**Muscle Fatigue Lab**

**Read entire procedure before starting!**

You will be experimenting with muscle fatigue.  Any prolonged period of muscle contraction will cause the muscle to fatigue. Fatigue results when there is not enough ATP to keep going.

For this experiment, find a lab partner.

1. Place one end of the rubber band around your thumb of your right hand and the other on the end of your ring finger on the same hand.
2. To give a good amount of resistance, either double the rubber band or twist it in the middle so that it loops around the fingers. Check the rubber band that will be used for any flaws to prevent the rubber band from breaking during the experiment.
3. Get a timer (use timer function on your cell phone)
4. You will be opening your hand as wide as you can (maximum stretch distance) and then closing it. Keep opening and closing your hand, each time to your Max stretch distance.
5. The first time you fail to stretch the full distance, the timer calls stop and records the time.

Repeat this procedure for your other hand. Trade off timing and stretching until both you and your partner have completed three trials for each hand. For each person calculate their average fatigue time.

Turn in 1 paper per group.

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| --- | --- | --- | --- | --- | --- |
|  | Trial 1  (#seconds) | Trial 2  (#seconds) | Trial 3  (#seconds) | = sum of trials | average |
| Right Hand (you) |  |  |  |  |  |
| Left Hand (you) |  |  |  |  |  |
| Right hand (partner) |  |  |  |  |  |
| Left hand (partner) |  |  |  |  |  |

1. How do the muscles feel as they fatigue?
2. Do different people’s muscles fatigue at the same rate?
3. Is there a difference in the fatigue rate of the dominant hand vs. the other hand?
4. Do muscles that are used regularly fatigue faster or slower than muscles that are not used as often?
5. What is the physiological mechanisms of muscles fatigue?
6. When the muscle fatigues, what does the sarcomere look like?