

Exercise Science and Sports Medicine

EXAM INFORMATION	DESCRIPTION																										
Exam Number 701 Items 60 Points 77 Prerequisites NONE Recommended Course Length ONE YEAR National Career Cluster HEALTH SCIENCE NCHSE HEALTH SCIENCE BUNDLE Performance Standards INCLUDED (OPTIONAL) Certificate Available YES	<p>This full-year course is designed to teach students components of exercise science/sports medicine; including exploration of therapeutic careers, medical terminology, anatomy and physiology, first aid, injury prevention principles, the healing process, rehabilitation techniques, therapeutic modalities, sport nutrition, sport psychology, and performance enhancement philosophies.</p>																										
	EXAM BLUEPRINT <table> <tr> <th>STANDARD</th><th>PERCENTAGE OF EXAM</th></tr> <tr> <td>1. Fundamental Aspects</td><td>6%</td></tr> <tr> <td>2. Sports Psychology</td><td>4%</td></tr> <tr> <td>3. Injury and Healing Process</td><td>12%</td></tr> <tr> <td>4. Head and Neck Injuries</td><td>8%</td></tr> <tr> <td>5. Sports Nutrition</td><td>4%</td></tr> <tr> <td>6. Body Composition and Diseases</td><td>4%</td></tr> <tr> <td>7. Lower Extremities Injuries</td><td>19%</td></tr> <tr> <td>8. Performance Enhancement Philosophies</td><td>8%</td></tr> <tr> <td>9. Strength Training/Flexibility/Ergogenic Aids</td><td>8%</td></tr> <tr> <td>10. Upper Extremities Injuries</td><td>9%</td></tr> <tr> <td>11. Common Injuries</td><td>9%</td></tr> <tr> <td>12. Rehabilitation Techniques</td><td>9%</td></tr> </table>	STANDARD	PERCENTAGE OF EXAM	1. Fundamental Aspects	6%	2. Sports Psychology	4%	3. Injury and Healing Process	12%	4. Head and Neck Injuries	8%	5. Sports Nutrition	4%	6. Body Composition and Diseases	4%	7. Lower Extremities Injuries	19%	8. Performance Enhancement Philosophies	8%	9. Strength Training/Flexibility/Ergogenic Aids	8%	10. Upper Extremities Injuries	9%	11. Common Injuries	9%	12. Rehabilitation Techniques	9%
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STANDARD 1

Students will explore the fundamental aspects of exercise science/sports medicine.

- Objective 1** Identify members of the Sports Medicine team.
1. Recognize the primary members of the sports medicine team to include:
 - a. Coach
 - b. Athlete
 - c. Parents
 - d. Team Physician
 - e. Certified Athletic Trainer
 - f. Allied Health Professionals
 2. Understand that other careers provide support to the sports medicine team.
 3. Compare and contrast the roles of each member of the sports medicine team.

- Objective 2** Explore a variety of therapeutic careers and describe the job duties and skills, education required, job settings, and potential salary for:
1. Certified Athletic Trainer (AT)
 2. Physical Therapist (PT)
 3. Physical Therapy Assistant (PTA)
 4. Occupational Therapist (OT)
 5. Occupational Therapy Assistant (OTA)
 6. Exercise Physiologist
 7. Orthopedic Surgeon
 8. Physician
 - a. DO
 - b. MD
 9. Physician Assistant (PA)
 10. Nurse Practitioner (NP)
 11. Biomechanist
 12. Prosthetist
 13. Orthotist
 14. Podiatrist
 15. Chiropractor (DC)
 16. Sports Psychologist
 17. Certified Strength & Conditioning Specialist (CSCS)
 18. Emergency Medicine
 - a. EMT
 - b. Paramedic
 19. Registered Dietician (RD)
 20. Massage Therapist (LMT)

- Objective 3** Explain legal issues and legal terminology.

