

# SM 125

## Clinical Education in Sports Medicine II

### COMPETENCIES

#### RISK MANAGEMENT AND INJURY PREVENTION

##### *Cognitive Domain*

- Identifies the physical and environmental risk factors associated with specific activities the physically active person may engage in.
- Describes the principles of effective heat loss and heat illness prevention programs. These principles include, but are not limited to knowledge of the body's thermoregulatory mechanisms for acclimation and conditioning, fluid and electrolyte replacement requirements, proper practice and competition attire, and weight loss.
- Describes the use of a sling psychrometer, and possesses the ability to apply wet bulb globe thermometer (WBGT) reading and other heat and humidity indices to determine the scheduling, type, and duration of practice.
- Describes the basic principles regarding protective equipment , including standards for design, construction, maintenance, and reconditioning of protective sports equipment (e.g., football, hockey, and lacrosse pads and headgear).
- Identifies basic legal concepts and considerations associated with protective equipment, including product and personal liability.
- Accesses and interprets the rules and regulations established by the associations that govern the use of protective equipment .
- Describes the principles and concepts relating to prophylactic taping, wrapping, and bracing and protective pad fabrication.
- Explains the basic principles and concepts of protective equipment and material composition (e.g., tensile strength, maximum tolerances, heat dissipation).
- Relates the principles and concepts involved in the fabrication and appropriate application of dynamic and static splints.

##### *Psychomotor Domain*

- Collects and interprets climatic data (temperature, humidity, distance of lightning from practice or competition areas) with use of appropriate instruments or personal observation and applies this data to schedule physical activity.
- Implements prevention and treatment of environmental stress factors that pertain to acclimation and conditioning, fluid and electrolyte replacements, proper practice and competition attire, and weight loss.
- Selects, fabricates, and applies appropriate preventive taping and wrappings, splints, braces, and other special protective devices that are consistent with sound anatomical and biomechanical principles.
- Selects and fits standard protective equipment and clothing according to the physical characteristics and need of the individual.
- Constructs and applies functional splints.

##### *Affective Domain*

- Accepts and respects the established guidelines for scheduling physical activity to prevent exposure to unsafe environmental conditions.

- Appreciates the importance of the body's thermoregulatory mechanisms for acclimation and conditioning, fluid and electrolyte replacements, proper practice and competition attire, and weight loss.
- Values the importance of collecting data on temperature, humidity, and other environmental conditions that can affect the human body when exercising in adverse weather conditions.
- Understands the values and benefits of correctly selecting and using prophylactic taping and wrapping or prophylactic padding.
- Appreciates and respects the importance of correct and appropriate fitting in the use of protective equipment.
- Appreciates and respects the principles and concepts of home, school, and work place ergonomics.

## **ASSESSMENT AND EVALUATION**

### *Cognitive Domain*

- Demonstrates knowledge of the normal anatomical structures of the human body systems and their physiological functions, including the musculoskeletal (including articulations), nervous (central and peripheral), cardiovascular, respiratory, digestive, urogenital, endocrine, dermatological, reproductive, and special sensory systems.
- Distinguishes the anatomical and physiological growth and development characteristics of athletic and physically active males and females in the following stages: pre-adolescent; adolescent; adult; and senior.
- Lists and defines directional terms and cardinal planes used to describe the body and the relationship of its parts.
- Defines the principles and concepts of body movement including functional classification of joints, joint biomechanics, normal ranges of joint motion, joint action terminology, muscular structures responsible for joint actions (prime movers, synergists), skeletal muscle contraction, and kinesthesia/proprioception.
- Describes commonly accepted techniques and procedures for evaluation of the common injuries and illnesses that are incurred by athletes and others involved in physical activity. These techniques and procedures include the following: (a) taking a history, (b) inspection or observation, (c) palpation, (d) functional testing (range of motion, ligamentous or capsular stress, manual muscle, sensory, motor, reflex neurological), (e) special evaluation techniques (e.g., orthopedic tests, auscultation, percussion)
- Describes the use of myotomes, dermatomes, and reflexes (deep tendon, superficial) including manual muscle-testing, range-of-motion testing, and distinguishes between primary, cortical, and discriminatory forms of sensation.
- Defines the measurement and grading of dermatomes, myotomes, and reflexes and their relationships in a neurological examination.
- Describes active, passive, and resisted range-of-motion testing and differentiates the significance of the findings of each test.
- Explains the role of special tests, testing joint play, and postural examination in injury assessment.
- Explains how to measure resistive range of motion (or strength) of major muscles using manual muscle testing or break tests.
- Differentiates the use of diagnostic tests (x-rays, arthrograms, MRI, CAT scan, bone scan, ultrasound, myelogram) based on their applicability in the assessment of an injury or illness when prescribed by a physician.
- Explains how to recognize and evaluate athletes and others involved in physical activity who demonstrate clinical signs and symptoms of environmental stress.

