

# ELECTROMAGNETIC FIELDS FOR THE TREATMENT OF OSTEOARTHRITIS

Hulme Jennifer M, Welch Vivian, de Bie Rob, Judd Maria, Tugwell Peter

---

Hulme Jennifer M, Welch Vivian, de Bie Rob, Judd Maria, Tugwell Peter

Cochrane Database of Systematic Reviews, Issue 08, 2011 (Status in this issue: EDITED (NO CHANGE TO CONCLUSIONS))

Copyright © 2009 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

DOI: 10.1002/14651858.CD003523.pub1

This review should be cited as: Hulme Jennifer M, Welch Vivian, de Bie Rob, Judd Maria, Tugwell Peter. Electromagnetic fields for the treatment of osteoarthritis. Cochrane Database of Systematic Reviews. In: *The Cochrane Library*, Issue 08, Art. No. CD003523.

DOI: 10.1002/14651858.CD003523.pub1

## ABSTRACT

### 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.

### Objective

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.

### Criteria for considering studies for this review

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the Cochrane Field of Physical and Related Therapies and the Cochrane Musculoskeletal Group for further published and unpublished articles.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.

## **Authors' 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.

---