

HIGH ENERGY INDUCTIVE THERAPY

Case studies highlighting the effectiveness of HEIT for musculoskeletal conditions

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TIME TO READ: 10-12 MIN.

THE TAKEAWAY

More powerful with faster healing and deeper penetration than PEMF, HEIT works through clothing with reduced treatment times for patients.

BIOPHYSICAL STIMULATION with pulsed electromagnetic fields (PEMF) has been used as a safe, effective, noninvasive method to treat several musculoskeletal and other conditions.¹⁻³ There is also evidence that suggests PEMF may be beneficial in several refractory bone conditions such as delayed healing of fractures, osteoporosis and osteonecrosis of the femoral head.⁴⁻⁶

PEMF acts by stimulating various cellular signaling pathways. The electromagnetic signal is translated into a biological signal at the cellular level. This leads to the stimulation of nerves, muscle fibers and blood vessels through growth factors and other molecules such as fibroblast growth factor (FGF), vascular endothelial growth factor (VEGF), transforming growth factor (TGF)- β , bone morphogenetic proteins (BMP) and insulin-like growth factor (IGF).⁴

HEIT vs. PEMF

Another therapeutic device exists that takes the benefits of PEMF to a new level. This device uses high energy inductive therapy (HEIT), a treatment modality that is more potent than PEMF.⁷ With power up to 3 Tesla (equivalent to 30,000 Gauss) — about 600 times stronger than a normal magnet — HEIT offers faster results and deeper penetration than PEMF.

Besides the known mechanisms of action of PEMF, the high energy in HEIT induces a change in voltage in the cell membrane that restores its normal resting potential. As a result, the exchange of electrolytes through the cellular membrane is normalized. An optimal balance of electrolytes supports cellular function, including the production of energy by the mitochondria. High energy inductive therapy has shown impressive results for various clinical indications.⁸

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Case studies

Below I will present my experience using a HEIT device for several clinical applications.

Case 1: Radiating neck pain Demographics: 59-year-old female. Chief complaint: Constant, severe 8-out-of-10 neck pain radiating into the left arm. The pain increases with any neck movement. There was no position that provided relief.

History of present illness: Two treatments from another provider included cervical manipulation, active release technique (ART) and NSAIDs at 1,600 mg/day. The cervical pain had a severity of 8 out of 10 on presentation, radiating into the arm and lateral forearm, as well as the axillary region.

Physical exam: Left biceps reflex diminished; all other deep tendon reflexes intact. Positive Spurling test; positive Valsalva maneuver. McKenzie elevation non-responder. Sensory loss along C5-C6 dermatomal pattern.

X-rays: AP, lateral and AP open mouth views of the cervical spine supplemented with right and left oblique views were done at my office. Findings are shown in Figure 1.

Treatment: Treatment with highpower laser on the cervical spine and HEIT on the upper thoracic spine as well as along the C5 and C6 nerve distribution.

The protocol I used consisted of static treatment with the large applicator with energy on for four seconds and a frequency of the magnetic field of 25 Hz, followed by three seconds off. This was alternated with the magnetic energy increased to 50 Hz and kept on for four seconds, followed by three seconds off. This protocol was run for 20 minutes with the articulating arm holding the applicator in place; this allowed this portion of the treatment to be mostly unattended.

The patient was treated with HEIT only once and achieved complete resolution of the pain.



Figure 1. Lateral view of the cervical spine showing severe disc degeneration at C3-C4, C4-C5, and C5-C6 with the presence of an anterolateral bridging spondylophyte at these levels.

Degenerative retrolisthesis is seen at C4, C5 and C6. There is also a reversal of the cervical lordosis resulting in narrowing of the spinal canal.

Case 2: Rib fractures with severe pain Demographics: 40-year-old female. **Chief complaint:** Severe pain over the right posterior ribs.

History of present illness: The patient was holding a child when she fell backwards on the edge of a swimming pool. On presentation, she had pain over the right posterior ribs with a severity of 10 out of 10. She went to the emergency room before coming into my office. However, they did not obtain any imaging studies there.

