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Introduction

The information contained within this Instructor’s Manual is intended to help instructors organize and deliver the didactic and laboratory content presented in Clinical Pathology for Athletic Trainers: Recognizing Systemic Disease, Third Edition. This manual (and the textbook) is organized assuming an entire course is dedicated to the prevention, diagnosis, and management of common systemic illnesses and non-orthopedic injuries, as well as the therapeutic medications used to treat these conditions.

This Instructor’s Manual is organized by chapter and includes the following components:
- Organizational content outline with chapter learning objectives
- List of the knowledge and skills that are addressed from the 5th edition of the Athletic Training Education Competencies
- Chapter overview
- Summary of power point modules
- Summary of case studies
- List of lab exercises

Power Point Modules

The content within each chapter is divided into multiple power point modules that provide students with focused, manageable “chunks” of information. These modules can be presented in class in a traditional lecture environment or assigned for students to review outside of class using a “flipped classroom” model for teaching and learning. This latter approach provides a more student-centered environment and frees up class time for active engagement in the discussion of actual patient cases or the completion of assignments and/or projects in small groups. Each chapter within this Instructor’s Manual provides a summary of the different power point modules and the student learning outcomes for each. In most cases, the power point modules include the same figures, tables and clinical algorithms as the textbook.

Case Studies

Most chapters include a case study that requires students to apply information from the chapter to real-world patient scenarios. These case studies can be used to stimulate class discussion at the beginning or end of class or be assigned for students to complete outside of class. Students can also be assigned the task of developing additional case studies for discussion in class.

Lab Exercises

The accompanying lab manual includes 23 lab exercises designed to teach students the clinical assessment skills related to systemic illness and non-orthopedic injuries. Each lab exercise introduces one or more assessment skill(s), provides step-by-step instructions, and requires students to practice the skill(s) on their peers. Most of the lab exercises include application questions designed to help students apply the assessment skill(s) to real patient care. Also, a few of the labs incorporate an experiential model of discovery, enabling students to explore factors that might influence their assessment findings. For example, Lab Exercise 10-1 assessing Blood Glucose provides students the opportunity to see the
direct effects of fasting and exercise on blood glucose levels, as well as to explore the ability of certain substances or beverages to raise blood glucose values.

References

Chapter 1

Principles of Clinical Pathology and Decision Making

**Competencies**

This chapter addresses the following knowledge and skills from the National Athletic Trainers’ Association’s *Athletic Training Education Competencies, 5th ed.*\(^1\):

<table>
<thead>
<tr>
<th>Content Area</th>
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<td>Evidence-Based Practice (EBP)</td>
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<td>Prevention and Health Promotion (PHP)</td>
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<td>Clinical Examination and Diagnosis (CE)</td>
<td>13, 16, 17, 18, 20a</td>
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<td>Acute Care of Injury and Illness (AC)</td>
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<td>Healthcare Administration (HA)</td>
<td>22, 23</td>
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<tr>
<td>Clinical Integration Proficiencies (CIP)</td>
<td>5, 6</td>
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</tbody>
</table>

**Chapter Outline and Objectives**

**Introduction**
- Define terminology used to discuss pathology.
  - Pathology in Sports Medicine
  - Signs and Symptoms
  - Diagnosis
- Review the theoretical and scientific bases of clinical pathology.
  - Theories of Disease and Pathogenesis
- Discuss the role of the athletic trainer with respect to identifying general medical pathology.
  - Role of Athletic Trainers in Disease Prevention

**Diagnostic Reasoning and Clinical Decision Making**
- Explain the role of clinical reasoning in the clinical decision-making process.
Medical History
◊ Introduce questions included in a medical history relevant to general medical pathology.

Symptoms
◊ Review the behavior and characteristics of symptoms relevant to general medical pathology.

Physical Examination Techniques
◊ Introduce methods of physical examination relevant to general medical pathology.

Differentiation of Signs and Symptoms

Medical Emergency
◊ Identify signs and symptoms of medical emergencies and explain the associated referral and transport decisions.

Evaluating Seriousness of Condition
◊ Discuss signs and symptoms of systemic pathology that are similar to musculoskeletal pathology.
◊ Describe the process of developing differential diagnoses for pathology involved with each of the major body systems.

Summary

CHAPTER OVERVIEW

Chapter 1 provides an introduction to the role of clinical reasoning and clinical decision-making in patient care, particularly as they relate to the non-orthopedic illnesses and injuries that athletic trainers may encounter during their clinical practice. The clinical presentation of systemic illness is contrasted with that of the typical orthopedic injury. Also, the physical assessment procedures commonly used in the evaluation of systemic conditions are discussed. The Chapter 1 content is divided into two power point modules, each of which is summarized below.

POWER POINT MODULES

Module I: Intro to Clinical Pathology and Decision Making
(33 slides)

Summary
The Module I power point discusses the importance of clinical reasoning and clinical decision making when evaluating and treating a patient. The process of obtaining an individual’s medical history related to a systemic illness is contrasted with the process used when evaluating an orthopedic injury, particularly the role of personal health and family health history. Examples of general systemic signs and symptoms are presented along with the common conditions associated with them. Also, the special tests/tools used to evaluate systemic illnesses are introduced (ie, otoscope, urinalysis, glucometer).
Student Learning Outcomes

After completing this module, students should be able to:
◊ define terminology used to discuss pathology
◊ explain the role of clinical reasoning in the clinical decision-making process
◊ introduce questions included in a medical history relevant to general medical pathology
◊ review the behavior and characteristics of symptoms relevant to general medical pathology
◊ introduce methods of physical examination relevant to general medical pathology

Module II: Differentiating Signs and Symptoms (35 slides)

Summary

The Module II power point discusses the role of triage in evaluating systemic illnesses and injuries and the role red flags play in this process. General and system-specific red flags are also discussed. System-specific signs and symptoms are reviewed along with confounding symptoms that might be confused with common orthopedic injuries.

Student Learning Outcomes

After completing this module, students should be able to:
◊ explain the role of triage in the assessment of non-orthopedic injuries and systemic illnesses
◊ explain the role of red flags in the assessment of non-orthopedic injuries and systemic illnesses
◊ identify general & system-specific red flags
◊ differentiate high, normal and low values for vital signs
◊ discuss signs and symptoms of systemic pathology that are similar to musculoskeletal pathology

Lab Exercise

Lab Exercise 1-1: History Taking (see Lab Manual)

This lab exercise includes three case studies that give students the opportunity to practice their history taking skills relative to possible systemic illnesses and disorders. This lab activity can be completed in class with students working in small groups or be assigned for outside of class completion. If completing in class using groups, time can be allotted for group presentations at the end of class.
Chapter 2

Pathophysiology

Competencies

This chapter addresses the following knowledge and skills from the National Athletic Trainers' Association’s *Athletic Training Education Competencies, 5th ed.*

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<thead>
<tr>
<th>Content Area</th>
<th>Competency #</th>
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<td>Clinical Examination and Diagnosis (CE)</td>
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<tr>
<td>Therapeutic Interventions (TI)</td>
<td>1, 5</td>
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Chapter Outline and Objectives

Introduction

◊ Explain the concept of homeostasis.
  * Homeostasis
  * Pathophysiology
◊ Describe cellular components and their functions.
◊ Describe cellular adaptations to disease.
  * The Cell
  * Tissue Healing
◊ Discuss the inflammatory process.
  * Inflammation
  * Infection

Cellular Physiology and Pathophysiology: Response to Cell Damage

◊ Explain tissue responses to disease.
◊ Review pathophysiology by tissue type.
  * Bone
  * Connective Tissue, Epithelium, and Endothelium
Chapter 2

- Muscle and Nerve
- Specialized Cells and Tissues

Summary

CHAPTER OVERVIEW

This chapter provides a general review of physiology, the role of homeostasis in maintaining normal functioning, and the common adaptations that occur in response to injury or illness. Depending on the strength of your institution’s anatomy and physiology courses and/or your students’ level of knowledge and understanding of normal systemic anatomy and physiology, the content within this chapter can be addressed through outside of class assignments (ie, reading chapter, reviewing power point, completing chapter quiz), in class lectures or discussions, or skipped entirely. The content in Chapter 2 is divided into two power point modules which are described below.

POWER POINT MODULES

Module I: Introduction to Pathophysiology (13 slides)

Summary

The Module I power point discusses the role of triage in evaluating systemic illnesses and injuries and the role red flags play in this process. General and system-specific red flags are also discussed. System-specific signs and symptoms are reviewed along with confounding symptoms that might be confused with common orthopedic injuries.

Student Learning Outcomes

After completing this module, students should be able to:
◊ explain the concept of homeostasis
◊ explain the cellular adaptations to disease
◊ explain the signs & symptoms associated with the acute inflammatory process
◊ explain the tissue response to injury or disease

Module II: Cellular Response to Injury (31 slides)

Summary

The Module II power point reviews the normal physiology, pathophysiology and cellular response to injury of bone, connective tissue, muscle and nerve.

Student Learning Outcomes

After completing this module, students should be able to:
◊ explain the common pathophysiology & healing of the following tissue types:
  ◦ bone
  ◦ connective tissue
  ◦ muscle
  ◦ nerve
  ◦ specialized (GI, renal, hepatic, etc.)
Lab Exercises

There are no lab exercises for Chapter 2.
Chapter 3

Pharmacology

Competencies

This chapter addresses the following knowledge and skills from the *Athletic Training Education Competencies, 5th ed.*

<table>
<thead>
<tr>
<th>Content Area</th>
<th>Knowledge and Skills</th>
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<td>Prevention and Health Promotion (PHP)</td>
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<tr>
<td>Therapeutic Interventions (TI)</td>
<td>21-31</td>
</tr>
<tr>
<td>Acute Care of Injuries and Illnesses (AC)</td>
<td>31-33</td>
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</tbody>
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Chapter Outline and Objectives

Introduction

Regulation of Therapeutic Medications

◊ Describe the federal laws and regulations related to the storage and management of medications in an athletic training facility.
  - Legislative Acts
  - Food and Drug Administration
  - Drug Enforcement Agency

Management of Medications

◊ Describe the laws, regulations, and recommended procedures related to the management of medications in an athletic training facility.
  - Storage and Packaging
  - Dispensing vs Administering
  - Documentation and Inventory Control
  - Expired Medications
Nomenclature
◊ Use appropriate terminology as it relates to the use, management, and storage of medications in an athletic training facility.

Classification of Drugs
◊ Describe the classifications of drugs.
  - Over the Counter
  - Prescription
  - Controlled Substances

Routes of Administration and Dosage Forms
◊ Describe the common routes of drug administration and dosage forms along with the advantages and disadvantages of each.
  - Oral
  - Injection
  - Inhalation
  - Topical
  - Sublingual and Buccal
  - Rectal

Pharmacokinetics
◊ Explain the processes of pharmacokinetics and the effect of exercise on these processes.
  - Absorption
  - Distribution
  - Metabolism
  - Elimination

Pharmacodynamics
◊ Explain the concepts of bioavailability, half-life, bioequivalence, site of action, onset, and duration of action.
◊ Explain the receptor theory of drug action, dose-response relationship, placebo effect, potency, and drug interactions.
◊ Explain the principles of drug dosing
◊ Describe the types of drug interactions and adverse reactions

Therapeutic Medications
◊ Describe the indications, routes of administration, dosage patterns, physiological effects, and side effects associated with common therapeutic medications.
  - Medications for Treating Inflammation
    - Nonsteroidal anti-inflammatory drugs
    - Corticosteroids
  - Medications for Treating Pain
    - Analgesics
    - Acetaminophen (Tylenol)
• Opioids (Narcotics)
• Medications for Treating Infections
  • Antibiotics
  • Antifungals
  • Antivirals
• Medications for Treating Colds and Allergies
  • Antihistamines
  • Decongestants
  • Antitussives
  • Expectorants
  • Multi-Symptom Medications
• Medications for Treating Asthma
  • Corticosteroids
  • Antileukotrienes
  • Mast Cell Stabilizers
  • Methylxanthines
  • Bronchodilators (short-acting $\beta_2$ agonists and long-acting $\beta_2$ agonists)
• Medications for Treating Gastrointestinal Disorders
  • Antiemetics
  • Antidiarrheals
  • Laxatives
  • Antacids
  • Proton Pump Inhibitors
  • H$_2$ Blockers

Nutritional Supplements and Performance-Enhancing Drugs
◊ Describe the routes of administration, dosage patterns, physiological effects, and side effects associated with select nutritional supplements and performance-enhancing drugs.
  • Creatine
  • Dehydroxyepiandrosterone and Androstenodione
  • Androgenic-Anabolic Steroids
  • Human Growth Hormone
  • Erythropoietin
◊ Identify supplements and drugs that might be banned by sport or workplace regulations.

