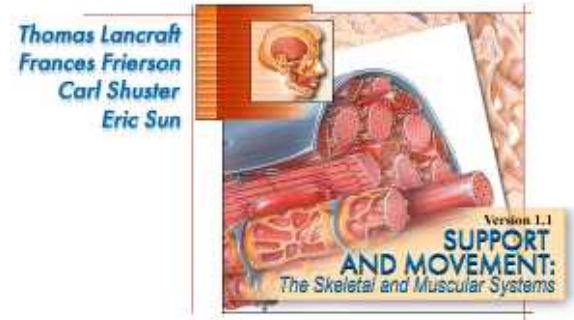


Control of Muscle Tension

Directions:

- Click the "Contents" button,
- Open the *Muscular System* File,
- Click *Animations*,
- Click *Control of Muscle Tension*



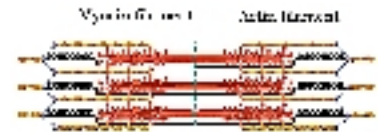
Introduction

1. Name four factors that determine muscle tension:



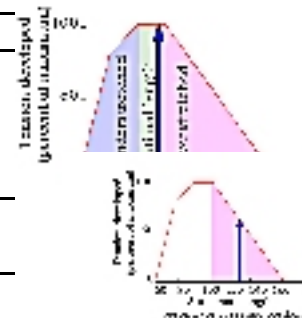
Sarcomere Length

2. How does the degree of myosin and actin filament overlap affect muscle tension?

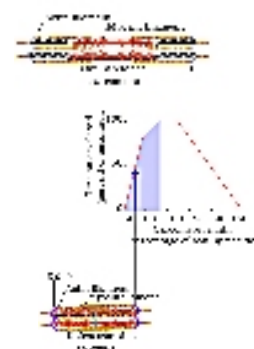


3. How does overstretched or under-stretched sarcomeres affect contraction force?

4. Overstretched: Explain why muscle contraction weakens if sarcomeres are overstretched.



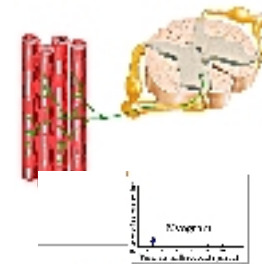
5. Understretched: Explain why muscle contraction weakens if sarcomeres are understretched.



Twitch and Motor Unit Size

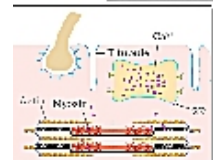
6. a. Define a *motor unit*.

b. Define a *muscle twitch*.



7. What occurs during each of the following stages of a muscle twitch (myogram):

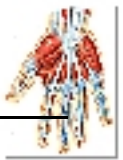
a. Latent Period:



b. Contraction Period: _____

c. Relaxation Period: _____

8. a. Describe the motor unit size differences between muscles with fine control, like the hands, and muscles like the quadriceps.



b. Describe how motor unit size affects contraction force. _____



Frequency of Stimulation

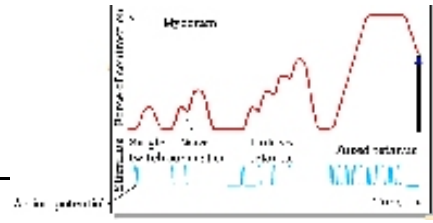
9. Define the difference between each of the following:

a. *single twitch* _____

b. *wave summation*: _____

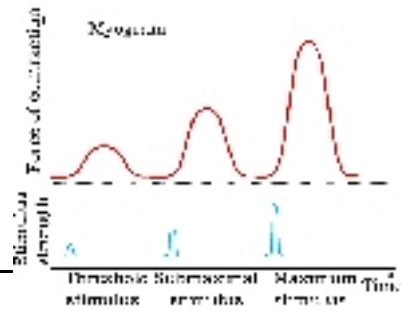
c. *unfused tetanus* _____

d. *fused tetanus* _____



Recruitment of Motor Units

10. As the number of motor units increases, so does the force of the muscular contraction. Describe each of the following:



a. *Threshold stimulus* _____

b. *Submaximal stimulus* _____

c. *Maximum stimulus* _____

11. Define *asynchronous recruitment*. _____

12. a. Explain how *muscle tone* is achieved. _____

b. Why is muscle tone important? What happens if neural damage eliminates muscle tone? _____

