



Curiosity Guide #603

Muscular Science

Accompanies Curious Crew, Season 6, Episode 3 (#603)

Anaerobic Exercise

Investigation #6

Description

Compare your friend's resting heart muscle to what happens when your friend does some hard, intense exercise.

Materials

- Weights
- Jump rope
- Stairs
- A friend

Procedure

- 1) Time your friend's heart. Have your friend feel her or his heart and count how many times it beats in 15 seconds.
- 2) Have your friend sprint as fast as possible for 300 meters, climb a very long flight of stairs, jump rope, or lift very heavy weights several times.
- 3) Time your friend's heart again for 15 seconds.
- 3) Have your friend describe how he or she feels.
- 4) How did your friend's heart rate compare in each situation?

My Results

Explanation

Anaerobic means "without oxygen." Some activities can be so intense that we get completely out of breath. This might happen after climbing up several flights of stairs, sprinting, or lifting heavy weights. Even regular aerobic exercise if done at too high an intensity can become anaerobic. If there is not enough oxygen being sent around the body for the muscles, the muscles will get the energy differently. Glycogen, a glucose polymer that comes from eating carbohydrates, is stored in our muscles and liver. When muscles operate anaerobically with high intensity and no oxygen, they can access the glycogen stored in that muscle and burn it. This process can also result in lactic acid in the muscles, which makes them ache or feel sore. The lactic acid will eventually travel to the liver, where it is converted to glycogen and stored or oxidized to water and carbon dioxide. Anaerobic exercise is tiring, but it still has many benefits to the body.

Think about this. Have you ever climbed several flights of steps or sprinted so fast that you got out of breath? Our muscles use energy from the glucose that travels in our blood, but sometimes we work our muscles so hard that we don't get enough oxygen and glucose. Fortunately, our muscles also store glucose as glycogen that gets broken down to give us bursts of energy, that is until we can catch our breath again! Our muscles sure do keep busy, especially the muscles that control our eyes. All that eye movement to watch TV or read can total as many as 10,000 movements. Amazing!

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