Herbal Supplements
◊ Describe the intended uses, side effects, and potential drug interactions associated with select herbal supplements.

Drug Resources
◊ Use drug resources to access information related to the indications, physiological effects, dosing, and potential side effects associated with common medications.

Summary
CHAPTER OVERVIEW

This chapter includes the latest evidence and recommendations presented in the following NATA Position Statements and Consensus Statements:
◊ Anabolic-Androgenic Steroids (http://www.nata.org/sites/default/files/position-statement-steroids.pdf)
◊ Managing Prescriptions and Non-Prescription Medication in the Athletic Training Facility (http://www.nata.org/sites/default/files/ManagingMedication.pdf)

The content within Chapter 3 is broken down into 11 power point modules. The first four modules focus on the regulation of medications, as well as general concepts related to pharmacology. The remaining seven modules address specific categories of therapeutic medications and their use in treating musculoskeletal injuries and systemic illnesses. Instructors may choose to use some of these power points later in the course when they are covering specific systemic chapters (i.e., use Module X Medications for Treating GI Conditions when covering Chapter 8 GI System). Each of the power point modules is summarized below.

POWER POINT MODULES

Module I: Regulation and Management of Therapeutic Medications (23 slides)

Summary
This module addresses the legal aspects related to the storage and use of over-the-counter (OTC) and prescription (Rx) medications in an athletic training facility. Instructors should also include information related to the athletic training practice acts and state statutes that govern the use of therapeutic medications in their specific state. Athletic training students should become familiar with the policies and procedures related to the storage and use of therapeutic medications at each of their clinical sites. The obtainment of this information could be made part of an out of class assignment.

Student Learning Outcomes
After completing this module, students should be able to:
◊ describe the roles of the FDA and DEA in regulating therapeutic medications
◊ explain the procedures required for gaining FDA approval for a new therapeutic drug
◊ explain the procedures associated with the management of medications
  - written log
  - storage & packaging
  - dispensing vs. administering
  - documentation & inventory control
  - expired meds

Module II: Foundational Concepts of Pharmacology (25 slides)

Summary
This module provides students with an introduction to the terminology used when documenting the use of therapeutic medications in the athletic training facility. The various routes for administering therapeutic medications are also discussed.
Student Learning Outcomes

After completing this module, students should be able to:
◊ identify and use appropriate pharmaceutical terminology for
  ◯ the management of medications
  ◯ inventory control
  ◯ reporting of pharmacological agents commonly used in an athletic training facility
◊ explain the classifications of drugs
◊ describe the common routes used to administer medications and the advantages and disadvantages associated with each route

Module III: Pharmacokinetics (33 slides)

Summary

Students are introduced to the four phases of pharmacokinetics (ADME) and how these phases influence the therapeutic effectiveness of medications. Also, the effect of exercise on each of these phases is discussed.

Student Learning Outcomes

After completing this module, students should be able to:
◊ explain the four phases of pharmacokinetics
◊ explain the influence that exercise might have on the processes within each phase

Module IV: Pharmacodynamics (16 slides)

Summary

This module discusses the principles and theories related to how medications produce a therapeutic result.

Student Learning Outcomes

After completing this module, you should be able to:
◊ explain the pharmacodynamic principles as they relate to the mechanism of drug action and therapeutic effectiveness
  ◯ receptor theory
  ◯ dose-response relationship
  ◯ placebo effect
  ◯ potency
  ◯ drug interactions

Module V: Medications for Treating Inflammation (49 slides)

Summary

This module introduces the cyclooxygenase and lypoxygenase pathways and the role of prostaglandins and leukotrienes in the inflammatory processes. The physiological effects produced by NSAIDs and corticosteroids, as well as the indications for their use, potential side effects, and typical dosing patterns are discussed. The role of corticosteroids for treating the chronic inflammation associated with asthma is further discussed in Chapter 7.
Student Learning Outcomes
After completing this module, you should be able to:
◊ explain the role of prostaglandins
◊ explain the difference COX-1 and COX-2 pathways
◊ explain the difference between non-selective NSAIDs and COX-2 NSAIDs
◊ describe the following as they relate to NSAIDs
  - indications
  - routes of administration
  - dosage patterns
  - physiological effects
  - side effects
◊ describe the following as they relate to corticosteroids
  - indications
  - routes of administration
  - dosage patterns
  - physiological effects
  - side effects

Module VI: Medications for Treating Pain (15 slides)
Summary
This module discusses the common OTC (analgesics) and Rx (opioids/narcotics) medications used to treat pain.

Student Learning Outcomes
After completing this module, students should be able to:
◊ describe the routes of administration, dosage patterns, physiological effects and side effects associated with the following therapeutic medications
  - analgesics
  - opioids (narcotics)

Module VII: Medications for Treating Infections (25 slides)
Summary
This module discusses the use of antibiotics, antivirals and antifungals in the treatment of infections.

Student Learning Outcomes
After completing this module, students should be able to:
◊ explain the role of antibiotics, antifungals, and antivirals in treating infections
◊ explain the pharmacokinetics and pharmacodynamics of antibiotics, antifungals, and antivirals
◊ explain the causes of antibiotic resistance
◊ explain the general therapeutic strategies for antibiotics, antifungals, and antivirals in treating infections
Module VIII: Medications for Treating Allergies and Colds
(27 slides)

Summary
This module discusses the different types of medications that are commonly used to treat the symptoms associated with allergic rhinitis and the common cold.

Student Learning Outcomes
After completing this module, students should be able to:
◊ explain the indications, routes of administration, typical dosing patterns, and potential side effects for:
  ◯ antihistamines
  ◯ decongestants
  ◯ antitussives
  ◯ expectorants
  ◯ multi-symptoms medications

Module IX: Medications for Treating Asthma (20 slides)

Summary
This module discusses the common medications used to control the underlying inflammation associated with asthma, as well those drugs used to treat acute asthma attacks.

Student Learning Outcomes
After completing this module, students should be able to:
◊ explain the indications, routes of administration, typical dosing patterns, and potential side effects for the following asthma medications:
  ◯ anti-inflammatories
  ◯ bronchodilators

Module X: Medications for Treating Gastrointestinal Disorders
(25 slides)

Summary
This module discusses the medications commonly used to treat the symptoms of nausea, vomiting, diarrhea and dyspepsia. These medications are further discussed in Chapter 8 for the treatment of common GI disorders such as gastroesophageal reflux disease (GERD), Crohn’s disease, ulcerative colitis, inflammatory bowel syndrome, gastric ulcers, and gastroenteritis.

Student Learning Outcomes
After completing this module, students should be able to:
◊ explain the indications, routes of administration, typical dosing patterns, and potential side effects for:
  ◯ antiemetics
  ◯ antidiarrheals
  ◯ antacids
  ◯ laxatives
  ◯ proton pump inhibitors

Module XI: Dietary Supplements and Performance Enhancing Drugs (64 slides)

Summary

Given the sheer number of supplements and PEDs that are currently used by athletes and other individuals, it is impossible to completely address all such substances in a single chapter. This module discusses a few of the more commonly used substances including creatine, androstenodione, anabolic steroids, human growth hormone, and erythropoietin.

Student Learning Outcomes

After completing this module, students should be able to:
◊ describe the routes of administration, dosage patterns, physiological effects and side effects associated with the following therapeutic medications
* dietary supplements
* performance enhancement

Case Study

The case study in Chapter 3 provides students the opportunity to deal with an athlete who they suspect may be using anabolic steroids. The application questions ask them to explain how situation would be addressed by the policies and procedures of their current institution (either their university or their specific clinical education site, if different). This case can be completed in class as an active learning activity or assigned for outside homework.

Lab Exercise

Lab Exercise 3-1: Use of Pharmacology Resources (See Lab Manual)

This lab activity provides students the opportunity to use online drug resources to obtain information about specific medications. The lab activity includes a listing of drugs from several different categories of therapeutic medications. If preferred, instructors can provide students with their own list of medications. The lab can be conducted as a stand-alone lab class or the activity can be spread across multiple class meetings, with students accessing drug information for the medications discussed in class that day.
Chapter 4

Immune System

Competencies

This chapter addresses the following knowledge and skills from the Athletic Training Education Competencies, 5th ed.:

<table>
<thead>
<tr>
<th>Content Area</th>
<th>Knowledge and Skills</th>
</tr>
</thead>
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<tr>
<td>Prevention and Health Promotion (PHP)</td>
<td>17g</td>
</tr>
<tr>
<td>Clinical Examination and Diagnosis (CE)</td>
<td>1-3, 20j, 21p, 22</td>
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<tr>
<td>Acute Care of Injuries and Illnesses (AC)</td>
<td>6, 7, 35, 36j, 36o</td>
</tr>
<tr>
<td>Therapeutic Interventions (TI)</td>
<td>30, 31</td>
</tr>
</tbody>
</table>

Chapter Outline and Objectives

Introduction

Review of Anatomy, Physiology, and Pathogenesis

◊ Review the basic physiology of the immune system.
◊ Review pathophysiological mechanisms of the immune system, including contributions to homeostasis.
◊ Describe the effect of exercise on the immune system.

Signs and Symptoms

◊ Identify the general signs and symptoms of pathology involving the immune system.

Pain Patterns

◊ Identify the general pain patterns associated with pathology involving the immune system.
Medical History and Physical Examination Procedures

◊ Discuss medical history findings relevant to pathology involving the immune system.
◊ Describe the physical examination procedures used to assess conditions involving the immune system.

Pathology and Pathogenesis

◊ Discuss the signs, symptoms, management, medical referral guidelines, and, when appropriate, the return to participation criteria for pathology involving the immune system.
  ▪ Infections
    • Infectious Mononucleosis
    • Musculoskeletal Infections
  ▪ Autoimmune Disorders
    • Rheumatoid Arthritis
    • Systemic Lupus Erythematosus
  ▪ Chronic Fatigue Syndrome
  ▪ Blood-borne Viral Diseases
    • Human Immunodeficiency Virus
    • Hepatitis B
  ▪ Vector-borne Diseases
    • Lyme Disease
    • West Nile Virus
  ▪ Prevention of Infectious Disease
  ▪ Allergic Reactions and Anaphylaxis
    • Urticaria
    • Cholinergic Urticaria
    • Anaphylaxis
    • Exercise-induced Anaphylaxis
    • Insect Stings and Bites
  ▪ Pediatric Concerns
    • “Childhood” Infectious Diseases
      - Chicken Pox
      - Mumps
      - Measles

Summary

Chapter Overview

Chapter 4 reviews the anatomical structures that make up the immune system. The innate and adapted immune response systems are explained, as well as the effect exercise has on the immune system.

The general signs and symptoms of conditions that may involve the immune system are discussed along with physical assessment procedures, including the measurement of body temperature and the palpation of lymph nodes.
Immune system pathology discussed in Chapter 4 are categorized into six areas: infections, autoimmune disorders, blood-borne viral diseases, vector-based diseases, allergic reactions and childhood infectious diseases. The content within Chapter 4 is broken down into four power point modules, which are discussed below. This chapter also discusses steps for preventing infections. Two clinical algorithms are provided for the assessment of conditions involving the immune system: one for fever and the other for lymphadenitis.

**Power Point Modules**

Module I: Functional Anatomy, Signs & Symptoms, History and Evaluation (26 slides)

*Student Learning Outcomes*

After completing this module, students should be able to:

◊ explain the immune system's methods for fighting infectious organisms
◊ identify the general signs and symptoms of pathology involving the immune system
◊ discuss medical history findings relevant to immune system pathology
◊ discuss assessment procedures for identifying immune system pathology

Module II: Infections & Autoimmune Disorders (23 slides)

*Student Learning Outcomes*

After completing this module, students should be able to:

◊ discuss the signs, symptoms, treatment, and return to participation for the following:
  ◊ infections
  ◊ autoimmune disorders
◊ describe procedures for preventing infections

Module III: Vector-Based Diseases (19 slides)

*Student Learning Outcomes*

After completing this module, students should be able to:

◊ discuss the signs, symptoms, management, medical referral guidelines, and return to participation for specific vector-borne diseases
  ◊ Lyme Disease
  ◊ West-Nile Virus

Module IV: Allergic Reactions (27 slides)

*Student Learning Outcomes*

After completing this module, students should be able to:

◊ discuss the signs, symptoms, management, medical referral guidelines, and return to participation for allergic reactions
  ◊ anaphylaxis
  ◊ exercise induced anaphylaxis
  ◊ insect stings & bites
**Case Study**

Chapter 4 includes a case study that involves an athlete who is highly allergic to bee stings. The application/critical thinking questions require the student to think proactively about how to prevent and/or manage a bee sting in this athlete. This case study can be assigned for students to complete outside of class or you can use the case study as an active learning activity for the class to work through as a group (or several small groups).

