

Abstract Submitted  
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**Driving Sodium/Potassium Pumps with an Oscillating Electric field: Effects on Muscle Fatigue** OLIVIA LANES, Dickinson College, MATTHEW BOVYN, North Arizona State University, WEI CHEN, University of South Florida — Dr. Chen has developed a technique called Synchronization Modulation, which has already been proven to be an effective tool in synchronizing and speeding up the sodium/potassium pumps in cell membranes. When synchronized, it is thought that these pumps are more efficient because they require less ATP. We hypothesized that if this was correct, this technique may be used to reduce muscle fatigue. To test our hypothesis, we had multiple test subjects hold a 15 lb weight for as long as they could while isolating the bicep muscle and applying an oscillating electric field. We compared the EMG data we took during these trials to the control, which was done the same way but without applying the electric field. To compare how fatigued subjects were, we did a Fast Fourier Transform on the first and last 10 seconds of each trial to measure the Fatigue Index. Our preliminary results suggest that the Fatigue Index decreased at a slower rate in the trials where the subject held the weight with Synchronization Modulation.

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