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Bone density changes in osteoporosis-prone women exposed to pulsed electromagnetic fields (PEMFs)

Abstract

To determine the effect of a 72 Hz pulsating electromagnetic field (PEMF) on bone density of the radii of osteoporosis-prone women, the nondominant forearms of 20 subjects were exposed to PEMF 10 h daily for a period of 12 weeks. Bone density before, during, and after the exposure period was determined by use of a Norland-Cameron bone mineral analyzer. Bone mineral densities of the treated radii measured by single-photon densitometry increased significantly in the immediate area of the field during the exposure period and decreased during the following 36 weeks. A similar but weaker response occurred in the opposite arm, suggesting a "cross-talk" effect on the nontreated radii, from either possible arm proximity during sleep or very weak general field effects. The data suggest that properly applied PEMFs, if scaled for whole-body use, may have clinical application in the prevention and treatment of osteoporosis.

1998

Clinical report on long-term bone density after short-term EMF application

Abstract

A 1984 study determined the effect of a 72 Hz pulsating electromagnetic field (PEMF) on bone density of the radii of post-menopausal (osteoporosis-prone) women, during and after treatment of 10 h daily for 12 weeks. Bone mineral densities of the treated radii increased significantly in the immediate area of the field during the exposure period and decreased during the following 36 weeks. Bone density determination of the radii of these women, remeasured after eight years, suggests no long-term changes. The bone density- enhancing effect of PEMFs should be further studied, alone and in combination with exercise and pharmacologic agents such as the bisphosphonates and hormones, as prophylaxis in the osteoporosis- prone postmenopausal woman and as a possible block to the demineralization effect of microgravity.

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