1. Discuss risk management in an athletic setting.
 - a. Collision
 - b. Contact
 - c. Non-contact
 - d. Surfaces
2. Define legal terminology and discuss issues including:
 - a. Assumption of Risk
 - b. Battery
 - c. Failure to warn
 - d. HIPAA
 - e. Informed consent
 - f. Liability
 - g. • Negligence
 - i. Duty of care
 - ii. Breach of duty
 - iii. Damage/injury occurred
 - iv. Proximal cause
 - h. Malpractice
 - i. Commission
 - j. Omission
 - k. Standard of care
 - l. Statute of limitations
 - m. Good Samaritan law
3. Discuss parameters of ethical conduct and associated issues including:
 - a. Americans with Disabilities Act
 - b. Cheating
 - c. Drug testing
 - d. Fair play and sportsmanship
 - e. Performance enhancing drugs
 - f. Scope of practice
 - g. Title IX (Gender equity in sports)
 - h. Winning at all costs
4. Review preventative measures to reduce potential risks of litigation.
 - a. Medical History & Preparticipation Physical Examination (PPE)
 - b. Carry liability insurance
 - c. Continuing education
 - d. Appropriate documentation
 - e. Follow physician orders and recommendations
 - f. Have an emergency action plan (EAP)
 - g. Maintain adequate supervision
 - h. Maintain good rapport with the Sports Medicine Team

Standard 1 Performance Evaluation included below (Optional)

STANDARD 2

Students will describe principles of sports psychology.

Objective 1 Identify the psychological implications of an injury to an athlete.

1. Describe the five psychological phases an athlete experiences following an injury.
 - a. Denial
 - b. Anger
 - c. Bargaining
 - d. Depression
 - e. Acceptance
2. Compare and contrast how some athletes may view pain.
 - a. Deny pain and loss of function.
 - b. Injury as a source of relief.

Objective 2 Identify effective psychological intervention skills.

1. Describe the importance of goal setting.
 - a. Performance goals
 - b. Outcome goals
 - c. SMART goals
2. Examine different relaxation techniques and how they can help performance.
 - a. Focused breathing
 - b. Progressive muscle relaxation
 - c. Visual Imagery

Objective 3 Identify potential problems associated with overtraining.

1. Compare and contrast staleness and burnout.
2. Identify interventions to prevent or treat staleness or burnout.
 - a. Remove from activity
 - b. Time off
 - c. Allow athlete to have more control
 - d. Decrease emotional and stressful demands

- e. Avoid repetition
- f. Sufficient attention to complaints and small injuries
- g. Supportive and caring environment

Objective 4 Discuss different sources of anxiety that athletes may deal with.

- 1. Trauma induced
- 2. Stress related
- 3. Phobias that affect performance

Objective 5 Discuss depression in athletes.

- 1. Causes
- 2. Resources (sources for professional help)
- 3. Coping Strategies

STANDARD 3

Students will describe the injury and healing process, including basic injury assessment.

Objective 1 Discuss the inflammatory response and the healing process.

- 1. Compare and contrast Acute and Chronic injuries.
- 2. Discuss the purpose of inflammation.
- 3. Categorize the stages of acute injury healing and explain the processes involved in each.
 - a. Acute (Inflammation) Phase
 - i. Signs and symptoms of inflammation
 - 1. Heat
 - 2. Redness
 - 3. Swelling
 - 4. Pain
 - 5. Loss of function
 - ii. Time frame
 - iii. Define vasodilation and explain why it occurs
 - iv. Define hypoxia and explain its role in secondary cell death
 - b. Subacute (Repair and Regeneration) Phase
 - i. Time frame
 - ii. Explain the role of fibroblasts and collagen in scar tissue formation.
 - c. Remodeling (Maturation) Phase
 - i. Time frame
 - ii. Define adhesions
 - iii. Explain Wolff's Law

Objective 2 Explain an injury assessment (HIPS)

1. Identify the components included in obtaining an accurate history.
2. Identify the components of an inspection.
3. Describe the process of palpation.
4. Describe the purposes of special tests.
 - a. Range of Motion
 - i. Passive
 - ii. Active
 - iii. Resistive
 - b. Stress Tests (structural integrity)
 - c. Neurological
 - d. Functional
5. Discuss the decisions that can be made from a HIPS evaluation.
6. REQUIRED SKILLS:
 - a. Write a SOAP note
 - b. Explain a HIPS assessment.

