

Biofeedback- An Intervention To Regulate Occupational Stress

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Abstract : The main aim of this paper is to create awareness to the readers about Biofeedback as a technique to control Occupational Stress. Occupational stress has a real and significant effect on health and performance in personal life and at the workplace. The perils of stress are well-documented. Prolonged stress results in release of many anti-stress chemicals in the body which lead to disrupt of chemical balance and weakens the systems of the body. A great way to reduce stress is to use Biofeedback devices. It helps to monitor how body respond to negative stimuli and helps in eliminating stress. Biofeedback is built on the concept of “mind over matter”. Biofeedback is a research-based learning process in which people are taught to improve their health and performance by observing signals generated by their own bodies to stressors and other stimuli with an eclectic variety of instruments. It offers a unique, non-invasive window on body's stress level. It is scientific based and validated by research studies and clinical practice. It is a highly effective way to control stress and helps in achieving personal and professional goals.

Keywords: Biofeedback, Biofeedback Techniques, Occupational Stress

I. Introduction

Occupational Stress has become an epidemic in the organisations even more than that was existing epochs ago, resulting in serious health issues in the contemporary world. Occupational stress is the inability to cope up with the pressures in a job, because of misfit between one's abilities and his/her work requirements and conditions. It is a mental and physical condition which affects an individual's productivity, effectiveness, personal health and quality of work (Comish & Swindle, 1994). *Physical symptoms* of occupational stress are: headaches, blood pressure, diabetics, digestive problems, sleep deprivation, hives, heartburn, heart attacks, night sweats, diminished sexual desire, menstrual irregularities, infertility, chronic back pain and muscle tensions, loss of appetite and weight gain. *Emotional symptoms* are: increased irritation and anger, frustration, depression, sulkiness, anxiety, burnout, problems with memory, fatigue, and increased use of nicotine, alcohol and drugs. *Work related symptoms* are: increased absenteeism, accidents on the job, and complaints from colleagues, drop in work productivity, and difficulty in understanding methods and procedures. The harmful and costly consequences of stress demonstrate the need for strategies to limit stressors within the organization (Comish & Swindle, 1994), as well as to deal with stress that already occurred.

Over the decades, many stress management interventions have been suggested to control and manage occupational stress, one of such an intervention is biofeedback. Research has shown that biofeedback interventions are effective in controlling stress and a variety of medical conditions. It is gaining popularity in many western countries and not much in use in India.

II. Biofeedback

Biofeedback is a self-regulation modus operandi through which people learn to voluntarily control body processes to increase relaxation, relieve pain, develop healthier and more comfortable life patterns. It gives information about oneself by means of instruments. Biofeedback is being applied clinically and investigated for a range of disorders such as chronic pain conditions, hypertension, incontinence, and attention deficit/hyperactivity disorder (ADHD).

Historical background

It emerged in 1960's and the word Biofeedback was coined in the year 1969 but has its roots of from far back as 5000 years. Neal Miller, John Basmanjian and Joe Kamiya are called as 'Fathers of Biofeedback'. The history has begun with a relaxation technique and autogenic training developed by Edmund Jacobson and Johann Schultz in 1930's. First, the technique was used to describe laboratory procedures later used to train experimental research concerns to alter brain activity, heart rate, blood pressure and other bodily functions that normally are not controlled voluntarily.

Definition

Bio means 'life' and feedback is 'returning knowledge to origin'. It is also called as "Yoga of the West" or "Zen Technology". The Association for Applied Psychophysiology and Biofeedback (AAPB), the Biofeedback Certification Institution of America (BCIA), and the International Society for Neurofeedback and Research (ISNR) approved the following definition of biofeedback on May 18, 2008:

"Biofeedback is a process that enables an individual to learn how to change physiological activity for the purposes of improving health and performance. Precise instruments measure physiological activity such as brainwaves, heart function, breathing, muscle activity, and skin temperature. These instruments rapidly and accurately "feed back" information to the user. The presentation of this information — often in conjunction with changes in thinking, emotions, and behavior — supports desired physiological changes. Over time, these changes can endure without continued use of an instrument".

Another definition given by the Association for Applied Psychophysiology and Biofeedback (AAPB) defines biofeedback as a process that provides "real time information from psychophysiological recordings about the levels at which physiological systems are functioning."

Training not a treatment

Biofeedback is not a treatment, but it's an educational training process for learning specialised mind and body skills. Learning to identify physiological reactions and change them requires practice. With practice, body becomes familiar with its own unique psychophysiological patterns and responses to stress, and learn to control stress rather than stress control on body.

Purpose

Biofeedback is aimed at combating stress through relaxation techniques. Persons undergoing training consciously manipulate breathing, heart rate, and other usually "involuntary" functions to override on body's response to stressful situations. Biofeedback appears to be most effective for conditions that are heavily influenced by stress.

