



CSNS CERTIFICATION EXAM

STUDY GUIDE

<u>Exercise Science</u>

- Form a timeline of the major biomechanism(s) involved with strength gains over a period of time
 - "What can specifically be attributed to strength gains between weeks _ and _"
- Good understanding of aerobic capacity
 - Hint: what is used to measure one's aerobic capacity?
- Lactate blood level
 - Focus on how exercise can influence these levels
- Good understanding of the different types of training, as well as the three phases of plyometric exercise

- Characteristics associated with having type I muscle fibers versus type II muscle fibers
 - Be able to match hormone groups with their effects on ones performance during exercise
 - Be able to think of common body adaptations that result from high endurance training
- Concentric
- Monosynaptic reflexes

 Focus on the cells that influence this

• Physical changes following the onset of exercise

 Newton's Second Law of Motion

- Phases involved in lifting weight on the muscle
 - Resting \rightarrow contraction \rightarrow ...
- Cross-bridge cycle (sliding filament theory)
 - Understand the role of the proteins involved in the theory (i.e myosin and actin)
- Inverted-U theory versus optimal functioning theory

Sports Nutrition

- Relationship between the role of biological macromolecules and exercise/dieting methods on ATP production
 - High-intensity, low-intensity, caloric restriction, etc.

- Know the amount of kcals associated with different substrates
 - Carbohydrates, proteins, fats, alcohol
 - The factors that determine the rate of ATP production

 How are anabolic steroids different from corticosteroids? What role do each play in terms of bodily function? Overall goal with each?

• Chemicals involved in muscle

contraction (i.e ATP)



• Be able to recall common supplements and their intended effect on the body/bodily function

- Creatine and its purpose
 - misconceptions associated with it

 Caffeine and its purpose

 misconceptions associated with it

- Know the role of omega 3 fatty acids to

 * benefits*
- What the brain need in terms of fuel during exercise

<u>Anatomy</u>

- Neuronal structure/anatomy
- General heart anatomy
 - Get creative with thinking of similarities between the muscles of the heart and other skeletal muscles

- General medical terminology
 - General understanding of the circulatory system and its components/main purpose



<u>Neuropsychology & Neurobiology</u>

- Be able to associate the different stages of an action potential with: • Ionic gradients membrane potential • Good understanding of • Myelinated versus unmyelinated common nervous system ionic currents 0 axons disorders/diseases and their • Pros/cons effects • How is electrical impulse/ stimuli affected? AWOKE Stage 1 NREM Airta Stage N FEM The Ha Good understanding • Motor and sensory map \rightarrow of the five basic NREI Deite motor homunculus sensory receptors and their purpose REM Time (second) Neurogenesis and Exercise Motor neurons as they relate to exercise Membrane Pytential (mV) polarizing Repairing hase 0 Ø the sc • Neurotrophin family Good understanding of of growth factors neurotransmitters in the Undersheet visceral motor system as
 - Types of neurons and their effect on performance when activated
 - Hormones produced and released in
 - Common gene polymorphisms involved in exercise
 - Brown-Peterson task

TIME

Yerkes Dodson law

it pertains to exercise

Stages of sleep \rightarrow how this affects

muscle growth/muscle memory

- Cognitive function/memory
- Nociception & Proprioception

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