

## Cervical Osteoarthritis

Rheumatol Int. 2005 Jun 29; [Epub ahead of print]

### **The effect of pulsed electromagnetic fields in the treatment of cervical osteoarthritis: a randomized, double-blind, sham-controlled trial.**

[Sutbeyaz ST](#), [Sezer N](#), [Koseoglu BF](#).

Ankara Physical Medicine and Rehabilitation Education and Research Hospital, Turk ocagi S No: 3 Sihhiye, Ankara, Turkey.

The purpose of this study was to evaluate the effect of electromagnetic field therapy (PEMF) on pain, range of motion (ROM) and functional status in patients with cervical osteoarthritis (COA). Thirty-four patients with COA were included in a randomized, double-blind study. PEMF was administered to the whole body using a mat 1.8x0.6 m in size. During the treatment, the patients lay on the mat for 30 min per session, twice a day for 3 weeks. Pain levels in the PEMF group decreased significantly after therapy ( $p < 0.001$ ), but no change was observed in the placebo group. The active ROM, paravertebral muscle spasm and neck pain and disability scale (NPDS) scores improved significantly after PEMF therapy ( $p < 0.001$ ) but no change was observed in the sham group. The results of this study are promising, in that PEMF treatment may offer a potential therapeutic adjunct to current COA therapies in the future.

### **The Effect of Pulsed Electromagnetic Fields in the Treatment of Osteoarthritis of the Knee and Cervical Spine. Report of Randomized, Double-Blind, Placebo Controlled Trials**

Trock D. et.al. Department of Medicine, Danbury Hospital, CT. J. of Rheumatology

**OBJECTIVE.** We conducted a randomized, double blind clinical trial to determine the effectiveness of pulsed electromagnetic fields (PEMF) in the treatment of osteoarthritis (OA) of the knee and cervical spine.

**METHODS.** A controlled trial of 18 half-hour active or placebo treatments was conducted in 86 patients with OA of the knee and 81 patients with OA of the cervical spine, in which pain was evaluated using a 10 cm visual analog scale, activities of daily living using a series of questions (answered by the patient as never, sometimes, most of the time, or always), pain on passive motion (recorded as none, slight, moderate, or severe), and joint tenderness (recorded using a modified Ritchie scale). Global evaluations of improvement were made by the patient and examining physician.

Evaluations were made at baseline, midway, end of treatment, and one month after completion of treatment.

**RESULTS.** Matched pair t tests showed extremely significant changes from baseline for the treated patients in both knee and cervical spine studies at the end of treatment and the one month follow-up observations, whereas the changes in the placebo patients showed lesser degrees of significance at the end of treatment, and had lost significance for most variables at the one month follow-up. Means of the treated group of patients with OA of the knee showed greater improvement from baseline values than the placebo group by the end of treatment and at the one month follow-up observation. Using the 2-tailed t test, at the end of treatment the differences in the means of the 2 groups reached statistical significance for pain, pain on motion, and both the patient overall assessment and the physician global assessment. The means of the treated patients with OA of the cervical spine showed greater improvement from baseline than the placebo group for most variables at the end of treatment and one month follow-up observations; these differences reached statistical significance at one or more observation points for pain, pain on motion, and tenderness.

**CONCLUSION.** PEMF has therapeutic benefit in painful OA of the knee or cervical spine.

J Med Eng Technol. 2002 Nov-Dec;26(6):253-8.

**Comparison between the analgesic and therapeutic effects of a musically modulated electromagnetic field (TAMMEF) and those of a 100 Hz electromagnetic field: blind experiment on patients suffering from cervical spondylosis or shoulder peri-arthritis.**

[Rigato M](#), [Battisti E](#), [Fortunato M](#), [Giordano N](#).

Department of Physics, Section of Medical Physics University of Sienna, Italy.  
[rigato@unisi.it](mailto:rigato@unisi.it)

The analgesic-therapeutic efficacy and tolerability of a low-frequency electromagnetic field (ELF), modulated at a frequency of 100 Hz with a sinusoidal waveform and mean induction of a few gauss, has been demonstrated by the authors in numerous previous studies of various hyperalgetic pathologies, particularly of the locomotor apparatus. In the present study, the authors tested a new type of all-inclusive field, denoted TAMMEF, whose parameters (frequency, intensity, waveform) are modified in time, randomly varying within the respective ranges, so that all the possible codes can occur during a single application. For the comparison, 150 subjects (118 women and 32 men, between 37 and 66 years of age) were enrolled. They were affected by cervical spondylosis (101 cases) or shoulder peri-arthritis (49 cases). Unbeknownst to them, they were randomly divided into three groups of 50 subjects. One group was exposed to the new TAMMEF, another group to the usual ELF, and the third group to simulated treatment. The results

show that the effects of the new TAMMEF therapy are equivalent to those obtained with the ELF.

