

# Sports Medicine Curriculum

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## ACKNOWLEDGEMENTS

I would like to personally thank Brian Springer, MD FACEP Assistant Professor and Sports Medicine Fellowship Director Wright State University Department of Emergency Medicine. I would not have been able to begin and complete this project without his expertise and development of sports medicine curriculum for residents.

I would also like to thank my Teaching Fellowship Mentor, Michael Winters MD, FAAEM for his guidance, input, and feedback.

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## **Project Summary**

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Title: Sports Medicine Curriculum for Emergency Medicine Residents

Purpose: This module was created to instruct Emergency Medicine Residents in the management of patients who present to the Emergency Department with injuries sustained during sport.

Audience: The primary audience are PGY 1-5 Emergency Residents of the SUNY Downstate/Kings County Residency Program. More specialized lectures will be dedicated to Emergency Medicine Residents who are participating in a sports medicine “mini-fellowship.”

Intended Use: This module shall compose a lecture series given during the regular weekly didactic conference of the Emergency Medicine Residency. More specialized lectures will be given in a small groups format to residents that have elected to participate in a sports medicine mini-fellowship.

Medium: The material will be presented in multiple formats. First, didactic material will be presented in a lecture format with corresponding “power point” slides. Secondly, specific injuries will be demonstrated in a case base format. Visual Diagnoses will be presented via an “xray bank” and “stimulus photos”.

Description: The content of this module will focus on sports medicine topics germane to Emergency Medicine Physicians. Topics include diagnoses and management of sports injuries, relationship of chronic illness to sports participation, and discharge instructions for patients who sustained sports injuries. For residents who desire further exposure to sports medicine by participating in a mini-fellowship, specialized lectures will include lectures sports physiology, nutrition, and performance enhancing drugs. Mini-fellows may also have the opportunity to volunteer at local football games to learn event medicine, “return-to-play” criteria after head injury, and taping and bracing.

## Learner Profiles

The primary learners for this instructional module are PGY1-5 Emergency Medicine residents at SUNY Downstate/Kings County Hospital Center. In addition to a four-year categorical program, SUNY Downstate/Kings County has five-year combined programs in both Emergency Medicine/Internal Medicine. The Emergency Medicine Department also has a “mini-fellowship” program, which allows residents to participate in intensive study of a particular aspect of emergency medicine. Thus, the secondary audience for this module consists of residents ranging from the PGY-2 to PGY-5 level who are participating in the sports medicine mini-fellowship program. Learner profiles are as follows:

	<b>PGY 1 (PGY 1 &amp; 2 EM/IM)</b>	<b>PGY 2 (PGY 3 &amp; 4 EM/IM)</b>	<b>PGY 3 (PGY 5 EM/IM)</b>	<b>Mini-Fellows PGY 2-4 (PGY2- 5 EM/IM)</b>
<b>Cognitive Skills</b>	-Able to recall facts and terminology -Able to comprehend facts as the year progresses -Limited ability to apply facts/information	-Able to recall facts -Able to comprehend information -Able to apply information -Developing skills in analysis, synthesis, and evaluation	Resident is expected to be able to analyze, synthesize, and evaluate patient information obtained	Residents are expected to have increased knowledge of sports physiology, nutrition and offer rehab plans to patients
<b>Psychomotor Skills</b>	No experience with: -Splinting -Casting -Taping/Bracing	Able to adequately: -Splinting -Casting -Taping/Bracing -Offer simple post injury exercises to the patient	Experienced in: -Splinting -Casting -Taping/Bracing	Advanced experience in: -Splinting -Casting -Taping/Bracing -post injury exercises

