

Abstract Submitted
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Driving Sodium-Potassium Pumps With An Oscillating Electric Field: Effects On Muscle Recovery In The Human Biceps Brachii¹ MATT BOVYN, Northern Arizona University, WEI CHEN, University of South Florida, OLIVIA LANES, Dickinson College, JASON MAST, University of South Florida — Dr. Chen has developed a technique called synchronization modulation, which uses an oscillating electric field to increase the rate at which the sodium-potassium pumps in the cell membrane work. Because the sodium-potassium pump is integral in the recovery of skeletal muscle fibers after an action potential, we investigated the effects of applying synchronization modulation to muscles which had already undergone fatigue due to repeated action potentials during exercise. Fatigue was induced in human subjects' biceps brachii through isometric contraction. Surface electromyography measurements of fatigue index were used to quantify how the muscle recovered over the minutes following fatigue, both when synchronization modulation was applied and when it was absent. The preliminary results were inconclusive, but it is hoped that in later work it will be shown that applying synchronization modulation is effective in increasing the rate at which the muscle recovers to its initial state. This would demonstrate not only that synchronization modulation can be successfully applied to human muscle, but also that it has many potential applications in sports medicine and novel disease treatments.

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