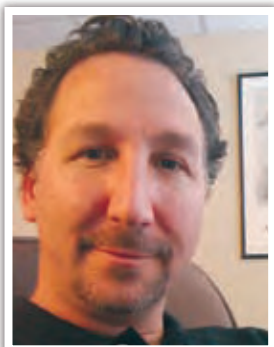


NEUROFIELD

Nicholas Dogris, Ph.D.



This is the story about how NeuroField was developed. I began my journey in the field of Neurofeedback after working in the mental health field for over 10 years. My doctoral training is in health psychology in which I was trained in medicine and psychology in an effort to be one of the new prescribing psychologists. Over time I became discouraged with the western medicine approach to psychiatric illness and was intrigued to learn that biofeedback techniques could be utilized to help this client population. I learned traditional neurofeedback techniques and my private practice quickly morphed into what I now call an energy psychology practice. I practiced traditional Neurofeedback methods and was initially trained by Margaret Ayers, but learned from many others who were kind enough to share their wisdom and knowledge with me.

I had been practicing traditional neurofeedback up until the birth of my son who had been born anoxic and premature. When I met him in the NICU I realized that he suffered significant trauma to his brain and that he would need my help.

Naturally I made the decision to find a way to help him as soon as possible and I knew it would not be easy. Everything I had learned about neurofeedback was geared towards children who were old enough to engage in the training procedure. At that point in time I had not treated infants using traditional neurofeedback methods and had not read any studies suggesting that it was possible to do so successfully. When I attached EEG electrodes to his scalp for the first time my heart sunk as I observed exceedingly high amplitude, low frequency activity. I was concerned for his well being and wondered how he would ever be able to function in the world.

I engaged in a two-year search looking at as many energy devices that I could lay my hands on. Some had merit while others were misleading and did nothing short of relieve the user of his/her hard earned money. Furthermore, many of the companies that made these devices would sell them to anyone, anywhere. All you needed was the cash. I felt my hopes begin to drop until I came across the Low Energy Neurofeedback System (LENS). When my son was 18 months old he was barely walking, spoke in one and two word sentences, had hypotonia, a blood disorder, and had extreme visual and auditory sensory integration problems. The LENS made sense to me and was grounded in neurofeedback principals that I could apply to my son sooner than later. Upon obtaining this system I began treating my son and he responded very well to the treatments. The LENS had a significant impact on his life and improved his overall functionality. Len Ochs, Ph.D. helped me through this time by mentoring me and encouraging me to stretch the limits of my thinking. Over time I would develop protocols for the

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NEUROFIELD TREATMENT OF PAIN

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INTRODUCTION

NeuroField is an innovative neurotherapy device. It provides extremely low levels of variable DC stimulation through various programs that provide the stimulation at certain pre-set frequencies that are believed to influence the energy field generated by the brain and the body, facilitating certain physiological effects. The low level stimulation is provided through a 19-channel electrode cap and is generated from 6 AA batteries. No formal research exists utilizing the device, and thus it must be acknowledged to patients as an experimental treatment at this time.

Approximately 15 months prior to writing this article I purchased NeuroField. Since that time I have used it following informed consent about its investigational nature with approximately 100 patients. In a large proportion of cases the results have been gratifying and thus far the only side effects I have observed were of someone feeling tired during the remainder of the day, or having insomnia for an evening if too much stimulation was provided. I have utilized NeuroField as part of treatment with attentional problems, anxiety, insomnia, head injuries, chronic fatigue, and both acute and chronic pain.

The Inflammation Reduction program has proven especially effective. I was initially quite skeptical that this protocol could impact inflammation. The first individual that I used this protocol with had a chronic inflammatory condition that results in her clearing her throat of phlegm numerous times throughout each day. When she must clear her throat it sounds very loud and disgusting, perhaps best described as sounding as if she is coughing up a fur ball. After using the Inflammation Reduction protocol with her three times in one session (which required about 3 minutes), this individual reported that for the next 3 days she had almost no need to cough and that her arthritic pain was significantly less. Subsequently I have used the Inflammation Reduction protocol with patients who suffered with neck and shoulder pain, rotator cuff pain, carpal tunnel pain, knee and back pain, headaches, and post-surgical pain. In most of these cases the electrode cap is simply placed over the area of the pain, rather than on the head. In this paper I will report on the most severe case of chronic pain on which I have used NeuroField.