	<b>PGY 1 (PGY 1 &amp; 2 EM/IM)</b>	<b>PGY 2 (PGY 3 &amp; 4 EM/IM)</b>	<b>PGY 3 (PGY 5 EM/IM)</b>	<b>Mini-Fellows PGY 2-4 (PGY2- 5 EM/IM)</b>
<b>Background Knowledge</b>	<p><u>Entry level knowledge:</u></p> <ul style="list-style-type: none"> <li>-anatomy</li> <li>-physiology</li> <li>-patient interaction</li> <li>-physical examination</li> </ul> <p><u>No knowledge of:</u></p> <ul style="list-style-type: none"> <li>-Indication of Return to “Play after head injury.”</li> <li>-Post injury exercises</li> <li>-Proper Splinting/Bracing techniques</li> <li>-interpretation of radiologic studies</li> </ul>	<p><u>Adequate fund of knowledge regarding:</u></p> <ul style="list-style-type: none"> <li>-interpretation of radiologic studies</li> <li>- diagnosis of common sports related injuries</li> <li>- Management of common sports related injuries</li> </ul> <p><u>Limited fund of knowledge regarding:</u></p> <ul style="list-style-type: none"> <li>-Evidence-Based guidelines for “return to play” after head injuries</li> </ul>	<p><u>Good knowledge base regarding:</u></p> <ul style="list-style-type: none"> <li>-interpretation of radiologic studies</li> <li>- diagnosis of common sports related injuries</li> <li>- Management of common sports related injuries</li> </ul> <p><u>Adequate fund of knowledge regarding:</u></p> <ul style="list-style-type: none"> <li>-Evidence-Based guidelines for “return to play” after head injuries</li> </ul>	<p><u>Excellent knowledge regarding:</u></p> <ul style="list-style-type: none"> <li>-sports physiology</li> <li>-nutrition</li> <li>-post injury exercise regimens and rehab</li> <li>-performance enhancing drugs</li> <li>-Evidence-Based Medicine guidelines for “return to play”</li> </ul> <p><u>Adequate knowledge regarding:</u></p> <ul style="list-style-type: none"> <li>Side-line medicine.Event medicine</li> </ul>
<b>Clinical Rotations</b>	Trauma, Pediatrics ED	Orthopedics/Fast Track, Pediatrics ED	Fast Track	

## **Content Outline with Instructional Objectives**

The majority of the material in this instructional module is in lecture format. Material that is presented in Case-Based Format is highlighted in **RED**. Visual Diagnoses demonstrated through a “stimulus bank” are highlighted in **GREEN**. Techniques presented through “procedure labs” are highlighted in **BLUE**. Topics geared toward sports medicine “mini-fellows” will be so marked.

### **Section I**

#### **Anatomy, Physiology, Biomechanics of Exercise (mini-fellows)**

- a) Neuromuscular Anatomy and Adaptations to Conditioning
  - 1) Define the motor unit including muscle spindle, golgi tendon organ, and nervous innervation and describe how they interact to cause muscle contraction
  - 2) Name the motor unit types
  - 3) Describe how muscles adapt to both resistance and aerobic training. Explain how these adaptations affect performance
  - 4) List how training affects the cardiovascular system at rest, during aerobic exercise, and at maximal intensity
  
- b) Biomechanics of Resistance and Endurance Exercise
  - 1) Define the terms energy, work, and power and how they are related to exercise
  - 2) Make a distinction between isotonic and isometric contractions
  - 3) Delineate how work is affected by concentric and eccentric muscle contractions.



**Section 2**  
**Nutrition and Athletics (mini-fellows)**

- a) Energy System
- 1) Describe the 3 energy systems required for muscle activity
- b) Energy Sources
- 1) Discuss the sources of energy available for the athlete and how much each source provides in kilocalories.
  - 2) For each of the following energy sources give daily requirements for endurance, strength and recreational athletes.
    - Carbohydrates
    - Protein
    - Fat
- c) Vitamins and Minerals
- 1) List current recommendations regarding vitamin and mineral intake for the athlete.
  - 2) Name the most common mineral and vitamin deficiency in athletes and identify which patients are at the greatest risk.
- d) Fluid Loss and Performance
- 1) Illustrate the primary mechanism of water loss during exercise and calculate the average fluid loss during exercise
  - 2) Explain what happens to the body if it becomes dehydrated and how that impairs performance
  - 3) Give hydration volume recommendations for the athlete both during and after exercise. Inform your patient about the ideal beverage choice for exercise lasting less than and greater than one hour.

