

Sports Medicine & Injury Management

SEM1 - 8th Period - SY 21-22

INSTRUCTOR: Ms. Amanda Nisula, LAT, ATC

P: 609-586-3705 ext. 132

E: anisula@trentocatholicprep.org

SPORTS MEDICINE & SPORTS INJURY MANAGEMENT

Course Description: This course provides high school students with a general overview of athletic training, sports medicine and its history. It includes introductory information about the AT's scope of practice: injury prevention, treatment, rehabilitation, emergency injury management and administrative functions. This course is intended to help students gain an understanding of sports medicine, various associated disciplines and the role they play in the physically active community. Students enrolled in this class will not provide patient care.

1. Unit 1 - Investigating the Field of Sports Medicine

Organizational and Professional Health and Well-Being

- A. **Terms:** athletic training student aides (ATSA), licensed athletic trainer (LAT), athletic trainer certified (ATC), National Athletic Trainers' Association (NATA), Board of Certification (BOC), accrediting agencies, state board, American Medical Association (AMA), sports medicine, sports medicine team, National Federation of State High School Associations (NFHS)
- B. **Objectives-Students will be able to:**
1. Describe the historical foundations of athletic training.
 2. Compare and contrast various professional organizations dedicated to athletic training and sports medicine.
 3. Delineate the process for attaining national certification and state licensure for the athletic trainer.
 4. List and differentiate between the roles and responsibilities of other health care professionals who make up the sport medicine team (e.g., physicians, physical therapists, occupational therapists, nurses, EMTs, etc.).
 5. Analyze the different types of job opportunities and settings available to the athletic trainer as well as other members of the sports medicine team.
- C. **Applications-Activities students may perform:**
1. Draw a timeline and give brief explanations of the significance that specific past events have on the present, as well as infer possible implications those events may have on the profession's future.
 2. Create a scenario involving a minimum of five members of the sports medicine team and explain how they work together.
 3. Pick 5 states, locate their practice acts and determine the process required to be able to practice athletic training or
- D. physical therapy in each state. How is each different or the same?
- E. Discussion on the sports medicine team and all its members. This can include: physicians, athletic trainers, personal trainers, massage therapists, physician assistants, nurse practitioners, physical therapists, sports psychologists, nutritionist, dentists, chiropractors, nurses, exercise physiologists, biomechanists, strength and conditioning coaches, emergency medical
- F. technicians, paramedics, orthotists and prosthetists.

2. Unit - 2 Understanding Concepts of Health Care Administration

Organizational and Professional Health and Well-Being

- A. **Terms:** Health Insurance Portability and Accountability Act (HIPAA), Family Education Right and Protection Act (FERPA), sports medicine facility, WOTSUP (weaknesses, opportunities, treats, strengths, underline, planning), preparticipation physical examination (PPE), injury tracking, SOAP (subjective, objective, assessment, plan) note
- B. **Objectives-Students will be able to:**
1. Investigate the necessary components that make up a well-designed sports medicine facility.
 2. List budgetary concerns.
 3. Explain the legal importance of accurate, clear and up-to-date record keeping.
 4. Create and analyze legal scenarios to consider as an administrator of an athletic health care facility in different settings.
 5. Explain the difference between HIPAA and FERPA in relation to sharing medical information.
- C. **Applications-Activities students may perform:**
1. Create a list of equipment necessary to run a sports medicine facility on a certain budget.
 2. Design a sports medicine facility with a certain budget in mind. Determine the software you will use for injury tracking and pick 3 vendors/distributors to buy the equipment from.

3. Unit 3 - Analyzing Legal, Ethical and Insurance Considerations in Sports Medicine

Organizational and Professional Health and Well-Being

- A. **Terms:** duty, liability, negligence (tort), assumption of risk, sovereign immunity, good Samaritan law, product liability, statute of limitations, foreseeability of harm, practice act, general medical insurance, liability insurance, HMO, PPO, Medicare, Medicaid, billing codes (ICD, CPT), third party reimbursement, copay, premium, deductible, SOAP note, National Provider Identifiers (NPIs)
- B. **Objectives-Students will be able to:**
1. List and define the 4 components of negligence.
 2. Analyze legal considerations for health care professionals.
 3. Compare and contrast legal concepts of liability, negligence, supervision, and assumption of risks.
 4. Differentiate between legal and ethical actions in a given scenario.
 5. Differentiate between different types of medical insurance and be able to explain various terms associated with third party reimbursement.
 6. Determine the benefits of maintaining medical records to benefit the student athletes.
 7. Discuss the importance of medical professionals obtaining National Provider Identifiers (NPIs)
- C. **Applications-Activities students may perform:**
1. Locate a recent lawsuit involving a sports medicine health care professional and create a mock trial.
 2. Examine real-world scenarios of specific legal and ethical dilemmas related to sports medicine and analyze them.
 3. Discuss ways in which health care professionals can reduce their liability risk when working with student-athletes.

