Pemf article 4

http://www.ncbi.nlm.nih.gov/pubmed/19670410(Pulsed Electromagnetic Fields Stimulation Affects Bone Mineral Density (BMD) and Local Factor Production of Rats with Disuse Osteoporosis (2010). "Pulsed electromagnetic fields (PEMF) have been used widely to treat nonunion fractures and related problems in bone healing, as a biological and physical method. [...] The results found demonstrate that PEMF stimulation can efficiently suppress bone mass loss. We, therefore, conclude that PEMF may affect bone remodeling.")

Pulsed electromagnetic fields stimulation affects BMD and local factor production of rats with disuse osteoporosis.

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Abstract
Pulsed electromagnetic fields (PEMF) have been used widely to treat nonunion fractures and related problems in bone healing, as a biological and physical method. With the use of Helmholtz coils and PEMF stimulators to generate uniform time-varying electromagnetic fields, the effects of extremely low frequency electromagnetic fields on bone mineral density (BMD) and local factor production in disuse osteoporosis (DOP) rats were investigated. Eighty 4-month-old female Sprague Dawley (SD) rats were randomly divided into intact (INT) group, DOP group, calcitonin-treated (CT) group, and PEMF stimulation group. The right hindlimbs of all the rats were immobilized by tibia-tail fixation except for those rats in the INT group. Rats in the CT group were injected with calcitonin (2 IU/kg, i.p.,once a day) and rats in the PEMF group were irradiated with PEMF immediately postoperative. The BMD, serum transforming growth factor-

beta 1 (TGF-beta1), and interleukin-6 (IL-6) concentration of the proximal femur were measured 1, 2, 4, and 8 weeks after treatment. Compared with the CT and DOP groups, the BMD and serum TGF-beta1 concentration in the PEMF group increased significantly after 8 weeks. The IL-6 concentration in the DOP group was elevated significantly after operation. The PEMF group showed significantly lower IL-6 level than the DOP group. The results found demonstrate that PEMF stimulation can efficiently suppress bone mass loss. We, therefore, conclude that PEMF may affect bone remodeling process through promoting TGF-beta1 secretion and inhibiting IL-6 expression.

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