BIOFEEDBACK AND SOMATICS

Toward Personal Evolution

Eleanor Criswell, Ed.D.

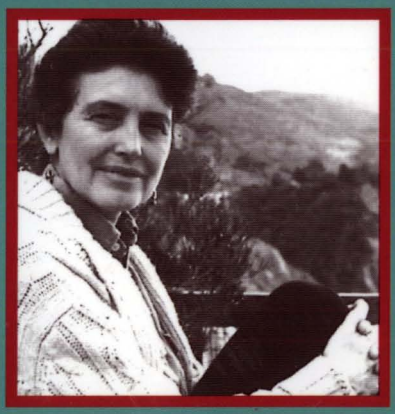
Freeperson Press

BIOFEEDBACK AND SOMATICS

Biofeedback is simply the feeding back of a biological signal to you, the producer of the signal. The biological signals are recorded by computerized biofeedback systems. Through the information provided, you become able to change your physiological state in a desired direction. With that information you can manage stress, medical and psychological complaints, and enhance performance in a variety of arenas.

Somatics is the term, coined by Thomas Hanna, used to describe the mind/body disciplines. These are non-instrument interventions that you can add to the repertoire of practices that you use personally and professionally. You can use these skills for your personal evolution.

This book provides a foundation for understanding biofeedback and somatics and offers suggestions for designing programs for yourself or others.



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Eleanor Criswell Hanna, Ed.D., is Professor of Psychology and Department Chair of the Psychology Department, Sonoma State University, California. Involved with the field of biofeedback since 1967, she is a past president and former executive director of the Biofeedback Society of California. In 1975 she co-founded, with Thomas Hanna, the Novato Institute for Somatic Research and Training. She is editor of Somatics - Magazine-Journal of the Mind/Body Arts and Sciences.

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PREFACE

Many years ago, because of my interest in the development of human potential, I became excited by the possible contribution of biofeedback to the cultural evolution of humans. Many of us had a similar vision. Freedom and autonomy in the actualization of positive human potential is crucial. The possibilities for the use of psychophysiological measures in evaluation of the impact of developmental experiences are tremendously exciting. Biofeedback has made it possible to go one step further: to use our own physiological measures as feedback to us about the effects of life experiences, and therefore, to make changes in our physiology and behavior. Somatics, in general, is a nontechnological approach to self-regulation. This is freedom and autonomy (self-regulation) manifested at a physiological level.

We cannot depend solely on others to care for our health, well being, and maximum development of our potential. This is more and more the case. But we can become highly skilled at being our own somatic educators, and we can share that knowledge with those with whom we live and work. With these biofeedback and somatic skills, we can actualize a great deal of our potential for health and well being throughout our lives.

The purpose of this book is to provide a comprehensive foundation for understanding the field of biofeedback and somatics. Whether you are just beginning in the field, want to augment your basic understanding of it, or are an educated layperson wanting to know what it is, this book is designed to enable you to learn the important concepts of biofeedback and somatics. You can make them a part of your life. They can be used by people who are training to become biofeedback practitioners, or by people who are using biofeedback and somatics for their own self-care and development.

WHAT IS BIOFEEDBACK?

Biofeedback is simply the feeding back of a biological signal to you, the producer of the signal. The biological signals are recorded by electronic devices. Through the information provided, you become able to change your physiological state in a desired direction. The information fed back is significant with regard to a predetermined goal.

The field of biofeedback has gone through a period of professionalization. Standardization, consistency, and continuity with the other health care deliv-

ery systems have been of great concern. Yet the biofeedback practitioner must work creatively to achieve goals in a way that is workable for the client.

Some practitioners work as biotherapists with biofeedback at the core of their practice. How biofeedback is used by the different disciplines depends on the structure of the practice or the discipline. The psychologist tends to use the one-on-one, 50-minute hour approach to biofeedback. The physician or practitioner in a medical setting often uses a 30-minute session. The physical therapist may also use a 30-minute session in conjunction with other physical therapy interventions. The structure selected is appropriate for the patient/client population and treatment plans found in that setting.

There are two basic theories as to how biofeedback works; there are other speculations of interest. The two basic theories are behaviorism and information theory. The behavioristic theory of biofeedback rests on the idea that the feedback signal is a reinforcer. The information theory of biofeedback refers to the idea that biofeedback provides the person with information about his or her body's function. With increased information there is a more effective use of the body on many levels.

Biofeedback training can affect a person's locus of control, usually shifting it from external to internal. This means that people with an external locus of control, who usually feel that their lives are controlled by others and by circumstances, come to develop a more internal locus of control, feeling that they can impact on their environments and make decisions about how to react and make changes. Biofeedback offers a person some choice and flexibility with regard to which stance is chosen as a way of experiencing the world.

People often ask me how I became involved in biofeedback. Originally, I became involved because of my interest in electroencephalography (the recording of brain waves). I remember the moment I first read about electroencephalography (referred to as EEG). I was whiling away some time in the library of a naval installation in Norfolk, Virginia. I happened to browse through a book by Grey Walter, the British brain researcher, titled *The Living Brain.* Suddenly, in a burst of insight, I realized that the way to measure the impact of learning on brain changes might be through measuring the EEG before and after learning.

I was intensely excited.

From there I continued my literature review of EEG. I moved to Gainesville, Florida, to continue my doctoral work at the University of Florida. I volunteered to do some work in the EEG lab at the Veterans Ad-

ministration hospital in Gainesville. There I was able to learn some of the principles of electroencephalography, under the gracious tutelage of Frances Matthews, EEG technician.