4. Unit 4 - Understanding the Basics of Training and Conditioning Techniques

Treatment and Rehabilitation

- A. **Terms:** cardiac output, overload principle, domains of fitness, training effect, aerobic metabolism, anaerobic metabolism, adenosine triphosphate (ATP), creatine phosphate (CP), neuromuscular control (NMC), range of motion (ROM), plyometric, proprioception, muscle spindle, golgi tendon organ (GTO), functional progression, agonist muscle, antagonist muscle, proprioceptive neuromuscular facilitation (PNF), DOMS, DAPRE, isometric, isotonic
- B. **Objectives-Students will be able to:**
1. Investigate the roles of the athletic trainer and the strength and conditioning coach on an athlete's fitness.
 2. Explain the principles of conditioning.
 3. Explain the role that overtraining plays in the risk of injury.
 4. Design goals of a training and conditioning program for a specific sport/position on a team.
 5. List the equipment needed for a comprehensive training and conditioning program.
 6. Differentiate between the types of stretching and determine which is best in a given scenario.
- C. **Applications-Activities students may perform:**
1. Design a workout program for a specific sport using each of the following techniques/principles: dynamic, static, and PNF stretching; PReS, isometrics, isotonicS, core stability and proprioception exercises.
 2. Design a workout for a hypothetical scenario.
 3. Discuss how technology has helped to motivate people to exercise.

5. Unit 5 - Assessing Environmental Factors That Lead to Injury

Immediate and Emergency Care

- A. **Terms:** emergency action plan (EAP), thermal injuries, ambient temperature, heat index, psychrometer, wind chill, humidity, conduction, convection, evaporation, radiation, hydration, altitude, sun protection factor (SPF), circadian dysrhythmia, sickle cell trait, lightning and thunder.
- B. **Objectives-Students will be able to:**
1. Recognize atmospheric conditions that contribute to environmental injury.
 2. Explain the environmental factors to be considered when caring for athletes.
 3. Determine an appropriate SPF for specific individuals.
 4. Explain the complications circadian dysrhythmia could have for various levels of athletes.
 5. Discuss the importance of an EAP and policy for thunder and lightning as it relates to athletics.
 6. Determine the risks associated with repeated overexposure to the sun.
- C. **Applications-Activities students may perform:**
1. Formulate the wet-bulb globe temperature (WBGT) using a sling psychrometer or other means and make suggestions for safe practice in given scenarios.
 2. Create the thunder and lightning EAP for a specific outdoor venue.
 3. Investigate equipment necessary to prevent, manage and treat environmental injury/illnesses.
 4. Explain the role of each member of the sports medicine team.
 5. Discuss as many ways as possible to decrease the risk of environmental injuries.

6. Unit 6 - Human Anatomy and Physiology:

Discussion on the Following Body Systems

- | | |
|-------------------|-----------------|
| A. Integumentary | H. Respiratory |
| B. Skeletal | I. Urinary |
| C. Nervous | J. Excretory |
| D. Cardiovascular | K. Reproductive |
| E. Endocrine | L. Digestive |
| F. Muscular | M. Immune |
| G. Lymphatic | |

7. Unit 7 - Understanding Basic Taping, Wrapping and Bracing for Injuries

Injury/Illness Prevention and Wellness Protection

- A. **Terms:** off- the-shelf, customized, foam padding, orthotics, prophylactic taping, bracing, restricted movement brace, heel lock, stirrup, horseshoe, spica, spiral
- B. **Objectives-Students will be able to:**
1. List considerations to be given when properly fitting headgear.
 2. Debate the advantages and disadvantages of customized versus commercial protective devices.
 3. Identify the types of marketed and fabricated bracing devices as well as techniques.
 4. Debate the advantages and disadvantages of taping versus bracing.
 5. Determine which elastic wraps and wrapping procedures are most appropriate for specific scenarios.
 6. Differentiate between different types of adhesive and cohesive tape, and determine what application is best for a specific scenario
 7. Identify 4 basic tape applications and the rationale of each.
- C. **Applications-Activities students may perform:**
1. Demonstrate knowledge of basic wrapping and taping procedures for a given joint.
 2. Demonstrate knowledge of basic taping procedures to prevent a specific movement for a given joint.
 3. Discuss the different types of athletic tape and their uses.