Objective 3 Compare and contrast injury classifications

1. Describe first degree injuries.
2. Describe second degree injuries.
3. Describe third degree injuries.

Objective 4 Compare and contrast injury classifications

1. Compression
2. Depressed
3. Greenstick
4. Comminuted
5. Longitudinal
6. Spiral
7. Transverse

Objective 5 Vocabulary

1. Anatomical Planes
 - a. Sagittal Plane/Midsagittal
 - b. Frontal/Coronal
 - c. Transverse/Horizontal
2. Signs & Symptoms
 - a. Acute
 - b. Chronic
 - c. Constriction
 - d. Dilation
 - e. Ecchymosis

- f. Edema
- g. Effusion
- h. Inflammation
- i. Joint laxity

STANDARD 4

Students will explore specific sports injuries of the head and neck and apply athletic injury prevention principles.

Objective 1 Review the anatomy of the head and neck.

- 1. Bones
 - a. Frontal
 - b. Occipital
 - c. Parietal
 - d. Temporal
 - e. Mandible
 - f. Maxillae
 - g. Zygomatic
 - h. Nasal
 - i. Vertebrae
- 2. Muscles
 - a. Sternocleidomastoid
 - b. Trapezius
- 3. Structures
 - a. Brain
 - b. Intervertebral discs
- 4. Nerves
 - a. Cervical plexus
 - b. Brachial plexus

Objective 2 Head and Neck Injuries

- 1. Recognize common injuries to the head and neck to include:
 - a. Concussion
 - b. Subdural hematoma
 - c. Epidural hematoma
 - d. Cervical spine fracture
 - e. Brachial plexus injuries
 - f. Nose bleeds
- 2. Identify the mechanism of injury
- 3. Identify the signs and symptoms of the injury
- 4. Indicate appropriate treatment for the injury
- 5. Describe injury prevention strategies

- a. Modification of equipment
- b. Proper fit and selection
- c. Use of defective or worn out equipment

Objective 3 Describe the basic principles and specialized equipment used in the prevention of athletic injury.

- 1. Recognize types and functions of protective equipment.
 - 1. Helmet, facemask, ear guards
 - 2. Mouth guards
 - 3. Neck collars
 - 4. Padding
 - 5. Sports bras
 - 6. Compression shorts/cup
- 2. Discuss the legal ramifications of manufacturing, buying, and issuing equipment.
 - 1. NOCSAE warning
 - 2. Modification of equipment
 - 3. Proper fit and selection
 - 4. Use of defective or worn out equipment

Objective 4 Vocabulary

- 1. Amnesia
- 2. Articulation
- 3. Innervate
- 4. Mechanism of Injury (MOI)
- 5. Point tenderness
- 6. Range of Motion (ROM)-Active, Passive, Resistive
- 7. Referred Pain

STANDARD 5

Students will explore various aspects of sports nutrition.

Objective 1 Describe the basic components (kcal/gram, functions, energy vs. nutrients, healthy diet guidelines) of nutrition and the sources of the following nutrients.

- 1. Carbohydrates
- 2. Proteins
- 3. Fats
- 4. Vitamins
- 5. Minerals
- 6. Water

- Objective 2** Examine the importance of fluid replacement and hydration.
1. Examine the importance of water and its role in the body.
 2. Explain the correct process of hydration during athletic activity.
 - a. Identify the dangers of inappropriate hydration techniques.
 - i. Hyponatremia
 - ii. Timing
 - b. Identify the dangers of dehydration.
 3. Compare and contrast advantages and disadvantages of sports drinks.
 1. Identify the role of sports drinks in hydration.
 2. Discuss the importance of the correct chemical make-up of sports drinks.

- Objective 3** Identify the components of a pre and post event meal and explain the value of each.
1. Identify the recommended nutrients included in pre and post event meals.
 2. Identify foods that are easily digested.
 3. Identify foods that should be avoided.
 4. Identify when pre and post event meals should be eaten.
 5. Discuss the concept of carbohydrate loading and discuss when it benefits.

STANDARD 6

Students will explore the fundamentals of body composition and diseases and disorders related to body issues.

- Objective 1** Describe basic body composition.
1. Define body composition.
 2. Compare and contrast the most common methods for analyzing body composition.
 - a. Bod Pod
 - b. Skin-fold calipers
 - c. Bio-Impedance Analysis (BIA)
 - d. Hydrostatic weighing
 - e. Emerging technologies (ultrasound, etc.)
 3. Describe the parameters of safe weight loss and weight gain.