### Section 3

#### Sport in Special Patient Populations

##### a) Geriatrics

- 1) Describe the physiologic changes in the aging population and the effects on the musculoskeletal, cardiovascular, pulmonary, and endocrine systems
- 2) Delineate the benefits of exercise and activity for aging adults
- 3) List the most common injuries of older active adults and how aging effects the diagnosis and treatment

##### b) Pediatrics

- 1) Perform a complete orthopedic evaluation specific to the pediatric athlete
- 2) Identify the following chiefs complaints on an xray bank.  
Describe the diagnosis and treatment (case based format).
  - Anterior knee pain
  - The limping child
  - Growth plate fractures (Salter-Harris classification)
  - Leg-Calves Perthes disease
  - Osgood-Schlatter disease
  - Slipped Capital Femoral Epiphysis (SCFE)
- 3) Identify the ancillary testing needed to diagnose pediatric sports injuries
- 4) List the indications for referral to subspecialty service

##### c) Female Athlete

- 1) List physiologic differences between males and female athletes as children
- 2) Describe how female and male athletes develop differently
- 3) Describe the physiologic differences between mature male and female athletes.
- 4) Define the female athlete triad.
- 5) List the indications for inpatient management of a patient with the female athlete triad.

##### d) Pregnant Athlete

- 1) Describe the physiologic changes that occur during pregnancy and illustrate how those changes can affect performance
- 2) List at least three benefits of exercise during pregnancy
- 3) List absolute and relative contraindications to aerobic exercise in pregnancy

e) Disabled Athlete

- 1) Articulate the World Health Organization and NCAA definitions for the disabled athlete
- 2) Contrast the ability to thermoregulate during exercise between the disabled athlete and those without disability
- 3) For a Down-Syndrome athlete with suspected atlantoaxial instability:
  - Describe the pathophysiology
  - Give the epidemiology
  - Demonstrate how the diagnosis is made
  - Delineate the complications
  - Describe the Special Olympics policy
  - Demonstrate the screening process

## Section 4

### Specific Systems and their Effect on Exercise

#### a) Infectious disease

##### 1) General

- Describe how exercise affects the immune system
- Discuss how fever affects performance
- Develop treatment plans, discharge instructions, exercise regimens, and “return to play” guidelines for athletes presenting to the ED with fever, nasal congestion, sore throat (including mononucleosis), and diarrhea.

##### 2) HIV

- Describe the effects of exercise on the immune system for an HIV positive athlete
- Delineate the risk of HIV transmission during sports
- Identify preventative measures to prevent HIV transmission during sport
- Discuss ethical considerations of HIV testing and participation in organized athletics.

#### b) Pulmonary/Allergic

##### 1) Exercise-induced bronchoconstriction (EIB)

- Define EIB
- **Identify a patient with EIB. (case-based format)**
- State the prevalence of EIB among the general population and those with asthma
- Describe the pathophysiology of EIB and list the most common triggers.
- List the most common symptoms of EIB

##### 2) Urticaria or Angioedema

- **Identify a patient with Urticaria or Angioedema (case based format)**
- Perform a complete, accurate history and physical exam
- List the common causes of Urticaria/angioedema in an athlete
- Describe the acute management of both Urticaria and angioedema including laboratory evaluation
- Describe the indications for long-term management and referral to an allergist

#### c) Gastrointestinal

##### 1) Upper GI

- Describe the athletes at greatest risk for Gastroesophageal Reflux Disease (GERD)
- Describe the pathophysiology of GERD in athletes
- List the 1<sup>st</sup> and 2<sup>nd</sup> line treatment of athletes with GERD

#### 2) Lower GI

- Identify an athlete with runner's diarrhea (case based format)
- Describe the pathophysiology, evaluation, and treatment of Runner's diarrhea
- Describe the possible etiology of the "side stitch" and describe its management

#### d) Genitourinary

##### 1) Trauma

- Discuss the pathophysiology, evaluation, and management of the athlete who sustained trauma to the following structures: kidney, ureters, bladder, and genitalia