BACKGROUND HISTORY

Dotty was a 71 year old, married woman. In the past she had been a very upbeat, sociable person who enjoyed artistic pursuits, church activities, and had a fun loving sense of humor. These qualities had been overshadowed for more than a decade due to harsh chronic pain. She developed a prolapsed bladder and right ovarian cyst and underwent surgery in 1995. The initial surgery, a full abdominal entry, resulted in a series of additional surgeries through 2004, mostly to repair recurrent incisional hernias.

Beginning in about 1996 she began experiencing serious pain in the area of the incisions. This led to a neuroma surgery in her lower right abdomen in January 2004, which led to an additional incisional hernia. In July 2004 a hernia specialist excised a football shaped section of her abdominal wall along the centerline, approximately 8 inches long and 3 inches wide. During this surgery they found hernia mesh from a

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LENS that would enhance the system and lead to even better treatment effects.

In a matter of two years AJ had improved greatly, but I continued to observe significant suppression in his EEG characterized by low frequency, high amplitude waveforms that had little to no variability. It has been my observation that when the brain is damaged cortical suppression is a byproduct of the injury. As the person heals the amount of suppression reduces and normal variability is once again observed in the EEG. However, the brain does not function in a linear, predictable fashion and variables that cause suppression are many making resolving this issue very difficult. I discovered that one of the ways to resolve cortical suppression is to replenish the system with energy so that it could repair itself. The LENS is a *disentrainment* neurofeedback device that disrupts the brain, causing it to re-organize itself. This process pulls a great deal of energy from the body. I have observed this on multiple occasions while treating my son and many other patients which lead me to the conclusion that better results were obtained in LENS treatment when the body had the energy to repair itself.

The research in this area is clear. The

two best methods for achieving good neurological health are diet and exercise. This is something that every one of my patients hears when they come to my office. I insist upon it as neurofeedback results are greatly improved, especially in children. It's a simple concept really, when the body has good fuel and plenty of oxygen it functions better. In my initial EEG evaluation I make recommendations for supplementation for the patient (or parents) to consider. By the time I would work up the data and schedule the first treatment session I would observe improvements in the EEG if the parents had implemented the recommendations. I would also hear that the child had improved and was doing better. The EEG that was once suppressed with little to no variability was now showing variability and the entire EEG would appear to be improved. These observations lead to the question, "How could energy be introduced to the body so that it could repair itself?" It was then that I came across "The Field" by Lynn McTaggart (2003) who wrote the following:

"At our most elemental, we are not a chemical reaction, but an energetic charge. Human beings and all living things are a coalescence of energy in a field of energy connected to every other thing in the world. This pulsating energy field is the central engine of our being and our consciousness,

the alpha and the omega of our existence."

When I first read this paragraph it had a profound impact on me. We are made out of the energy and the foundation of biology rests upon the foundation of energy. Fritz Albert Popp (2002) demonstrated that light is emitted from organic substances and coined the term 'biophotons.' The light that is emitted from organic sources surrounds the source that it is emitted from and creates a standing waveform. Popp also demonstrated that energy 'looks' for compartments in which to store itself. It is a natural phenomenon that suggests that energy can store itself in biological and non-biological places. If energy can store itself in compartments then it is feasible to theorize that energy can store itself in the human body. After all we have three major compartments in the body, the gut, the heart and the head. In Chinese Traditional Medicine the 'triple burner' or the gut, heart and head are regions in which chi is stored. The power plant of the system so to speak. When this system is depleted the organism is prone to illness. When the system is energized it can repair itself and defend against disease.

The notion that we are made out of energy and have regions in our bodies that can store energy made sense to me, but when I thought about cells in the human body on a molecular level the theory



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behind the energetic system simply did not hold up. I had never been taught that there were compartments in the cells that could store energy. I kept on getting stumped by this because many books that explain cellular biology use a version of the human cell that is outdated and reflective of the physiological thinking of the 1960's. The cell is drawn in most books as a bag that holds various parts of the cell with the majority being composed of solution. Eventually my search would lead me to a book entitled, "Energy Medicine" (Oschman, 2000), where Dr. James Oschman discusses what is known as the "living matrix." He describes the living matrix as follows:

"The living matrix is a continuous and dynamic 'supramolecular' webwork, extending into every nook and cranny of the body: a nuclear matrix within a cellular matrix within a connective tissue matrix. In essence, when you touch a human body, you are touching a continuously interconnected system, composed of virtually all of the molecules in the body linked together in an intricate webwork. The living matrix has no fundamental unit or central aspect, no part that is primary or most basic. The properties of the whole net depend upon the integrated activities of all the components. Effects on one part of the system can, and do spread to others."