- Objective 2** Recognize disorders associated with nutrition.
1. Explore the effects of generalized disordered eating.
 2. Identify signs, symptoms, and effects of Anorexia Nervosa.
 3. Identify signs, symptoms, and effects of Bulimia Nervosa.
 4. Identify signs, symptoms, and effects of Muscle Dysmorphia.
 5. Identify signs, symptoms, and effects of the Female Athlete Triad.

STANDARD 7

Students will explore specific sports injuries of the lower extremities and apply athletic injury prevention principles.

Objective 1 Review the anatomy of the lower extremities.

1. Bones
 - a. Femur
 - b. Tibia
 - c. Fibula
 - d. Patella
 - e. Talus
 - f. Calcaneus
 - g. Metatarsals
 - h. Phalanges
2. Joints
 - a. Tibial Femoral
 - b. Patella Femoral
 - c. Talocrural
 - d. Subtalar
 - e. Midfoot
 - f. MP
 - g. PIP/DIP
3. Soft Tissues
 - a. Patellar Tendon
 - b. Anterior Cruciate Ligament (ACL)
 - c. Medial Collateral Ligament (MCL)
 - d. Posterior Cruciate Ligament (PCL)
 - e. Lateral Collateral Ligament (LCL)
 - f. Lateral and Medial Meniscus
 - g. Anterior Talofibular ligament (ATF)
 - h. Deltoid ligament
4. Muscles
 - a. Quadriceps
 - b. Hamstrings
 - c. Peroneal
 - d. Tibialis Anterior
 - e. Tibialis Posterior
 - f. Gastrocnemius
 - g. Soleus
 - h. Achilles Tendon

Objective 2 Lower extremity injuries.

1. Recognize common injuries to the lower extremity to include:
 - a. Cruciate/Collateral Ligament Sprains
 - b. Meniscal injury
 - c. Patella-femoral injuries
 - d. Ankle sprains
 - e. Plantar Fasciitis
 - f. Turf toe
 - g. Thigh contusions
 - h. Quadriceps/Hamstring strains
 - i. Medial Tibial Stress Syndrome
2. Identify the mechanism of injury
3. Identify the signs and symptoms of the injury
4. Indicate appropriate treatment for the injury
5. Describe injury prevention strategies
 - a. Shin Guards
 - b. Shoes
 - c. Other sport specific protection devices

Objective 3 Demonstrate theory and principles of prophylactic taping.

1. Analyze the basic principles of prophylactic taping.
2. Identify the necessary supplies and their purpose for prophylactic taping.
 - a. Athletic tape (various sizes)
 - b. Underwrap
 - c. Heel and lace pad
 - d. Adhesive spray
 - e. Shark/Scissors
3. Analyze the basic principles of proper tape removal.
4. Explain the terminology associated with prophylactic taping procedures.
 - a. Anchor
 - b. Stirrup
 - c. Horseshoe
 - d. Spica
 - e. Heel-lock
 - f. Checkrein/fan
5. REQUIRED SKILL - Competently tape an ankle using the standard prophylactic taping method.
6. OPTIONAL SKILL - Competently tape an arch using the standard prophylactic taping method.

Objective 4 Identify principles of protective bracing.

1. Discuss the differences between functional and prophylactic bracing.

2. Identify the function of joint sleeves (compression).

Objective 4 Vocabulary

1. General Terms
 - a. Atrophy
 - b. Bursa
 - c. Cartilage
 - d. Crepitus
 - e. Ligament
 - f. Tendon
 - g. Valgus/Varus
2. Anatomical Positions and Directions
 - a. Superior/Inferior
 - b. Anterior/Posterior
 - c. Medial/Lateral
 - d. Proximal/Distal
 - e. Superficial/Deep
 - f. Ventral/Dorsal
 - g. Prone/Supine
 - h. Unilateral/Bilateral/Contralateral
3. Movements of the Foot and Ankle
 - a. Inversion/Eversion
 - b. Dorsiflexion/Plantarflexion

Standard 7 Performance Evaluation included below (Optional)

STANDARD 8

Students will examine performance enhancement philosophies.

Objective 1 Define terms associated with performance enhancement.

1. Cardiovascular endurance
2. Muscular endurance
3. Power
4. Speed
5. Strength

Objective 2 Discuss general conditioning principles.