##### 2) Hematuria

- List the clinical features of "sports hematuria" and describe the pathophysiology
- Describe the evaluation and treatment plan of the athlete presenting with hematuria

##### 3) Proteinuria

- Define proteinuria and discuss the pathophysiology of proteinuria in the athlete
- Describe the evaluation and diagnostic workup of a patient with proteinuria found on pre-participation physical (mini-fellows)

#### e) Hematological

##### 1) Anemia

- Define anemia and discuss the prevalence among the general US population versus athletes
- Describe the risks of exercise associated with sickle cell trait and sickle cell disease.
- For the anemic athlete describe the pathophysiology and discuss the evaluation and treatment of the following disorders:
  - Athletic pseudoanemia
  - Iron Deficiency anemia
  - GI blood loss
  - Menstrual Blood Loss
  - Exertional Hemolysis

##### 2) Exertional Rhabdomyolysis

- Define exertional Rhabdomyolysis and discuss the pathophysiology
- List the risk factors for developing Rhabdomyolysis
- Differentiate between mild and fulminant Rhabdomyolysis and describe the treatment of each
- Describe the management and treatment of isolated muscle group injury
- Delineate the “return to play” guidelines for the athlete with rhabdomyolysis

f) Dermatological

1) Mechanical Injury

- Identify the following conditions on a stimulus bank.
- Describe the pathophysiology and treatment
  - Skin abrasions
  - Acne Mechanica
  - Black Heel/toenail
  - Blisters/Corns
  - Ingrown toenail-Demonstrate the proper technique for excision of an ingrown toenail
  - Jogger’s nipples
  - Contact Dermatitis

2) Infectious Dermatological Conditions

- Identify the following conditions in a stimulus bank.
- Discuss the pathophysiology and treatment.
- Describe the return to play criteria of the following conditions:
  - Furunculosis
  - Impetigo
  - Verrucae Vulgaris
  - Molluscum Contagiosum
  - Herpes Gladiatorum
  - Tinea Corporus/cruris/pedis/capitus/versicolor

g) EENT

1) Facial and Dental Trauma

- Demonstrate a sideline physical exam for an athlete presenting facial or dental trauma.
- Demonstrate an ED based exam for an athlete presenting with facial or dental trauma.
- List the indication for referral to subspecialists for athletes with facial or dental swelling

## 2) Ocular Trauma

- Demonstrate a proper sideline exam for an athlete presenting with eye trauma.
- Demonstrate a through eye exam for an athlete presenting to the ED with eye trauma. List the indications for subspecialty referral for an athlete with eye trauma
- Describe the diagnosis and treatment as well as return to play guidelines for the following EYE complaints. Identify on a stimulus bank.
  - Eyelid Laceration
  - Corneal Abrasion/laceration
  - Subconjunctival hemorrhage
  - Hyphema
  - Traumatic Iritis
  - Globe rupture
  - Orbital Wall fracture

**Section 5**  
**Use of exercise in the care of chronic medical problems (mini-fellows/EM/IM residents)**

- a) Diabetic Athlete
  - 1) Compare the endocrine response to exercise with that of the normoglycemic athlete
  - 2) List the cardiovascular and endocrine risks and benefits of regular exercise of the diabetic patient
  - 3) Delineate the components of the pre-participation physical exam (mini-fellows)
  - 4) State the guidelines for glycemic control before, during, and post exercise (mini-fellows)
  
- b) Coronary Artery Disease
  - 1) List the benefits of regular exercise
  - 2) Describe risk stratification prior to return to exercise using recommendations of the 36<sup>th</sup> Bethesda Conference
  - 3) List recommendations for starting an exercise program and elucidate how to set the upper limits of exercise intensity
  
- c) Hypertension
  - 1) List the benefits of regular exercise
  - 2) Perform a thorough physical exam and diagnostic workup to diagnose secondary causes of hypertension and diagnose end organ damage
  - 3) Recommend pharmacologic and non-pharmacologic treatment
  - 4) List the side effects of pharmacologic therapy on exercise
  
