

Stroke Rehabilitation with PEMF Therapy

Pulsed Electromagnetic Field (PEMF) therapy is a low field magnetic stimulation which utilizes electromagnetic fields to heal damaged tissues and alleviate injury-related pain and stimulate organs.

For more than six decades now, PEMF therapy's non-invasive approach has been used to treat injuries, chronic pain, and health conditions like diabetes and depression.

PEMF has been touted by NASA, the U.S. Veteran Affairs, John Hopkins, and the Mayo Clinic for its effectiveness in healing and alleviating pain and chronic health conditions.

How does PEMF work?

PEMF therapy utilizes bursts of low-level electromagnetic radiation which will pass via your skin and penetrate deep into your muscles, bones, tendons, and organs to activate the energy at a cellular level and induce natural repair mechanisms. The idea is that energy pulses penetrate and stimulate your cells at the site of an injury.

Another insight is that in just about any disease, it is preceded by a drop in cell charge. This implies that any technology which can reach to that cellular level and bring that pulse back to normalcy can help restore healthy electrochemical exchanges and allow the cells to replicate and produce more normal cells.

PEMFs can stimulate every single entry point in your body. Be it mats, pads, rings, or paddles, irrespective of what you apply, the electromagnetic pulses of energy can penetrate through your body at a cellular level. Based on what your problem is, PEMFs can address even the slightest of imbalance at a very quick period and can induce a more substantial change over time.

But be informed that PEMF therapy isn't the same as electromagnetic fields coming from sources like microwaves, wireless routers which can disrupt your cells and cause genetic mutations. The frequency and duration of these electromagnetic fields can make a lot of difference.

PEMF's therapeutic frequency resembles that of those you encounter in nature so that your body learns how to deal with it. PEMF therapies mostly fall in the 5-30 Hz range which is way less than what a thunderstorm could give you.

How does PEMF therapy impact patients?

PEMF has been used for several years to aid fracture healing. Even though the mechanisms of action at the cellular or molecular levels haven't been completely explained, PEMF therapy is believed to benefit in the treatment of the bone nonunion or delayed union.

As cellular reaction occurs in everybody, magnetic fields aren't condition specific. Therefore, PEMF therapy can be utilized to treat the vast majority of health ailments. Clinical studies have demonstrated its effectiveness in increasing blood circulation, enhancing muscle function, improving blood oxygenation, alleviating stress, speed up bone healing, and decreasing inflammation.

Strokes are not just medical emergencies but can be life-changing and life-threatening as it might also take a toll on a person's speech, vision, and mobility. Every 40 seconds, one person is struck by this devastating condition. But thanks to PEMF therapy, it is now possible to simulate a stroke patient's neurons, cells, and damaged tissues and help them recover quickly.

Also called a cerebral infarction, stroke is the leading cause of serious long-term disability and the 5th leading cause of death in the U.S. It occurs when a blood vessel that carries oxygen alongside other nutrients to the brain gets blocked by clots or ruptures.

Nearly one out of five stroke cases are fatal and despite surviving such a devastating condition, the survivors are twice as likely to be struck again by the 'lightning' in his/her head. Considering such a gravely disturbing prevalence of the condition, it is crucial to diagnose the condition and treat it at the earliest.

The prompt treatment being critical for stroke, conventional treatment includes clot-busting medications that work by dissolving these blood clots and per national guidelines, stroke patients should be treated within 60 minutes after being rushed to the hospital. Applying PEMF therapy doesn't just improve stroke recovery but makes it possible to achieve levels of recovery that wasn't possible earlier.

Stroke recovery depends on several factors like the brain's regenerative capabilities and plasticity. Neuroplasticity needed in a damaged brain is entirely different from that of a normally functioning one. Such a demand for adaptive healing begins as soon a stroke event happens when the blood supply to the brain gets impaired.

To aid the growth of new neurons and to support the survival of existing neurons, several factors including the neurotrophic or growth factors, neurotrophins, hormones, neurotransmitters, and micro-environmental factors should be made available.

Several studies have demonstrated the effectiveness of **PEMF for stroke rehabilitation**.