Tests: We ordered AP and lateral X-rays of the thoracic spine. The images revealed complete fractures of the posterior ribs of T11 and T12 with displacement (Fig. 2).

Treatment: Initial treatment was a combination of HEIT and high-power laser, followed by treatment with localized Cryo 6 and kinesiology taping. After the first HEIT session, pain was reduced by 50%.

I used HEIT with a protocol for inflammation consisting of static treatment with the large applicator with energy on for four seconds and a frequency of the magnetic field of 25 Hz, followed by three seconds off. This was alternated with the magnetic energy increased to 50 Hz and kept on for four seconds, followed by three seconds off. This protocol was run for 20 minutes with the articulating arm holding the applicator in place.

The patient received a total of eight HEIT treatments, three times a week for two weeks, followed by twice a week for one more week. The energy used was up to patient tolerance of around 0.4 Tesla on the first session and could be

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increased with each session up to 2 Tesla on the last session.

Within four weeks of treatment there was early callus formation (accelerated healing, see Fig. 3). After the eighth HEIT

treatment, she was discharged without any pain.

Case 3: Tennis Elbow Demographics: 20-year-old male.



Figure 2. AP view of the torso showing a complete fracture of the right posterior ribs of T11 and T12.



Figure 3. AP view after HEIT treatment six weeks later showing early callus formation in the aforementioned fractures.

Chief complaint: Elbow pain with a VAS severity of 7 out of 10 at rest.

History of present illness: Professional tennis player presents with tendinitis and lateral epicondylitis.

Treatment: I used the same protocol for inflammation consisting of static treatment with the large applicator with energy on for four seconds and a frequency of the magnetic field of 25 Hz, followed by three seconds off. This was alternated with the magnetic energy increased to 50 Hz and kept on for four seconds, followed by three seconds off. This protocol was run for 20 minutes with the articulating arm holding the applicator in place.

For the first session, the magnetic field was set to 50% of possible energy output, which is equivalent to approximately 1.5 Tesla.

The patient has currently received the sixth treatment session. The energy was increased from treatment to treatment up to 70%, which corresponds to about



2.25 Tesla. For his last therapy session, the protocol was changed to one of the preset protocols, "increase local blood circulation," which uses a series of sinusoidal waveforms starting at a low frequency of 3 Hz and increasing up to a frequency of 25 Hz.

For all six treatments, I used the large applicator in combination with the articulating arm to hold the device in place on the painful area of the elbow.

Pain was reduced significantly in the course of six sessions, from 7 out of 10

reduced to 1 at rest.

Compared to other PEMF devices, the HEIT offers full and painless penetration. Because of its potency, it works through clothing, making the setup quick and simple. Treatment time is reduced to 10-20 minutes and it can be mostly unattended if using the large applicator for static treatments.

PEMF is an exceptional modality to reduce pain and inflammation, and stimulate nerve repair. HEIT is all that and much more: faster results



and deeper penetration than PEMF. Additionally, it can contract muscles, whereas the majority of PEMF devices possess such low potency that patients can barely feel them, and no muscle contractions are induced. **C**

MICHAEL SHEPS, DC, certified MDT, specializes in high-intensity laser therapy, spinal decompression and chiropractic care. He performs spinal and cervical manipulation to help relieve back and neck pain due to conditions like herniated and bulging discs, arthritis, pinched nerves and sciatica. An adherent to multidisciplinary, solutions-driven research, he offers other safe alternatives to surgery and medication. Some of these include treatment with Zimmer MedizinSystems' emFieldPro High Energy Inductive Therapy, OptonPro high-power laser, Cryo 6 localized cryotherapy and extracorporeal shockwave therapy. Additionally, he has developed patentpending protocols for pain management and musculoskeletal treatments that combine laser therapy, cryotherapy, decompression, shockwave therapy, muscle stimulation and sequential compression. Over his 36 years in practice, he has developed chiropractic and patent-pending pain management protocols that have won the trust of professional athletes, the U.S. Department of Defense's Wounded Warriors program, celebrities and patients seeking relief. His practice is in Los Angeles, Calif. To learn more, visit drsheps.com and pacificcoastsportsmedicine.com.