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 Finger Marathon Lab

What you will need:

* Spring operated clothes pin
* Stopwatch
* Paper & pencil

Procedure: work individually

1. Hold the clothespin straight out in between the thumb and forefinger of the hand you write with. The rest of your fingers should be closed like a fist.
2. We will be doing (30 second) trials with a 15 second rest break between trials.
3. When the teacher says “Go” start squeezing the clothespin as many times as possible within the 30 second interval.
4. Keep a count of the number of times you have closed the clothespin and write the number down in the data table.
5. Graph the data that was just collected on the data page attached. Label the x-axis with the *trial number* and the y-axis with the *number of squeezes.*

Questions to answer:

1. Was there any difference in the number of squeezes you were able to do for the different trials? Explain your answer

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1. Describe the feeling in your finger muscles during the different trials of 30 second intervals.

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What’s happening?

At the early stage of this activity your cells are using energy that has been generated from aerobic respiration (using oxygen and releasing carbon dioxide). The muscle fibers that carry out this oxygen-involving respiration are called slow twitch muscle fibers.

After a while, oxygen can’t be delivered fast enough to these muscle fibers and fast- twitch muscle fibers are recruited, which are able to release energy through anaerobic respiration (respiration that doesn’t need oxygen). The downside of this reaction is that less energy is produced and the waste product is lactic acid. When lactic acid accumulates in the muscle it interferes with muscle contraction and you are aware of a “burn” with lactic acid build up.

In the recovery stage (when you are having a rest), oxygen is restored to the muscles and the lactic acid is removed from the muscle cells by the blood.

Most people don’t exhaust their supply of energy because muscular fatigue and pain usually cause them to stop their activity. Marathon runners may push beyond pain and sometimes they collapse because there is no more energy to keep their muscles moving.

**Extra credit:**

Further investigation you may do for extra credit outside of class

1. Is there a difference between the writing hand and the non-writing hand? Explain

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1. How long a period of rest do your finger muscles need before you can repeat the experiment and get the same results as your first trial? Explain

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1. Graph the data that was just collected on the data page attached. Label the x-axis with the *trial number* and the y-axis with the *number of squeezes.*