BioRadio™ Wearable Tech Used by Youngstown State University in Research Study
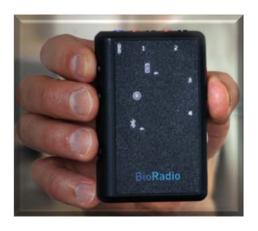
1 May 2018: Cleveland, OH – Great Lakes NeuroTechnologies (GLNT), manufacturer of the BioRadio™, is proud to support Youngstown State University as they use the BioRadio with a new population – sloths. Michael T. Butcher, Ph.D. is a zoologist in the Department of Biological Sciences at YSU. He and his graduate student, Marissa Gorvet, are conducting a research study that evaluates muscle activation in the forelimb muscles of three-toed sloths. To do this, electromyography (EMG) data is needed to determine the patterns and levels of muscle recruitment required to support the body weight of sloths during hanging compared to when they are moving (e.g. inverted walking or climbing).

Dr. Butcher and Gorvet hypothesize that the properties of sloth muscles will reflect neuromuscular specialization to conserve energy by minimizing activation of muscles. Specifically, they predict the muscle activation will be the least during postural hanging. To record EMG from live sloths, the researchers utilized the BioRadio from Great Lakes NeuroTechnologies.

The BioRadio is wireless, wearable technology that acquires physiological signals, such as ECG, EMG, EEG, and Respiration. Its wireless capabilities, small size, and light weight were ideal to sample EMG signals from sloths. The BioRadio's data acquisition software, BioCapture™, was an easy-to-use platform that made data acquisition quick and efficient, which is very important when working with live animals. Moreover, Gorvet constructed custom fine-wire electrodes which were able to interface seamlessly with the BioRadio. The fine-wire electrodes were implanted percutaneously into the limb muscles of sloths, and high-quality data was acquired.

Having wireless technology proved to be the key step for recording EMG from sloths native to Costa Rica. The sloths could move freely during the experimental trials, simulating movements in their natural rainforest environment. Butcher and Gorvet successfully recorded EMG from six animals, amounting to data sampled from over 200 individual experimental trials across the three target behaviors. Currently, Gorvet is working to analyze the data as a significant portion of her Masters Thesis at YSU. She and Dr. Butcher plan to prepare this novel data set in its entirety as a manuscript for publication in the **_Journal of Experimental Biology_**, which helped fund the research.

"Great Lakes NeuroTechnologies is very proud to collaborate with YSU on this exciting study. Using wearable technology to capture physiological data provides significant benefit to many research studies.", says Carissa Simmerman, BioRadio Sales Manager at Great Lakes NeuroTechnologies. "We are strongly committed to the successful integration of wearable technology in research and clinical studies. "

About Great Lakes NeuroTechnologies
Great Lakes NeuroTechnologies is committed to pioneering innovative biomedical technologies to serve research, education, and medical communities, improving access to medical technology for diverse populations, and positively impacting quality of life for people around the world.

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