Quizzes

Sunday March 2nd, 2025

1. What occurs in frequency summation?
A) The contraction is partially added to the previous one, increasing tension
B) The muscle enters a relaxed state between contractions
C) Only a single muscle fiber is involved in the contraction
D) The sarcoplasmic reticulum absorbs all calcium ions instantly

Answer: A) The contraction is partially added to the previous one, increasing tension

2. What is the difference between incomplete and complete tetanization?
A) In incomplete tetanization, relaxation occurs between stimuli, but in complete tetanization, relaxation does not occur
B) In complete tetanization, relaxation occurs between stimuli, but in incomplete tetanization, relaxation does not occur
C) Both result in decreased muscle tension over time
D) Only complete tetanization leads to fatigue

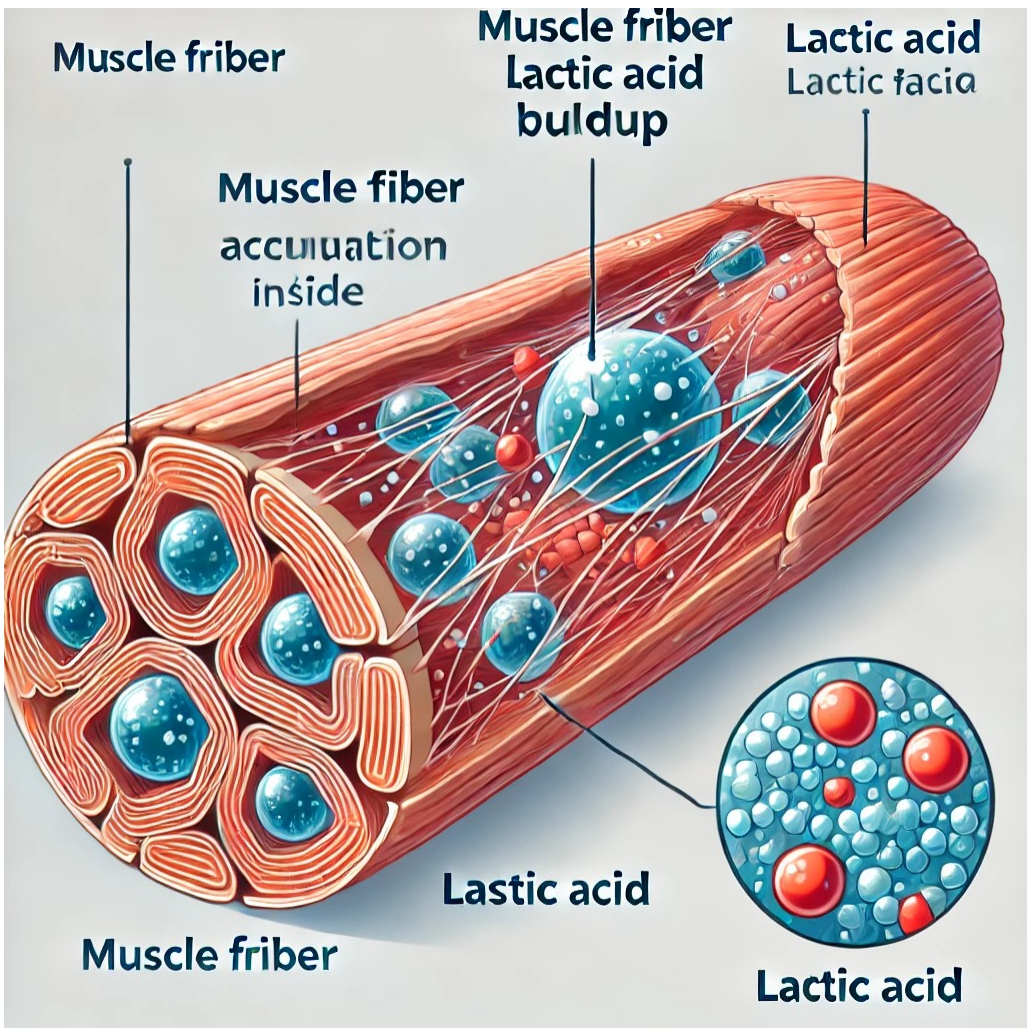
Answer: A) In incomplete tetanization, relaxation occurs between stimuli, but in complete tetanization, relaxation does not occur

