

Abstract Submitted
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Treatment for Traumatic Brain Injury in Mice Using Transcranial Magnetic Stimulation: A Preliminary Study¹ ALEXANDRIA CARR, GARY ZENITSKY, LAWRENCE CROWTHER, RAVI HADIMANI, VELLAREDDY ANANTHARAM, ANUMANTHA KANTHASAMY, DAVID JILES, Iowa State University — Transcranial magnetic stimulation (TMS) is a non-invasive surgery-free tool used to stimulate the brain by time-varying magnetic fields. TMS is currently being investigated as a treatment for neurological disorders such as depression, Parkinson's disease and TBI. Before moving to human TMS/TBI trials, animal testing should be pursued to determine suitability and adverse effects. As an initial study, four healthy mice were treated with TMS at different power levels to determine short-term behavioral effects and set a control group baseline. The mouse's behavior was studied using the Rotorod test, which measures the animal's latency to fall off a rotating rod, and the Versamax test, which measures horizontal and vertical movement, and total distance traveled. The Rotorod test has shown for TMS power levels $\geq 90\%$ the mice begin to fall directly post-treatment. Similarly, the Versamax test has shown for power levels $\geq 80\%$ the mice are less mobile directly post-treatment. Versamax mobility was found to return to normal the day following treatment. These mice were housed in the facility for 4 months and the behavioral tests were repeated. Versamax results showed there was no significant variation in mobility indicating there are no long-term side effects of TMS treatment on the mice.

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Alexandria Carr
Iowa State University

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