



A Short History of Biogenics: Mind and Self-Regulation

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Autogenics * Progressive Relaxation * Transcendental Meditation * Biofeedback * Psychosomatic Symptoms * Mind-Body Self-Regulation * Autonomic Nervous System, Hypothalamus, Limbic System * The Effects of Lowering Brain Wave Frequencies * Breath Regulation * Biofeedback Training Methods * Subjective Awareness * Relief from Stress, Pain and Psychosomatic Illnesses

Autogenic training was developed in the 1920s in Germany by Johannes H. Schultz as a means of acquiring mind and self-regulation. Schultz believed that voluntary and predictable control of the body could be achieved by programming it to develop warm, heavy extremities, a warm abdomen, a calm, regular heartbeat, relaxed respiration, and a cool forehead. Autogenic training is, actually, sensory biofeedback.

The practice dates back even further than that in control of physiological processes through long practice of particular mental disciplines. In fact, early in this century, two related techniques were developed. In 1910, Emil Coue, a French pharmacist, elaborated his system of autosuggestion, a simple general approach to psychosomatic attunement. “Every day, in every way, I am getting better and better.”

Thousands and thousands of patients were successfully treated with this technique. Less than twenty years later, a Chicago physician, Edmund Jacobson, introduced his own method known as “progressive relaxation”. His technique, he insisted, had nothing to do with “suggestion or autosuggestion.” But most psychophysiological symptoms were reported to be markedly improved by the regular practice of simple deep relaxation. Spastic colon, globus hystericus, chronic insomnia, compulsion neuroses, phobias, neurasthenia, anxiety neurosis, depression, stuttering and stammering, all benefited.

In 1959, Maharishi Mahesh Yogi introduced Transcendental Meditation into the Western World. This approach is certainly much more mystical and metaphysical, but apart from the cult-like aspect of being

initiated by a personal secret word, it primarily teaches passive, dispassionate relaxation. Very extensive work has demonstrated unmistakably its effectiveness in a wide variety of psychophysiological symptoms. Unfortunately, it has not proven of value in the chronic pain patient, and is alleged to have led to some cases of catatonia as it is rather passive.

Despite the tremendous data behind biofeedback training, the most scientific and rigorously



studied of these psychophysiological approaches, scientists and physicians in the West have largely ignored it. Of some 3,000 publications related to biofeedback training, less than 300 are in English and most of the English articles are written by the Japanese. The whole idea of autogenic training did not really catch on in America until biofeedback, which is the method of using electronics for measuring and monitoring simple physiological activities. Biofeedback was developed in 1961, and my own American tours in 1961, '63 and 1964 brought these ideas back to England.

By observing the evidence of his ability to manage his body's activities (for example, a student can see for himself that it is possible for him to raise or lower his skin temperature, and even that it is possible to raise one hand, and to lower the temperature of the other at the same time), the student trains himself to control actions of his body which he had previously thought to be involuntary: his heartbeat, his breathing, his temperature, and – a particular point to note – his pain.

As a part of teaching the student to control his autonomic nervous system, which regulates the internal organs, the goal of all autogenic methods is harmonious limbic-hypothalamic, that is to say, emotional balance. To acquire that regulation or attunement, the student needs to learn to sublimate his negative emotions, not to suppress them, but to overcome feelings of paranoia, anger, hatred, frustration, self-pity, and depression, which are so often a part of the make-up of the chronic pain sufferer. Because emotional stress puts a great deal of stress on the body as well, the purpose of autogenics and biofeedback training is to evoke changes opposite to those of stress for both preventive and therapeutic reasons.

We have often been surprised by the warm reception our students give to the ideas and techniques of autogenics and biofeedback, and also the rapidity with which they have been able to develop these procedures for their own benefit. But I am not going to say that we don't have to cope with a number of sceptics as well: Approaching such students with the idea that habits, attitudes, and emotions may be part of their problem can be difficult to do, because some students very quickly become defensive. However, if they are to profit from autogenic training, it is absolutely essential that they know just how much wear and tear negative emotions can have on their bodies, and the benefits that they, as pain sufferers, and indeed as people, can reap if they keep in touch with their feelings and their bodies' actions and reactions.

