

REVIEW SHEET  
EXERCISE 2  
Skeletal Muscle Physiology

NAME:  
LAB TIME/DATE:

Electrical Stimulation

1. Name each phase of a typical muscle twitch, and, on the following line, describe what is happening in each phase.

a.

b.

c.

2. In Activity 2, how long was the latent period? \_\_\_\_\_ msec  
Describe the chemical changes that are occurring during this period.

The Graded Muscle Response to Increased Stimulus Intensity

3. From Activity 3, describe the effect of increasing the voltage. What happened to the force generated and why did this change occur?

4. How does this change occur in vivo?

5. In Activity 4, you looked at the effect of stimulating the muscle multiple times in a short period with complete relaxation between the stimuli.

Describe the force of contraction with each subsequent stimulus.

6. Describe the chemical changes that are thought to correlate to this change in vivo.

7. In Activity 5, what was the effect of increasing the frequency of stimulation?

8. Compare and contrast wave summation with recruitment (multiple motor unit summation). How are they similar? How was each achieved in the simulation?

9. Explain how wave summation and recruitment are achieved in vivo.
10. For Activity 6, explain how you were able to achieve smooth contraction at a given force level.
11. In Activity 7, explain why the force of the muscle decreased over time during uninterrupted stimulation. Describe the multiple causes of this phenomenon, which occurs in vivo with prolonged use of a muscle.

#### Isometric Contraction

12. In Activity 8, at what length of the muscle does the passive force start to increase?
13. Explain what happens to the active force with an increase in the muscle length.
14. Explain what happens to the active force with a decrease in the muscle length.
15. Explain what is happening in the sarcomere that results in the changes in total force when the muscle length changes.

#### Isotonic Contraction

16. In Activity 9, which weight resulted in the highest initial velocity of shortening?
17. Explain the relationship between the amount of resistance and the initial velocity of shortening.
18. Explain why it will take you longer to perform 10 repetitions lifting a 20-pound weight than it would to perform the same number of repetitions with a 5-pound weight.