8. Unit 8 - Understanding Sports Nutrition, Supplementation and Substance Abuse

Injury/Illness Prevention and Wellness Protection

- A. **Terms:** nutrients, vitamins, minerals, supplements, amino acids, saturated fats, unsaturated fats, electrolytes, calorie, anabolic steroids, human growth hormone (HGH), body composition, anorexia nervosa, bulimia, creatine, amphetamines, performance enhancing drugs (PED), banned substance
- B. **Objectives-Students will be able to:**
1. List the six classes of nutrients and give an example in each class.
 2. Explain the importance of good nutrition in enhancing performance and injury prevention.
 3. Differentiate between body weight and body composition along with the factors that influence both of them.
 4. Identify methods to calculate percent body fat and issues associated with each.
 5. Identify safe methods for weight loss as well as weight gain.
- C. **Applications-Activities students may perform:**
1. Create an appropriate pre-game meal for a specific sport (endurance vs. non endurance).
 2. Create an educational brochure for athletes on banned substances from the IOC and the NCAA.
 3. Study food labels and identify what information is important for people involved in different athletic activities.

9. Unit 9 - Identifying Basic Tissue Response and Common Injuries

Clinical Evaluation and Diagnosis

- A. **Terms:** inflammation, acute, chronic, edema, hemorrhage, inflammatory response, necrosis, Wolff's Law, nerve pathway, nociceptors, pain, vascular response, skin lesions, Stress-strain curve, strain, sprain, bursitis, mechanism of injury, micro trauma, macro trauma, biomechanical alteration, fasciitis, myositis ossificans, hematoma, subluxation, luxation, osteochondral defects, arthritis, epiphysis, fractures (fx), diagnostic imaging techniques
- B. **Objectives-Students will be able to:**
1. Describe and illustrate the three phases of the healing process as it pertains to various soft tissue structures, including cartilage, ligament, muscle, tendon, and nerve.
 2. Explain the physiology and psychology of pain.
 3. Differentiate between sprains and strains, and differentiate between 1st, 2nd, and 3rd degree injuries.
 4. Illustrate various types of fractures and explain the forces required to produce each one.
 5. List the mechanical properties of tissue as they pertain to the stress-strain curve.
 6. Illustrate and describe the 5 types of tissue loading.
 7. Explain the relationship between poor body mechanics and injury potential.
- C. **Applications-Activities students may perform:**
1. Provide examples of the types of injuries overtraining may cause for a specific sport.
 2. Model and demonstrate components of the stress-strain curve.
 3. Discuss ways in which active individuals can decrease their chance of an overuse injury.

10. Unit - 10 Recognizing and Preventing the Spread of Blood Borne Pathogens

Immediate and Emergency care

- A. **Terms:** hepatitis, human immunodeficiency virus (HIV), acquired immune deficiency syndrome (AIDS), Occupational Safety and Health Administration (OSHA)
- B. **Objectives-Students will be able to:**
1. Investigate various blood borne pathogens.
 2. Explain the OSHA blood borne pathogen standard.
 3. Outline the components of a written exposure plan.
 4. Explain basic wound care procedures.
- C. **Applications-Activities students may perform:**
1. Demonstrate basic wound care procedures.
 2. Demonstrate proper hand washing and glove usage.
 3. Discuss the OSHA policy at your school.
 4. Identify common mistakes that schools make as it pertains to OSHA guidelines.

11. Unit 11 - Determining Appropriate Emergency Injury Management

Injury/Illness Prevention and Wellness Protection

- A. **Terms:** primary survey, secondary survey, history observation palpation special tests (HOPS), peripheral nervous system (PNS), central nervous system (CNS), level of consciousness (LOC), crepitus, myotome, dermatome, reflexes, concussion, traumatic brain injury (TBI), amnesia, cardiopulmonary resuscitation (CPR), automatic external defibrillator (AED), emergency action plan (EAP), catastrophic injury, myocardial infarction, sudden death syndrome, stroke, embolism, aneurysm
- B. **Objectives-Students will be able to:**
1. Determine the components of an EAP.
 2. Investigate the acute injury management techniques.
 3. List and describe the signs and symptoms of a concussion and demonstrate the recognition of them.
 4. Explain the steps involved in performing CPR.
 5. Recognize the common causes of cardiopulmonary complications in sports.
- C. **Applications-Activities students may perform:**
1. Properly demonstrate CPR and the use of an AED