I would learn that the cell is not a 'bag' of solution, but rather filled with filaments, tubes, fibers, and trabeculae. If each cell in the body contains compartments then the assumption could be made that energy stores itself in every cell of the body (Grass et. al., 2003). Furthermore, if the living matrix stored energy then the assumption could be made that the "field" or "biofield" could be emitted by systems of cells if not individual cells themselves. Therefore the overall biofield is a summation of the energy emitted from every cell in the human body and the NeuroField is a subdivision of the overall biofield.

After I had convinced myself that the NeuroField did indeed exist, the question as to whether the field was capable of being manipulated was my next question. Could energy be introduced to the field for the purposes of healing? Physics studies have suggested that a molecular structure loses electrons and photons when it is damaged. Laser light healing therapies suggest that if an energy pulse is introduced to the biofield that resonates at the frequency of the damaged molecules then free floating electrons and photons could be introduced back into that molecular system (Lytle, 2004). Dam-

aged molecules will recruit free floating electrons and photons returning the electron ring to a fully populated state. This allows the system to come back on line, so to speak, in a reorganized, balanced fashion. Once this occurs the body is able to use its own restorative functions to repair itself. I had developed the theory that the biofield is an interactive, intelligent, multi dimensional phenomena that could absorb energy and disseminate it to the areas of the body that match the resonant frequency of the energy being introduced.

With these thoughts in mind I decided to seek out an engineer to help me make the idea of NeuroField into a reality. It takes an enormous amount of engineering know how to build something like NeuroField and I knew that my knowledge of computers was not adequate to complete the task. Enter Brad Wiitala. Brad is the engineering genius behind the development of NeuroField. Our initial meetings were exciting as Brad developed ideas about how to build the circuitry within the specifications that I was requesting. Within a very short period of time he had drawn up a circuit diagram, was ordering parts, and assembled the prototype. After a couple of prototypes Brad had built a functional system that I could work with.

Brad and I developed a system that could emit frequencies at different amplitudes and durations. Through a proprietary method, protocols were developed that could deliver energy back to the body and re-charge virtually any system in the body. We went through several different prototypes and tried different ideas over a period of six months. During this time I knew we were onto something special and my excitement increased by the day. Brad had developed a solid platform for generating frequencies, but the problem was delivering energy into the biofield. We talked about different ideas, but nothing seemed to work. I had examined many different type of invasive methods, but they were too overwhelming and did not lead to what I considered good treatment effects. It's hard to break out of traditional methods when you are traditionally trained. In traditional EEG we attached sensors to the head and I had yet to let go of the idea of doing so. Then it occurred to me that if the biofield *really* exists outside of the body then all I would have to do is simply give energy within the projected biofield. I didn't have to put any energy into the body. I decided to test the idea and asked Brad to spin up a prototype for me.

On one late evening Brad had just finished changing the circuitry so that I

could connect my QEEG cap to the NeuroField device. The cap was not connected to me in any fashion with no grounding or electro-paste. The time had come and I decided to try NeuroField on myself and observe the results. Brad asked me what he should do if something 'bad' happened to me. I said, "Call 911." To which he said, "And what am I supposed to tell them!?" I reached over and activated the X1000 stimulation unit. What happened next changed everything. I had developed a 30 second protocol called Brain Fog Reduction which is designed to wake you up and help you to think clearly. After the protocol had finished I felt instantly awake. The lights in the room appeared to be brighter, but I did not generate insight into these changes because I immediately had some ideas that I wanted Brad to add into the software. This occurred around 10 PM after I had seen patients all day and was tired. The Brain Fog Reduction protocol did its job and by the time I recognized it, it was midnight. I was wide awake, focused and calm. I had fed energy into the biofield and my brain responded to it. NeuroField was born and it was time to get other professionals involved to verify this finding.