### *Psychomotor Domain*

- Demonstrates active, passive, and resisted range-of-motion testing of the toes, foot, ankle, knee, hip, shoulder, elbow, wrist, hand, thumb, fingers, and spine.
- Palpates bony and soft tissue structures to determine normal or pathological tissue(s).

- Performs and interprets appropriate palpation techniques and special tests of the abdomen, chest, cranium, and musculoskeletal system.
- Assesses the neurological function of cranial nerves, spinal nerves, and peripheral nerves and assesses the level of spinal cord involvement following injury, including the function of dermatomes, myotomes, and reflexes (e.g., deep tendon, superficial).
- Uses appropriate terminology in the communication and documentation of injuries and illnesses.

## **ACUTE CARE OF INJURIES AND ILLNESSES**

### *Cognitive Domain*

- Describes the availability, contents, purposes, and maintenance of contemporary first aid and emergency care equipment
- Recognizes appropriate written medical documentation and abbreviations.
- Describes the management of external hemorrhage, including the location of pressure points, use of universal precautions, and proper disposal of biohazardous materials.
- Selects a cervical stabilization device that is appropriate to the circumstances of the injury.
- Recites the indications and guidelines for removing the helmet and shoulder pads from an athlete with a suspected cervical spine injury
- Describes the proper techniques for removing the helmet and shoulder pads from an athlete with a suspected cervical spine injury.
- Describes the proper techniques and necessary supplies for removing equipment and clothing in order to evaluate and/or stabilize the involved area
- Recognizes proper positioning and immobilization of a person with a suspected spinal cord injury when using a spine board or body splint, including preparatory positioning prior to placement of the spine board or body splint.
- Identifies the appropriate short-distance transportation method for an injured athlete or other physically active individual, including immobilization if applicable.
- Describes the signs, symptoms, and causes of allergic, thermal, and chemical reactions of the skin.
- Recognizes the signs, symptoms, and treatment of individuals suffering from adverse reactions to environmental conditions.
- Describes the proper immobilization techniques and selects the appropriate splinting material to stabilize the injured joint or limb and maintain distal circulation.
- Recognizes the proper technique for using ambulatory aids, including selecting an aid appropriate for the injury and person.
- Recommends ambulatory aids to coordinate movement on flat, slippery, or uneven terrain and to navigate steps, ramps, doors, or obstacles, and evaluates the patient's technique in using the aids.

### *Psychomotor Domain*

- Palpates a variety of anatomic locations to assess the pulse in resting (non-emergency) and trauma situations.
- Demonstrates proper use of universal precautions and aseptic or sterile techniques when controlling external hemorrhaging.
- Demonstrates proper wound cleaning and care, including the use of barriers, aseptic protocols, and disposal of biohazardous waste.
- Applies various cervical stabilization devices correctly, with the victim in various positions.
- Applies various types of splints to different body parts, employing different constructions of splinting materials and allowing for distal pulse palpation.
- Demonstrates the proper techniques for using ambulatory aids to coordinate movement on flat, slippery, or uneven terrain and to navigate steps, ramps, doors, or obstacles.
- Fabricates, applies, adjusts, and removes commonly used immobilization devices.
- Fabricates, applies, adjusts, and removes special protective equipment (braces, special pads, modified taping procedures).

### *Affective Domain*

- Appreciates the construction of various splinting devices and the appropriate uses for each.
- Appreciates state laws, rules, and regulations governing the application of immobilization devices
- Values the proper positioning and securing of a person with a suspected spinal injury onto a spine board or body splint, including preparatory positioning prior to placement of the spine board or body splint, as critical for prevention of further trauma.
- Supports the application of cryotherapy, elevation, and compression as primary care for a non-threatening injury.
- Accepts the approved aseptic and sterile methods for cleaning, treating, and bandaging wounds and for disposing of biohazardous waste.
- Empathizes with individuals facing the daily challenges of using ambulatory aids.

