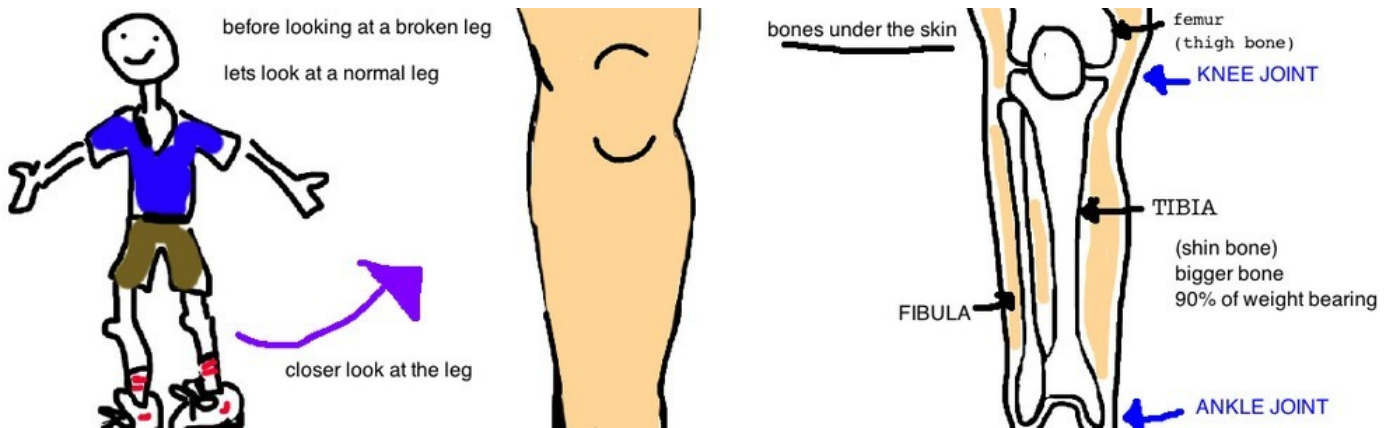


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Pulsed electromagnetic fields for the treatment of tibial delayed unions and nonunions A prospective clinical study and review of the literature.



Assiotis A, Sachinis NP, Chalidis BE.

Abstract

ABSTRACT:

BACKGROUND:

Pulsed electromagnetic fields (PEMF) stimulation for the treatment of bone nonunion or delayed union have been in use for several years, but on a limited basis. The aim of this study was to assess the overall efficacy of the method in tibial delayed unions and nonunions and identify factors that could affect the final outcome.

METHODS:

We prospectively reviewed 44 patients (27 men) with a mean age of 49.6 +/- 18.4 years that received PEMF therapy due to tibial shaft delayed union or nonunion. In all cases, fracture gap was less than 1cm and infection or soft tissue defects were absent.

RESULTS:

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Fracture union was confirmed in 34 cases (77.3%). No relationship was found between union rate and age ($p=0.819$), fracture side (left or right) ($p=0.734$), fracture type (simple or comminuted, open or closed) ($p=0.111$), smoking ($p=0.245$), diabetes ($p=0.68$) and initial treatment method applied (plates, nail, plaster of paris) ($p=0.395$). The time of treatment onset didn't affect the incidence of fracture healing ($p=0.841$). Although statistical significance was not demonstrated, longer treatment duration showed a trend of increased probability of union ($p=0.081$).

CONCLUSION:

PEMF stimulation is an effective non-invasive method for addressing non-infected tibial union abnormalities. Its success is not associated with specific fracture or patient related variables and it couldn't be clearly considered a time-dependent phenomenon.

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