I introduced NeuroField to a group of colleagues and we began the process of beta testing the device. After a couple of months multiple reports came in suggesting that NeuroField was having a significant impact on the beta tester's client populations. This group of professionals interacted online and began sharing information that surprised me. Some reported using the NeuroField cap on different parts of the body to reduce inflammation and pain while others reported changes in thyroid blood levels. The ideas poured in and it was a truly exciting time as we began to discover that NeuroField had multiple applications. I observed an almost immediate response in my son as his EEG suppression lifted he became more functional. He also became trainable with conventional EEG methods which I employed (and continue to employ) with good results. As of the writing of this paper he has improved greatly in almost every way in his life and I am no longer gravely concerned for his welfare as I was since his birth. My intention has always been to help him which was my primary motivation for creating NeuroField. However, I realized that I was ethically obligated to share this technology with others so this technology can continue to be researched and developed over time.

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As a result I released NeuroField publically in August 2008 only to licensed health care professionals.

After the public release of NeuroField, Brad and I decided to research ways to measure the NeuroField effect. Many of the NeuroField practitioners would select protocols through the process of muscle testing the client. They reported good treatment effects which encouraged me to start the process of muscle testing clients along with taking pulses. It was then that I observed variability in the pulse rate when a person was given specific frequencies. When I observed increased variability, people would report that they liked the “feeling” of the frequency and would rate it higher than those frequencies where there was no noticeable

variability in pulse rate. It then occurred to me that the heart could be muscle tested by measuring heart rate variability (HRV) (see figure 1). After testing this theory on my client population for three months I developed the theory that increases in HRV are an affirmative or “yes” response to a specific frequency. I also used the Gas Discharge Visualization (GDV) system to measure pre and post changes in the biofield pre and post HRV sessions. The GDV was created by Dr. Konstantin Korotkov in Saint Petersburg, Russia. After reading Dr. Korotkov’s book “Human Energy Field” I purchased one of his machines. Basically the GDV is a camera that takes pictures of the light that emits from a person’s fingertips. These pictures are then analyzed via a computer program and a ‘map’ of the biofield is rendered based on acupuncture points (see figure 2). After conducting over 250 scans the same result

was observed. HRV would increase in response to specific frequencies and the GDV post test scan would show changes in the biofield towards normalization when compared to pretest scans. However, since I was measuring HRV with a third party software it was time to test out the idea with my own HRV hardware.

Brad built a prototype HRV module and we began testing this theory. The HRV measurement module was developed over the course of a nine month period. Measurement protocols have been developed to examine real time HRV changes in response to specific frequencies through the NeuroField stimulation device. The HRV measurement device is capable of measuring HRV in a very short period of time. The NeuroField user sets a threshold or acceptance criterion for increases in HRV. The patient is given specific frequencies one at a time and HRV is calculated after each frequency. If HRV increases above the acceptance criterion, then the NeuroField program will isolate that frequency so the user can give it again at a later time. The idea is to tap into the natural healing wisdom of the body so that it can select the frequency energy it needs in order to repair itself. Initial patient observations have been positive with patients reporting improved/stable mood, reduced anxiety, reduced inflammation responses, and increased attentional ability. A new kind of energy biofeedback had been developed in the form of the NeuroField HRV unit.

The HRV module was formally released at the 2009 ISNR conference in Indianapolis. At this time I am collecting QEEG, NeuroField HRV, GDV and patient subjective report data and intend to report my findings during the 2010 ISNR conference in Denver, Colorado. We continue to conduct further research into this area and plan on releasing other physiological add-on modules in the near future. For more information please visit www.NeuroField.com.