- d) Arrhythmias
  - 1) Describe the symptoms of arrhythmia in athletes
  - 2) Describe the pre-participation evaluation of an athlete in regards to detection of arrhythmias
  - 3) List the recommendations for common arrhythmias seen in athletes according to the 36<sup>th</sup> Bethesda Conference
  - 4) Delineate the indications for referral to a cardiologist
  
- e) Sudden Death
  - 1) List the most common causes of sudden in both an athlete above or below the age of 35.
  - 2) Describe the overall risk of sudden death during sports
  - 3) Perform a screening exam for sudden death by eliciting key components of the history and physical for Athletic Heart Syndrome, Marfan's syndrome, and hypertrophic cardiomyopathy
  - 4) List the guidelines on restriction of exercise



- 5) Given the athlete that presents with syncope, provide a differential diagnosis and demonstrate an appropriate work-up

**Section 6**  
**Prevention, evaluation, management of injuries**

a) Head/Maxillofacial

- 1) Demonstrate an accurate history and perform a thorough physical exam for an athlete presenting with head or maxillofacial trauma
- 2) Describe the pathophysiology of head and maxillofacial injuries
- 3) Order and interpret the appropriate imaging studies for the evaluation of head and maxillofacial injuries
- 4) Describe the treatment options
- 5) List the indications for referral to a subspecialist
- 6) List different concussion grading scales and discuss the utility and validity of these scales
- 7) Delineate the risks of concussion
- 8) Demonstrate the current “return to play” guidelines for athletes according to the Zurich convention

b) Spine

- 1) Demonstrate an accurate history and perform a thorough physical exam for an athlete presenting with spinal injuries
- 2) Describe the pathophysiology of spinal injuries
- 3) Order and interpret the appropriate imaging studies for the evaluation of spinal injuries
- 4) Describe the treatment options
- 5) List the indications for referral to a subspecialist
- 6) Describe the pathophysiology, diagnosis, and treatment of the following conditions:
  - Cauda equina syndrome
  - Cervical radiculopathy
  - Cervical Spondylosis
  - Fracture (cervical, thoracic, lumbar)
  - Low back sprain
  - Degenerative disc disease
  - Herniated disc

c) Shoulder

- 1) Demonstrate an accurate history and perform a thorough physical exam for an athlete presenting with a shoulder injury
- 2) Describe the pathophysiology of shoulder injuries
- 3) Order and interpret the appropriate imaging studies for the evaluation of shoulder injuries
- 4) Describe the treatment options
- 5) List the indications for referral to a subspecialist
- 6) Describe the pathophysiology, diagnosis, and treatment of the following conditions:
  - Rotator cuff injury (acute and chronic)

- Impingement syndrome
- Shoulder instability
- Clavicle/acromioclavicular/sternoclavicular injury
- Brachial Plexus Injury
- Dislocation (also case-based format)

d) Elbow and Forearm

- 1) Demonstrate an accurate history and perform a thorough physical exam for an athlete presenting with an elbow or forearm injury
- 2) Describe the pathophysiology of elbow and forearm injuries
- 3) Order and interpret the appropriate imaging studies for the evaluation of elbow injuries
- 4) Describe the treatment options
- 5) List the indications for referral to a subspecialist
- 6) Describe the pathophysiology, diagnosis, and treatment of the following conditions:
  - Epicondylitis (medial/lateral)
  - Osteochondritis Dissecans
  - Panner's disease
  - Apophysitis
  - Instability (acute/chronic)
  - Distal humerus fracture
  - Radial head fracture
  - Ulnar/radial head fracture
  - Ulnar/radial nerve injury
  - Olecranon bursitis

e) Wrist and Hand

- 1) Demonstrate an accurate history and perform a thorough physical exam for an athlete presenting with wrist or hand injuries
- 2) Describe the pathophysiology of wrist/hand injuries
- 3) Order and interpret the appropriate imaging studies for the evaluation of wrist or hand injuries
- 4) Describe the treatment options
- 5) List the indications for referral to a subspecialist
- 6) Describe the pathophysiology, diagnosis, and treatment of the following conditions:
  - Carpal bone fracture/dislocation
  - Carpal ligamentous injury
  - Overuse Injury
  - Kienbock disease
  - Metacarpal fracture
  - Phalanx fracture
  - MCP/DIP/PIP/fingertip injury

