

## Danbury Hospital (Yale - USA) Research Day - May 12, 1993

### TREATMENT OF PAINFUL OSTEOARTHRITIS WITH PULSED ELECTROMAGNETIC FIELDS: A DOUBLE-BLIND RANDOMIZED STUDY

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Pulsed electromagnetic fields (PEMF) have been observed to produce numerous biological effects including healing of ununited fractures in humans, and in the laboratory, acceleration of nerve regeneration, increased DNA transcription and protein synthesis in a variety of cell lines, as well as increased synthesis of cartilage matrix components (collagen and proteoglycans) by chondrocytes. PEMF have been used to treat ununited fractures for over a decade with no recorded toxicity. A study of the potential therapeutic effect of such non-ionizing energy in the treatment of painful joint disease due to osteoarthritis was undertaken.

In a double-blind randomized trial, 166 patients with painful osteoarthritis of the knee or cervical spine were treated with PEMF. Treatments consisted of 18 half-hour periods of exposure over approximately one month in a specially designed noncontact, air coil device. Observations were made on six clinical parameters, including global pain (using a 10 cm analog scale), difficulty with activities of daily living, pain on passive motion and joint tenderness. Observations were made at baseline, midpoint, end of therapy, and one month post treatment.

By the end of treatment and at one month post treatment, the mean changes from baseline in each of the parameters observed was greater in the treated patients (N=84) than the placebo controls (N=82). Statistically significant changes were achieved in global pain, pain on passive motion, joint tenderness, and global assessment by the physician. The group mean of patients subjective overall improvement was greater for the treatment group but did not reach statistical significance. No toxicity was observed.

The decreased pain and improvement of joint function in the treated patients suggests that this configuration of PEMF has potential as an effective form of therapy for painful osteoarthritis.