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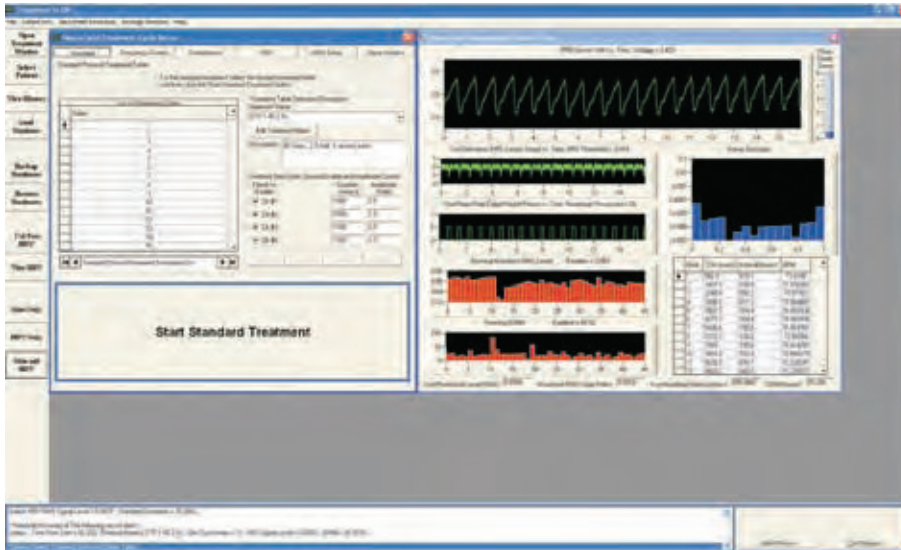


Figure 1: Screen display, NeuroField HRV module

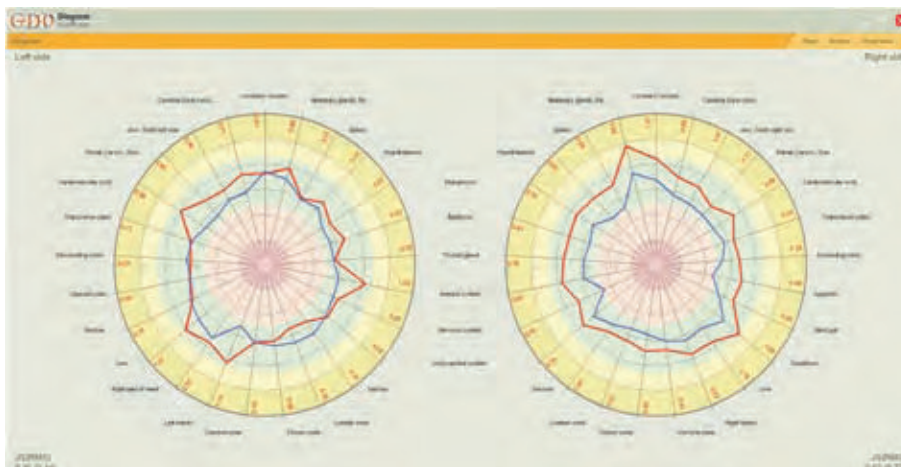


Figure 2: Schematic map of the biofield derived from Gas Discharge Visualization technique. Red = pretreatment Blue = posttreatment

NEUROFIELD TREATMENT OF PAIN CONTINUED FROM PAGE 23

1995 surgery that had not been properly attached, was floating free, and had calcified to the consistency of a tortoise shell. It was determined that this and the accompanying inflammation were the likely source of the pain she had been experiencing since 1996 rather than a neuroma.

Back in 1996 the following pain interventions occurred: 1) Lidocaine injections in the abdominal wall at the site of the pain, resulting in 6 hours of complete relief; 2) BOTOX injections in the abdominal wall, with no discernable effect; 3) intercostal lidocaine injections at T9/T10, resulting in 26 hours of complete pain relief; 4) intercostal phenol injections at T9/T10 that resulted in extreme neuritis lasting several months. In early 1997 they traveled to John Hopkins Pain Treatment Center where she had pulsed RF intercostal intervention at T9/T10/T11. This resulted in 2 weeks of complete pain relief and 5 weeks of substantial relief followed by a relapse of the intense pain. The pulsed RF procedure was repeated in May 2007 which only brought 2 days of complete pain relief and a relapse of the intense pain within a week.

Narcotic treatment was then recommended, beginning with a Fentanyl patch in June 1997, which was increased from 0 to 100 mcg/hour alternate days over a period of 6 weeks. She did not develop tolerance to the Fentanyl, experienced nausea and dizziness, severe cognitive effects, and loss of balance (with 5 falls where she hit her head) while only obtaining slight relief from the pain. She was tapered off Fentanyl by October 2007, experiencing moderate restoration of cognitive function and mobility, but with a full resurgence of pain. Her last fall had resulted in a depressed fracture in the right posterior area of her skull. Since that time she continued to experience some balance problems, despite being off Fentanyl.