Here are some:

- [Experts at the University of Milan Medical School](#) emphasized that noninvasive techniques that stimulate the cerebellum part of the human brain had therapeutic potential. Repetitive transcranial magnetic stimulation (rTMS) and transcranial direct current stimulation of the brain can potentially treat people suffering from neurological conditions. The researchers highlighted that cerebellar noninvasive brain stimulation is increasingly being tested in patients with stroke and other neurological conditions like Parkinson's disease, essential tremor, ataxia, and dystonia.
- A [Japanese team of researchers](#) who sought to investigate the association between sleep during low-frequency repetitive transcranial magnetic stimulation and improvement of motor function in affected limbs amongst stroke patients post inpatient rehabilitation found a significant correlation between low frequency repetitive transcranial magnetic stimulation and improved motor function in the affected upper limb and sleep. They used low-frequency rTMS with 1 Hz over the contralesional motor cortex via an adhesive sensor which was put on each stroke patient's forehead.
- A 2018 study published in the [American Journal of Physical Medicine & Rehabilitation](#) which was conducted to investigate the effects of repetitive transcranial magnetic stimulation on stroke patients' walking and balance function found that rTMS significantly improved walking speed.
- Aphasia – a language disorder affecting one's ability to communicate can occur suddenly after a stroke or head injury. An [international team of researchers](#) who sought to compare the efficacy of rTMS applied at different frequencies in stroke patients with non-fluent aphasia demonstrated that low-frequency rTMS significantly benefited the recovery of speech function in stroke patients who suffered non-fluent aphasia.
- And when the [researchers from the Fourth Military Medical University, China](#) compared the effects of low frequency and high-frequency rTMS on the upper limb motor function in the early phase of stroke, they found that low-frequency rTMS was better than high-frequency rTMS in promoting upper limb motor recovery in patients with acute stroke.
- A [2018 case report published video evidence](#) of improved hand function following repetitive transcranial magnetic stimulation alongside physical therapy in a 46-year-old female 6 months after she suffered a stroke. She suffered from minimal paretic hand function and with 2 intermittent sessions of rTMS per week helped her sustained benefits. For each of her therapy sessions, she was seated in a regular armchair wearing earplugs. Throughout all the three series of her treatment, she didn't experience any side effects.
- A [2016 study](#) published in Applied Biochemistry and Biotechnology which investigated the effect of low-frequency PEMFs on neuroprotection after ischemic stroke patients found that LF-PEMF exposure did have an amazing neuroprotective effect in mice models. Studies like this have made it evident that PEMF for stroke rehabilitation is very effective.
- Depression among stroke patients is one of the most common mood problems that follows within a few months of facing the devastating health condition. Depression among stroke survivors might hinder the recovery process and might also lead to fatigue and the inability to process. A [2018 research](#) conducted by an international team of researchers demonstrated that rTMS effectively treated post-stroke depression. According to the researchers, understanding the effectiveness of rTMS in post-stroke depression could also aid the development of novel treatments for stroke patients.
- Another post-stroke problem is dysphagia (difficulty swallowing). A [2014 study](#) found that 5 days of low-frequency (1Hz) rTMS in the unaffected hemisphere significantly improved swallowing function in patients who suffered from a stroke.
- People who suffered a right parietal stroke are commonly limited in their ability to track moving objects, especially in their left visual field. Another [2014 study](#) found that stroke patients' performance in attentional tracking significantly improved after rTMS.

Effects of applying PEMF for stroke rehabilitation

Researchers who analyzed the effectiveness of PEMF for stroke rehabilitation have demonstrated that it improved cell survival and reduced ischemic damage and reduced up to 90% of disability soon following stroke.

PEMF also treats underlying health risks of stroke including [diabetes](#), [hypertension](#), and heart diseases. This also implies that PEMF can help prevent stroke.

When utilized regularly, PEMF therapy can help delay or avoid a stroke as it can decrease inflammation in your vascular system and reduce the risk of plaque formation or blood clots that might eventually lead to a stroke.

PEMF for stroke rehabilitation can effectively improve the following:

- Speech
- Motor function
- Mood
- [Reduce depression](#)
- Vision
- Limb function
- Walking and balance
- Communication
- Swallowing function
- [Alleviates pain](#)
- Cognition
- Reduce inflammation
- Minimizes cellular damage and begin healing

Bottom line

The effectiveness and safety of PEMF for stroke rehabilitation backed up by a plethora of clinical researches implies that PEMF therapy can be one of the best options for stroke patients. Although PEMF isn't intended to substitute treatment plans recommended by your healthcare provider, it can be an excellent addition that can offer great benefits for stroke rehabilitation.

If you or a loved one has suffered a stroke, consider PEMF therapy since it is advanced enough to improve your quality of life and reduce your chances of encountering the devastating experience once again.