

## **New Hope for Sufferers of Chronic Pain**

*by Siegfried Othmer, Ph.D.*

Pain is one of several sensory systems that keep us apprised of the status of our bodies. As we hurry through our daily lives, we usually view pain at the very least as an inconvenience, if not a major disruption. It's fortunate that we have our pain sensors - they provide a valuable warning to us that we need to stop and take care of ourselves. Pain has considerable survival value, but when an injury has healed and the pain continues unabated, or when pain seems to have no obvious connection to any injury, it no longer serves a useful purpose. Pain of this type is referred to as chronic pain, and once you have fallen under its sway, it may be very difficult to escape.

### **The Challenge of Pain Management**

The management of chronic pain has always been a medical challenge. Treatment often involves increasing doses of a variety of medications in an effort to gain a measure of relief. In some instances, the pain is significantly reduced with the use of medication, but when the drugs are removed the pain returns, and so the meds become a more or less permanent fixture of life, often resulting in drug dependence or even addiction. In other cases even heavy use of medication provides the sufferer little or no relief; the brain simply adjusts to the presence of the medications and demands more, while the pain continues.

Meanwhile, even the most thorough medical examination can find no real reason that the pain should persist. This all becomes clearer when we reflect on the fact that pain is not 'out there' in the body where it is felt. Pain is actually sensed in the brain. The brain makes it up, so to speak. It is a result of the way the brain interprets messages coming from the body, a determination that you should receive an "I hurt" warning so you won't just ignore an injury that needs care. The brain is ultimately in charge of how severely the pain is perceived and where it is localized in the body.

Pain is not an absolute measure like a temperature. It varies according to what is going on in the brain. And depending on the way the brain interprets incoming signals, pain may not be accurately scaled to the actual injury, and may persist long after the injury is healed. The brain also registers pain emotionally, and feelings of fear, trauma, or helplessness may increase pain sensitivity. The increased sensitivity intensifies the experience of pain, which in turn increases the

trauma and causes the cycle to spiral out of control. When the sensitivity escalates to the highest levels, injury messages are no longer necessary to sustain the experience of pain - even normal nerve impulse will do!

The only way to deal with this self-reinforcing cycle is to redefine the way the brain interprets nerve impulses and allow its sensitivity to return to normal levels. Recent clinical outcomes indicate that the technique of EEG (brain wave) biofeedback can be used to break the cycle and lead to a major decrease or (more rarely) even the total elimination of chronic pain.

### **What is EEG Biofeedback (Neurofeedback)?**

EEG biofeedback uses standard EEG amplifiers and dedicated software to allow the therapist to monitor brain wave activity, which in many cases may exhibit patterns of hyper-vigilance, hyper-sensitivity, and other types of dysregulation. Clinically relevant features are extracted from these signals, and these are then fed right back to the client in real time in the form of some kind of symbolic display of moment-to-moment brain activity. Visual and auditory cues are given to the patient to coach him/her to alter the brain waves toward better regulated patterns of activity.

Brain waves are a representation of the way you pay attention, both to the outside world and to your internal feelings. In the case of chronic pain, the brain is paying too much attention and has become over-sensitized. By learning to control your brain waves with the aid of EEG biofeedback, you can affect the underlying behavior patterns of your attention and return your brain's pain sensitivity to normal levels.

### **Some Case Examples**

A case in point is "Ted" (not his real name), who was nearly electrocuted. Three years later he was still "...suicidal with agony." He had been to a number of psychiatrists, and some of the medications they provided helped for a while, but the pain always returned. In great desperation, he came in to have his pain sensitivity retrained with EEG biofeedback. After only a few sessions, his pain was reduced to where it no longer bothered him, and he returned to a normal life.

Another example is "Jack," who came in with a diagnosis of fibromyalgia, a kind of whole body pain, along with chronic fatigue syndrome. Within three weeks, he was free of what he described as "bone-crushing pain" for the first time in six years. He went on and did a number of additional sessions of EEG biofeedback to consolidate his gains, but the major difference was made early on.

One of the most gratifying examples of the power of EEG biofeedback to relieve pain was the case of "Doris," who underwent hip-replacement surgery in April of 1996. After several months, the pain was still at "six" on a scale of 1-10 despite heavy medication, and she continued to require crutches to walk. She began a program of EEG biofeedback and within a month the pain had been reduced by half. By November she was no longer using crutches and began to be able to make dance movements, while having greatly reduced episodes of significant pain. As of the writing of this article, she is essentially pain-free, and only uses medication occasionally at night. Now she is even able to do a bit of running. One medical doctor, a chronic pain patient himself, was so pleased with the benefits he gained from the EEG biofeedback process for his own post-operative pain that he now offers it in his practice.

Another MD, a rheumatologist, was so impressed with preliminary clinical outcomes on his fibromyalgia patients, that he has undertaken a formal controlled study of the use of EEG biofeedback for chronic pain in association with a local university. Data from this study will not be available for some time, but results obtained at a number of clinics throughout the country make it clear that EEG biofeedback represents a significant addition to the arsenal of available therapies for chronic pain.

EEG biofeedback is a non-invasive process that uses state of the art digital technology to monitor and train the brain in ways that were previously not thought possible. Yet the key to its remarkable effectiveness in dealing with chronic pain is not the hardware or software, but rather the brain's ability to learn to reorganize and maintain its own functional state. EEG biofeedback is simply the most advanced way of retraining the brain, and it now offers new hope to sufferers of chronic pain.

### **Siegfried Othmer, Ph.D.**

The above is a slightly edited version of an article that appeared in "Your Family's Health" in 1997. The rheumatologist mentioned in the article has offered Neurofeedback continuously since that time. He considers it his single most effective intervention for Fibromyalgia.

The protocols in use for chronic pain have undergone major revision over the last decade simply by virtue of a longer learning curve and greater range and breadth of clinical experience. Published data have become available for the effective use of functional magnetic resonance

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imaging in feedback. In this method, significant pain reduction was achieved in a single session with the instrument. A publication is in press that shows similar results for EEG biofeedback.

**EEG INFO**

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