3. What is the function of acetylcholine (ACh) at the neuromuscular junction?
A) To inhibit muscle contraction
B) To break down ATP for energy
C) To stimulate muscle fibers by binding to receptors on the sarcolemma
D) To transport calcium into the sarcoplasmic reticulum

Answer: C) To stimulate muscle fibers by binding to receptors on the sarcolemma

4.Which of the following is the primary cause of muscle fatigue during sustained maximal contraction?
A) Depletion of glycogen stores
B) Accumulation of lactic acid
C) Lack of oxygen in the bloodstream
D) Reduced calcium ion availability in the sarcoplasmic reticulum

Answer: B) Accumulation of lactic acid



Monday March 3rd, 2025

1.Which of the following correctly describes the latent period of a muscle twitch?
A) Time when calcium ions bind to troponin and cross-bridges form
B) Time between stimulus application and beginning of contraction
C) Time when myosin heads detach and tension decreases
D) Time when the muscle fiber is unable to relax between twitches

Answer: b) Time between stimulus application and beginning of contraction

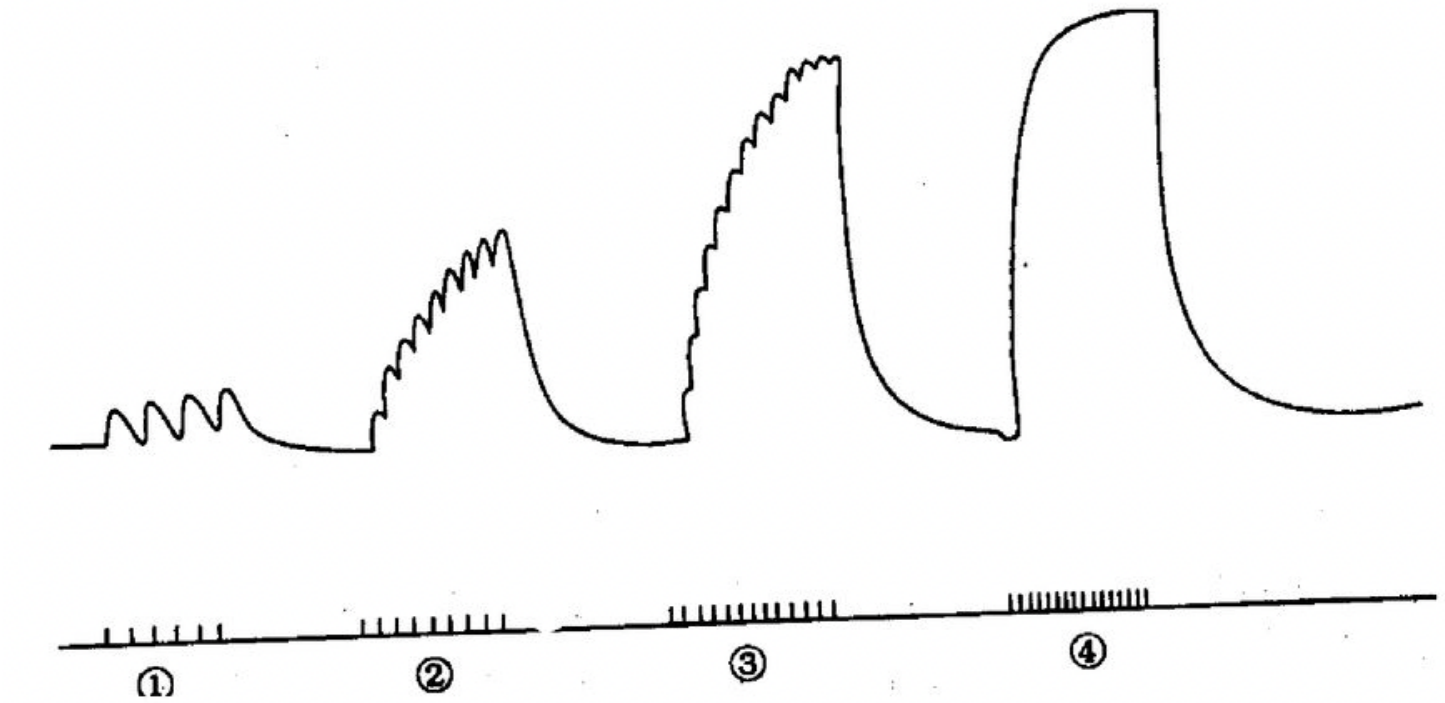
2. What happens during the contraction period of a simple muscle twitch?
A) The action potential sweeps over the sarcolemma
B) Calcium ions bind to troponin, and cross-bridges form
C) Myosin-binding sites are covered by tropomyosin
D) The muscle fiber returns to its baseline tension