How to get started

Becoming aware of body's stress signals (physical awareness) can be a sort of natural form of biofeedback. There are many household biofeedback tools like scales, thermometers and mirrors which shows about the functioning of body parts by pointing out excess weight, fevers and visible signs of acne. Both of these methods helps the person to know that healthy changes are required.

Types

Different types of biofeedback equipment can provide information about the systems in your body that are affected by stress. They are:

- 1.1.1 Galvanic Skin Response (GSR):** It is also called as Electro dermal Activity (EDA). This measures the skin's electrical conductance that is related to sweat gland activity. A small electrical current is applied to the skin, the GSR equipment measures changes in the levels of water and salt released from sweat glands. GSR is used to treat stress, anxiety, phobias etc.
- 1.1.2 Temperature/Thermal feedback:** It is also called Skin Temperature Biofeedback. It utilizes a machine that monitors skin temperature. A sensor is attached to the finger or toe which records skin temperature based on calmness or anxiousness of a person. Temperature drops if the person is nervous or anxious and rises when he/she is calm. Temperature feedback can be instrumental for treating stress, headaches and circulatory disorders.
- 1.1.3 Electromyogram (EMG):** It measures muscle tension. Two sensors are taped onto the skin over the muscle to be monitored. When the sensor measure muscle tension, the device produces a buzz, beep or coloured light. By continuous monitoring of muscle tension the person can learn to eliminate the tension before it causes problems. EMG is particularly good for treating neck pain, jaw pain, headaches, and stress related conditions like ulcers and asthma.
- 1.1.4 Electroencephalogram (EEG):** It is also called as Neurofeedback. It monitors the brain waves. EEG comprises of several bandwidths: Theta, Alpha, Beta, Gamma. It is useful to find relief from anxiety, stress, insomnia and attention deficit hyperactivity disorder (ADHD).
- 1.1.5 Heart Rate Variability (HRA):** It measures heart rate. It is used to reduce problems of anxiety, stress, asthma, irregular heartbeat and chronic obstructive pulmonary disease (COPD).

How it works

Before the training the person's overall psychological state is recorded without feedback in various modalities to get the person's clinician picture. In a biofeedback session, the person relaxes into a comfortable chair and is hooked up to the biofeedback instrument with electrodes attached to the surface of the skin at various places on the body like fingers, shoulder, back and head. Electrical impulses from these places are recorded and reflected on a computer monitor in the form of graphs or other visual displays. The person receives

auditory feedback reflecting increases and decreases in body system activity in the form of higher and lower musical tones. Through tries and error monitored by the therapist the person can learn to identify and control the mental activity that will bring about the desired physical changes and therapist helps to practice relaxation exercises, which fine tune to control different body functions.

How many sessions are required?

The number of sessions needed to attend basically depend on number of factors like how quickly person learns to control physical response and physical and psychological disorders. Typically a biofeedback session lasts for half-an-hour to one hour. Generally in 8-10 sessions change in the condition happens, but syndromes like chronic stress, high blood pressure, insomnia requires nearly 20 sessions. During the sessions relaxation techniques are also taught. After the training the person can practice every day for 5 to 10 minutes at home.

Benefits

Biofeedback techniques with combination of relaxation techniques helps to control stress and improve quality of life. Other benefits of biofeedback include:

- Positive outcomes in as little as 10 minutes of daily practice over three consecutive weeks.
- Improved performance and better short- and long-term memory.
- It may be used in situations where other treatments have not been effective or where people are unable to take certain medications.
- Lasting effects, beyond the initial training, with consistent practice.
- Mindfulness, which enables more control in life situations, allowing you to "act and not react".
- It can reduce and sometimes eliminate the need for medications.
- It monitors and "feeds-back" how well you are succeeding at reducing your stress levels.
- It is an effective treatment choice for people who do not tolerate medications, have found medications ineffective, and women who are pregnant and want to avoid taking medications.

Risks

Biofeedback is generally safe. There have been no negative side effects reported. However, biofeedback may not be for everyone.

Limitations

- Biofeedback is not recommended for individuals with severe mental health issues such as psychosis or major depression.
- It is also not recommended for the people who are on high doses of medications.
- Biofeedback sessions must be taken only under the supervision of experienced biofeedback therapist.

III. Conclusion

Occupational Stress can have a wide range of negative health effects including heart diseases, depressions, burnout, anxiety, constipation, sleep disorders etc. Today, biofeedback is a well-recognized tool for self-regulation and stress relief. It is a noninvasive technique. By learning how to listen and talk to body person can be able to manage and control the harmful physical and psychological effects of stress using biofeedback. With biofeedback people can control stress without any use of needles nor medications.

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