When I tell my students that from 65 to 85 percent of all symptoms are psychosomatic (that is, they are caused by emotional stress) or at least have a psychosomatic component, that remark always raises a few hackles. To some people, it can only mean one thing: their pains are all "in the head", and they are – in crude layman's language – "unreal."

Deeply ingrained in their thinking is the idea that talking of the emotional and mental influences of their discomfort is the same as admitting fakery. To their mind, if the discomfort is "real", then the emotions of the mind did NOT cause it, nor can they get a "real" cure.

Yet, while even medical students know that a large percentage of illness is psychosomatic, most



doctors do not deal with illness as a psychosomatic problem, and, of course, the idea of psychosomatic HEALTH is almost unheard of: But almost is the correct word here: nowadays the possibilities of using the mind to control the health are being studied in many teaching hospitals, and are proving very successful.

Finally, the idea that a patient can and ought to manage, at least in part, his own pain and health flies in the face of traditional medical thinking. The whole thing smacks too much of self-treatment (which is justifiably frowned upon in cases of self-diagnosis or self-administration of medication) or worse yet it sounds a lot like the bugbear of the medical profession, the faith healer: Consequently, even though there is much evidence proving its effectiveness, autogenics is often seen, at first, as the very last resort for unresponsive cases.

To the student who may be resistant to the idea of autogenics, we try to make it as clear as possible that we are not suggesting that their pain – or for that matter, any of their physical maladies – are imaginary. A majority of symptoms – pain included – are directly caused by, or least aggravated by unresolved emotional stress. The attitude of the student at the time of an emotional stress determines whether a symptom will develop, and where the symptom will be felt. In general, some part of the body will react to most emotional stress. If the stress is persistent, chronic maybe, then symptoms may gradually lead to actual physical disturbance, through prolonged and/or intense physiological change. Whenever someone is alerted to a physical danger, his heart beats rapidly (or it may even slow to the point of death), he gets cold and sweaty, his breathing becomes heavy, he may get diarrhea, or conversely, his intestines may suddenly cease functioning, and he may have bladder spasms. No one would argue that these physical symptoms are simply figments of the imagination: they are, rather, very real, physical manifestations of an emotion: fear. Less apparent, but still verifiable, fright can cause the serum cortisone and the adrenaline levels to soar and numerous other chemical changes to take place as well.

Not all stress is emotional. Physiological changes can also be brought on, for instance, by the ingestion of drugs. Even the commonplace aspirin can eat a hole in the person's stomach lining, if that person takes enough of it. And things like cigarettes and caffeine, whether in coffee or cola drinks, can act adversely upon the body's chemistry. Other factors, which are largely outside the individual's control – like environmental pollutants, or heredity – also go into the creation of disease.

It is the autonomic nervous system which governs the body's physiology, the inner organs that generally function below the conscious level; it regulates the activity of these structures such as respiration, blood pressure, circulation, heartbeat, digestion, body temperature, metabolism, sweating, and so on. In other words, the autonomic system is what makes the body run. It has long been believed that the inner organs and their activities are not under volitional control, but there is evidence that the autonomic nervous system can be brought under voluntary control or self-regulation through training techniques, and this form of control is what we try to teach.

The autonomic nervous system, in turn, is managed by the hypothalamus, the master switch in the brain that regulates all other inner physiology. The hypothalamus is surrounded by the limbic system – the



emotional centre of the brain – and has connections with it; and it is through the limbic system’s influence on the hypothalamus that emotional disturbances are transferred to the brain. Conversely, by avoiding emotional excesses, it is possible to balance the hypothalamus and the autonomic nervous system. The limbic system can as easily, although not as quickly, get out of tune through emotional stress, and the result is hardening of the arteries, peptic ulcer, rheumatoid arthritis, or a host of other psychosomatic symptoms – including, most commonly, pain. The purpose of autogenic and biofeedback training is to get the limbic and the autonomic nervous systems, that is, the emotional and somatic functions, balanced in order to prevent or overcome psychophysiological problems.

It is also possible to bring these two systems into balance through religious faith or spiritual meditation, or self-hypnosis, or even art and music. Although I do not deny the effectiveness of these methods, they are not acceptable to everyone; autogenics, or biofeedback, is, I believe, more agreeable to more people.

