (1977) used as an electrocardiogram machine, also known as an EKG, to monitor the

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participants' heart rate during the duration of the study. Other items I will use in the study will include EKG leads, a chair, a clock, a volt-ohm meter, and a paper describing the tasks.

### **Procedure**

Before we begin our study I will first fully explain what I will be doing in the study and gain their permission before continuing. Our first step after getting consent will be to teach them the biofeedback method. After they have been fully briefed on the use of the volt-ohm meter, I will proceed to hook them to the machine. I will then give them two metal probes for them to hold onto. The study will then start by having monitoring their heart rate with the Biopac MP40 and then having the participant trying to work towards lowering it. After a period of about ten minutes the study will stop. We will then unhook our participants from the machine and make sure he/she is okay.

### **Method of Analysis**

After performing our study and collecting the individuals' heart rate throughout the study I will compare the starting heart rate to the ending heart rate. I will also look at the heart rate of the individual throughout the study to see if there was any significant change that shows a lower heart rate than the starting heart rate. This study should show that practicing biofeedback effectively reduces heart rate and therefore reduces stress.

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