**Lab Exercise**

Lab Exercise 4-1: Assessment of Body Temperature

This lab exercise provides students the opportunity to learn and practice their skills in assessing body temperature. The lab also allows students to explore the questions of “How long do you have to wait after someone drinks a cold drink before taking his or her temperature?” and “What effect does exercise have on body temperature when taking an athlete’s temperature during or after practice?” The answers to both of these questions can affect what the athletic trainer may do when needing to take the temperature of a sick athlete.

This lab includes the measurement of oral and tympanic temperatures. A variety of oral thermometers (glass, digital, etc) can be used and is dependent on the instructor’s preference. This lab does not include rectal temperature. While rectal temperature assessment is the standard of care for exertional heat illness, this procedure is not typically used when assessing systemic illnesses.

Lab Exercise 4-1 also asks students to write a report describing their methods for collecting the temperature data, create a graph illustrating their findings, and apply their finding to their daily practice. Instructors can choose whether they wish to keep this portion of the lab activity.
Chapter 5

Oncology

Competencies

This chapter addresses the following knowledge and skills from the Athletic Training Education Competencies, 5th ed.1:

<table>
<thead>
<tr>
<th>Content Area</th>
<th>Knowledge and Skills</th>
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<td>Clinical Examination and Diagnosis (CE)</td>
<td>6, 13, 17, 18, 20a-c, 22</td>
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<tr>
<td>Psychosocial Strategies and Referral (PS)</td>
<td>6</td>
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Chapter Outline and Objectives

Introduction

Review of Physiology and Pathogenesis
   ◊ Describe the etiology and pathophysiological mechanisms of cancer.
   ◊ Explain the process of metastasis.

Risk Factors
   ◊ Identify the modifiable and nonmodifiable risk factors associated with cancer.

Signs and Symptoms
   ◊ Identify the signs and symptoms of cancer.
   ◊ Identify potential early warning signs of cancer.

Medical History and Physical Examination Procedures
   ◊ Identify medical history findings that are suggestive of cancer.
   ◊ Identify conditions that would warrant inclusion in a differential diagnosis.
◊ Identify physical examination techniques that may be useful when cancer is suspected.
◊ Determine when the findings of an examination warrant referral of the patient.

Diagnosis and Staging
◊ Describe the TNM System for staging cancer.
◊ Explain the concept of survival rates and its relation to cancer staging.

Cancer Treatment Options
◊ Describe the types of treatment used for cancer, including surgery, radiation, chemotherapy, and other methods.
◊ Explain the process of recovery from cancer.

Return to Activity
◊ Describe the factors that may affect a cancer patient’s ability to return to participation during or following adjuvant treatment.

Pathology and Pathogenesis
◊ Discuss the clinical presentation, treatment options, prognosis, and survival rates for common types of cancers.
  • Leukemia
  • Hodgkin’s lymphoma
  • Non-Hodgkin’s lymphoma
  • Skeletal cancers

Pediatric Concerns
  • Acute lymphocytic leukemia
  • Ewing’s sarcoma

Summary

Case Study

**Chapter Overview**

The American Cancer Society estimates the lifetime risk for people in the United States to develop cancer at some point in their life to be approximately one in two males and one in three females. This means that half of the males in your class and a third of the females in your class will likely develop some form of cancer at some point in their lifetime. These are staggering statistics and will typically capture the attention of the students.

Many cancers are now curable thanks to advances in cancer detection and treatment protocols. As a result, almost 14 million Americans are living as cancer survivors (either cancer free or in treatment). Due to this increasing number of cancer survivors, it is very likely that athletic trainers will encounter patients in their clinical practice who are at some stage of cancer survivorship. By educating their patients about risk factors, early warning signs, and the importance of self-examination techniques, athletic trainers can play a role in both cancer prevention and early detection. Athletic trainers may also play a role in helping cancer patients and survivors to restore function and return to physical...
activity. For this reason, athletic trainers should be aware of the common cancer treatments, their side effects, and the precautions and contraindications relative to physical activity and rehabilitation.

This chapter provides an overview of cancer, including the general signs and symptoms, common diagnostic procedures, staging methods, and treatment options. Additionally, this chapter will discuss several specific cancers including leukemia, Hodgkin’s lymphoma, Non-Hodgkin’s lymphoma and skeletal tumors. This content is broken down into four power point modules, which are summarized below. Instructors can choose to assign these power points for students to review outside of class, freeing up class time for interactive discussions, or use them for traditional lectures in class.

NOTE: Other common system-specific cancers such as lung (Chapter 7); colorectal (Chapter 8); breast, testicular, ovarian, and prostate (Chapter 9); and skin (Chapter 12), are discussed in their associated system chapters.

**Power Point Modules**

**Module I: Introduction to Cancer (13 slides)**

*Summary*

This power point introduces students to the pathophysiology and nomenclature associated with cancer.

*Student Learning Outcomes*

After completing this module, students should be able to:

◊ describe the etiology and pathophysiological mechanisms of cancer
◊ explain the process of metastasis
◊ explain the role of ATs in the prevention and early detection of cancer

**Module II: Risk Factors, S/S and Physical Exam (12 slides)**

*Summary*

This power point module discusses the general risk factors, early warning signs and signs/symptoms associated with cancer. The risk factors and signs/symptoms of specific cancers are discussed in Module IV, as well as in later systemic chapters. This module also discusses the medical history findings that might suggest cancer.

*Student Learning Outcomes*

After completing this module, students should be able to:

◊ discuss risk factors associated with cancer
◊ discuss the early warning signs of cancer
◊ explain the general signs and symptoms of cancer
◊ identify medical history findings that are suggestive of cancer
◊ identify physical examination techniques that may be useful when cancer is suspected

**Module III: Diagnosis and Treatment Options (19 slides)**

*Summary*

This power point module provides an overview of the standard diagnostic procedures that are commonly used to confirm a diagnosis of cancer. Also, the TNM System for staging cancer is discussed. Treatment for specific types of cancer are addressed in Module IV of this chapter and several of the
other chapters that address systems that include common cancers (ie, breast and testicular cancer are discussed in Chapter 9 Urogenital System).

**Student Learning Outcomes**

After completing this module, students should be able to:

◊ explain the diagnosis procedures for common cancers
◊ explain the TNM System for staging cancer
◊ explain the treatment options for cancer

**Module IV: Common Cancers (41 slides)**

**Summary**

This power point module discusses the clinical presentation, treatment and prognosis related to leukemia, Hodgkin's/non-Hodgkin's lymphoma, and skeletal tumors. As previously explained, other common cancers (ie, breast, testicular, colon) are discussed in the system chapters that correspond to these diseases.

**Student Learning Outcomes**

After completing this module, students should be able to:

◊ explain the clinical presentation, treatment options, prognosis, and survival rates for the following types of cancers:
  ∗ leukemia
  ∗ Hodgkin's lymphoma
  ∗ non-Hodgkin's lymphoma
  ∗ skeletal tumors

**Case Study**

The case study presented in this chapter is an example of how the athletic trainer may be the person who first identifies the possibility of a skeletal tumor. This case also illustrates the relationship athletic trainers often have with their patients and their parents, with these individuals often turning to the athletic trainer for information and advice.

**Lab Exercises**

There are no lab exercises for Chapter 5.
Chapter 6

Cardiovascular and Hematological Systems

Competencies

This chapter addresses the following knowledge and skills from the Athletic Training Education Competencies, 5th ed.1:

<table>
<thead>
<tr>
<th>Content Area</th>
<th>Competency #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention and Health Promotion (PHP)</td>
<td>3, 5, 8, 9, 17a</td>
</tr>
<tr>
<td>Clinical Examination and Diagnosis (CE)</td>
<td>13, 16, 17, 18, 20b, 20h, 21i, 22</td>
</tr>
<tr>
<td>Acute Care of Injury and Illness (AC)</td>
<td>6, 7, 36a, 36e, 41</td>
</tr>
<tr>
<td>Therapeutic Interventions (TI)</td>
<td>30</td>
</tr>
<tr>
<td>Healthcare Administration (HA)</td>
<td>22, 23</td>
</tr>
<tr>
<td>Clinical Integration Proficiencies (CIP)</td>
<td>3, 5, 6</td>
</tr>
</tbody>
</table>

Chapter Outline and Objectives

Introduction

Review of Physiology and Pathogenesis

◊ Describe basic cardiovascular and hematological anatomy and function.
◊ Explain the pathophysiological mechanisms of the cardiovascular and hematological systems.
◊ Describe the response of the cardiovascular and hematological systems to exercise.
◊ Explain the role of the preparticipation physical examination in identifying potential cardiovascular or hematological conditions that might predispose an athlete to sudden cardiac death.
◊ Identify the minimum cardiovascular screening components that should be included in a preparticipation physical examination, as recommended by current guidelines.
◊ Identify the risk factors and mechanisms for illnesses involving the cardiovascular and hematological systems.
Signs and Symptoms
◊ Identify signs and symptoms of common cardiovascular and hematological pathology.

Medical History and Physical Examination
◊ Discuss medical history results that are relevant to cardiovascular and hematological pathology.
◊ Perform physical examination tasks and interpret findings relevant to the cardiovascular and hematological systems.
  • Heart Rate
  • Respiration Rate
  • Blood Pressure
  • Auscultation
  • Palpation

Pathology and Pathogenesis
◊ Explain the precautions and risk factors associated with physical activity in individuals with common congenital and acquired abnormalities and diseases involving the cardiovascular and hematological systems.
◊ Explain the prevention guidelines associated with the common causes of sudden death in physically active individuals.
◊ Describe etiology, signs, symptoms, interventions, and, when appropriate, return-to-participation criteria for cardiac conditions.
  • Sudden Cardiac Death
  • Hypertrophic Cardiomyopathy
  • Coronary Artery Anomalies
  • Disorders of the Myocardium and Coronary Artery Disease
  • Valve Disorders
  • Cardiac Conduction Disorders
  • Marfan Syndrome
  • Commotio Cordis
◊ Describe etiology, signs, symptoms, interventions, and, when appropriate, return-to-participation criteria for hypertension.
◊ Describe etiology, signs, symptoms, interventions, and, when appropriate, return-to-participation criteria for disorders of the blood.
  • Anemia
  • Sickle Cell Disease and Sickle Cell Trait
  • Hemophilia
◊ Describe etiology, signs, symptoms, interventions, and, when appropriate, return-to-participation criteria for vascular disorders.
  • Trauma
  • Occlusion Syndromes
  • Thoracic Outlet Syndrome
  • Deep Vein Thrombosis and Pulmonary Embolism
  • Aneurysm
  • Headache
◊ Describe etiology, signs, symptoms, interventions and, when appropriate, return-to-participation criteria for pediatric cardiovascular conditions.

- Chest Pain
- Congenital Heart Conditions

Summary
Case Study
◊ Develop critical-thinking and clinical decision-making skills.

CHAPTER OVERVIEW

Chapter 6 reviews the functional anatomy and physiology of the cardiovascular and hematological systems and the effect of exercise on these systems. The role of preparticipation physical exams (PPEs) in identifying potential cardiovascular conditions is discussed, as well as the history and physical assessment components that the American Heart Association recommends for inclusion in PPEs. The assessment of vitals signs and cardiac auscultation are discussed and demonstrated through full color photos and graphics. The pathological conditions discussed focus primarily on the disorders that are associated with sudden cardiac arrest in young physically active individuals. This chapter also includes the latest evidence and recommendations presented in the following NATA Position Statements:

◊ NATA Official Statement on Automatic External Defibrillators (http://www.nata.org/public-information/docs/AEDofficialstatement.pdf)
◊ NATA Official Statement on Commotio Cordis (http://www.nata.org/publicinformation/files/ASTFstmt.pdf)
◊ NATA Official Statement: Preventing Sudden Death in Sports (http://www.nata.org/sites/default/files/Preventing-Sudden-Death-Position-Statement_2.pdf)

The content within Chapter 6 is divided into six power point modules, which are described next.

POWER POINT MODULES

Module I: Anatomical Review (31 slides)

Summary
Module I provides a review of the normal anatomy and physiology of the cardiovascular system. The anatomical graphics from the textbook are included in this power point. This module also provides a basic review of how the cardiovascular system responds to exercise.