1. Adaptation
2. Overload
3. Specificity
4. Reversibility
5. Periodization

Objective 3 Examine the role the cardiovascular/respiratory systems have on fitness/athletic performance.

1. Identify and describe the structures and functions of the cardiovascular/respiratory systems and their interrelationship.
 - a. Heart
 - i. 4 chambers
 - ii. 4 valves
 - iii. 4 blood vessels
 - b. Lungs
 - i. Oxygen exchange from alveoli to capillaries
2. Identify vital signs related to the cardiovascular/respiratory system.
 - a. Describe and accurately measure blood pressure (systolic/diastolic)
 - b. Describe and accurately measure respiratory rate
 - c. Describe and accurately measure pulse rate
 - d. Describe lung volumes
 - e. Tidal Volume
 - f. Vital Capacity
 - g. Describe the importance of cardiac output, stroke volume, and heart rate during exercise
3. Examine different types of tests used to quantify cardiovascular fitness.
 - a. VO2max
 - b. Harvard step test
 - c. 12-minute run test
4. Describe the effects exercise has on the cardiovascular/respiratory systems.
 - a. Immediate effects of exercise
 - i. Heart rate
 - ii. Ventilation
 - b. Long term effects of exercise
 - i. Heart rate
 - ii. Stroke volume
 - iii. Cardiac output
5. Compare and contrast aerobic/anaerobic training.
6. Examine the importance of a warm up/cool down in a training program.
7. Examine different cardiovascular training methods.
 - a. Interval
 - b. Fartlek
 - c. Circuit
 - d. Continuous
8. Apply general conditioning principles to improve cardiovascular fitness.
 - a. Rate of perceived exertion (BORG scale)
 - b. Target heart rate

Objective 4 Examine the effects of the environment on training and performance.

1. Discuss the effect of high and low altitude.

2. Describe the effects of acclimatization.
3. Recognize the effects of travel on the body.

STANDARD 9

Students will examine strength training principles, flexibility, and ergogenic aids.

Objective 1 Examine the role strength training has on fitness/athletic performance.

1. Identify and describe the sliding filament model.
 - a. Sarcomere
 - i. Actin
 - ii. Myosin
 - b. Neuromuscular junction
2. Compare and contrast the difference between slow twitch and fast twitch muscle fibers.
 - a. Slow twitch athletic activities
 - b. Fast twitch athletic activities
3. Compare and contrast different types of movements related to strength training.
 - a. Isometric/isotonic/isokinetic
 - b. Eccentric/concentric
 - c. Closed chain/open chain
 - d. Plyometrics
4. Identify methods of resistance.
5. Apply general conditioning principles to improve strength.
 - a. Speed
 - b. Muscular endurance
 - c. Power

Objective 2 Examine the importance of flexibility in fitness/athletic performance.

1. Explain the general guidelines of flexibility.
 - a. Define ROM and how it relates to fitness/athletic performance
 - b. Identify the benefits of flexibility
 - i. Decrease risk of injury
 - ii. Reduce muscle soreness
 - iii. Improve muscular balance and postural awareness
 - c. Demonstrate proper timing of flexibility techniques
 - i. Before activity
 - ii. After activity
2. Identify the different methods to increase flexibility and the safety/effectiveness of each.

- a. Static stretching
 - i. REQUIRED SKILL - Demonstrate the proper techniques of static stretching for all major muscle groups
- b. Ballistic stretching
- c. Dynamic stretching
- d. Proprioceptive Neuromuscular Facilitation Stretching
 - i. Contract/Relax
 - ii. Hold/Relax

Objective 3 Compare and contrast the physiological and psychological effects of ergogenic aids.

- 1. Define ergogenic aid.
- 2. Recognize the effects and possible dangers of common ergogenic aids.
 - a. Stimulants
 - b. Narcotics
 - c. Anabolic steroids
 - d. Beta blockers
 - e. Diuretics
 - f. Human growth hormone
 - g. Blood doping products
 - i. Blood transfusions
 - ii. Erythropoietin (EPO)
 - h. Anesthetics
 - i. Corticosteroids
 - ii. Creatine
- 3. Discuss the dangers of energy drinks and their effects on the body.

Standard 9 Performance Evaluation included below (Optional)

STANDARD 10

Students will explore specific sports injuries of the upper extremities and apply athletic injury prevention principles.

