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Physiology

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### **Lab 9**

**Title:** 9- E: The effect of Oxygen supply on skeletal muscle activity

**Introduction:** Muscle cells, including skeletal, cardiac, and smooth muscle, have different characteristics in terms of contraction rate, fatigue, and response to neurotransmitters. Oxygen plays a crucial role in muscle function. This lab explores the effects of neurotransmitter and oxygen availability on muscle contraction. A procedure for recording an electromyogram (EMG) and the effect of oxygen availability to skeletal muscles will also be demonstrated.

### **Procedure:**

1. Firmly squeeze a tennis ball as rapidly as possible with your non-dominant hand until you feel fatigued and can no longer squeeze it. Record the duration of this effort.
2. Have a partner attach a sphygmomanometer cuff to your dominant arm and inflate it to 150mmHg, or 10 mmHg above your normal systolic pressure, if you know your blood pressure values.
3. Repeat the squeezing exercise with your dominant arm. Record the time duration of this effort. (NOTE: it is important to stop at the same sensation of fatigue, or “burn,” as the non-dominant arm.)
4. Evaluate the differences between the two duration measurements obtained in terms of energy demands of skeletal muscle and fatigue.

**Discussion:** In this lab I was able to explore the effect of oxygen supply on skeletal activity.

Squeezing the tennis ball and seeing the pressure being recorded was interesting to know the duration where the most strength was given. These findings emphasize the importance of oxygenation during physical activity for optimal muscle performance.

### **Conclusion:**

Based on the lab experiment, it can conclude that oxygen supply has a significant impact on skeletal muscle activity. When participants had sufficient oxygen, their grip strength was higher and they experienced less fatigue. However, when oxygen supply was limited, participants experienced more rapid muscle fatigue and decreased grip strength.

### **Results:**