- Ulnar nerve injury

f) Hip/Thigh

- 1) Demonstrate an accurate history and perform a thorough physical exam for an athlete presenting with a hip injury
- 2) Describe the pathophysiology of hip injuries
- 3) Order and interpret the appropriate imaging studies for the evaluation of hip injuries
- 4) Describe the treatment options
- 5) List the indications for referral to a subspecialist
- 6) Describe the pathophysiology, diagnosis, and treatment of the following conditions:
  - Contusion (hip, quadriceps)
  - Adductor injury
  - Osteitis pubis
  - Dislocation
  - Avascular Necrosis (AVN)
  - Fracture (stress, avulsion)
  - Hamstring Injury
  - Piriformis syndrome
  - Bursitis (iliopsoas, trochanter)
  - Tendinosis/"snapping hip"

g) Knee and Lower Leg

- 1) Demonstrate an accurate history and perform a thorough physical exam for an athlete presenting with a knee or lower leg injury
- 2) Describe the pathophysiology of knee and lower leg injuries
- 3) Order and interpret the appropriate imaging studies for the evaluation of knee or lower leg injuries
- 4) Describe the treatment options
- 5) List the indications for referral to a subspecialist
- 6) Describe the pathophysiology, diagnosis, and treatment of the following conditions:
  - Ligamentous injury (ACL, PCL, MCL, LCL)
  - Tendon/Connective Tissue Injury (Patella, Quadriceps, Pes Anserine, Iliotibial Band)
  - Fracture/Bone bruise
  - Meniscal Injury
  - OCD
  - Anterior knee pain/instability
  - Dislocation (patella, knee)
  - Stress fracture
  - Medial Tibial Stress Syndrome (MTSS)/"shin splints"
  - Exertional Compartment syndrome
  - Acute strain

h) Foot and Ankle

- 1) Demonstrate an accurate history and perform a thorough physical exam for an athlete presenting with a foot or ankle injury
- 2) Describe the pathophysiology of foot or ankle injuries
- 3) Order and interpret the appropriate imaging studies for the evaluation of foot or ankle injuries
- 4) Describe the treatment options
- 5) List the indications for referral to a subspecialist
- 6) Describe the pathophysiology, diagnosis, and treatment of the following conditions:
  - Achilles tendon injury (acute/chronic)
  - Ankle instability
  - Ligamentous injury (acute/chronic)
  - Tendon injury
  - Fracture (malleolar/Talar)
  - Foot Stress fractures
  - Lisfranc Joint injury
  - Metatarsalgia
  - Morton's Neuroma
  - Freiberg's infarction
  - Turf Toe
  - Bunions
  - Plantar Fasciitis

**Section 7**  
**Principles of Rehabilitation (mini-fellows)**

a) Physical Modalities

1) Describe the appropriate indications, list the pathophysiology, and demonstrate the proper applications of the following modalities for treatment of an injured athlete:

- Heat
- Cold
- Ultrasound
- Electrotherapy

b) Bracing and Taping

1) List the indications for taping and bracing  
2) Describe the role of bracing in injury prevention  
3) Describe the mechanism of action of taping and bracing for the treatment of injury

4) Demonstrate the proper technique for taping and bracing the following body areas (presented via procedure lab):

- Shoulder
- Elbow
- Wrist
- Finger
- Hip
- Thigh
- Knee
- Lower leg
- Ankle
- Foot/Toe

**Section 8**  
**Performance Enhancing Drugs (mini-fellows)**

- a) Definitions
- 1) Define the terms according the World Anti-Doping Association
    - Performance Enhancing Drugs
    - Ergogenic Aids
    - Doping
- b) History and Epidemiology
- 1) Discuss the history of the use of performance enhancement drugs
  - 2) Describe the scope of the problem of Performance enhancing drugs both in professional sports and the lay public
- c) Pathophysiology
- 1) Discuss the mechanism of actions and pathophysiology of the following ergogenic aids and performance enhancing drugs
    - Stimulants
    - Androgens
    - Erythropoietin/Micera
    - Doping
    - Human Growth Hormone
- d) Testing
- 1) Describe different techniques for detecting the presence of performance enhancing drugs
  - 2) Define the term “therapeutic use exemption” and describe the WADA prohibited substances list

