**Preliminary data on the effects of low-frequency pulsed electromagnetic fields on the physical resistance of bone.**

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The microhardness (HV) testing technique was applied to investigate the effects of low-frequency pulsed electromagnetic fields (PEMFs) on the degree of the mineralization of bone formed during the healing of transcortical holes. At the mid-diaphyseal level of the left and right metacarpal 3rd of 2 adult horses, 1 transcortical hole (4.5 mm diameter) was drilled. The hole in the left side was exposed for 30 days to PEMFs (28 Gauss peak amplitude, 1.3 msec rise time, 75 Hz repetition rate). The right contralateral untreated hole was taken as control. The results indicate: (a) the amount of bone formed during 30 days is greater in PEMF-treated holes than in contralateral untreated ones. The HV values of new bone formed during 30 days (b) are higher in PEMF-treated holes than in the controls; (c) in both PEMF-treated and untreated holes decrease from endosteum towards periosteum; (d) are higher in woven non lamellar bone than in lamellar bone. These preliminary findings indicate that the increase in the physical resistance of reparative PEMF-treated bone seem to be related to the improvement of the healing process promoted by PEMFs. Nevertheless it was not possible to exclude the possibility that PEMFs interfere with mineral fraction and/or matrix components of bone.