

## **Long-term Follow-up of Fracture Nonunions Treated with PEMFs**

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**Abstract:** One hundred thirty-nine established fracture non-unions were treated using a pulsed electromagnetic field (PEMF) device that also recorded patient usage. Patients who used the device less than an average of three hours a day had a success rate of 35.7% (5/14), while those who used the device in excess of three hours daily had an 80% success rate (108/135). The difference in the success rate was statistically significant at  $p < .05$ .

Treatment success was unaffected by long versus short bone, open versus closed fractures, nonunion of nine to 12 months duration compared to one to ten years, age of patient (whether less than or greater than age 60), gender, recalcitrant versus first time treatment, infected versus noninfected non-unions, fracture gaps up to 1cm, or weightbearing versus nonweightbearing.

Ninety-seven fractures in 90 patients (90% follow-up) who averaged more than three hours of PEMF treatment daily and were originally classified as healed were reevaluated clinically and radiographically at four years following treatment (range 3.6-5.4 years; mean: 4.1 years). Eighty-nine (92%) maintained a solid union. The success rate of PEMF treatment for nonunion repair demonstrated no statistically significant change over long-term follow-up.