Objective 1 Review the anatomy of the upper extremity.

- 1. Bones
 - a. Scapula
 - b. Clavicle
 - c. Humerus
 - d. Radius
 - e. Ulna
 - f. Carpals
 - g. Metacarpals
 - h. Phalanges

2. Joints
 - a. Shoulder
 - i. Sternoclavicular (SC)
 - ii. Acromioclavicular (AC)
 - iii. Glenohumeral
 - iv. Scapulothoracic
 - b. Elbow
 - c. Wrist
 - d. Metacarpal Phalangeal
 - e. Interphalangeal
3. Soft tissues
 - a. Subacromial bursa
 - b. AC ligament
 - c. Glenoid labrum
4. Muscles
 - a. Deltoid
 - b. Pectoralis Major
 - c. Latissimus Dorsi
 - d. Rotator Cuff (subscapularis, infraspinatus, supraspinatus, teres minor [SITS])
 - e. Biceps brachii
 - f. Triceps brachii

Objective 2 Recognize common injuries to the upper extremity.

1. Upper extremity injuries
 - a. Clavicle fracture
 - b. Impingement syndrome
 - c. Rotator cuff injuries
 - d. Glenohumeral dislocation
 - e. AC joint separation
 - f. Epicondylitis
 - g. Lateral (Tennis elbow)
 - h. Medial (Little leaguer's elbow)
 - i. Interphalangeal dislocation
2. Identify the mechanism of injury.
3. Identify the signs and symptoms of the injury.
4. Indicate appropriate treatment for the strategy.
5. Describe injury prevention strategies.
6. REQUIRED SKILL - Competently tape thumb using the standard prophylactic taping method.
7. OPTIONAL SKILL - Competently tape a wrist using the standard prophylactic taping method.

Objective 3 Recognize common injuries to the upper extremity.

1. Vocabulary
 - a. Movements
 - i. Abduction/Adduction
 - ii. Pronation/Supination
 - iii. Protraction/Retraction
 - iv. Elevation/Depression
 - v. Rotation
 1. Internal rotation
 2. External rotation
 - vi. Circumduction
 - vii. Lateral flexion
 - b. Movements of the Wrist & Thumb
 - i. Radial/Ulnar deviation
 - ii. Opposition

STANDARD 11

Students will be able to recognize common injuries and administer injury management.

Objective 1 Identify proper personal protective equipment (PPE)/body substance isolation (BSI) precautions.

Objective 2 Identify soft tissue injuries and skin conditions.

1. Differentiate signs, symptoms, and treatment for:
 - a. Avulsions
 - b. Abrasions
 - c. Bites
 - d. Blisters
 - e. Contusions
 - f. Lacerations
 - g. Stings
2. Differentiate signs, symptoms, and treatment for:
 - a. Ringworm
 - b. Jock itch
 - c. Athlete's foot
 - d. Impetigo
 - e. MRSA
 - f. Warts
 - g. Eczema

- Objective 3** Recognize abdominal injuries, bleeding, and shock.
1. Discuss external bleeding.
 2. Demonstrate proper procedures to control bleeding.
 - a. Apply direct pressure with sterile gauze pad
 - b. Apply a pressure dressing
 - c. Check circulation
 3. Identify signs, symptoms, and treatment of internal bleeding.
 4. Identify signs, symptoms, and treatment of abdominal injuries.
 - a. Ruptured spleen
 - b. Appendicitis
 - c. Hernia
 5. Describe the signs, symptoms, and treatment of shock.

- Objective 4** Discuss immobilization techniques.
1. Identify fracture signs and symptoms.
 2. Explain the steps to immobilization.
 - a. Splint in the position found
 - b. Immobilize the joint above and the joint below
 - c. Check circulation distal to the injury
 3. Explain head/neck immobilization
 - a. Maintain in-line stabilization
 - b. Monitor ABC's
 4. REQUIRED SKILL - Demonstrate crutch fitting to any size individual.
 5. OPTIONAL SKILL - Stabilize head/neck in position found.

