Strauch, et al. 2007. Pulsed Magnetic Fields Accelerate Cutaneous Wound Healing in Rats. Plast. Reconstr. Surg. 120: 425.

Background: Previous studies of pulsed magnetic fields have reported enhanced fracture and chronic wound healing, endothelial cell growth, and angiogenesis. This study characterizes the biomechanical changes that occur when standard cutaneous wounds are exposed to radiofrequency pulsed magnetic fields with specific dosage parameters, in an attempt to determine whether return to functional tensile strength could be accelerated in wound healing.

Methods: There were two study phases and a total of 100 rats. In phase 1, wounds were exposed to a 1.0-G pulsed magnetic field signal in clinical use for wound repair for 30 minutes twice daily for 21 or 60 days. Phase 2 was a prospective, placebo-controlled, double-blind trial in which rats were treated for 30 minutes twice daily with three different low-amplitude signals (0.02 to 0.05 G), configured assuming a Ca2_ binding transduction pathway, for 21 days. A midline, 8-cm, linear skin incision was made on the rat dorsum. Tensile strength was determined by measuring the point of rupture of the wound on a standard tensiometer loaded at 0.45 mm/second. Results: The mean tensile strength of treated groups in phase 1 was 48 percent (p = .001) greater than that of controls at 21 days; there was no significant difference at 60 days. In phase 2, the treated groups showed 18 percent (not significant), 44 percent, and 59 percent (p_0.001) increases in tensile strength over controls at 21 days.

Conclusion: The authors successfully demonstrated that exposing wounds to pulsed magnetic fields of very specific configurations accelerated early wound healing in this animal model, as evidenced by significantly increased wound tensile strength