Student Learning Outcomes
After completing this module, students should be able to:
◊ describe the normal cardiovascular anatomy and physiology
◊ describe the cardiovascular system’s response to exercise

Module II: Signs/Symptoms, History, and Evaluation (41 slides)

**Summary**

Module II discusses the general clinical presentation and evaluation procedures for conditions involving the cardiovascular and hematological systems. A clinical algorithm for chest pain is also included in this module.

**Student Learning Outcomes**

After completing this module, students should be able to:

◊ identify signs and symptoms of common cardiovascular and hematological pathology
◊ discuss medical history results that are relevant to cardiovascular and hematological pathology
◊ describe the physical examination procedures relevant to the cardiovascular and hematological systems

Module III: Sudden Cardiac Arrest – Part 1 (33 slides)

**Summary**

Modules III and IV discuss the clinical presentation and evaluation procedures for the cardiovascular conditions linked with sudden cardiac arrest in young athletes. The recommended therapeutic interventions for these conditions are noted, as well as the return-to-play guidelines (when appropriate) established by the 36th Bethesda Conference.

**Student Learning Outcomes**

After completing this module, students should be able to:

◊ describe signs, symptoms, evaluation, interventions, and when appropriate, return-to-participation criteria for the following pathology associated with sudden cardiac arrest
  * hypertrophic cardiomyopathy
  * coronary artery abnormalities
  * Marfan’s syndrome
  * commotio cordis

Module IV: Sudden Cardiac Arrest – Part 2 (32 slides)

**Summary**

See Module III summary.

**Student Learning Outcomes**

After completing this module, students should be able to:

◊ describe signs, symptoms, evaluation, interventions, and when appropriate, return-to-participation criteria for the following pathology associated with sudden cardiac arrest
  * myocardial ischemia
  * myocarditis
  * valve disorders
  * coronary conduction abnormalities
Module V: Cardiovascular Screening in PPEs (11 slides)

**Summary**
Module V discusses the American Heart Association’s recommendations for the history and physical examination items to be included in the athletic preparticipation physical exam.

**Student Learning Outcomes**
After completing this module, students should be able to:
◊ explain the minimum components that should be included in the cardiovascular screening of PPEs

Module VI: Hypertension, Blood Disorders, and Vascular Disorders (53 slides)

**Summary**
Module VI discusses the clinical presentation of hypertension along with the medications commonly used to control this condition and situations when individuals would be restricted from certain physical activities. Other blood and vascular disorders discussed include anemia, hemophilia, blood clots (DVT, PE) and migraine headaches.

**Student Learning Outcomes**
After completing this module, students should be able to:
◊ describe signs, symptoms, treatment, and return-to-participation criteria for pathology involving the blood and vascular structures

Module VII: Sickle Cell Trait and Exertional Sickling (22 slides)

**Summary**
Module VII discusses the pathophysiology associated with sickle cell trait (SCT) and the clinical presentation of exertional sickling. Strategies for the prevention and management of exertional sickling are also discussed, along with the associated risk for exertional rhabdomyolysis.

**Student Learning Outcomes**
After completing this module, students should be able to:
◊ explain the pathophysiology associated with sickle cell trait
◊ describe signs, symptoms, treatment, and return-to-participation criteria for exertional sickling
◊ describe strategies for preventing exertional sickling in individuals with sickle cell trait

**Lab Exercises**
There are 2 lab exercises that address physical examination procedures for pathology involving the cardiovascular system: 6-1 Vital Signs and 6-2 Cardiac Auscultation. There are several online resources included at the end of the chapter that can be used to provide students with examples of normal and abnormal heart sounds.
◊ The Auscultation Assistant (www.med.ucla.edu/wilkes/intro.html)
◊ Blaufuss Multimedia Heart Sounds and Cardiac Arrhythmia (www.blaufuss.org/)
◊ Frontiers in Bioscience (www.bioscience.org/atlas/heart/)
◊ HeartLab (http://www.familypractice.com/heartlab/heartlab.htm)
Case Study

The Chapter 6 case study provides students the opportunity to develop a differential diagnosis based on a clinical presentation that suggests a potential cardiovascular condition. The students are also asked to describe how they would manage this athlete and to identify potential risks that are associated with this clinical presentation. This case can be used in class to foster active discussion or be assigned for students to complete outside of class.
Chapter 7

Pulmonary System

Competencies

This chapter addresses the following knowledge and skills from the *Athletic Training Education Competencies, 5th ed.*\(^1\):

<table>
<thead>
<tr>
<th>Content Area</th>
<th>Knowledge and Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention and Health Promotion (PHP)</td>
<td>16, 17b</td>
</tr>
<tr>
<td>Clinical Examination and Diagnosis (CE)</td>
<td>1–3, 7, 13, 15–19, 20a–d, g, 21j, 22</td>
</tr>
<tr>
<td>Acute Care of Injuries and Illnesses (AC)</td>
<td>5–7, 15–18, 31–33, 36i,</td>
</tr>
<tr>
<td>Therapeutic Interventions (TI)</td>
<td>28, 30</td>
</tr>
</tbody>
</table>

Chapter Outline and Objectives

Introduction

Review of Anatomy, Physiology, and Pathogenesis

◊ Describe basic pulmonary anatomy and function.
◊ Review pathophysiological mechanisms of the pulmonary system.
◊ Describe the response of the pulmonary system to exercise.

Signs and Symptoms

◊ Identify the general signs and symptoms of pulmonary pathology.

Pain Patterns

◊ Identify the referred pain patterns associated with pulmonary pathology.

Medical History and Physical Examination

◊ Discuss medical history results that are relevant to pulmonary pathology.
◊ Perform physical examination procedures and interpret findings relevant to injury or illness involving the pulmonary system.
History Taking
- Inspection/Observation
- Palpation
- Respiration Rate and Depth
- Heart Rate
- Blood Pressure
- Percussion
- Auscultation
- Pulse Oximetry
- Peak Expiratory Flow

Therapeutic Interventions for Pulmonary Pathology
- Explain the indications, application procedures, and treatment parameters for supplemental oxygen administration for emergency pulmonary conditions.
- Explain the indications, application procedures, and treatment parameters for administering a nebulizer treatment for a patient with asthma.
- Explain the indications, application procedures, and treatment parameters for the use of a metered-dose inhaler in treating asthma.
- Explain the therapeutic strategies for preventing and treating acute asthma attacks.

Pathology and Pathogenesis
- Explain the strategies that should be used to prevent acute asthma attacks.
- Discuss the etiology, signs, symptoms, management, medical referral guidelines and, when appropriate, return-to-participation guidelines for asthma attacks.
- Discuss the etiology, signs, symptoms, management, medical referral guidelines and, when appropriate, return-to-participation guidelines for respiratory infections.
  - Upper Respiratory Infections
  - Lower Respiratory Infections
    - Acute Bronchitis
    - Influenza
    - Pneumonia
- Discuss the etiology, signs, symptoms, management, medical referral guidelines and, when appropriate, return-to-participation guidelines for pathology associated with pulmonary obstruction.
  - Chronic Obstructive Pulmonary Disease
  - Chronic Bronchitis
- Discuss the etiology, signs, symptoms, management, medical referral guidelines and, when appropriate, return-to-participation guidelines for pulmonary pathology associated with trauma.
  - Atelectasis
  - Drowning and Near-Drowning
  - Flail Chest Injury
  - Pneumothorax, Tension Pneumothorax, and Hemothorax
  - Pneumomediastinum
- Discuss the risk factors, signs, symptoms, treatment, and prognosis associated with lung cancer.
Pediatric Concerns
◊ Discuss the common pulmonary disorders that affect children.
   • Asthma in Children
   • Cystic Fibrosis
   • Neuromuscular Diseases
   • Scoliosis
   • Pertussis (Whooping Cough)

Summary
Case Study

CHAPTER OVERVIEW

The content within Chapter 7 is divided into 6 power point modules, which are described below. The primary focus of this chapter is asthma; however, other common conditions are also discussed, including trauma-related pulmonary conditions and upper respiratory infections. This chapter includes the latest evidence and recommendations presented in the following NATA Position Statements:
◊ Management of Asthma in Athletes (http://www.nata.org/sites/default/files/MgmtOfAsthmaInAthletes.pdf)
◊ Preventing Sudden Death in Sports (http://www.nata.org/sites/default/files/Preventing-Sudden-Death-Position-Statement_2.pdf)

POWER POINT MODULES

Module I: Functional Anatomy (11 slides)

Summary
Module I provides an overview of the functional anatomy of the pulmonary system.

Student Learning Outcomes
After completing this module, students should be able to:
◊ describe the normal pulmonary anatomy and physiology
◊ compare and contrast the pulmonary functions of ventilation and respiration
◊ explain the mechanisms that regulate breathing

Module II: History, Signs/Symptoms, and Evaluation (57 slides)

Summary
Module II describes the general signs and symptoms that make up the clinical presentation of common pulmonary illnesses and injuries. Descriptions and pictures are provided for each of the physical assessment procedures used to evaluate pulmonary conditions. Two clinical algorithms are presented: one for cough and the other for dyspnea.

Student Learning Outcomes
After completing this module, students should be able to:
◊ identify general signs and symptoms of common pulmonary pathology
◊ discuss medical history results that are relevant to pulmonary pathology
◊ describe the physical examination procedures relevant to the pulmonary system
  • Inspection
  • Special Tests
    • rib compression test
    • respiration rate & depth
    • heart rate
    • blood pressure
    • percussion
    • auscultation
    • pulse oximetry
    • peak flow meter

Module III: Therapeutic Interventions for Pulmonary Conditions (29 slides)

Summary
Module III describes the indications for and the step-by-step instructions for using supplemental oxygen, metered dose inhalers and nebulizers for the treatment of pulmonary conditions.

Student Learning Outcomes
After completing this module, students should be able to:
◊ explain the indications for supplemental oxygen
◊ explain the procedures for administering supplemental oxygen
◊ explain the role of metered dose inhalers in the treatment of asthma
◊ explain the steps for the proper use of metered dose inhalers
◊ explain the role of nebulizers in the treatment of asthma
◊ explain the steps for assembling and using a nebulizer to administer medications for treating asthma

Module IV: Asthma (38 slides)

Summary
Module IV discusses the underlying pathophysiology and clinical presentation of asthma. The strategies for preventing and managing acute asthma attacks are presented, as well as return-to-participation criteria.

Student Learning Outcomes
After completing this module, students should be able to:
◊ describe the pathophysiology associated with asthma
◊ describe the common signs/symptoms of asthma
◊ explain the treatment strategies for managing underlying chronic inflammation and acute asthma attacks
◊ explain the role of peak expiratory flow assessment in patients with asthma
◊ explain the NATAs’s recommendations for managing an acute asthma attack
◊ explain the return-to-participation criteria for asthma
Module V: Trauma-Related Conditions and Lung Cancer (29 slides)

**Summary**

This power point module addresses the pulmonary conditions that can result from trauma involving the thorax. The risk factors, signs and symptoms, diagnosis, treatment and prognosis of lung cancer are also discussed.

**Student Learning Outcomes**

After completing this module, students should be able to:

◊ describe signs, symptoms, treatment, and return-to-play criteria for pathology involving the pulmonary system
  - Trauma-related pathology
    - Atelectasis
    - Drowning
    - Flail chest injury
    - Pneumothorax
    - Hemorrhage
  - Lung cancer

Module VI: Upper Respiratory Infections, Allergies & Flu (22 slides)

**Summary**

Module VI presents the signs, symptoms, evaluation, treatment and return-to-participation criteria for upper respiratory infections, allergic rhinitis, and influenza.

**Student Learning Outcomes**

After completing this module, students should be able to:

◊ identify the signs and symptoms of common upper respiratory infections (URIs), allergic rhinitis, and influenza
◊ identify the common therapeutic medications used to treat URIs, allergic rhinitis, and influenza
◊ explain the treatment strategies for managing URIs, allergic rhinitis, and influenza
◊ explain the return to play criteria for patients suffering from URIs, allergic rhinitis, and influenza

**Lab Exercises**

There are 6 lab exercises that involve physical assessment skills or therapeutic interventions for common pulmonary pathology. These lab activities are available in the accompanying lab manual and include:

◊ Lab 7-1 Pulmonary Auscultation
◊ Lab 7-2 Pulmonary Percussion
◊ Lab 7-3 Peak Expiratory Flow Rate
◊ Lab 7-4 Pulse Oximeter
◊ Lab 7-5 Supplemental Oxygen
◊ Lab 7-6 Nebulizer

The chapter includes several online resources, including two sites that provide examples of normal and abnormal lung sounds.