After years of suffering, in early 2008 Dotty had a subcutaneous stimulator implanted at the site of the pain. It reduces her pain, "but not enough to make the pain tolerable." Frequent program changes in the stimulator proved necessary to maintain effectiveness and she was never free of pain. She was also placed on Neurontin, Soma, and Lorazepam. Prior to treatment with me husband wrote, "Because of the number of interventions that have been tried with limited or no success, Dotty is skeptical of the likely outcome, but is willing to give it a good-faith try and hope for a good outcome." In our initial in-

take interview she rated her pain during the day (when the implanted stimulator was on) as varying from 2-8 in intensity (on a 0-10 scale). The pain was experienced to the right of her naval with referred pain into the rectum and vagina.

TREATMENT

The patient traveled from out of state and remained in the Salt Lake City area with her husband for approximately 3 weeks, residing with relatives. She arrived for the sessions with her husband pushing her in a wheelchair, and then holding someone's hand she would walk unsteadily from the door of my office to a chair. In the 3 weeks prior to our intake interview she had tapered off Soma and Lorazepam. After the intake history session she was instructed in the use of a Photonic Stimulator (an infrared light device for pain management produced by OchsLabs, Inc). They took the photonic stimulator home and used it as directed daily over a 3 day weekend without positive result. It was believed that the source of the pain was simply too deep in her body to respond to the photonic stimulator. Therefore, following informed consent in our first treatment session, we began using NeuroField. With the electrode cap held by her directly over the site of the pain we ran the Inflammation Reduction program 3 times, and then another program called CNS Repair. The next day she indicated that she had run out of Neurontin. We used the Inflammation Reduction program 4 times over the wound site, followed by the CNS Repair program once. On the third treatment day Inflammation Reduction was run 6 times, CNS Repair twice, and a swelling reduction program was run twice.

Our next session was 4 days later. Despite having a cold and coughing, which would usually make her pain much worse, she rated her pain level as a 1. Her husband reported that she had been walking with a more upright posture. The Inflammation protocol was repeated 6 times, CNS Repair 3 times, and Swelling Reduction 3 times. By the next day (treatment session 5) it was reported that she was doing much more for herself and was being more mobile. We continued this treatment regime for a total of 14 sessions. After 6 sessions she began walking (a long walk) from the front of the hospital to my office, and then afterwards back out to the parking terrace, without the wheelchair. Her pain level continued to improve. At the end of treatment she was usually experiencing no belly pain unless she "overdid it" by being extremely active, in which case there

was mild pain. In her last week of treatment, she and her husband went out to a movie and dinner, which was the first time this had occurred in two years. It should also be noted that in 6 of her sessions we used the Low Energy Neurofeedback System (LENS) for two seconds of feedback each at sites directly underneath O1 and O2, barely above theinion ridge. This was done because of the author's previous work (Hammond, 2005) at these locations with traditional neurofeedback which has been found to improve physical balance. The patient and her husband also reported improvements in her physical balance and they returned to their home in another state.

FOLLOW-UP

In a one month follow-up her husband indicated that her pain relief had been maintained. Further, they had gone on the first vacation that she had been able to go on in four years.

Seven months after the last treatment session the patient's husband reported that her only medications are Neurontin and Ibuprophen, and that when her implant is fully charged and she is inactive she does not experience any pain. He said, "It is clear that Dotty's pain is very much better and doesn't appear to have lapsed back since the earlier treatments." She is also significantly more active than previous to treatment. Her husband indicated: "She has been doing more and more housekeeping, cooking, etc. And she has appetite and eats normal food. I have a motorized treadmill and she's got her distance up to a half-mile at 2 mph." He said that they both considered NeuroField to be a success.

CONCLUSION

The author's clinical experience with NeuroField has been very positive, particularly in applications with attentional problems, head injuries, anxiety, insomnia, and both chronic and acute pain. Both the immediate and the enduring results that were seen in this case of severe chronic pain are encouraging that NeuroField can offer an additional treatment modality with pain cases. Based on my clinical experiences I believe that research with NeuroField is clearly warranted. One of the great advantages of the device is its ease of application and the fact that it can be so easily added to treatment since its use only takes a few minutes.

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