

## Dr Oz Show

The Dr Oz Video

Dr Oz Article #1

Dr Oz Article #2

## Ask Your Doctor About: Pulsed Electromagnetic Field Therapy

Pulsed electromagnetic field therapy is a new approach to pain management that uses magnets to create pulsing, moving energy. These energy waves could change the way your body copes with pain. Learn more about this new treatment. Could it work for you?

**Added to Articles on Wed 11/16/2011**

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.



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 TGF $\beta$  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

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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.



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