Beck BR, Matheson GO, Bergman G, Norling T, Fredericson M, Hoffman AR, Marcus R. Do Capacitively Coupled Electric Fields Accelerate Tibial Stress Fracture Healing?: A Randomized Control Trial. *Am J Sports Med*. 2008;36(3):545-553.

Stress fractures are an increasingly common injury among athletic and military populations, specifically at the tibia. This injury can be problematic as it can take upwards of 3 months to heal. It has previously been established that electric fields activate the bone formation process in vitro, and that electric and electromagnetic field stimulation facilitates the healing of recalcitrant fractures in humans in vivo. Therefore, the purpose of this study was to examine the effect of capacitively coupled electric field (CCEF) stimulation versus placebo treatment on the rate of tibial stress fracture healing in men and woman.

This study used a double-blind, randomized controlled trial design in which subjects (n=44) diagnosed with 1 or more tibial stress fractures who were only prescribed rest were included into the study. Each subject was randomly assigned a CCEF stimulator and instructed to use the device 15 hours per day. All subjects underwent rehabilitation that included repetitive weightbearing training. Lastly, all subjects were issued acetaminophen to use as needed and asked to avoid NSAIDs. Intervention was ceased when subjects had a complete absence of pain during hopping exercises on the affected limb for 30 seconds to a height of 10cm.

There was no main effect of device status on time to healing from the beginning of treatment; however, overall, women healed more slowly than did men ($p=.05$). Increased hours of device use per day were associated with greater reduction in time to healing in the treatment group compared to the placebo group ($F=57.33$, $p=.003$). Subjects who complied more than 70% healed significantly faster than did those who complied less than 70% ($t=2.739$, $p=.009$, 95%CI). Correlation analyses revealed no significant relationship between time to healing and variables such as injury severity or delay to treatment start.

As the study design was previously reported, the level of evidence was determined with the *AAOS Levels of Evidence for Primary Research Question*. This study used a double-blind, randomized controlled trial design and statistical analyses with narrow CI's, therefore this study was determined to be Level 1, Therapeutic. The strength of this article's recommendation was determined with the Strength of Recommendation Taxonomy (SORT). Although the study used a randomized controlled study design, there was limited patient-oriented evidence; therefore, this study was determined to be Level B, Treatment. In addition, this article accumulated a Critical Appraisal Checklist score of 41/48.

Tibial stress fractures are problematic for clinicians as they are usually accompanied by athletes who compete at high-intensity and/or elite levels. Rest is one of the most commonly prescribed treatments. This article reflects the notion that bone stimulators should not be the primary source of treatment until further research is demonstrated. Patients must be informed of the time frames associated with the healing of stress fractures and that they can continue to exercise, as long as it's within pain-free ranges and is non-weightbearing.