Just as important as any of the exercises discussed for the body, are the more recent exercises for enabling us to make the proper use of our brain. There are a great many such exercises, some designed to enable us to use both hemispheres equally well, some to enable us to integrate the results to the best advantage. In trying to make sense of brain wave patterns, we are essentially putting together two independent variables – the speed of the rhythms of electrical activity in the brain, and our own experience of different states of consciousness. We are trying, therefore, for a union of objective measurement and subjective discrimination, and this calls not for simple identification but for interpretation.

Brain waves are measured in cycles per second, or hertz. Beta is the fastest at 13-30 hz, followed by alpha at 8-13 Hz and theta at 4-7 hz, and the slowest rhythm is delta at ½-4 hz. There are certain points where clearly defined states of consciousness and brain waves always coincide: delta is present in deep dreamless sleep, theta accompanies dreaming sleep, theta and alpha appear in hypnagogic and hypnopompic imagery as the person is just going into or coming out of sleep, and beta is there when the person is wide awake and doing, or not doing, anything, and this is when we should remember how little we have to go on, and yet how far it can lead us if we allow our original building blocks to become metaphors of states of consciousness.

Looking at the whole spectrum of beta to delta, we can see initially that the speed of the brain wave varies with the degree of active conscious involvement of the person – the more active the attention the faster the brain is working, as one might expect, and conversely, the lesser the involvement on the part of the conscious ego the slower the brain wave.

Individuals who are deeply hypnotised are usually in a theta state. If the brain goes down even further and is pulsing from one to three cycles per second, it is in a delta state and usually sleep occurs. In both the theta and alpha states, significant distress is not very likely, because stress, whether it is emotional or physical, is an alerting mechanism which accelerates the brain’s activities up into the beta state. If a person can purposefully put himself back down into alpha or theta states and remain there, he can suppress his pain.



It is also possible to control bleeding. It has been demonstrated that if surgery is done under hypnosis, where the brain is in a theta state, there is much less blood loss than under ordinary anaesthesia.

Because anaesthesia increases venous pressure and decreases proper breathing, and, without it, there is naturally less bleeding. But, in addition, individuals have such good control over their autonomic nervous system function they can actually regulate their blood vessels.

However, it is still possible to programme the mind to slow down its electrical activity without hypnosis. It is possible through breathing exercises, relaxation and concentration to drop down to theta and alpha states. And, most importantly, cultivating the ability to decrease the full-speed activity of the brain also normalizes and regulates body functions of all sorts; the heartbeat becomes calm and regular, the metabolic rate goes down, the respiration is slow and even, and each of the internal organs operates with quiet ease. During this state, the body can be mentally programmed, and instructions given to it will be carried out; emotions, as well, can be examined, and if found unacceptable, they can be regulated into acceptable ones.

Getting down to the alpha or theta states, or to fall asleep, requires either that there is total concentration on a single thing, or on nothing at all. The most time-honoured technique of dropping to the alpha state requires voluntary regulation of breathing. The normal rate of breathing of sixteen to twenty times per minute is actually inefficient, too rapid, really, to fill the lungs. Slowing that rate to about four per minute and breathing deeply and completely is one of the quickest ways of entering a more relaxed state of mind.

The purpose of both autogenic and biofeedback training is to balance and alter beneficial body functions through mental concentration. Much more study remains to be done verifying how statistically successful this method of maintaining good health is and what factors go into determining its effectiveness, but preliminary studies indicate that it can be very effective indeed.

Although the idea that cancer is a psychosomatic disease may be too far-fetched for some people to accept, Dr Carl Simonton in the U.S.A. is convinced otherwise. He noticed that a certain small percentage of cancer patients responded to treatments much more readily and unexpectedly than others, to the point where they actually defied medical prognoses. In talking with these patients, he found consistently that they were people with positive attitudes who simply refused to die. On the other hand, those patients who did not respond to treatment, in spite of their expressed wishes to continue living, were found to be depressed and indifferent to life, perhaps, on some level, even wishing to die, as Freud emphasised.

