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1: ASAIO Trans 1990 Jul-Sep;36(3):M426-8

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### Effect of a pulsing electromagnetic field on metabolically derived osteoporosis in rats: a pilot study.

Takayama K, Nomura H, Tanaka J, Zborowski M, Harasaki H, Jacobs GB, Malchesky PS, Licata AA, Nose Y.

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The literature suggests that a pulsating electromagnetic field (PEMF) is effective against bone loss in disuse osteoporosis. This study was conducted to evaluate the effects of PEMF on metabolically derived osteoporosis in rats. Sixteen 5 month old female Sprague-Dawley rats were divided into three groups (G-1,2,3). G-1 was given a normal diet and no exposure to PEMF; G-2,3 were oophorectomized and fed a low calcium diet for 8 months; and G-3 was also exposed for 24 hr/day to PEMF generated by applying a 15 Hz, 5.6 peak to peak square wave to Helmholtz coils (64 cm I.D., 200 turns/coil). The rats were sacrificed at 4, 6, and 8 months. Skeletal changes were analyzed by measurements of acid extracted bone calcium and bone mineral content (BMC) using single photon absorptiometry (SPA). Although all animals started at approximately the same weight (mean of 290.0 g), G-2 showed a more progressive increase. While the mean weight after 8 months in G-1 was 350.0 g, and 352.5 g for G-3, that in G-2 was 400.0 g. The calcium content of the femur in G-2 and G-3 at 8 months was lower than that of G-1, but there were no significant differences among the three groups. (ABSTRACT TRUNCATED AT 250 WORDS)

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