

Having healthy cells is not a passive process. Active, regular tuning-up of our cells is not only feasible, but also necessary to slow aging and reduce the risk of cell dysfunction. We are, after all, only as healthy as our cells. Imperceptible cell dysfunction that is not corrected early can lead to disease. Fine-tuning can be done daily in only minutes, using pulsed electromagnetic fields (PEMFs). In addition, when there is a known imbalance (when symptoms are present) or there is a known disease or condition, PEMF treatments, used either alone or along with other therapies, can often help cells rebalance dysfunction faster.



**FROM THIS EPISODE:**

[*The Revolutionary Cure for Pain*](http://www.doctoroz.com/episode/revolutionary-cure-pain)

PEMFs work to:

* Reduce pain, inflammation, the effects of stress on the body, and platelet adhesion.
* Improve energy, circulation, blood and tissue oxygenation, sleep quality, blood pressure and cholesterol levels, the uptake of nutrients, cellular detoxification and the ability to regenerate cells.
* Balance the immune system and stimulate RNA and DNA.
* Accelerate repair of bone and soft tissue.
* Relax muscles.

PEMFs have been used extensively for decades for many conditions and medical disciplines, and results can be seen in animals as well as humans. The National Institutes of Health have made PEMFs a priority for research. In fact, [many PEMF devices have already been approved by the FDA](http://www.doctoroz.com/videos/ask-your-doctor-about-pulsed-electromagnetic-field-therapy), some specifically to fuse broken bones, wound healing, pain and tissue swelling, and treat depression. Most therapeutic PEMF devices are considered safe by various standards and organizations.

**What are PEMFs and how do they work?**

Science teaches us that everything is energy. Energy is always dynamic and, therefore, has a frequency; it changes by the second or minute, for example, at the very least.

All energy is electromagnetic in nature. All atoms, chemicals and cells produce electromagnetic fields (EMFs). Every organ in the body produces it own signature bioelectromagnetic field. Science has proven that our bodies actually project their own magnetic fields and that all 70 trillion cells in the body communicate via electromagnetic frequencies. Nothing happens in the body without an electromagnetic exchange. When the electromagnetic activity of the body ceases, life ceases.

Physics, that is, electromagnetic energy, controls chemistry. This in turn controls tissue function. Disruption of electromagnetic energy in cells causes impaired cell metabolism, whatever the initial cause. This happens anywhere in the disease process.

PEMFs address impaired chemistry and thus the function of cells – which in turn, improves health. PEMFs deliver beneficial, health-enhancing EMFs and frequencies to the cells. Low frequency PEMFs of even the weakest strengths pass right through the body, penetrating every cell, tissue, organ and even bone without being absorbed or altered! As they pass through, they stimulate most of the electrical and chemical processes in the tissues. Therapeutic PEMFs are specifically designed to positively support cellular energy, resulting in better cellular health and function.

Devices that produce PEMFs vary by a number of important features: frequency, waveform, strength, and types of stimulators. Frequencies can be simple or complex; and high, medium or low. Intensity can also be high, medium or low.

No “one-size” treatment fits all situations. Most PEMF devices help to varying degrees depending on the problem or condition, but selecting the wrong device may produce unsatisfactory results. Since the body is complex, PEMFs are ideal devices to be able get good results without needing a myriad of different treatments.

**Aren’t some EMFs bad for you?**

They can be. Evidence is mounting that a new form of pollution called “electrosmog” is a very real threat because it is disruptive to cell metabolism. Manmade, unnatural EMFs come from electrical wiring and equipment, for example, power lines, communications towers, computers, TVs, cell phones – everything from the wiring in our homes to fluorescent lighting to microwave ovens, hair dryers, clock radios, electric blankets and more

* Electrosmog EMFs are not designed with the body in mind. They can be a strong inducer of stress in the body and, therefore, drain our energy. Electrosmog includes “dirty” electricity, ground currents, microwaves and radio waves. Microwaves are not only from leaky microwave ovens, but also from cell towers, cell phones and wireless equipment.
* Electrosmog is all around us and can only be partially blocked. One of the best solutions is to take measures to decrease your exposure. With therapeutic PEMFs, one can purposely add beneficial balancing frequencies to the body to decrease the burden of the negative effects of electrosmog.
* **PEMFs and Magnets: What’s the difference?**
* PEMFs are frequency-based, applied to either the whole body or parts of the body.  PEMFs may only be needed for short periods of time, while the effects last for many hours, setting in motion cellular and whole-body changes to restore and maintain balance in metabolism and health. The body does not acclimate, or “get used to,” the healthy energy signals of therapeutic PEMFs, even if used for a long time, compared to magnets.
* Stationary (or “static”), non-varying, magnetic fields from magnets have fixed strengths. They are used in mattresses, bracelets, knee wraps and the like. Most have very shallow penetration into the body, resulting in a very limited ability to affect deeper tissues, and they rarely treat all the cells of the body simultaneously. Only skilled practitioners may guide you to get the best results from these approaches.