## **Section 9**

### **Analgesics and Injections**

#### a) Analgesics and antiinflammatories

- 1) Describe the mechanism of actions of Non-steroidal Inflammatory Drugs (NSAIDs) and corticosteroids for the treatment of athletic injuries
- 2) Discuss the side effects of anti-inflammatory agents and steroids
- 3) List mechanisms by which the athlete can limit the complications of NSAIDs and steroids

#### b) Injections (mini-fellows)

- 1) List the indications for steroid injections in an injured athlete
- 2) List the contraindications for steroid injections and delineate the risks and complications of injections
- 3) Describe the general process of providing injections. Include:
  - Required equipment
  - Choice on analgesia/corticosteroid
  - Basic technique
  - Post-procedure follow-up
- 4) **List the indications and demonstrate the proper technique of injections body areas or conditions. (during procedure lab):**
  - Glenohumeral Joint
  - Subacromial space
  - Lateral epicondyle
  - DeQuervain's tenosynovitis
  - Carpal Tunnel
  - Trigger Finger
  - Trochanteric Bursitis
  - Knee
  - Iliotibial Band
  - Pes Anserine
  - Ankle Joint
  - Planter Fascia
  - Myofascial Trigger Points



**Section 10**  
**Ethical and Medical Legal Issues in Sports (mini-fellows)**

a) Ethical Principles

1) Define the following ethical principles that guide team physicians:

- Beneficence
- Non-maleficence
- Autonomy
- Confidentiality
- Banned Substances
- Divided Loyalties

b) Medicolegal

- 1) Describe the Legal duties of the team physician and the athlete
- 2) Identify common legal issues the athlete may encounter when negotiating contracts
- 3) Discuss how Good Samaritan Laws affect the practice of a team physician
- 4) Describe good practices that decrease malpractice risk for the team physician

## Section 11

### Environmental Effects of Exercise

#### a) Cold injury

- 1) Define hypothermia, frostbite, pernio, and trench foot and discuss the pathophysiology
- 2) Discuss the epidemiology of frost bite and hypothermia in an athlete training in cool/cold environments
- 3) Describe the physical presentation of an athlete presenting with hypothermia/frost bite
- 4) Identify trench foot, frost bite, pernio and Osborne waves on a stimulus bank.
- 5) Describe the diagnosis and treatment of hypothermia and frost bite, trench foot and pernio.
- 6) List mechanisms for prevention of hypothermia and frost bite

#### b) Heat Injury

- 1) Differentiate between the terms: heat injury, heat cramps, heat exhaustion, and heat stroke
- 2) Describe the epidemiology and pathophysiology of heat injury for the athlete training in warm/hot environments
- 3) Describe the presentation of an athlete presenting with heat injuries and how the presentation differs between heat cramps, exhaustion, and stroke
- 4) Describe the treatment of an athlete presenting with heat injury
- 5) List mechanisms for the prevention of heat injury

#### c) Altitude

- 1) Describe what constitutes “high altitude”
- 2) Describe the physiologic changes that occur to the human body while training at high altitude
- 3) Define acute mountain sickness, high altitude pulmonary edema, high altitude cerebral edema
- 4) List types of prophylaxis for AMS and discuss the indications
- 5) Describe the treatment of all forms of mountain sickness, both on scene and in the emergency department

#### d) Dive Medicine

- 1) Define dysbarism in an athlete who is SCUBA diving
- 2) Describe the pathophysiology of dysbarism
- 3) Describe the treatment of an athlete with dysbarism both at the scene and in the emergency department

## Evaluation Plan

The material discussed within this instructional module is diverse. Therefore, the evaluation tools used to evaluate learner achievement cover a wide range of techniques. The evaluation techniques for each individual module are as follows:

### Anatomy and Physiology-Section 1

- Written Examination with open-ended questions

### Nutrition and Athletics-Section 2

- Written Examination with open-ended questions

### Sports in Special Populations-Section 3

- Written Examination with open-ended questions
- Written Examination using case-based scenarios
- The resident will develop a model exercise prescription plan for each special population.

