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Muscle Fatigue and Recuperation With Inclusion of Vibration Plate

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Poster Presentation

Surface Electromyography, or sEMG, measures the electrical activity of muscles. These measurements can be used to show the difference between muscles at rest and during activity. Active muscles do not have to be in motion but can be flexed as when pulling on an immovable object. Over time, as the muscles are flexed and active, they will begin to fatigue. This fatigue can be directly measured with the sEMG sensors. If the immovable object was a handle attached to a force plate, then the force of this pulling could be measured also.

Our proposal is to measure the correlation of the force pulling on a force plate and the fatigue in the bicep. The elbow would be placed on a surface and the arm would flex and curl to pull on a vertically standing force plate with a handle. sEMG sensors on the bicep would measure fatigue, while the force plate would measure the force. The addition of a vibration plate will be used to measure the difference during the experiment when there is no vibration and, with an elbow resting on a vibration plate, when there is vibration in the arm. The vibration plate could also be used as a recuperation device, measuring the effects between two pull periods with rest, when one set of rest is on a vibration plate. In theory, high amplitude high frequency vibrations should decrease fatigue and allow for less decline during exertion and improved recuperation during rest.