**Experience with PEMFs**

There are quite a number of PEMF systems available now in the US, for daily in-home use, that can help meet your unique needs. Some are FDA-approved and many more are available over-the counter or from various experienced practitioners. Some whole-body systems have been available in the US for over a decade and have been used in Europe by tens of thousands of people for a wide variety of problems without significant negative effects for over 20 years. One PEMF system has been studied through NIH-supported research at the University of Virginia for Rheumatoid Arthritis. These whole body systems have been used worldwide, not only by health-conscious individuals for health improvement and maintenance, but also by world-class and Olympic athletes for increased endurance, enhanced performance, and faster recovery.

[For more information on these devices, click here](http://www.doctoroz.com/videos/ask-your-doctor-about-pulsed-electromagnetic-field-therapy).

**What kind of doctor can help me with PEMFs?**

Unfortunately, very few conventional, and even alternative or holistic, doctors know about these devices or this technological area. This is not a subject of mandatory education for doctors. Doctors often learn about these new technologies long after the public does, as has been seen with acupuncture. The process of educating doctors and other non-medical practitioners is growing all the time but will take years. Be patient and look for practitioners who have expertise in the area of PEMF therapies.

Pulsed electromagnetic field (PEMF) therapy is FDA-approved to fuse bones and has been cleared in certain devices to reduce swelling and joint pain. Transcranial Magnetic Stimulation (TMS) and Magnetic Resonance Imaging (MRI) work on the same physics.



## FROM THIS EPISODE:

[*The Revolutionary Cure for Pain*](http://www.doctoroz.com/episode/revolutionary-cure-pain)

This therapy has been used to treat pain and edema in soft tissue for over 60 years. The technology stemmed from radio frequency (RF) diathermy, which utilized a continuous electromagnetic field to produce heat in soft tissue.

A moving – or resonating – magnetic field can create currents without heating and thus directly alter cellular signaling. It has been firmly established that tissues including blood, muscle, ligaments, bone and cartilage respond to biophysical input, including electrical and electromagnetic fields. New studies show that with the proper field intensity and frequency, treatment with PEMF appears to be disease-modifying. The stimulation of TGFβ may be a mechanism by which PEMF favorably affects cartilage homeostasis. Through calcium-calmodulin-dependent pathways, PEMF may also increase nitric oxide activity.

**PEMF Mat Devices**

On the show, world-class pain specialist Dr. James Dillard mentioned electromagnetic portable pads to Dr. Oz. These mats produce a therapeutic pulsed electromagnetic field that can surround the entire body. They are not FDA-approved and are not made in the USA. PEMF mats are primarily advertised and distributed over the Internet, often used without medical supervision. Retail price is $2000 to $3000, and often renting is possible for a weekly rate. There are a dozen different companies that make these devices. Three examples are the Mediconsult iMRS/MRS2000, Medithera Home System, and Quantron Resonance System QRS-101.

**PEMF Knee Device**

Also on the show, family physician Dr. William Pawluk discussed the OrthoCor Active Knee System. This is an FDA-approved device that combines PEMF energy and thermal therapy to increase circulation and thus reduce swelling, relieve chronic pain and arthritis, as well as improve range of motion. The device’s technology consists of a cuff that surrounds the knee. It has a coil and heat pods that send magnetic pulses and heat through the injured tissue. Patients can walk while the OrthoCor device is in operation. OrthoCor sells its products through orthopedic clinics, physicians and health care practitioners.

**PEMF Patch Devices**

Dr. Pawluk also introduced a small, disposable PEMF device called Acti-Patch by Bioelectronics Corp. In Canada, ActiPatch is a Class II device and is sold over-the-counter. Health Canada has approved it for relief of musculoskeletal pain. It is not FDA-approved for musculoskeletal pain, so the efficacy of these patches is still unclear. It may have some benefit with superficial pain and edema.

**Further Reading**

1. Markov MS. Expanding use of pulsed electromagnetic field therapies. Electromagn Biol Med. 2007;26(3):257-74.

2. Nelson F, et al., The use of a specific pulsed electromagnetic field (PEMF) in treating early knee osteoarthritis. Trans 56th Annual Orthopaedic Research Society Meeting, New Orleans, LA (2010), p. 1034.

3. Pilla, et al., Electromagnetic fields as first messenger in biological signaling: Application to calmodulin-dependent signaling in tissue repair, Biochim. Biophys. Acta (2011), 2011 Oct 8;1810(12):1236-1245.

4. Rosch P, et al., Bioelectromagnetic medicine. New York: Marcel Dekker, 2004.