During the summer of 1967, I lived in Laguna Beach, California. In exploring the area for EEG research, I happened upon the work of Joseph Hart, Ph.D., a professor at the University of California at Irvine. He was engaged in doing some of the first biofeedback studies. His research dealt with the relationship between hypnotic susceptibility and the capacity to increase the presence of alpha waves through biofeedback. (They found that there was a significant correlation between susceptibility to hypnosis and ability to succeed in alpha training.)

Joseph Hart kindly invited me to participate in the activities. I engaged in a literature review of relevant materials, and we met periodically to discuss the findings. I rode my motorcycle up the coast highway in order to spend time in the campus library and in his biofeedback lab. It was an invaluable experience, and a wonderful way of pursuing my interest in biofeedback.

When I returned to Gainesville from the summer break, I continued my EEG studies. Joe Hart formed an information exchange network of 17 researchers who would exchange letters and papers about biofeedback. I was excited to have been included in that group; I was very excited about the potential of biofeedback.

When I moved to the San Francisco Bay Area, I met Joe Kamiya. I began to study with him on a formal and informal basis (he held small electronics and EEG biofeedback classes, and he was very generous with his knowledge and his time). A group of early biofeedback visionaries would meet to discuss the potential of biofeedback. Results of those discussions and writings were published in an article in one of Bob Ornstein's books attributed to Ralph Ezios. (Ralph was a favorite name of Bob Ornstein, and Ezios stood for Electric Zen in Outer Space. Barbara Brown had decided that she preferred to be mentioned in a footnote rather than as an author. So we all dropped to the footnote and left authorship to the fictional "Ralph.")

I was hired at Sonoma State University to teach physiological psychology in the Fall of 1969, and a Beckman EEG was bought for the Psychology Department so that I could use it in my classes. Special circuitry enabled us to use it as an EEG biofeedback device. We began to use it in the physiological psychology class. Later, the biofeedback and consciousness research class was created because of student demand. As they say, the rest is history. It has been a great

privilege to participate in the history of biofeedback. Biofeedback research and application is now worldwide. It has gone a long way toward fulfilling the early potential we all envisioned.

BIOFEEDBACK AND SOMATICS

"Somatics" is a term coined by Thomas Hanna in 1976. He used the term to label the field that was beginning to develop which included the mind/body integration disciplines.

He used the term "soma," the Greek word for the living body, to label this mind-body combination. He then defined it as the body experienced from within. It is his brilliant solution for the mind-body problem.

Biofeedback is primarily a matter of somatic practice. It includes the first- and third-person perceptions. First-person perception refers to your personal perceptions about yourself from your subjective center. You are "subject" and everything else is considered an "object." The third-person perception is the outside information about the person. It includes information about how a person behaves, the observations of the biofeedback practitioner, and external observations of the biofeedback instrument.

As Thomas Hanna would say, the biofeedback is being done by the body of life. The biofeedback instrument is recording information about the life processes: the physiological functions and whether they are on or off homeostasis (which is the balance point). With the aid of biofeedback information, one is able to guide oneself in directions appropriate for the task. That means that one is sometimes moving toward homeostasis and sometimes away.

With biofeedback training one is trying to make conscious functions that are usually unconscious; trying to make voluntary that which is usually involuntary. That means that functions that are usually automatically controlled by the brain stem will be controlled at the cortex level where one can organize oneself more effectively to meet one's needs.

We are not used to consciously controlling the autonomic systems, as we are used to controlling other systems (for example, the muscular system). We do consciously control the central nervous system (CNS) to some extent, but we are not aware of ourselves as we do it. We do control the CNS indirectly, for example, through behavioral control, but we do not usually exert cognitive and affective control (although certain branches of therapy approach conscious cognitive and affective control).

With biofeedback, we use the equipment to amplify the signals we generate. With the evidence of autonomic function brought up to a level that can be perceived, we are able to work toward conscious control.

Therefore, we take time to practice controlling the function. There are certain strategies that intensify the function so that we may control it. All of this involves the conscious mind in controlling the function. Therefore, various areas of the voluntary motor cortex and other areas of the cerebral cortex are more involved in controlling the function. Awareness is a key factor.

As a result of training, when you return to everyday activities, you organize all of your psychophysiological systems more effectively for the tasks at hand.

This book will enable you to develop a basic understanding of biofeedback and somatics. We will explore biofeedback and somatics; an introduction to biofeedback training; the concepts of stimulation, arousal, and adaptation level; indications for biofeedback; contraindications for biofeedback; training and instrumentation; electroencephalograph feedback; electromyograph feedback; electrodermal feedback; skin temperature feedback; adjunctive procedures; biofeedback, relaxation and performance; biofeedback and stress management; biofeedback in education; biofeedback in the business setting; and biofeedback and optimal performance, athletics, and the arts. The appendices include an overview of biofeedback and the nervous systems; a biofeedback protocol for lab or home practice; a stress management protocol; and biofeedback and somatics resources. The main purpose of the book is to provide a framework for your continued learning and experience.

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There have been many people involved in the development of my understanding of biofeedback and somatics. I would like to thank: Francis Matthews, Gainesville, Florida, EEG Lab, V.A. Hospital, for her fostering of my original EEG apprenticeship; Joe Hart, for his encouragement of my exploration of EEG biofeedback; Joe Kamiya, for his tutelage in EEG biofeedback and electronics; the many friendships within the Association for Applied Psychophysiology and Biofeedback (especially, Francine Butler), and the Biofeedback Society of California; Elmer and Alyce Green and the Council Groves Conference (Kansas); and my colleagues Victor Daniels, Arthur Warmoth, David Van Nuys, and Barry Godolphin, great friends of the Biofeedback Labs at Sonoma State University.

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