Answer: b) Calcium ions bind to troponin, and cross-bridges form

3. How does multiple fiber summation increase muscle contraction intensity?
A) By increasing the number of motor units contracting simultaneously
B) By increasing the frequency of stimulation
C) By depleting ATP stores in the muscle
D) By reducing the relaxation time between twitches

Answer: A) By increasing the number of motor units contracting simultaneously

4. Fill in the blank



(1) .....

(2) .....

(3) .....

(4) .....

Answer: (1) simple muscle
(2) summation
(3) incomplete tetanus
(4) complete tetanus

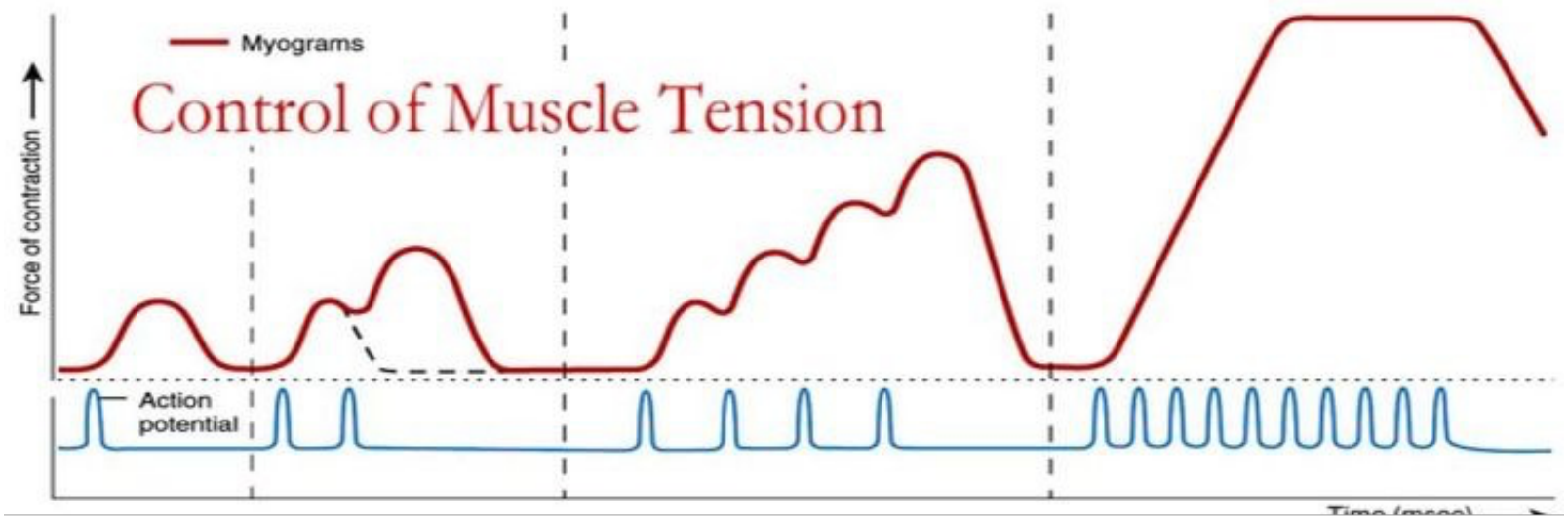
5.What happens during incomplete tetanus?
A) The muscle fully relaxes between contractions
B) The muscle produces a sustained contraction with partial relaxation between stimuli
C) The muscle remains completely contracted with no relaxation
D) The muscle does not contract at all