◊ The Auscultation Assistant (www.med.ucla.edu/wilkes/intro.html)
◊ The RALE Repository (www.rale.ca)

**CASE STUDY**

The Chapter 7 case study presents a 20 year-old female basketball athlete who is suffering from exercise-induced asthma. The case includes critical thinking questions that require students to explain their differential diagnosis, identify diagnostic tests that a physician might perform to confirm the diagnosis, and the proper procedures for managing this condition. Instructors can choose to introduce the case in class and use it to foster student engagement in class or assign it for out of class work.
Chapter 8

Gastrointestinal and Hepatic-Biliary Systems

COMPETENCIES

This chapter addresses the following knowledge and skills from the National Athletic Trainers’ Association’s Athletic Training Education Competencies, 5th ed.1:

<table>
<thead>
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<tr>
<td>Acute Care of Injury and Illness (AC)</td>
<td>7, 36g, 41</td>
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<td>Healthcare Administration (HA)</td>
<td>22</td>
</tr>
<tr>
<td>Clinical Integration Proficiencies (CIP)</td>
<td>5, 6</td>
</tr>
</tbody>
</table>

CHAPTER OUTLINE AND OBJECTIVES

Introduction

Review of Anatomy, Physiology, and Pathogenesis

◊ Describe basic gastrointestinal and hepatic-biliary anatomy and function.
◊ Review pathophysiological mechanisms of the gastrointestinal and hepatic-biliary systems.
◊ Describe the response of the gastrointestinal and hepatic-biliary systems to exercise.

Signs and Symptoms

◊ Discuss the general signs and symptoms of gastrointestinal and hepatic-biliary pathology.

Pain Patterns

◊ Describe the referred pain patterns associated with gastrointestinal and hepatic-biliary pathology.
Medical History and Physical Examination
◊ Discuss medical history findings relevant to gastrointestinal and hepatic-biliary pathology.
◊ Describe physical examination tasks relevant to the gastrointestinal and hepatic-biliary systems.
  ▪ Auscultation
  ▪ Percussion
  ▪ Palpation

Pathology and Pathogenesis
◊ Describe the etiology, signs, symptoms, interventions, medical referral guidelines, and, when appropriate, return-to-participation criteria for gastrointestinal infections.
  ▪ Viral Gastroenteritis
  ▪ Food Poisoning
  ▪ Traveler's Diarrhea
◊ Describe the etiology, signs, symptoms, interventions, medical referral guidelines, and, when appropriate, return-to-participation criteria for criteria for upper gastrointestinal disorders.
  ▪ Dyspepsia
  ▪ Gastroesophageal Reflux Disease
  ▪ Hiatal Hernia
  ▪ Peptic Ulcer
  ▪ Gastritis and Gastroenteritis
◊ Describe the etiology, signs, symptoms, interventions, medical referral guidelines, and, when appropriate, return-to-participation criteria for criteria for lower gastrointestinal disorders.
  ▪ Inflammatory Bowel Diseases (Crohn's disease and ulcerative colitis)
  ▪ Irritable Bowel Syndrome
  ▪ Appendicitis
  ▪ Diverticulosis and Diverticulitis
  ▪ Hernia
  ▪ Hemorrhoids
  ▪ Colorectal Cancer
◊ Describe the etiology, signs, symptoms, interventions, medical referral guidelines, and, when appropriate, return-to-participation criteria for abdominal trauma.
  ▪ Spleen Trauma and Splenomegaly
  ▪ Liver Trauma
◊ Describe the etiology, signs, symptoms, interventions, medical referral guidelines, and, when appropriate, return-to-participation criteria for hepatic-biliary diseases.
  ▪ Hepatitis
  ▪ Cirrhosis
  ▪ Gallstones and Gallbladder Disease
  ▪ Pancreatitis

Summary

Case Study
◊ Develop critical-thinking and clinical decision-making skills.
Online Resources

**CHAPTER OVERVIEW**

Chapter 8 addresses the common injuries and illnesses of the abdomen that athletic trainers may encounter during their clinical practice. The content within the chapter is divided into eight power point modules. As with the previous systems chapters, Module I reviews the functional anatomy and Module II discusses the clinical presentation and evaluation of common abdominal pathology. Modules III through VII address the common conditions that involve the structures and functions in the gastrointestinal, hepatic and biliary systems. Lastly, Module VIII presents three clinical algorithms that provide decision-making pathways for the symptoms of abdominal pain, nausea and vomiting, and diarrhea.

**POWER POINT MODULES**

Module I: Functional Anatomy (13 slides)

*Summary*

Module I provides an overview of the functional anatomy of the gastrointestinal and hepatic-biliary systems. The power points include the graphics from the textbook illustrating the anatomical structures.

*Student Learning Outcomes*

After completing this module, students should be able to:
- describe the key anatomical structures of the gastrointestinal and hepatic-biliary systems and their function

Module II: History, Signs/Symptoms, and Evaluation (35 slides)

*Summary*

Module II describes the general signs and symptoms that make up the clinical presentation of common GI and hepatic-biliary illnesses and injuries. Descriptions and pictures are provided for each of the physical assessment procedures used to evaluate these conditions.

*Student Learning Outcomes*

After completing this module, students should be able to:
- describe the general signs and symptoms of common gastrointestinal and hepatic-biliary pathology
- discuss medical history results that are relevant to gastrointestinal and hepatic-biliary pathology
- explain the physical assessment procedures for evaluating injuries and illnesses of the GI and hepatic-biliary systems
  - Special Tests
    - auscultation
    - percussion
    - palpation
Module III: Gastrointestinal Infections (15 slides)

Summary
Module III discusses the clinical presentation of common GI infections. The common medications used to treat GI infections are also discussed, as well as the return to participation criteria for these conditions.

Student Learning Outcomes
After completing this module, students should be able to:
◇ describe signs, symptoms, treatment, and return-to-participation criteria for common GI infections
◇ identify the therapeutic medications used to treat common GI infections

Module IV: Upper GI Disorders (23 slides)

Summary
Module IV identifies the common upper GI conditions and their clinical presentation. Treatment recommendations, including the medications used to treat these conditions, are discussed, as well as return to participation criteria.

Student Learning Outcomes
After completing this module, students should be able to:
◇ describe signs, symptoms, treatment, and return-to-play criteria for common upper GI disorders
  ◇ Dyspepsia
  ◇ Gastroesophageal reflux
  ◇ Hiatal hernia
  ◇ Peptic ulcer
  ◇ Gastritis and gastroenteritis
◇ identify the therapeutic medications used to treat common upper GI disorders

Module V: Lower GI Disorders (42 slides)

Summary
Module IV identifies the common lower GI conditions and their clinical presentation. Treatment recommendations, including the medications used to treat these conditions, are discussed, as well as return to participation criteria.

Student Learning Outcomes
After completing this module, students should be able to:
◇ describe signs, symptoms, treatment, and return-to-play criteria for common lower GI disorders
  ◇ inflammatory bowel diseases
  ◇ Crohn’s disease
  ◇ ulcerative colitis
  ◇ irritable bowel syndrome
  ◇ appendicitis
  ◇ diverticulosis and diverticulitis
  ◇ hernias
  ◇ hemorrhoids
◊ identify the therapeutic medications used to treat common lower GI disorders

Module VI: GI Trauma (17 slides)

Summary
Module VI presents the signs, symptoms, evaluation, treatment and return-to-participation criteria for splenomegaly and sports-related injuries involving the spleen and liver.

Student Learning Outcomes
After completing this module, students should be able to:
◊ identify the signs and symptoms of sports-related injuries involving the liver and spleen
◊ discuss medical history results that are relevant to sports-related injuries involving the liver and spleen
◊ describe the physical examination procedures relevant to sports-related injuries involving the liver and spleen
◊ describe the treatment, and return-to-play criteria for sports-related injuries involving the liver and spleen

Module VII: Hepatic-Biliary Pathology (37 slides)

Summary
Module VII presents the signs, symptoms, evaluation, treatment and return-to-participation criteria for illnesses or disorders involving the liver, gall bladder and pancreas.

Student Learning Outcomes
After completing this module, students should be able to:
◊ identify the signs, symptoms, interventions and, when appropriate, the return-to-participation criteria for the following illnesses involving the hepatic-biliary systems
  ¤ hepatitis
  ¤ gallstones & gallbladder disease
  ¤ pancreatitis

Module VIII: Diagnostic Algorithms (18 slides)

Summary
Module VIII presents diagnostic algorithms for abdominal pain, nausea and vomiting, and diarrhea. The decision pathways outlined within each of the algorithms is designed to help students develop decision-making skills related to the recognition and management of abdominal injuries and illnesses.

Student Learning Outcomes
After completing this module, students should be able to:
◊ explain the potential decision making pathways associated with the following abdominal symptoms
  ¤ abdominal pain
  ¤ nausea and vomiting
  ¤ diarrhea

Suggestion: After reviewing the algorithms with the students, it may be helpful to have the students work through case studies in groups, giving them the opportunity to apply the algorithm pathways.
Lab Exercises

Lab 8-1 Abdominal Assessment is made up of 3 parts: (I) Auscultation, (II) Percussion, and (III) Palpation. Instructors can choose to separate these into separate exercises or keep them combined as one.

Case Study

The case study presented in Chapter 8 provides students with a clinical presentation that requires differentiation between a possible heart attack and an abdominal illness.
Chapter 9
Renal and Urogenital Systems

Competencies

This chapter addresses the following knowledge and skills from the Athletic Training Education Competencies, 5th ed.¹:

<table>
<thead>
<tr>
<th>Content Area</th>
<th>Knowledge and Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention and Health Promotion (PHP)</td>
<td>5</td>
</tr>
<tr>
<td>Clinical Examination and Diagnosis (CE)</td>
<td>1-3; 13; 17-19; 20 a-c, j; 21 l; 22-23</td>
</tr>
<tr>
<td>Therapeutic Interventions (TI)</td>
<td>30-31</td>
</tr>
</tbody>
</table>

Chapter Outline and Objectives

Introduction

Review of Anatomy, Physiology, and Pathogenesis

◊ Describe the basic renal and urogenital structures and their functions.
◊ Describe the pathophysiological mechanisms of the renal and urogenital systems.
◊ Describe the response of the renal and urogenital systems to exercise.

Signs and Symptoms

◊ Identify the general signs and symptoms of renal pathology.
◊ Identify the general signs and symptoms of urogenital pathology.

Pain Patterns

◊ Identify the referred pain patterns associated with pathology of the renal and urogenital systems.

Medical History and Physical Examination

◊ Discuss medical history findings relevant to renal and urogenital pathology.
◊ Describe the physical examination procedures associated with renal and urogenital pathology.
  - Inspection
  - Palpation
  - Urinalysis
  - Refractometry

Pathology and Pathogenesis
◊ Discuss the signs, symptoms, management, medical referral guidelines, and, when appropriate, return-to-participation criteria for pathology involving the renal system.
  - Renal and Bladder Trauma
  - Renal, Bladder, and Genital Infections
    - Urinary Tract Infection
    - Sexually Transmitted Infections
  - Renal Disorders
    - Urolithiasis
    - Renal Failure

◊ Discuss the signs, symptoms, management, medical referral guidelines, and, when appropriate, return-to-participation criteria for pathology involving the urogenital system.
  - Male Urogenital Disorders
    - Monorchidism
    - Prostate Disorders
    - Prostate Cancer
    - Scrotum and Testicular Trauma
    - Testicular Torsion
    - Varicoceles
    - Testicular Cancer
  - Female Urogenital Disorders
    - Endometriosis
    - Pregnancy
    - Ruptured Ectopic Pregnancy
    - Female Athlete Triad
    - Breast Disorders
    - Breast Cancer
    - Ovarian Cysts
    - Cervical, Ovarian, and Uterine Cancers

Pediatric Concerns
◊ Primary Amenorrhea
◊ Kidney Trauma
◊ Cryptorchidism
Summary

Case Study
◊ Develop critical-thinking and clinical decision-making skills.

CHAPTER OVERVIEW

Chapter 9 addresses the common injuries and illnesses of the renal and urogenital systems that athletic trainers may encounter during their clinical practice. The content within the chapter is divided into five power point modules. As with the previous systems chapters, Module I reviews the functional anatomy and Module II discusses the clinical presentation and evaluation of common pathology involving the renal and urogenital systems. Clinical algorithms for dysuria and hematuria are also included in Module II. The remaining three modules address the common injuries, illnesses and disorders that involve the kidneys and the urogenital system.