### Specific Systems and their Effect on Exercise-Section 4

- Written Examination with open-ended questions
- Written Examination using stimulus images of sports related physical exam findings

### Use of Exercise in the care of chronic medical problems-Section 5

- Written Examination with open-ended questions
- Written Examination using case-based scenarios
- Written Examination using EKG images to diagnose the most common arrhythmias seen in sports

### Prevention, evaluation, management of injuries-Section 6

- Written Examination with open-ended questions
- Written Examination using case-based scenarios
- Written Examination using stimulus images and x-ray images of sports related physical exam findings
- The resident will demonstrate proper splinting and casting technique during the skills labs after Wednesday conference

### Principles of Rehabilitation-Section 7

- The resident will demonstrate proper taping and bracing technique during the skills labs after Wednesday conference.

### Performance Enhancing Drugs-Section 8

- Written Examination with open-ended and multiple choice questions

Analgesics and Injections-Section 9

- Using the simulator, “blue phantom” models, and cadaver lab, the resident will demonstrate proper joint injection technique

Ethical and Medical Legal issues in Sports-Section 10

- Written Examination with open-ended questions

Environmental Effects of Exercise-Section 11

- Written Examination with open-ended questions



## Conference Presentation Evaluation

**Lecturer:**

**Topic:**

**Date:**

Your input is appreciated. The goal of this lecture was that the information be accurate, relevant, interesting and presented in a manner that maintains your attention. In an ongoing effort to improve resident education as well as performance, please take a few minutes to answer these questions. Be honest. This feedback is anonymous and seen only by the individual resident. Thanks for your help.

Was the **TOPIC** ...

- |   |     |    |
|---|-----|----|
| (1) Of interest to you? .....                       | Yes | No |
| (2) Relevant to Emergency Medicine training? .....  | Yes | No |
| (3) Offering more than a textbook? .....            | Yes | No |
| (4) Providing current information? .....            | Yes | No |
| (5) Appropriate for your level of experience? ..... | Yes | No |

Please circle: PGY 1 2 3 4 5 Attending Student PA

If you answered no, please circle: Too Basic Too Advanced

Did the **PRESENTER** ...

- |   |     |    |
|---|-----|----|
| (1) Speak clearly and loudly? .....       | Yes | No |
| (2) Make good eye contact? .....          | Yes | No |
| (3) Hold your interest? .....             | Yes | No |
| (4) Answer questions knowledgeably? ..... | Yes | No |

**OVERALL:** Needs work Good Above Average Outstanding

Were the **SLIDES** ...

- |   |     |    |
|---|-----|----|
| (1) Easy to read? .....                           | Yes | No |
| (2) Offering new information? .....               | Yes | No |
| (3) Using an appropriate amount of text? .....    | Yes | No |
| (4) Visually interesting? .....                   | Yes | No |
| (5) More than just the speaker's narrative? ..... | Yes | No |

**OVERALL:** Needs work Good Above Average Outstanding

Did the **PRESENTATION** ...

- |  |     |    |     |
|--|-----|----|-----|
| (1) Reinforce the way you currently practice? .....                | Yes | No |     |
| (2) Cause you to consider a different approach or treatment? ..... | Yes | No |     |
| (3) Provide interesting radiology, EKGs, photos? .....             | Yes | No | N/A |

**OVERALL:** Needs work Good Above Average Outstanding

Were current EBM studies presented? .....

Were the studies good or well known? .....

Were they clearly presented? .....

Did it add anything to the presentation? .....

Would you like this topic included in next year's curriculum? .....

Would you have benefited more from a "more senior" presenter? .....

Please feel free to offer any constructive **comments** or kind words.