Answer: B) The muscle produces a sustained contraction with partial relaxation between stimuli

Tuesday March 4th, 2025

1. What occurs when a muscle is stimulated repeatedly at high frequency, leading to a smooth, sustained contraction?
A) Twitch
B) Summation
C) Tetanus
D) Fatigue

Answer: C) Tetanus



2. Which statement is true about isometric muscle contractions?
A) Muscle length changes while tension remains constant
B) Muscle tension increases while length remains the same
C) The muscle moves a load through a range of motion
D) The contraction occurs only in fatigued muscles

Answer: B) Muscle tension increases while length remains the same

3. What is the main function of the sarcoplasmic reticulum in muscle contraction?
A) Generating action potentials
B) Storing and releasing calcium ions
C) Producing ATP for contraction
D) Breaking down acetylcholine

Answer: B) Storing and releasing calcium ions

4. Which of the following describes incomplete tetanus?
A) A single contraction and relaxation
B) A continuous contraction with complete relaxation between each twitch
C) A sustained contraction with brief periods of relaxation between stimuli
D) A contraction in which the muscle fibers do not respond

Answer: C) A sustained contraction with brief periods of relaxation between stimuli

5.What distinguishes complete tetanus from incomplete tetanus?
A) Complete tetanus occurs with very high-frequency stimulation, eliminating relaxation
B) Complete tetanus allows the muscle to relax completely between contractions
C) Complete tetanus involves only a single muscle twitch
D) Complete tetanus only occurs in cardiac muscle

Answer: A) Complete tetanus occurs with very high-frequency stimulation, eliminating relaxation

Thursday March 6th, 2025

1.Which of the following best describes a single muscle twitch?
A) A sustained contraction due to repeated stimulation
B) A single, brief contraction followed by relaxation
C) A prolonged contraction without relaxation
D) A contraction caused by multiple action potentials

Answer: B) A single, brief contraction followed by relaxation

2. What are the three phases of a single muscle twitch?
A) Contraction, relaxation, and summation
B) Latent period, contraction, and relaxation
C) Depolarization, contraction, and tetanus
D) Summation, incomplete tetanus, and complete tetanus

Answer: B) Latent period, contraction, and relaxation

3.What is summation in muscle contraction?
A) The complete relaxation of a muscle before another contraction
B) The increased force of contraction due to repeated stimuli before full relaxation
C) A contraction that results in muscle fatigue
D) The failure of muscle fibers to contract