- Objective 5** Recognize and provide treatment for environmental conditions.
1. Compare and contrast the causes, signs, symptoms, and treatment of heat illnesses.
 - a. Heat cramps
 - b. Heat exhaustion
 - c. Heat stroke
 2. Compare and contrast the causes, signs, symptoms, and treatment of cold exposure.
 - a. Hypothermia
 - b. Frostbite

- Objective 6** Describe the treatment for the following medical conditions:
1. Seizures
 2. Fainting
 3. Diabetes
 4. Anaphylactic shock
 5. Asthma

6. Exertional sickling
7. Sudden cardiac arrest

Objective 6 Vocabulary

1. General Vocabulary Terms
 - a. Cyanosis
 - b. Diagnosis
 - c. Incision
 - d. Palpation
 - e. Prognosis
 - f. Reduction
 - g. Shock
2. Injuries
 - a. Bursitis
 - b. Dislocation
 - c. Subluxation
 - d. Fracture
 - e. Hematoma
 - f. Separation
 - g. Sprain
 - h. Strain

Standard 11 Performance Evaluation included below (Optional)

STANDARD 12

Students will explain therapeutic modalities and rehabilitation techniques.

- Objective 1 Explore therapeutic modalities.
1. Identify the purpose of therapeutic modalities.
 2. Explain how to properly select the use of therapeutic modalities.
 3. Identify the Gate Control Theory as a principle of pain management and describe the physiological process of the theory.
- Objective 2 Describe the physiological effects, indications, contraindications, and application of the following:
1. Cryotherapy
 - a. Ice packs
 - i. REQUIRED SKILL - Prepare an ice bag/pack
 - b. Ice massage
 - c. Ice immersion
 - d. Cold whirlpool

- e. Chemical coolant
- f. Describe the R.I.C.E. method for acute injuries
 - i. REQUIRED SKILL - Prepare an ice bag/pack.
 - ii. REQUIRED SKILL - Apply a compression wrap to an ankle
 - iii. REQUIRED SKILL - Apply a compression wrap to a knee
- 2. Thermotherapy
 - a. Heat packs
 - b. Ultrasound
 - c. Hot whirlpool
- 3. Electrotherapy
- 4. Manual Therapy
 - a. Massage
 - b. Cupping
 - c. Scraping techniques

Objective 3 Discuss the components and goals of a rehabilitation program.

- 1. Identify the general guidelines of a rehabilitation program.
 - a. Individualize each program
 - b. Be as aggressive as possible without causing harm
 - c. Use a variety of equipment
- 2. Common mistakes
 - a. Treat the cause not the symptoms
 - b. Not addressing the contra-lateral side
 - c. Postural defects, anatomical mal-alignment, and biomechanical imbalances
- 3. Appropriate goal setting
- 4. Components of a rehabilitation program
- 2. Phase I
 - a. Body conditioning/maintain cardiovascular fitness throughout all phases
 - b. Control swelling
 - c. Control pain
 - d. Increase range of motion
- 3. Phase II
 - a. Restore full range of motion
 - b. Strength, endurance, speed, power in all muscle groups
 - c. Begin skill patterns and proprioception
- 4. Phase III
 - a. Functional and sport specific skills
 - b. Restore balance and proprioception
 - c. Return to sport
 - d. Relate the different exercise principles to rehabilitation
 - e. SAID

f. Overload

Objective 4 Vocabulary

1. Analgesic
2. Contraindicate
3. Cryotherapy
4. Hydrotherapy
5. Indicate
6. Modality
7. Thermotherapy
8. Vasoconstrictor
9. Vasodilator

Standard 12 Performance Evaluation included below (Optional)

Workplace Skills

- Communication
- Problem Solving
- Teamwork
- Critical Thinking
- Dependability
- Accountability
- Legal Requirements/expectations

Exercise Science and Sports Medicine

Performance assessments may be completed and evaluated at any time during the course. The following performance skills are to be used in connection with the associated standards and exam. To pass the performance standard the student must attain a performance standard average of 8 or higher on the rating scale. Students may be encouraged to repeat the objectives until they average 8 or higher.

Student's Name: _____

Class: _____

PERFORMANCE STANDARDS RATING SCALE



STANDARD 1 - Fundamentals

Score:

- ☐ Prepare a basic SOAP note.
- ☐ Student will read a scenario and complete the SOAP note.

