



The Science Behind PEMF Therapy and How It Can Fix Your Pain

At A Glance

- Mitochondria, the battery packs of your cells, and how strong they are affects everything you do. What if you could charge up your mitochondria directly — in a sense, plug them in? PEMF therapy comes pretty close.
- PEMF therapy uses bursts of low-level electromagnetic radiation to heal damaged tissues and bone, to relieve injury-related pain, and even to stimulate organs.
- It's a safe level of EMFs. The therapeutic frequency of PEMFs look a lot like the frequencies you encounter in nature, so your body knows how to deal with it. Most PEMF treatments and maintenance will fall in the 5-30 Hz range, which is less than you get from a thunderstorm.
- Research has demonstrated that PEMF healed bones faster, helped regenerate parts of the liver that had been removed, reduced pain from arthritis and more.

At Bulletproof, there's a lot of talk about mitochondria, the battery packs of your cells. How many mitochondria you have and how strong they are affect everything you do — from performing better to living longer. There are ways to boost your mitochondria through diet and lifestyle. But what if you could charge up your mitochondria directly — in a sense, plug them in?

Pulsed Electromagnetic Field (PEMF) therapy comes pretty close. All by transferring energy, PEMF has been used to improve functions like:

- Rate of injury healing
- Immune function
- Sleep
- Depression
- Physical energy
- Bone healing and density
- Circulation

But does it work? Read on to find out the mechanism behind PEMF benefits, whether it's harmful like the EMFs you hear about, and whether it can help you.

What is PEMF therapy?

PEMF therapy uses bursts of low-level electromagnetic radiation to heal damaged tissues and bone, to relieve injury-related pain, and even to stimulate organs.

The idea is that pulses at low frequencies will pass through the skin and penetrate deep into muscle, bones, tendons, and even organs to activate the cell's energy and encourage its natural repair mechanisms.

PEMF is catching on as a non-invasive way to approach injuries, chronic pain, and even chronic conditions like depression and diabetes.

Wait, are EMFs dangerous?

You may have heard that electromagnetic fields (EMFs) that come from things like wireless routers, microwaves, and airplanes **disrupt your biology**. EMFs can alter your DNA^{[1][2][3][4]} and reconfigure your genes,^{[5][6]} which can leave your cells not really knowing what to do. That can result in a lot of havoc, ranging from being tired all the time or ending up with DNA damage and cancer.^[7]

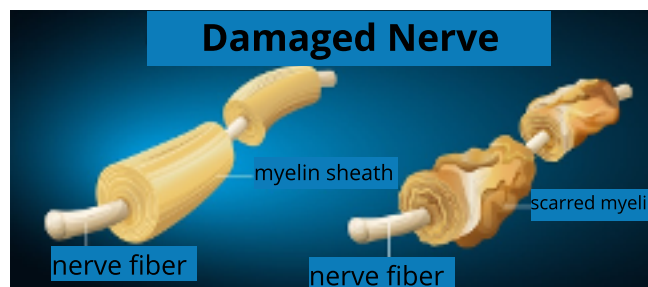
PEMF therapy isn't the same thing. Frequency and duration make all the difference.

EMFs fall on a wide spectrum — everything from x-rays and satellites to your wireless headphones emit EMFs at different frequencies. High-frequency EMFs, like X-rays that register frequencies in the hundred quintillion Hz range (yes, that's a number and it's big) are the most disruptive to your body. That's because they are ionizing — which means they have enough energy to break electrons off of atoms, which charges them. This changes the way your cells work.

Even non-ionizing EMFs in the middle frequency (example: microwaves register around ten billion Hz) range can cause changes in your DNA and disrupt your circadian rhythm.

The therapeutic frequency of PEMFs look a lot like the frequencies you encounter in nature, so your body knows how to deal with it. Most PEMF treatments and maintenance will fall in the 5-30 Hz range, which is less than you get from a thunderstorm.

What's more is that, PEMF treatment is pulsed and brief, so you don't have extended exposure like you would sitting under a cell phone tower all day. Most PEMF treatments last 10-20 minutes and deliver short bursts the whole time, instead of constant exposure. So, you can get all of the benefits of PEMF without the negative effects that come with man-made EMF sources like electronics.



Why PEMF therapy works

The idea behind it is that the energy pulses penetrate and stimulate cells at the injury site, and everywhere around it.

In an episode of the **Bulletproof Radio** podcast, PEMF expert Dr. Gary Ryan, known as “The Energy Doctor,” explains, “Based on a lot of research that was done at Yale, it is apparent that just about any pathology in the body is preceded by a drop in cell charge. Now we have technology that will reach down to the level of a cell that has lost charge and, due to the high intensity of the pulse, bring that pulse back to normal or a more normal situation, which allows it to replicate and produce a more normal cell.”

So, introducing a low-level electromagnetic field into the body can bring those charges back up and restore healthy electrochemical exchanges.

PEMFs stimulate every level of the body. You apply mats, pads, rings or paddles externally, and the electromagnetic pulses of energy penetrate the body at the cellular level. Your body then uses that energy to heal itself through its natural healing mechanisms. Depending on the extent of the issue, PEMFs can address a slight imbalance quickly, like a pulled muscle, or it can work to bring about a more substantial change over time, like restoring a sluggish organ system.