[Cochrane Database Syst Rev. 2002;\(1\):CD003523.](#)

## **Electromagnetic fields for the treatment of osteoarthritis.**

[Hulme J](#), [Robinson V](#), [DeBie R](#), [Wells G](#), [Judd M](#), [Tugwell P](#).

Cochrane Collaborating Center, Center for Global Health, Institute of Population Health - University of Ottawa, 1 Stewart Street, Ottawa, Ontario, Canada, K1N 6N5.

[jhulme@uottawa.ca](mailto:jhulme@uottawa.ca)

**BACKGROUND:** As the focus for osteoarthritis (OA) treatment shifts away from drug therapy, we consider the effectiveness of pulsed electric stimulation which is proven to stimulate cartilage growth on the cellular level. **OBJECTIVES:** 1) To assess the effectiveness of pulsed electric stimulation for the treatment of osteoarthritis (OA). 2) To assess the most effective and efficient method of applying an electromagnetic field, through pulsed electromagnetic fields (PEMF) or electric stimulation, as well as the consideration of length of treatment, dosage, and the frequency of the applications. **SEARCH STRATEGY:** We searched PREMEDLINE, MEDLINE, HealthSTAR, CINAHL, PEDro, and the Cochrane Controlled Trials Register (CCTR) up to and including 2001. This included searches through the coordinating offices of the trials registries of the Cochrane Field of Physical and Related Therapies and the Cochrane Musculoskeletal Group for further published and unpublished articles. The electronic search was complemented by hand searches and experts in the area. **SELECTION CRITERIA:** Randomized controlled trials and controlled clinical trials that compared PEMF or direct electric stimulation against placebo in patients with OA. **DATA COLLECTION AND ANALYSIS:** Two reviewers determined the studies to be included in the review based on inclusion and exclusion criteria (JH,VR) and extracted the data using pre-developed extraction forms for the Cochrane Musculoskeletal Group. The methodological quality of the trials was assessed by the same reviewers using a validated scale (Jadad 1996). Osteoarthritis outcome measures were extracted from the publications according to OMERACT guidelines (Bellamy 1997) and additional secondary outcomes considered. **MAIN RESULTS:** Only three studies with a total of 259 OA patients were included in the review. Electrical stimulation therapy had a small to moderate effect on outcomes for knee OA, all statistically significant with clinical benefit ranging from 13-23% greater with active treatment than with placebo. Only 2 outcomes for cervical OA were significantly different with PEMF treatment and no clinical benefit can be reported with changes of 12% or less. **REVIEWER'S CONCLUSIONS:** Current evidence suggests that electrical stimulation therapy may provide significant improvements for knee OA, but further studies are required to confirm whether the statistically significant results shown in these trials confer to important benefits.

## **Low energy high frequency pulsed electromagnetic therapy for acute whiplash injuries. A double blind randomized controlled study.**

Foley-Nolan D. et.al. Mater Hospital, Dublin, Ireland.

The standard treatment of acute whiplash injuries (soft collar and analgesia) is frequently unsuccessful. Pulsed electromagnetic therapy PEMT has been shown to have pro-healing and anti-inflammatory effects. This study examines the effect of PEMT on the acute whiplash syndrome. PEMT as described is safe for domiciliary use and this study suggests that PEMT has a beneficial effect in the management of the acute whiplash injury.

Vopr Kurortol Fizioter Lech Fiz Kult. 1997 Sep-Oct;(5):25-6.

**[Experience in using sapropel mud in combination with a magnetic field in treating cervical osteochondrosis]**

[Article in Russian]

**[Samutin NM.](#)**

Patients with cervical osteochondrosis were successfully treated with Deshembinskoe Lake [correction of Deshembinskaya] sapropel mud in combination with exposure to magnetic field. The details of this treatment regimen are described. Combination of pelotherapy with effects of the magnetic field proved beneficial for patients with cervical osteochondrosis.

Minerva Anesthesiol. 1989 Jul-Aug;55(7-8):295-9.

**[Pulsed magnetic fields. Observations in 353 patients suffering from chronic pain]**

[Article in Italian]

**[Di Massa A](#), [Misuriello I](#), [Olivieri MC](#), [Rigato M](#).**

Three hundred-fifty-three patients with chronic pain have been treated with pulsed electromagnetic fields. In this work the Authors show the result obtained in the unsteady follow-up (2-60 months). The eventual progressive reduction of benefits is valued by Spearman's test. We noted the better results in the group of patients with post-herpetic pain (deafferentation) and in patients simultaneously suffering from neck and low back pain.