POWER POINT MODULES

Module I: Functional Anatomy (13 slides)

Summary

Module I provides an overview of the functional anatomy of the renal and urogenital systems. The kidney’s role in regulating blood pressure is discussed relative to the impact a potential injury or illness of the kidney may have on systemic health. The power points include the graphics from the textbook illustrating the anatomical structures.

Student Learning Outcomes
After completing this module, students should be able to:
◊ identify the key anatomical structures of the renal and urogenital systems
◊ explain the functions of the renal-urinary systems
◊ explain the roles the kidneys play in regulating blood pressure

Module II: Signs, Symptoms, History, and Physical Exam (48 slides)

Summary

Module II discusses the clinical presentation common to injuries, illnesses and disorders involving the kidneys and urogenital systems. Physical assessment procedures are discussed, including the use of clinical urinalysis testing to screen for specific substances in the urine (eg, glucose, ketones, blood, leukocytes) and the use of a refractometer to measure specific gravity in order to determine an individual’s level of hydration. These assessment skills are also addressed in the Chapter 9 lab exercises. The Module II power point also includes a clinical algorithm for dysuria and hematuria.

Student Learning Outcomes
After completing this module, students should be able to:
◊ identify the general signs and symptoms of common renal and urogenital pathology
◊ identify the general pain patterns associated with common renal and urogenital pathology
◊ discuss medical history results that are relevant to renal and urogenital pathology

identify the assessment procedures that can be used to evaluate for possible renal and urogenital pathology

Module III: Renal Trauma, Infections and Disorders (20 slides)

Summary
Module III discusses the clinical presentation of kidney injuries, urinary tract infections, kidney stones and renal failure. Evaluation procedures are presented as well as return to participation criteria.

Student Learning Outcomes
After completing this module, students should be able to:
◊ identify the signs, symptoms, interventions, and, when appropriate, return-to-participation criteria for renal pathology
  • trauma related injury to the kidney
  • urinary tract infections
  • kidney disorders

Module IV: Male Urogenital Disorders (24 slides)

Summary
Module IV discusses the common injuries, illnesses and disorders that are associated with the male urogenital system.

Student Learning Outcomes
After completing this module, students should be able to:
◊ Identify the signs, symptoms, interventions, and, when appropriate, return-to-participation criteria for
  • monorchidism
  • prostrate disorders
  • prostrate cancer
  • scrotum and testicular trauma
  • testicular torsion
  • varicoceles
  • testicular cancer

Module V: Female Urogenital Disorders (40 slides)

Summary
Module V discusses the common injuries, illnesses and disorders that are associated with the female urogenital system.

Student Learning Outcomes
After completing this module, students should be able to:
◊ identify the signs, symptoms, interventions, and, when appropriate, return-to-participation criteria for:
  • endometriosis
  • pregnancy
raptured ectopic pregnancy
• female athletic triad
• breast disorders
• breast cancer
• ovarian cysts
• cervical, ovarian, and uterine cancers

Lab Exercises

Chapter 9 includes two lab exercises that each involve the assessment of urine values. With each lab, students learn how to instruct patients to collect a “clean catch” urine specimen.

Lab Exercise 9-1 Urinalysis enables students to gain experience performing a clinical urinalysis test using reagent test strips. The instructor can select what urine values they wish to have the students evaluate, as well as how many urinalyses each student will perform. There is only one urinalysis results sheet included with the Lab 9-1 worksheet. Instructors can revise the form to match the reagent strips that their students will be using for the urinalyses. Also, instructors will need to make copies of the form based on the number of urinalyses each student will perform. Most likely, all of the urine samples evaluated in the lab class will result in normal urine value. For this reason, the lab worksheet also includes application questions that require students to interpret potentially “abnormal” results and whether these urine values would require a physician referral.

Lab Exercise 9-2 Refractometer enables students to gain experience assessing hydration status by using a refractometer to measure specific gravity. Step-by-step instructions are provided for calibrating and using a refractometer. Students are asked to assess at least four urine samples, record the specific gravity values and determine the hydration status.

Case Study

The Chapter 9 case study presents students with the scenario that they have been asked by the women’s athletic director to develop an education and prevention program for the female athlete triad. The goals of the program are to educate the female athletes on the causes and the short-term and long-term consequences of the triad, and to provide the coaches with a simple way to screen athletes for signs of potential female athlete triad.

Students are asked to identify the important points they would include in their presentation. They are also asked to explain what advice they would provide to the coaches to help them screen for the female athlete triad among their athletes. These questions are just a starting point for how this case study could be used to help students develop a richer experience and greater depth of understanding. Instructors may wish to have their students develop an outline of their presentation, or even a full presentation complete with power points and handouts.
Chapter 10

Endocrine and Metabolic Systems

Competencies

This chapter addresses the following competencies from the National Athletic Trainers’ Association’s Athletic Training Education Competencies, 5th ed.¹:

<table>
<thead>
<tr>
<th>Content Area</th>
<th>Competency #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention and Health Promotion (PHP)</td>
<td>3, 5, 10, 11, 12, 17d, 17e, 36</td>
</tr>
<tr>
<td>Clinical Examination and Diagnosis (CE)</td>
<td>1, 16, 17, 18, 20j, 21p, 22</td>
</tr>
<tr>
<td>Acute Care of Injury and Illness (AC)</td>
<td>6, 7, 27, 28, 29, 30, 36d, 36h, 36m, 41</td>
</tr>
<tr>
<td>Therapeutic Interventions (TI)</td>
<td>28, 30</td>
</tr>
<tr>
<td>Healthcare Administration (HA)</td>
<td>22</td>
</tr>
<tr>
<td>Clinical Integration Proficiencies (CIP)</td>
<td>1, 5, 6</td>
</tr>
</tbody>
</table>

Chapter Outline and Objectives

Introduction

Review of Anatomy, Physiology, and Pathogenesis

◊ Describe basic endocrine system structures and their functions.
◊ Review pathophysiological mechanisms of the endocrine system, including contributions to homeostasis and metabolism.
◊ Explain how the endocrine system contributes to the regulation of body energy.
◊ Explain how the endocrine system contributes to the regulation of body temperature.
◊ Explain how the endocrine system contributes to the regulation of body fluid.
◊ Describe the response of the endocrine system to exercise.
◊ Describe basic metabolic responses to exercise.
Signs and Symptoms
◊ Identify the general signs and symptoms of pathology involving the endocrine and metabolic systems.

Pain Patterns
◊ Identify the referred pain patterns associated with illnesses and diseases involving the endocrine and metabolic systems.

Medical History and Physical Examination
◊ Discuss medical history findings relevant to endocrine and metabolic pathology.
◊ Perform physical examination tasks and interpret findings relevant to the endocrine system and metabolic systems.
   ◊ Urinalysis
   ◊ Glucometer
   ◊ Rectal Temperature

Pathology and Pathogenesis
◊ Describe the pathophysiology associated with type I and type II diabetes.
◊ Discuss the etiology, signs, symptoms, interventions, medical referral guidelines, and, when appropriate, return-to-participation guidelines for diabetic emergencies (hypoglycemia and ketoacidosis).
◊ Explain the therapeutic strategies used for treating diabetes mellitus.
◊ Discuss the etiology, signs, symptoms, interventions, medical referral guidelines, and, when appropriate, return-to-participation guidelines for disorders of the pituitary gland.
◊ Discuss the etiology, signs, symptoms, interventions, medical referral guidelines, and, when appropriate, return-to-participation guidelines for disorders of the thyroid and parathyroid.
◊ Discuss the etiology, signs, symptoms, interventions, medical referral guidelines, and, when appropriate, return-to-participation guidelines for disorders of the adrenals.
◊ Discuss the etiology, signs, symptoms, management, medical referral guidelines, and, when appropriate, return-to-participation guidelines for exertional heat illnesses (heat cramps, heat exhaustion, heat stroke, and hyponatremia).
◊ Discuss the etiology, signs, symptoms, interventions, medical referral guidelines, and, when appropriate, return-to-participation guidelines for hypothermia.
◊ Describe the relationship between obesity and the development of chronic diseases.
◊ Describe the methods used to identify obesity in individuals and populations.
◊ Describe the contributing factors that lead to the development of obesity.
◊ Discuss the etiology, signs, symptoms and interventions for gout.
◊ Discuss the etiology, signs, symptoms, interventions, medical referral guidelines, and, when appropriate, return-to-participation guidelines for metabolic bone diseases.

Pediatric Concerns
◊ Discuss the etiology, signs, symptoms, interventions, and medical referral associated with osteogenesis imperfecta.
Summary

Case Study

◊ Develop critical-thinking and clinical decision-making skills.

**CHAPTER OVERVIEW**

The endocrine system regulates the functions of many organ-systems including normal metabolism and homeostasis. Pathology of the endocrine glands can produce signs and symptoms in many organ-systems, including the gastrointestinal, cardiovascular, neurological, urogenital, and musculoskeletal. The personal medical history, which can reveal distinct patterns of endocrine dysfunction, is the most important aspect of assessment for endocrine or metabolic disorders.

The primary focus of this chapter is diabetes; however, other common conditions discussed include thyroid disorders, Addison’s disease, Cushing’s Syndrome, gout and osteoporosis. The content in Chapter 10 is divided into five power point modules, which are described below. Although a discussion of environmental illnesses is included in this chapter, this content is not included in these power point modules. Typically, heat illness is addressed in an introductory athletic training course. Chapter 10 includes the latest evidence and recommendations presented in the following NATA Position Statement:

◊ Management of the Athlete with Type 1 Diabetes Mellitus (http://www.nata.org/sites/default/files/MgmtOfAthleteWithType1DiabetesMellitus.pdf)

**POWER POINT MODULES**

**Module I: Functional Anatomy (31 slides)**

**Summary**

Module I provides an overview of the functional anatomy of the endocrine system. The glands that make up the endocrine system are discussed along with the hormones that they produce. The endocrine system’s roles in regulating the body’s energy, temperature and fluid levels are also discussed. The power points include the graphics from the textbook illustrating the anatomical structures.

**Student Learning Outcomes**

After completing this module, students should be able to:

◊ identify the normal anatomical structures of the endocrine systems
◊ identify the key hormones of the endocrine system and their major functions
◊ describe the role(s) played by the endocrine system in the regulation of
  ¤ body energy
  ¤ body temperature
  ¤ body fluid level

**Module II: S/S, History, and Evaluation (12 slides)**

**Summary**

Module II presents the general signs and symptoms associated with endocrine pathology. Evaluation procedures are discussed including the use of a glucometer for assessing blood glucose levels and the role of urinalyses for identifying glucose and/or ketones in the urine.
Student Learning Outcomes
After completing this module, students should be able to:
◊ identify the general signs and symptoms of common endocrine and metabolic pathology
◊ discuss medical history results that are relevant to endocrine and metabolic pathology
◊ describe the physical examination procedures relevant to endocrine and metabolic pathology

Module III: Diabetes (41 slides)

Summary
Module III presents the underlying pathophysiology associated with Type I and Type II diabetes. Strategies for maintaining normal blood glucose are discussed, including the roles of diet and exercise. The clinical presentation for hypoglycemia, hyperglycemia and ketoacidosis are discussed along with the recommended procedures for managing these conditions.

Student Learning Outcomes
After completing this module, students should be able to:
◊ describe the pathophysiology associated with type I and II diabetes
◊ describe the clinical presentation and treatment for type I and II diabetes
◊ compare and contrast the clinical presentation and treatment for hypoglycemia, hyperglycemia and ketoacidosis
◊ discuss the strategies for maintaining normal blood glucose levels during sports participation or other physical activity
◊ explain the roles of exercise and diet in regulating type II diabetes

Module IV: Disorders of the Thyroid, Parathyroid, and Adrenals (30 slides)

Summary
Module IV discusses the common conditions that involve the thyroid, parathyroid and adrenal glands. Conditions discussed include: hypo- and hyperthyroidism, Grave’s Disease, Addison’s Disease and Cushing’s Syndrome.

Student Learning Outcomes
After completing this module, students should be able to:
◊ describe the signs, symptoms, intervention, and, when appropriate, return-to-participation guidelines for disorders of the thyroid, parathyroid and adrenal glands

Module V: Metabolic Disorders (29 slides)

Summary
Module V primarily focuses on obesity; however, gout and osteoporosis are also discussed. The current obesity rates and associated chronic health risks are presented. The World Health Organization’s (WHO) classifications for obesity based on percentage of body fat and body mass index (BMI) are discussed.

