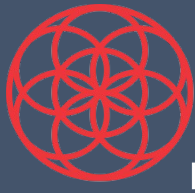


# Medical PEMF Studies



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## WOUND HEALING

**Design and fabrication of Helmholtz coils to study the effects of pulsed electromagnetic fields on the healing process in periodontitis: preliminary animal results.**



1. J Biomed Phys Eng. 2014 Sep 1;4(3):83-90. eCollection 2014.

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# Medical PEMF Studies



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**BACKGROUND:** Effects of electromagnetic fields on healing have been investigated for centuries. Substantial data indicate that exposure to electromagnetic field can lead to enhanced healing in both soft and hard tissues. Helmholtz coils are devices that generate pulsed electromagnetic fields (PEMF). Objective : In this work, a pair of Helmholtz coils for enhancing the healing process in periodontitis was designed and fabricated.

**METHOD:** An identical pair of square Helmholtz coils generated the 50 Hz magnetic field. This device was made up of two parallel coaxial circular coils (100 turns in each loop, wound in series) which were separated from each other by a distance equal to the radius of one coil (12.5 cm). The windings of our Helmholtz coil was made of standard 0.95mm wire to provide the maximum possible current. The coil was powered by a function generator.

**RESULTS:** The Helmholtz Coils generated a uniform magnetic field between its coils. The magnetic field strength at the center of the space between two coils was 97.6  $\mu$ T. Preliminary biological studies performed on rats show that exposure of laboratory animals to pulsed electromagnetic fields enhanced the healing of periodontitis.

**CONCLUSION:** Exposure to PEMFs can lead to stimulatory physiological effects on cells and tissues such as enhanced healing of periodontitis.

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