That the mind determines the body's immune response or resistance is now medically proven, and, according to Dr Simonton, whether a patient wants to live or wants to die determines whether or not his body will resist the growth of cancerous cells. To mobilise the mind's power in order that it might stimulate the body's resistance, he used mental balancing techniques in which the patient completely relaxed his body and envisioned himself becoming well, visualising the immune mechanism of his body going to work and the medical therapy effectively combating the malignant



cells. Dr Simonton found that those patients who were cooperative in their treatment and enthusiastic about getting well did, in fact, show a marked relief of their symptoms. Further study has indicated similar successful results.

In another report, clinical experience indicates that various somatic symptoms such as chronic headache, Raynaud's disease, vascular hypertension, weakness, palpitation and fatigue, disappeared readily with biofeedback training; and, as a beneficial side effect, these patients reported that they felt

more confident and capable of functioning in relation to themselves and other people. In short, it appears that 80 percent of ALL symptoms are amenable to biogenic training.

Biofeedback or biogenic training involves a therapeutic machine, a teaching device which helps the student learn to modify and control certain physiological functions and states of mind which have been previously believed not subject to voluntary control. Like autogenics, it is based on the assumption that if the student can be taught to control his internal state, he can also be taught to modify his psychosomatic discomforts, because he produces apparent changes in his autonomic nervous system, which is made manifest by the feedback of the machine – he becomes aware that malfunctioning of his body is also self-produced. Biofeedback reinforces the idea that many physical symptoms do not just happen; in fact, the majority of symptoms are either directly caused by or at least aggravated by unresolved stress.

There are several types of biofeedback training; brainwave or alpha training in which one learns to modify one's brain wave output – and it is most important to understand right at the start that producing alpha does nothing for you – in itself; but until you can do it at will, you are not ready to start all sorts of training that will be of enormous value to you.

Then there is temperature feedback instruction, in which the student learns to raise or lower the temperature of a portion of the body, and electromyogram training, in which one learns to relax certain muscles very effectively. Many other types of biofeedback training are now being developed for control of almost any physiological activity. The training is done with a battery-driven electronic machine, which is calibrated to pick up extremely small physiological changes as they take place. These minute changes (often as tiny as one millionth of a volt) are converted into either visual or auditory signals that the student can recognise, which allow him to know immediately when changes occur. The functions monitored are those in which a person is not usually able to detect changes, such as the number of alpha waves the brain is producing from moment to moment. In this manner, "biofeedback" feeds back to the student signals showing changes in one of the biological functions.

Once the student becomes aware of what's going on inside his body, which is what the machine tells him, he can begin to associate those changes in body function with subtle changes in his conscious feelings – his subjective awareness.

With continued practice in biofeedback training, one's appreciation of subjective feelings is



certainly enhanced. Eventually, the student finds that he can anticipate the biofeedback signals and has to depend less and less on the machine to know when, for example, he is producing continuous alpha waves, or is changing the temperature of some part of his body. After the student finds he is able to use his own awareness and feeling to tell him his internal functions (which is sensory biofeedback) he no longer needs an external device to feed external signals back to him. Once that point has been reached, he has learned to use more effectively another portion of his body, a portion which has been there all the time, but which he had never before used consciously or appreciated.

To the best of our knowledge, biogenics has no real adverse side effects. However, it is not yet widely used because, for one thing, the whole idea is relatively new, and new models and new methods are continuously emerging from the laboratories. Also, the machines themselves are still expensive for individual doctors or students to purchase.

These problems will undoubtedly be solved in a matter of time. What will be more difficult to deal with is our conditioned expectation that immediate and lasting relief comes in the form of a pill, or an operation, or some therapeutic method which is worked upon us. Ideas change very slowly, as a rule, so it may well take some time before biogenics is accepted, particularly since it requires that the student himself work at reprogramming his body, and since the effects are not instantaneous.

But regardless of the degree of pain and stress relief, or the speed with which disability of a psychosomatic kind is relieved, we have found most of our students to be open-minded and enthusiastic about accepting responsibility for controlling their own ailments. Once the idea of self-regulation and biofeedback is introduced to them, they are not averse to being taught to help themselves – physically and mentally – and to take charge of how they feel and how their bodies function.

These techniques, biogenic, biofeedback, and physical exercise, all properly belong to the field of biogenics. It seems obvious that most students who agree they will follow the programme can gain relief from pain and from most psychophysiological symptoms