## **PHARMACOLOGY**

### *Cognitive Domain*

- Recognizes the general concepts and differences in the legal regulation of non-prescription, prescription, and classified pharmaceuticals
- Recalls and can access the laws, regulations, and procedures that govern storage, transportation, dispensation, and recording prescription and nonprescription medications (Controlled Substance Act, scheduled drug classification, and state statutes).
- Identifies the role of the Food and Drug Administration (FDA) in approving and recalling drugs.
- Identifies appropriate terminology and pharmaceutical abbreviations used in the prescription and dispensation of medications.
- Identifies the common resources used to identify indications, contraindications, precautions, and adverse reactions for prescription and nonprescription medications.
- Recalls how the concept of potency and expiration affects drug dose protocols.
- Identifies common methods used to administer medication.
- Relates the relationship of generic to brand name pharmaceuticals.
- Describes the kinetic process of absorption, distribution, metabolism, and elimination of administered medication.
- Describes how physical activity may influence a drug's therapeutic effect.
- Illustrates the general concepts of dissolution, bioavailability, and bioequivalence.
- Recognizes the general action of biotransformation in the biochemical reactions that occur during drug absorption.
- Recognizes that adverse drug reactions can be immediate (acute) or delayed (chronic).
- Describes the potential risks of co-interaction between two or more pharmaceutical agents.
- Recognizes the difference between cortical and anabolic steroids and other androgens.
- Describes the general indications, contraindications, and adverse reactions of prescription and nonprescription anti-inflammatory and antiarthritic medications (e.g., steroidal and nonsteroidal).
- Lists the general indications, contraindications, and adverse reactions of commonly used prescription and nonprescription analgesic medications.
- Lists the general indications, contraindications, and adverse reactions of prescription and nonprescription local anesthetics.
- Lists the general indications, contraindications, and adverse reactions of bronchodilators and other prescription and nonprescription respiratory medications as they relate to physical activity.
- Identifies the general indications, contraindications, and adverse reactions of prescription and nonprescription antibiotics.
- Identifies the general indications, contraindications, and adverse reactions of anaphylaxis medications.
- Identifies the general adverse reactions of gastrointestinal prescription and nonprescription medications
- Lists the general indications, contraindications, and adverse reactions of beta-blockers and antihypertensives.

- Recalls the general indications, contraindications, and adverse reactions of prescription and nonprescription topical applications.
- Identifies the usage patterns, general effects, and adverse short- and long-term reactions of performance enhancing drugs.

### *Psychomotor Domain*

- Employs the Physician's Desk Reference (PDR), the Drug Facts and Comparisons, or on-line services to obtain information on the medications prescribed for athletes and others involved in physical activity.
- Follows federal, state, and local regulations regarding storing, transporting, dispensing, and recording medications
- Documents tracking of medications by name, manufacturer, amount, dosage, lot number, and expiration date
- Replicates procedures for storage and inventory of medications.
- Reviews and adheres to a policies-and-procedures manual as it relates to medications.
- Replicates the procedure for using an emergency epinephrine injection to prevent anaphylaxis as per physician instruction.
- Replicates procedures for using an asthmatic inhaler to prevent and treat exercise-induced bronchial spasms and/or asthmatic conditions.

### *Affective Domain*

- Recognizes that pharmacology applies to the immediate and ongoing care of injury and illness.
- Recognizes the importance of pharmacological concepts in health care.
- Accepts physician (or other qualified health care provider) and pharmacist consultation as a legal, moral, and ethical necessity in the prescription and dispensation of medication.
- Appreciates the use of clinical references such as the PDR and clinical databases to identify medications.
- Accepts the laws and regulations that govern the storage, transportation, and dispensation of all drugs.
- Supports the moral and ethical behavior of athletic trainers in dealing with the issues of drug use and abuse in sports.
- Accepts moral and ethical responsibility for maintaining current knowledge of the medications commonly prescribed to athletes and others involved in physical activity.
- Advocates moral and ethical behavior of self and colleagues in dealing with issues of a pharmacological nature.
- Promotes accountability for moral and ethical decision-making in pharmacological issues.

## **GENERAL MEDICAL CONDITIONS AND DISABILITIES**

### *Psychomotor Domain*

- Use and interprets urine diagnostic Chemstrips (dipsticks).
- Uses a penlight to examine pupil responsiveness, equality, and ocular motor function.
- Assesses body temperature.
- Assesses vital signs.

## **PSYCHOSOCIAL INTERVENTION AND REFERRAL**

### *Cognitive Domain*

- Contrasts psychological and physical dependence, tolerance, and withdrawal syndromes that may be seen in individuals addicted to alcohol, prescription or nonprescription medications, and/or 'street' drugs.