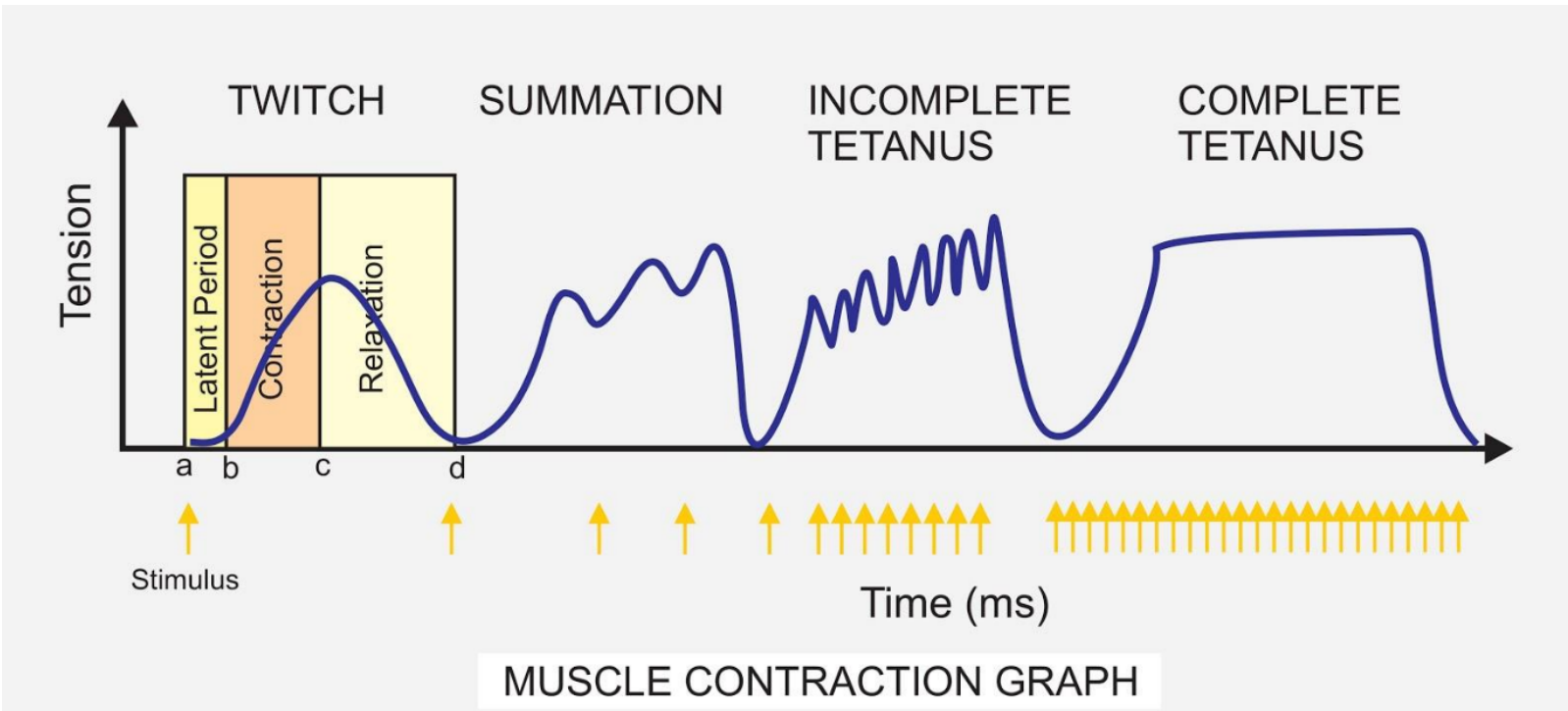
Answer: B) The increased force of contraction due to repeated stimuli before full relaxation

4.Why does summation occur?
A) Because the muscle has completely relaxed before the next stimulus
B) Because additional stimuli arrive before relaxation is complete, increasing tension
C) Because the muscle is already fatigued
D) Because a single action potential lasts longer than normal

Answer: B) Because additional stimuli arrive before relaxation is complete, increasing tension

5.During complete tetanus, why does the muscle remain fully contracted?
A) Because the muscle has stopped receiving action potentials
B) Because calcium ions remain in the cytoplasm, preventing relaxation
C) Because the muscle is unable to contract at all
D) Because the muscle is in the refractory period

Answer: B) Because calcium ions remain in the cytoplasm, preventing relaxation



MUSCLE CONTRACTION GRAPH