

 CSCS® EXAMINATION Detailed Content Outline SCIENTIFIC FOUNDATIONS	Cognitive Level			Total Items
	Recall	Application	Analysis	
1. EXERCISE SCIENCES	20	33	6	59
<p>A. Apply Knowledge of Muscle Anatomy and Physiology</p> <ol style="list-style-type: none"> 1. Muscle anatomy (e.g., muscle group names, specific muscle names, muscle fiber/cell structure) 2. Muscular dynamics involved during movement patterns (e.g., sliding filament theory, type of muscle action) <p>B. Apply Knowledge of Neuromuscular Anatomy and Physiology</p> <ol style="list-style-type: none"> 1. Neuromuscular anatomy (e.g., motor unit, Type I and II fibers, muscle spindle, Golgi tendon organ) 2. Neuromuscular responses to exercise (e.g., motor unit recruitment patterns, nerve conduction, summation) <p>C. Apply Knowledge of Basic Principles of Biomechanics Regarding Exercise Selection, Execution, and Sport Performance</p> <ol style="list-style-type: none"> 1. Kinematic principles of movement (e.g., anatomical planes of movement, joint angles, velocity) 2. Kinetic laws and principles of movement (e.g., momentum, torque, power, work, force, center of gravity, impulse, center of pressure, force-velocity curve, force-time curve, isometric/isotonic/isokinetic, lever systems) 3. Role of muscles in movement (e.g., agonist, antagonist, synergist, neutralizer, stabilizer) <p>D. Apply Knowledge of Bone and Connective Tissue (tendons and ligaments) Anatomy and Physiology</p> <ol style="list-style-type: none"> 1. Bone and connective tissue anatomy 2. Bone and connective tissue responses to exercise and training <p>E. Apply Knowledge of Bioenergetics and Metabolism</p> <ol style="list-style-type: none"> 1. Characteristics of the energy systems 2. Effects of manipulating training variables (e.g., mode, intensity, duration, volume and work:rest ratio) to target specific energy systems <p>F. Apply Knowledge of Neuroendocrine Physiology</p> <ol style="list-style-type: none"> 1. Functions of hormones (e.g., testosterone, growth hormone) 2. Neuroendocrine responses to exercise and training <p>G. Apply Knowledge of Cardiopulmonary Anatomy and Physiology</p> <ol style="list-style-type: none"> 1. Cardiopulmonary anatomy (e.g., structure of the heart, vascular system, lungs) 2. Cardiopulmonary responses to exercise and training 				

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<p>H. Apply Knowledge of Physiological Adaptations to Exercise and Training</p> <ol style="list-style-type: none"> 1. Adaptations to metabolic conditioning 2. Causes, signs, symptoms and effects of overtraining and detraining <p>I. Apply Knowledge of the Anatomical, Physiological and Biomechanical Differences of Athletes (e.g., age, sex, training status, specific sport or activity)</p> <p>J. Apply Knowledge of Psychological Techniques Used to Enhance Training and Performance</p> <ol style="list-style-type: none"> 1. Motivational techniques (e.g., imagery techniques, reinforcement strategies) 2. Methods that enhance motor learning and skill acquisition (e.g., instruction, feedback, whole versus part practice) 3. Attentional control and decision-making (e.g., focus, arousal management) 4. Confidence and positive self-talk 				
2. NUTRITION	6	10	5	21
<p>A. Apply Basic Knowledge of Nutritional Factors Affecting Health and Performance</p> <ol style="list-style-type: none"> 1. Health-related and performance-related application of nutrition concepts (e.g., food groups, food exchanges, "MyPlate", glycemic index) 2. Nutritional needs of various athletes for carbohydrates, protein, fat, vitamins, and minerals 3. Health risk factors associated with dietary choices (e.g., a high intake of cholesterol, triglycerides, and/or saturated fat, low intake of calcium and iron) 4. Effects of hydration status and electrolyte balance/imbalance on health and performance 5. Caloric vs. nutrient dense foods <p>B. Apply Basic Strategies for Manipulating Food Choices and Training Methods to Maximize Performance</p> <ol style="list-style-type: none"> 1. Training/nutritional programs that produce specific changes in body composition (e.g., fat loss or lean body mass increase) 2. Composition and timing of nutrient and fluid intake before, during, and after an exercise session or a sport event 3. Nutritional factors that affect muscular endurance, hypertrophy, strength, and aerobic endurance 				

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<p>C. Recognize Signs, Symptoms, and Behaviors Associated with Eating Disorders and Altered Eating Habits</p> <ol style="list-style-type: none"> 1. Signs and symptoms associated with disordered eating (e.g., body dysmorphia), bulimia, and anorexia 2. Body composition changes and performance variations associated with eating disorders or disordered eating 3. Referral to a qualified health care professional <p>D. Apply Basic Knowledge of the Effects, Risks, and Alternatives of Common Performance-Enhancing Substances and Methods</p> <ol style="list-style-type: none"> 1. Ergogenic aids and dietary supplements (e.g., creatine, carbohydrate loading, anabolic steroids, blood doping) abiding by relevant governing bodies 2. Signs and symptoms of ergogenic aid abuse 				
Totals for SCIENTIFIC FOUNDATIONS section:	26	43	11	80