-
- a) Attain first aid certification
 - b) Create an EAP for a specific sport and venue
 - c) Discuss the importance of involving each member of the sports medicine team
2. Describe what is involved in the primary assessment
 3. Describe what is involved in the secondary assessment (including vital signs)
 4. Emergency splinting and bandaging
 5. Wound care
 6. Disaster preparedness
 7. EMS system and structure
 8. Airway management
 9. CPR/AED
 10. Rescue breathing
 11. Medical emergencies
 - a) Bleeding, shock, soft tissue injuries
 - b) Musculoskeletal
 - c) Poisoning
 - d) Burns

12. Unit 12 - Investigating the Psychological Aspects of Injury

Treatment and Rehabilitation

- A. **Terms:** anxiety, cognitive appraisal model, counselor, imagery, five stages of grief, psychiatrist, psychologist, referral, relaxation techniques, reactionary phases, psychosis, neurosis, personality disorders, phobias
- B. **Objectives-Students will be able to:**
 1. 12.1 Investigate the psychological reactions one may see in the ill or injured athlete.
 2. 12.4 Determine the reasons why social support is important to the injured athlete.
 3. 12.3 Describe the role a health care provider plays when dealing with various psychological reactions.
 4. 12.4 Differentiate between a counselor, a psychologist and a psychiatrist.
- C. **Applications-Activities students may perform:**
 1. Create a list of community resources that could be used for intervention.
 2. Discuss warning signs of psychological issues such as depression, suicide.

13. Unit 13 - Introduction to Rehabilitation and Modalities

Treatment and Rehabilitation

- A. **Terms:** cryotherapy, thermotherapy, therapeutic ultrasound, electrical modality, manual therapy, protocol, parameter, indication, contraindication, thermal modality, ground fault circuit interrupter, hydrotherapy, light modality
- B. **Objectives-Students will be able to:**
 1. List the safety procedures with each type of modality.
 2. Investigate the role of various rehabilitation professionals.
 3. Understand the five phases of rehabilitation.
- C. **Applications-Activities students may perform:**
 1. Create a first aid treatment plan for an acute injury.

14. Unit 14 - Basic Pharmacology

Treatment and Rehabilitation

- A. **Terms:** pharmacology, over-the-counter drugs (OTC), nomenclature, nonsteroidal anti-inflammatory drugs (NSAIDs), infection deterrents, diuretics, pain relievers, steroids, drug distribution, barbiturates, gastrointestinal, stimulant, cardiac drugs, dispensing, administration, interactions, adverse reaction
- B. **Objectives-Students will be able to:**
1. Describe the difference between over the counter medications and prescription medications.
 2. Discuss the different classifications of common medications.
 3. Identify safety guidelines associated with proper medication use.
 4. List socially used drugs and problems associated with athletics and performance.
- C. **Applications-Activities students may perform:**
1. Create a list of common substances that may be used in an athletic health care facility.
 2. Identify common mistakes associated with improper administration and dispensing of medication in the athletic health care facility.
 3. Discuss the importance of having EAPs for asthma, allergic reactions, and cardiac arrest.

15. Unit 15 - Fundamental Concepts of Evaluation

Clinical Evaluation

- A. **Terms:** directional terminology, anatomical position, planes of the body, clinical survey, manual muscle testing, cultural considerations, active range of motion, passive range of motion, resistive range of motion, HOPS (history, observation, palpation, special tests), SOAP (subjective, objective, assessment, plan)
- B. **Objectives-Students will be able to:**
1. Illustrate the "anatomical position."
 2. Differentiate between HOPS and SOAP.
 3. Differentiate between manual muscle testing and resistive range of motion testing.
 4. Examine cultural ISSUES differences as it pertains to the manner in which an evaluation is conducted.
- C. **Applications-Activities students may perform:**
1. Point out various anatomical landmarks for a given body part.
 2. Create a SOAP note for a specific injury.
 3. Research different videos on specific body part evaluation techniques and terminology.
 4. Discuss ethical considerations that may be involved in an injury evaluation (e.g.: patient positioning, witnesses, cultural