Student Learning Outcomes
After completing this module, students should be able to:
◊ describe the signs, symptoms, intervention, and, when appropriate, return-to-participation guidelines for common metabolic disorders
Lab Exercises

Lab Exercise 10-1 involves the assessment of both fasting and non-fasting blood glucose levels. This lab exercise uses an experiential model to help students understand the effect of fasting and exercise on blood glucose levels. Instructors should designate prior to the scheduled lab meeting which students will eat breakfast (or other meal) and which will fast for at least 8 hours prior to the lab. At least four students will need to fast prior to the lab. If completing the lab exercise outside of a scheduled class meeting, each student should test 4 subjects who have fasted and one who has not.

Case Study

Chapter 10 includes a two-part case study that addresses the potential complications and challenges that an athletic trainer may face when they care for a diabetic athlete.
Chapter 11

Eye, Ear, Nose, Throat, and Mouth Disorders

Competencies

This chapter addresses the following knowledge and skills from the Athletic Training Education Competencies, 5th ed.¹:

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<td>1; 7; 13-15; 17-19; 20 a-c, j; 21 m, n; 22</td>
</tr>
<tr>
<td>Therapeutic Interventions (TI)</td>
<td>30</td>
</tr>
</tbody>
</table>

Chapter Outline and Objectives

Introduction

Review of Anatomy, Physiology, and Pathogenesis

◊ Describe the basic functional anatomy eye, ear, nose, throat, and mouth.

Signs and Symptoms

◊ Identify the general signs and symptoms of injuries and illnesses involving the eye, ear, nose, throat, and mouth.

Pain Patterns

◊ Identify the referred pain patterns associated with injuries and illness of the eye, ear, nose, throat, and mouth.

Medical History and Physical Examination

◊ Discuss the medical history findings relevant to injuries and illnesses involving the eye, ear, nose, throat, and mouth.
Describe the physical examination procedures associated with common illnesses and injuries involving the eye, ear, nose, throat, and mouth.

- History
- Inspection
- Palpation
- Special Tests
  - Visual Acuity
  - Pupillary Shape and Reaction
  - Eye Movements
  - Peripheral Vision
  - Fluorescein Strips and Cobalt Blue Light
  - Ophthalmoscope
  - Otoscope

Pathology and Pathogenesis

Discuss the signs, symptoms, interventions, medical referral guidelines, and, when appropriate, return-to-participation guidelines for eye pathology.

- Eye Injuries
  - Subconjunctival Hemorrhage
  - Corneal Abrasions
  - Hyphema
  - Ruptured Globe
  - Orbital Fracture
  - Detached Retina
- Eye Infections and Disorders
  - Conjunctivitis
  - Sty
  - Glaucoma

Discuss the signs, symptoms, interventions, medical referral guidelines, and, when appropriate, return-to-participation guidelines for ear pathology.

- Ear Injuries
  - Auricular Hematoma
  - Ruptured Tympanic Membrane
- Ear Infections and Disorders
  - Otitis Externa
  - Otitis Media
  - Impacted Cerumen

Discuss the signs, symptoms, interventions, medical referral guidelines, and, when appropriate, return-to-participation guidelines for nose pathology.

- Nose Injuries
  - Epistaxis (Nose Bleed)
  - Nasal Fracture
- Nasal Allergies and Infections
  - Allergic Rhinitis
• Sinusitis and Sinus Infection
  ◊ Discuss the signs, symptoms, interventions, medical referral guidelines, and, when appropriate, return-to-participation guidelines for throat infections.
  ◦ Laryngitis, Pharyngitis, and Tonsillitis
• Laryngitis, Pharyngitis, and Tonsillitis
  ◊ Discuss the signs, symptoms, interventions, medical referral guidelines, and, when appropriate, return-to-participation guidelines for mouth pathology.
  ◦ Gingivitis
  ◦ Periodontitis
  ◦ Dental Caries
  ◦ Oral Candidiasis
  ◦ Oral Cancer

Summary

Case Study
  ◊ Develop critical-thinking and clinical decision-making skills.

CHAPTER OVERVIEW

Although injuries or illnesses involving the eye, ear, nose, throat, and mouth are not the most common conditions encountered by the athletic trainer, they have the potential for serious complications such as loss of sight or hearing. Athletic trainers should be skilled in evaluating the eye, ear, nose, throat, and mouth including the use of an otoscope and ophthalmoscope. Early recognition and prompt referral are important aspects of the management of these conditions. Chapter 11 reviews the pertinent anatomy, signs and symptoms, evaluation procedures, referral guidelines, and when appropriate, return to participation criteria for the common injuries and illnesses involving the eye, ear, nose, throat, and mouth.

POWER POINT MODULES

Module I: Eye Anatomy (17 slides)

Summary
Module I provides an overview of the functional anatomy of the eye. The power points include the graphics from the textbook illustrating the anatomical structures.

Student Learning Outcomes
After completing this module, students should be able to:
  ◊ identify the normal anatomical structures of the eye

Module II: Eye Signs/Symptoms, History, and Physical Exam (27 slides)

Summary
Module II discusses the clinical presentation and physical assessment of common eye injuries and conditions.
Student Learning Outcomes
After completing this module, students should be able to:
◊ identify general signs and symptoms of common pathology involving the eye
◊ discuss medical history results that are relevant to pathology involving the eye
◊ describe the physical examination procedures relevant to the eye

Module III: Eye Pathology (23 slides)

Summary
Module II discusses the clinical presentation and physical assessment of common eye injuries and conditions.

Student Learning Outcomes
After completing this module, students should be able to:
◊ describe signs, symptoms, treatment, and return-to-play guidelines for specific eye pathology
  * stye
  * conjunctivitis
  * subconjunctival hemorrhage
  * corneal abrasions
  * hyphema
  * detached retina

Module IV: Ear Anatomy (10 slides)

Summary
Module I provides an overview of the functional anatomy of the ear. The power points include the graphics from the textbook illustrating the anatomical structures.

Student Learning Outcomes
After completing this module, students should be able to:
◊ identify the normal anatomical structures of the ear

Module V: Ear Signs/Symptoms, History, and Physical Exam (29 slides)

Summary
Module V discusses the clinical presentation and physical assessment of common ear pathology. Step-by-step instructions are presented for using an otoscope to evaluate the ear.

Student Learning Outcomes
After completing this module, students should be able to:
◊ identify signs and symptoms of common pathology involving the ear
◊ discuss medical history results that are relevant to pathology involving the ear
◊ describe the physical examination procedures relevant to the ear
Module VI: Ear Pathology (20 slides)

**Summary**
Module VI discusses the clinical presentation, treatment and return-to-participation guidelines for common ear infections and perforations of the tympanic membrane.

**Student Learning Outcomes**
After completing this module, students should be able to:
◊ describe signs, symptoms, treatment, and return-to-participation guidelines for common ear infections
  * otitis externa (swimmer’s ear)
  * otitis media
◊ describe signs, symptoms, treatment, and return-to-participation guidelines for a perforated tympanic membrane

Module VII: The Nose (20 slides)

**Summary**
Module VII reviews the anatomical structures and functions of the nose. The clinical presentation, physical assessment, treatment and return-to-participation criteria for common pathology of the nose are also discussed.

**Student Learning Outcomes**
After completing this module, students should be able to:
◊ describe the normal anatomy of the nose
◊ identify signs and symptoms of common pathology involving the nose
◊ discuss medical history results that are relevant to pathology involving the nose
◊ describe the physical examination procedures relevant to the nose
◊ describe signs, symptoms, treatment, and return-to-participation guidelines for pathology involving the nose
  * epistaxis (nose bleed)
  * nasal fracture
  * nasal allergies and infections

Module VIII: The Throat (24 slides)

**Summary**
Module VIII reviews the anatomical structures and functions of the throat. The clinical presentation, physical assessment, treatment and return-to-participation guidelines for common pathology of the throat are also discussed.

**Student Learning Outcomes**
After completing this module, students should be able to:
◊ describe the normal anatomy of the throat
◊ identify signs and symptoms of common pathology involving the throat
◊ discuss medical history results that are relevant to pathology involving the throat
◊ describe the physical examination procedures relevant to the throat
◊ describe signs, symptoms, treatment, and return-to-participation guidelines for pathology involving the throat
  - laryngitis
  - pharyngitis
  - tonsillitis
  - strep throat

**Module IX: The Mouth (23 slides)**

**Summary**
Module IX reviews the anatomical structures and functions of the mouth and teeth. The clinical presentation, physical assessment, treatment and return-to-participation guidelines for common pathology of the mouth are also discussed.

**Student Learning Outcomes**
After completing this module, students should be able to:
◊ describe the normal anatomy of the mouth
◊ identify signs and symptoms of common pathology involving the mouth
◊ discuss medical history results that are relevant to pathology involving the mouth
◊ describe the physical examination procedures relevant to the mouth
◊ describe signs, symptoms, treatment, and return-to-participation guidelines for pathology involving the mouth
  - gingivitis
  - periodontitis
  - dental Caries
  - oral cancer

**Lab Exercises**
Lab Exercise 11-1 provides students with the opportunity to learn how to use the otoscope to evaluate the ear. Step-by-step instructions and photos are provided in the textbook (Table 11-4) and in Power Point Module V. Students should be given the opportunity to examine as many ears as possible. The lab worksheet only includes one exam sheet; however, instructors can provide their students with enough copies to perform the assigned number of ear evaluations.

Lab Exercise 11-2 provides students with the step-by-step instructions for using the ophthalmoscope to view the retina as part of a physical assessment of the eye. Typically, using the ophthalmoscope is a more difficult skill for students to master as compared to the otoscope. Providing students with examples of what the retina looks like and what they are looking for with the ophthalmoscope can be helpful to them. The following web links provide images of normal retinas that instructors can share with their students.
  ◊ http://www1.appstate.edu/~kms/classes/psy3203/EyePhysio/human_retina.htm
  ◊ http://www.stlukeseye.com/anatomy/retina.html
  ◊ http://www.eyescreening.org.uk/pages/default.asp?id=15&sID=18

The lab worksheet instructs students to examine the eyes of 8 different individuals and then draw what they see.
CASE STUDY

The case study presented in Chapter 11 provides students with a clinical presentation that suggests a possible corneal abrasion. Students are asked to describe their evaluation procedures and then discuss the associated referral and return-to-play criteria.
Chapter 12

Dermatological Conditions

**Competencies**

This chapter addresses the following knowledge and skills from the *Athletic Training Education Competencies, 5th ed.*:

<table>
<thead>
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<td>Clinical Examination and Diagnosis (CE)</td>
<td>19, 21o</td>
</tr>
<tr>
<td>Therapeutic Interventions (TI)</td>
<td>30</td>
</tr>
</tbody>
</table>

**Chapter Outline and Objectives**

**Introduction**

- Describe the common types of lesions associated with most common skin injuries and illnesses.

**Review of Anatomy and Physiology**

- Describe the basic anatomy of the integumentary system.

**Mechanical Trauma**

- Describe the clinical presentation, differential diagnosis, treatment, prevention, and return-to-participation guidelines for common skin injuries and illnesses caused by mechanical trauma.
  - Blisters
  - Calluses
  - Acne Mechanica
  - Talon Noir
Skin Infections

◊ Describe the clinical presentation, differential diagnosis, treatment, prevention, and return-to-participation guidelines for common bacterial skin infections.
  - Community-Acquired Methicillin-Resistant *Staphylococcus aureus*
  - Impetigo
  - Cellulitis and Erysipelas
  - Furuncles and Carbuncles
  - Folliculitis

◊ Describe the clinical presentation, differential diagnosis, treatment, prevention, and return-to-participation guidelines for common viral skin infections.
  - Herpes Simplex Virus
  - Herpes Labialis
  - Herpes Gladiatorum
  - Warts
  - Plantar Warts

◊ Describe the clinical presentation, differential diagnosis, treatment, prevention, and return-to-participation guidelines for common fungal skin infections.
  - Tinea Pedis
  - Tinea Cruris
  - Tinea Unguium
  - Tinea Corporis
  - Tinea Versicolor

◊ Describe the clinical presentation, differential diagnosis, treatment, prevention, and return-to-participation guidelines for common parasitic skin infections.
  - Scabies
  - Pediculosis

◊ Describe the clinical presentation, differential diagnosis, treatment, prevention, and return-to-participation guidelines for common inflammatory skin conditions.
  - Acne Vulgaris
  - Contact Dermatitis
  - Chronic Eczema
  - Psoriasis

◊ Describe the clinical presentation, differential diagnosis, treatment, prevention, and return-to-participation guidelines for common skin conditions caused by environmental conditions.
  - Cold Urticaria
  - Frostnip
  - Frostbite
  - Sunburn
  - Skin Cancer

Summary

Case Study

◊ Develop critical-thinking and clinical decision-making skills.
Chapter Overview

Chapter 12 addresses the skin conditions that athletic trainers are most likely to encounter in their clinical practice. These conditions are grouped into five categories: (1) those caused by mechanical trauma, (2) those associated with an infection (bacterial, viral, fungal, or parasitic), (3) those associated with localized inflammatory reactions (acne vulgaris, contact dermatitis, chronic eczema, and psoriasis), (4) those caused by environmental exposure (frostnip, frost bite, sunburn and skin cancer), and (5) those caused by an allergic reaction (urticaria, insect bites). The discussion of each skin condition includes the clinical presentation, prevention, treatment, and, when applicable, return-to-participation guidelines.

