

50 Years of Pain Management

From cranial electrical stimulation to pulsed electromagnetic field therapy, pain management has advanced exponentially over the last 50 years

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Although electricity has been used for decades, it was the introduction of spinal cord stimulation and transcutaneous electrical nerve stimulation in the 1960s that initiated the modern widespread use (1-2). Cranial electrical stimulation was introduced in 1976, and since then, electrotherapy has been advanced to help heal fractures, wounds, assist bladder control, control opioid addiction, treat fibromyalgia and virtually all pain, cure tinnitus, advance acupuncture, treat hypertension, and improve memory (3-4). Electroshock therapy has unfortunately continued despite its risks and long-term damage, while electrotherapy is not considered acceptable. Even worse is frontal lobotomy for anything, including psychiatric illness or pain!

Electrotherapy

Electrotherapy expanded with use of stimulation for bladder control, wound healing, and fracture healing. In 1978, the American Holistic Medical Association was founded and became the focus for complementary, alternative, and eventually integrative medicine. Unfortunately, the medical system and hospitals began prostituting the integrative word by adding one or two simple tools, rarely comprehensive or holistic. In the 1990s, extended release opioids became available and have been the fountainhead for the severe opioid crisis with increased crime and suicide epidemic. In truly chronic pain, spinal cord stimulation is infinitely safer and more cost-effective (7-8, 10-13).

Of considerable interest is that by July 2000, *The Journal of the American Medical Association* published an article stating that the third leading cause of death was the medical system! Some have insisted that actually it is the number one cause of death (14). In 2004, pulsed electromagnetic field (PEMF) therapy was introduced and has since been shown to be the most useful of all electrical tools, not only for pain management, but also a broad variety of diseases.

Perhaps the most important use of electrotherapy was the discovery that human DNA resonates at 52-78GH and that a billionth of a watt of these frequencies is the most powerful for pain relief, acupuncture activation, and regeneration of telomeres. Indeed, studies have shown three different approaches that regenerate telomeres by 3.5% each year, instead of the usual shrinkage of 1% each year. Two of these use the 52-78GH to stimulate the entire body an hour a day or activate three acupuncture circuits, rings of fire, earth, and crystal. Fire raises DHEA and is useful in reducing depression and improving migraine and diabetic neuropathy, earth optimises calcitonin that may restore thyroid function and reduce pain, and crystal reduces free radicals by 80%, which is anti-inflammatory. Interestingly, these three circuits can also be stimulated with essential oils that increase telomeres by 3.5% a year (15-18).

PEMF

Just as spinal cord stimulation and transcutaneous electrical nerve stimulation sparked interest in many other uses of electrotherapy as well as the inclusion of holism, PEMF has proven to be as important a tool for general health as penicillin was for infectious diseases. In fact, in 2015, the FDA reclassified PEMF from category three to category two status as a wellness device. Subsequent PEMF research has proven that it may be helpful in musculoskeletal pain related to plantar fasciitis of the heel and osteoarthritis of the knee, depression, postoperative pain, such as adjuncts to spinal fusion, and acceleration of fracture repair. At the cellular level, PEMF increases adenosine triphosphate production in mitochondria, improves the sodium-potassium pump, boosts cellular pH to the more ideal alkaline, and improves oxygen uptake, circulation and microcirculation, nutrient transport, and waste elimination. It also lowers blood viscosity, builds stronger bones, produces beta endorphins for pain relief, better sleep, and increases human growth hormone secretion – to name a few (19).

Interestingly, PEMF is the most effective physiologic and psychological stress reducer. It also reduces the neurological, immunological, vascular, cardiac, and biochemical reactions to stress. In severe anxiety, it is the single best and fastest treatment possible. Studies have shown rapid improvement in oxygenation from 75% to 96% in patients with severe lung disease, best control of diabetic neuropathy pain with recovery of lost sensation, and rapid reduction of severe hypertension of 200/120 to 130/80. In one severe Parkinson's patient who could not stand with two persons supporting him, he improved to walking into the clinic one month later. One advanced Alzheimer's patient improved from severe to mild symptoms within a month.

However, the most outstanding result is with 10 long-standing opioid addicts with severe cravings moving to complete happiness with no cravings at the end of the first year. Several commercial PEMF devices put the brain into delta rhythm, which is relaxing and good for sleep, but only production of gamma is required for treatment of opioid addiction.

Fifty years of pain management have resulted in remarkable improvement in control of all types of pain, but perhaps more importantly, has helped create a wide variety of tools for management of almost all illnesses.

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