STANDARD 7 - Lower Extremity Injuries

Score:

- ☐ Completely tape an ankle within five minutes, using the standards prophylactic taping method:
 - ☐ Foot is placed in the neutral dorsiflexion/eversion position
 - ☐ Pre-wrap is applied from the mid-arch to the musculotendinous junction of the gastrocnemius and the Achilles tendon
 - ☐ Follow proper sequence of taping procedure; anchors, stirrups, fill-ins and heel locks (using two layers throughout)
 - ☐ Tape is applied uniformly to prevent tape cuts and/or blisters

STANDARD 9 - Strength, Flexibility and Ergogenic Aids

Score:

- ☐ Demonstrate proper techniques of static stretching for all major muscle groups.
 - ☐ Instruct the athlete to slowly stretch to the point where he/she feels tension (not pain) and hold that position for 10 to 30 seconds. The stretch is repeated three to five times.
 - ☐ Abdominal

- ☐ Groin
- ☐ Quadriceps
- ☐ Hamstrings
- ☐ Posterior shoulder
- ☐ Anterior shoulders
- ☐ Hip flexors
- ☐ Lower back/lumbar region
- ☐ Gastrocnemius/Achilles tendon
- ☐ Trapezius, neck (using rotation)

STANDARD 11 - Common Injuries

Score:

- ☐ Fit crutches to any size individual.
 - ☐ Student asks the height of the subject and locates a pair of crutches that is in the approximate range.
 - ☐ Student places the crutches under the subject's armpit with the crutch tips two inches in front and four inches to the side of the tip of his/her foot. With the crutch in this position, the axillary pad should be two finger widths below the armpit. If not, the legs should be adjusted.
 - ☐ With the crutch in this same position, the hand pad should be adjusted so that they elbow is flexed 15 to 20 degrees.
 - ☐ The subject should be instructed to move the injured limb with the crutches. When going upstairs, the uninjured leg leads first and the injured limb and crutches follow. When going downstairs, the injured limb and crutches go down first and the uninjured leg follows.

STANDARD 12 - Therapeutic Modalities and Rehabilitation

Score:

- ☐ Prepare an ice bag/pack.
 - ☐ Fills bag with appropriate amount of ice for body part receiving ice treatment. Makes sure the bag will conform properly to body part.
 - ☐ Removes all excess air by placing the bag on a hard surface and squeezing the air out or by sucking excess air out with mouth.
 - ☐ Ties bag with knot in a high position so bag will conform to body part receiving ice.
 - ☐ Instructs athlete to leave ice on the appropriate treatment time that is suitable for the area being treated (20-30 min).

- ☐ Apply a compression wrap to an ankle.
 - ☐ Position athlete so that no obstacle interferes with procedure
 - ☐ Begin first revolution at metatarsal heads
 - ☐ Complete one wrap around the foot to secure the edge of the elastic wrap
 - ☐ Continue the wrap diagonally upward across the dorsum of the foot and then around the bottom of the foot
 - ☐ Complete this revolution by bring it forward diagonally downward creating an inverted "V"
 - ☐ Continue up the foot in like manor using alternating upward and downward patterns to continue inverted "V" with each wrap
 - ☐ Make sure each revolution is overlapped half the width of the wrap and all skin is covered
 - ☐ Make sure each revolution is tight and snug without restricting blood flow
 - ☐ Check distal circulation by capillary refill
 - ☐ Ask athletes if the wrap feels comfortable
- ☐ Apply a compression wrap to a knee.
 - ☐ Position athlete so that no obstacle interferes with procedure
 - ☐ Begin distal to the knee just below visible swelling
 - ☐ Complete one wrap around the leg to secure the edge of the elastic wrap
 - ☐ Continue the wrap diagonally upward and around the back of the leg
 - ☐ Complete this revolution by bring it forward diagonally downward creating an inverted "V"
 - ☐ Continue up the leg in like manner using alternating upward and downward patterns to continue inverted "V" with each wrap
 - ☐ Make sure each wrap is overlapped half the width of the wrap
 - ☐ Make sure each wrap is tight and snug without restricting blood flow
 - ☐ Check distal circulation by pulse or capillary refill
 - ☐ Ask athletes if the wrap feels comfortable

PERFORMANCE STANDARD AVERAGE SCORE:

Evaluator Name: _____

Evaluator Title: _____

Evaluator Signature: _____

Date: _____