## **HEALTH CARE ADMINISTRATION**

### *Cognitive Domain*

- Describes the organization and administration of pre-participation examination and screening including, but not limited to, maintaining medical records, developing record keeping forms, scheduling personnel, and site utilization.
- Summarizes basic legal concepts, such as, but not limited to, standard of care, scope of practice, liability, negligence, informed consent, and confidentiality, as they apply to a medical or allied health care practitioner's performance of his or her responsibilities .
- Describes federal and state infection control regulations and guidelines as they pertain to the prevention, exposure, and control of infectious disease.
- Lists the components of a comprehensive risk management plan that addresses the issues of security, fire, electrical and equipment safety, emergency preparedness, and hazardous chemicals.
- Locates and interprets current banned-drug lists that are published by various governing athletic associations (National Collegiate Athletic Association [NCAA], United States Olympic Committee [USOC], International Olympic Committee [IOC], etc).

# PROFICIENCIES

## INSTRUCTED & EVALUATED

### **Risk Management and Injury Prevention**

The student will select and fit the following protective equipment:

- protective helmet and head gear
- protective shoulder pads
- footwear for physical activity
- mouth guard
- rib brace/guard
- prophylactic ankle brace
- prophylactic knee brace

The student will construct, apply, and remove the following protective devices:

- bony prominence pad
- friction pad ("doughnut" pad)
- muscle contusion pad
- checkrein device
- soft playing cast (e.g., silicone, thermofoam)
- hard, immobilization splint or cast (e.g., thermoplastic, plaster, fiberglass)

The student will demonstrate the ability to tape, splint, wrap, pad or brace the following joints to limit motions:

- cervical spine
- lumbar spine

The student will demonstrate the ability to tape, splint, wrap, pad or brace the following joints to limit motions:

- shoulder joint and girdle
- elbow
- wrist
- hand and fingers
- hip and pelvis
- knee
- leg
- ankle
- foot and toes

### **Assessment and Evaluation**

The student will identify, palpate, and assess the integrity of bony landmarks of the head and face.

The student will identify, palpate, and assess the integrity of soft tissue of the head and face.

### **Acute Care of Injuries and Illnesses**

The student will demonstrate the ability to

- stabilize and spine board or body splint an adult or child with a suspected spinal injury

The student will evaluate and manage the following:

- heat exhaustion
- heat stroke
- heat syncope
- hypothermia

The student will demonstrate the ability to

- stabilize and transport an adult or child with a head and/or spinal injury
- stabilize and transport an adult or child with a fracture and/or dislocation
- select, fit, and instruct the patient in the use of crutches
- select, fit, and instruct the patient in the use of a cane
- transport an injured adult or child using a manual conveyance technique

## **Pharmacology**

The student will use the PDR or another drug reference to search for information on the medications commonly prescribed to athletes and others involved in physical activity and to identify the following facts:

- generic and brand names
- dosing
- indications for use
- other notes (e.g., banned substance)
- contraindications
- side (adverse) effects
- warnings

The student will document, or simulate the documentation of, the tracking of medications by recording the following information about the medication:

- name
- dosage
- manufacturer
- lot number
- amount
- expiration date

The student will locate the policies-and-procedures manual, identify the section on medications, and replicate the procedures for administering medications to athletes and others involved in physical activity, which include the following:

- determine type of over-the-counter (OTC) medication to be used according to the physical ailment and established protocols
- identify the precautions, expiration date, lot number, and dosage for the medication as provided on the package and individual dose packets
- administer OTC medication by providing verbal and written instruction for its use to the patient and then recording and documenting the administration

The student will locate the phone number and address of the nearest poison control center and replicate the reporting of a drug overdose or poisoning situation. The report should state the following information:

- name and location of person making the call
- name and age of person who has taken the medication
- name and dosage of the drug taken
- time the drug was taken
- signs and symptoms associated with overdose or poison situation, including vital signs

The student will replicate the following procedures for using an emergency epinephrine injection to prevent anaphylaxis:

- identify indications for an epinephrine injection

- demonstrate proper use through verbal and nonverbal instruction
- identify signs and symptoms that might indicate an allergic reaction to or overdose of epinephrine
- demonstrate proper storage of epinephrine injectable
- demonstrate proper disposal of used injection system

The student will replicate the following procedures for using an emergency bronchodilator (inhaler) to prevent asthma attacks:

- identify indications for use of a bronchodilator
- demonstrate proper use through verbal and nonverbal instruction
- identify signs and symptoms that might indicate an allergic reaction to or overdose of a bronchodilator
- demonstrate proper storage of a bronchodilator