



Name _____

Due Date _____

Clothespin Lab / Muscle Fatigue

Purpose

What are the effects of anaerobic respiration on you muscles?

Background

Normally, muscles use oxygen through a process known as **cellular/aerobic respiration** to make energy (or ATP) from sugar (glucose). This process is very efficient and produces 38 ATPs for each molecule of glucose. Carbon dioxide and water are the results of this reaction.

When muscles undergo rigorous exercise they require more oxygen to make ATP than the blood can supply. At this point the muscle is forced to produce ATP without oxygen. This is known as **anaerobic respiration**. Anaerobic respiration produces only 2 ATPs for each molecule of glucose. The result of this reaction is lactic acid.

The advantages of anaerobic respiration are that the muscle cell can make ATP without oxygen and it can make ATP very quickly. This a particular advantage when lifting heavy objects. The big disadvantage to anaerobic respiration is that it produces lactic acid which gives muscles a temporary burning sensation.

Muscle fatigue (or tiredness) results when the demand for ATP is greater than the rate at which ATP can be produced in the muscle fibers. As a result, ATP levels are too low for muscle fibers to produce their maximum force contraction. Under condition of extreme fatigue, muscles become incapable of contracting or relaxing. (They stop working)

Today you will experience the use of **aerobic respiration** and **anaerobic respiration** by the muscle fibers in your fingers. You will experience the production of lactic acid and the sensation it produces in you muscles. The lab will demonstrate how your body used the resources available to provide you with the energy you need to do work.

Vocabulary

Aerobic Respiration- a form of cellular respiration that requires oxygen in order to generate energy
Glucose- sugar energy source

ATP- energy

Anaerobic Respiration- the production of energy without oxygen

Muscle Fatigue- temporary failure of muscle strength, power, and endurance. The muscles cannot contract or work properly

Lactic Acid- produced from anaerobic respiration, gives the muscles a burning sensation

Clothespin Muscle Fatigue Lab Answers

S Baum



Clothespin Muscle Fatigue Lab Answers:

Reviewing **Clothespin Muscle Fatigue Lab Answers**: Unlocking the Spellbinding Force of Linguistics

In a fast-paced world fueled by information and interconnectivity, the spellbinding force of linguistics has acquired newfound prominence. Its capacity to evoke emotions, stimulate contemplation, and stimulate metamorphosis is truly astonishing. Within the pages of "**Clothespin Muscle Fatigue Lab Answers**," an enthralling opus penned by a highly acclaimed wordsmith, readers attempt an immersive expedition to unravel the intricate significance of language and its indelible imprint on our lives. Throughout this assessment, we shall delve into the book's central motifs, appraise its distinctive narrative style, and gauge its overarching influence on the minds of its readers.

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