Chapter 12 includes the latest evidence and recommendations presented in the following NATA Position Statement: Skin Disease (http://www.nata.org/sites/default/files/position-statement-skin-disease.pdf)

Power Point Modules

Module I: Intro to Dermatology (20 slides)

Summary
Module I introduces the types of lesions that are associated with most skin disorders. This module also reviews the anatomical structures that form the integumentary system. The power points include the graphics from the textbook.

Student Learning Outcomes
After completing this module, students should be able to:
◊ describe the common types of lesions associated with most common skin injuries and illnesses
  ◊ vesicles
  ◊ bullae
  ◊ pustules
  ◊ papules
  ◊ nodules
  ◊ macules
  ◊ plaques
  ◊ wheals
  ◊ scales
◊ describe the basic anatomy of the integumentary system

Module II: Mechanical Trauma (18 slides)

Summary
Module II discusses the common skin conditions that are caused by mechanical trauma. The etiology, signs, symptoms, prevention, treatment, and return-to-participation guidelines are presented for each skin condition.

Student Learning Outcomes
After completing this module, students should be able to:
describe the clinical presentation, prevention, treatment, and return-to-participation guidelines for common skin injuries and illnesses caused by mechanical trauma

- abrasions
- lacerations
- blisters
- calluses
- acne mechanica
- talon noir

Module III: Bacterial Skin Infections (22 slides)

Summary
Module III discusses the common bacterial skin infections. The etiology, signs, symptoms, prevention, treatment, and return-to-participation guidelines are presented for each skin condition.

Student Learning Outcomes
After completing this module, students should be able to:

- describe the etiology, clinical presentation, treatment, prevention, and return-to-participation guidelines for common bacterial skin infections
  - community acquired methicillin-resistant staphylococcus aureus (CA-MRSA)
  - impetigo
  - furuncles and carbuncles
  - folliculitis

Module IV: Viral Skin Infections (18 slides)

Summary
Module IV discusses the common viral skin infections. The etiology, signs, symptoms, prevention, treatment, and return-to-participation guidelines are presented for each skin condition.

Student Learning Outcomes
After completing this module, students should be able to:

- describe the etiology, clinical presentation, prevention, treatment, and return-to-participation guidelines for common viral skin infections
  - herpes simplex virus (HSV)
  - molluscum contagiosum virus (MCV)
  - human papilloma virus (HPV)

Module V: Fungal Skin Infections (16 slides)

Summary
Module V discusses the common fungal skin infections. The etiology, signs, symptoms, prevention, treatment, and return-to-participation guidelines are presented for each skin condition.

Student Learning Outcomes
After completing this module, students should be able to:

- describe the etiology, clinical presentation, prevention, treatment, and return-to-participation guidelines for common fungal skin infections
Dermatological Conditions

- tinea capitis
- tinea pedis
- tinea cruris
- tinea unguium
- tinea corporis

Module VI: Parasitic Skin Infections (12 slides)

**Summary**

Module VI discusses the common parasitic skin infections. The etiology, signs, symptoms, prevention, treatment, and return-to-participation guidelines are presented for each skin condition.

**Student Learning Outcomes**

After completing this module, students should be able to:
- describe the etiology, clinical presentation, prevention, treatment, and return-to-participation guidelines for common parasitic skin infections
  - scabies
  - pediculosis

Module VII: Inflammatory Skin Infections (21 slides)

**Summary**

Module VII discusses the common inflammatory skin infections. The etiology, signs, symptoms, prevention, treatment, and return-to-participation guidelines are presented for each skin condition.

**Student Learning Outcomes**

After completing this module, students should be able to:
- describe the etiology, clinical presentation, prevention, treatment, and return-to-participation guidelines for common inflammatory skin infections
  - acne vulgaris
  - contact dermatitis
  - chronic eczema
  - psoriasis

Module VIII: Sunburn and Skin Cancer (19 slides)

**Summary**

Module VIII presents the etiology, signs, symptoms, prevention, treatment, and return-to-participation guidelines for sunburn and skin cancer.

**Student Learning Outcomes**

After completing this module, students should be able to:
- describe the severity levels, treatment, prevention, and return-to-participation guidelines for sunburn
- describe the different types of skin cancer
- explain the risk factors associated with developing skin cancer
- explain the ABCDE acronym promoted by the American Cancer Society for recognizing skin cancer
◊ explain the diagnosis and treatment procedures for skin cancer

**Case Study**

The case study presented in Chapter 12 asks students to describe how they would manage progressively worsening skin lesions in six football athletes. Students are also asked to describe the procedures they would use to prevent the spread of these lesions to the rest of the team.

**Lab Exercises**

There are no lab exercises for Chapter 12.
Chapter 13

Neurological System

Competencies

This chapter addresses the following knowledge and skills from the Athletic Training Education Competencies, 5th ed.¹:

<table>
<thead>
<tr>
<th>Content Area</th>
<th>Knowledge and Skills</th>
</tr>
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<tr>
<td>Prevention and Health Promotion (PHP)</td>
<td>5, 17c</td>
</tr>
<tr>
<td>Clinical Examination and Diagnosis (CE)</td>
<td>1–3, 7, 13, 16–19, 20f, 21h, 22</td>
</tr>
<tr>
<td>Acute Care of Injuries and Illnesses (AC)</td>
<td>34, 36b, 36k,</td>
</tr>
</tbody>
</table>

Chapter Outline and Objectives

Introduction

Review of Anatomy, Physiology, and Pathogenesis

◊ Describe the anatomy and physiology of the neurological system.
◊ Describe the pathophysiological mechanisms associated with injuries and illnesses involving the neurological system.

Signs and Symptoms

◊ Discuss the general signs and symptoms of neurological pathology.

Pain Patterns

◊ Identify the referred pain patterns associated with pathology of the central and peripheral nervous systems.

Medical History and Physical Examination

◊ Discuss medical history findings relevant to neurological pathology.
Chapter 13

◊ Describe the clinical examination procedures relevant to neurological injuries, illnesses and diseases.
  • Inspection
  • Physical Examination
    • Sensory Assessment
    • Motor Assessment
    • Assessment of Deep Tendon Reflexes
    • Meningeal Irritation
    • Cranial Nerve Assessment
    • Assessment of Cognitive Function
    • Balance and Postural Stability

Pathology and Pathogenesis

Central Nervous System Disorders
◊ Discuss the signs, symptoms, management, medical referral guidelines, return to participation guidelines, and prevention strategies for pathology involving the central nervous system.
  • Stroke
  • Cerebral Aneurysm
  • Headaches
    • Migraine
    • Cluster
    • Toxic Vascular
  • Brain Trauma
    • Concussion
    • Post-Concussion Syndrome
    • Second-Impact Syndrome
  • Neurological Infections
    • Acute Bacterial Meningitis
    • Viral Meningitis
  • Cerebral Palsy and Anoxic Brain Injury
  • Epilepsy, Seizure, and Convulsion Disorders
  • Spinal Cord Disorders
    • Spinal Cord Trauma
    • Spinal Bifida
  • Multiple Sclerosis

Peripheral Nervous System (and Combined Central-Peripheral) Disorders
◊ Discuss the signs, symptoms, management, medical referral guidelines, and return-to-participation guidelines for pathology involving the peripheral nervous system.
  • Reflex Sympathetic Dystrophy
  • Motor Unit and Neuromuscular Disorders
    • Motor Neuron
      - Amyotrophic Lateral Sclerosis
      - Poliomyelitis
Neurological System

• Post-polio Syndrome
  • Axon
  • Peripheral Neuropathy
  • Guillain-Barré Syndrome
• Neuromuscular Junction
  • Myasthenia Gravis
• Muscle
  • Muscular Dystrophy
• Management of Neuromuscular Diseases

Summary

Case Study
  ◊ Develop critical-thinking and clinical decision-making skills.

CHAPTER OVERVIEW

Chapter 13 begins with an anatomical review of the central (CNS) and peripheral nervous systems (PNS). The general signs and symptoms of neurological conditions are discussed, as well as the associated pain patterns. Physical examination procedures are described and illustrated through graphics and photos. The discussion of neurological pathology is organized into those conditions that affect the CNS and those that involve the PNS. The CNS pathology includes cerebrovascular conditions (eg, strokes, aneurysms, vascular headaches), concussions (including subdural and epidural hematomas, post-concussion syndrome and second impact-syndrome), neurological infections (eg, meningitis), cerebral palsy, epilepsy, spina bifida, and multiple sclerosis. The discussions of PNS pathology include Complex regional pain syndrome (CRPS), amyotrophic lateral sclerosis (ALS or “Lou Gehrig’s disease”), poliomyelitis and post-polio syndrome, peripheral neuropathy, Guillain-Barré syndrome, myasthenia gravis and muscular dystrophy.

Chapter 13 includes the latest evidence and recommendations presented in the following NATA Position Statements:
  ◊ Management of Sport Related Concussion (http://www.nata.org/sites/default/files/MgmtOfSportRelatedConcussion.pdf)
  ◊ Preventing Sudden Death in Sports (http://www.nata.org/sites/default/files/Preventing-Sudden-Death-Position-Statement_2.pdf)

Although the clinical presentation, assessment and management of concussions are included in this chapter, we recognize that Athletic Training Education Programs typically address this content in orthopedic/musculoskeletal assessment courses. For this reason, the Chapter 13 power point modules do not include this information. Similarly, we recognize that many of the neurological conditions discussed in Chapter 13 may not be common among the active patient population of most athletic trainers; however, we felt that these conditions should be mentioned so that athletic trainers were at least “aware” of them. With this in mind, the power point modules, which are summarized below, include the more common conditions that athletic trainers may face in their day-to-day clinical practice.
Power Point Modules

Module I: Anatomical Review (35 slides)

Summary
Module I reviews the functional anatomy of the central and peripheral nervous systems. The four main regions of the brain are presented along with the structures that make up these regions and their primary functions. The roles of the blood brain barrier and cerebrospinal fluid are also explained. The cranial nerves, spinal nerve roots and peripheral nerves are identified.

Student Learning Outcomes
After completing this module, students should be able to:
◊ describe the anatomical structures and functions of the central nervous system
◊ explain the structure and function of the blood brain barrier
◊ explain the function of cerebrospinal fluid
◊ explain the structure and function of the meninges
◊ identify each cranial nerve and its function
◊ describe the basic anatomical structure of nerve cells
◊ describe the anatomical structures and functions of the peripheral nervous system
◊ explain the organization and function of spinal nerve roots
◊ identify the location and function of the peripheral nerves
◊ compare and contrast the functions of the autonomic and somatic nervous systems

Module II: Signs/Symptoms, History and Evaluation (43 slides)

Summary
Module II presents the general signs and symptoms associated with neurological pathology. Family and personal history findings related neurological injuries and conditions are discussed, along with characteristics to observe for when evaluating such conditions. Physical examination procedures discussed include upper and lower quarter nerve assessment, cranial nerve assessment, evaluation of cognitive function, and assessment of balance and postural stability.

Student Learning Outcomes
After completing this module, students should be able to:
◊ discuss the general signs and symptoms of neurological pathology
◊ identify the referred pain patterns associated with pathology of the central and peripheral nervous systems
◊ discuss medical history findings relevant to neurological pathology.
◊ identify & describe the physical examination procedures used in evaluating neurological injuries and illnesses
  • assessment of sensory, motor & DTRs
  • cranial nerve assessment
  • assessment of cognitive function
  • balance & postural stability
Module III: Neurovascular Disorders (39 slides)

*Summary*
Module III discusses the clinical presentation and management of strokes, cerebral aneurysms and neurovascular headaches.

*Student Learning Outcomes*
After completing this module, students should be able to:
◊ describe the pathophysiology associated with neurovascular injuries to the CNS
◊ describe the clinical presentation, evaluation, and management of common neurovascular injuries to the CNS
  º strokes
  º aneurysms
  º neurovascular headaches

Module IV: Neurological Infections and Seizure Disorders (30 slides)

*Summary*
Module IV discusses the clinical presentation and management of meningitis and epilepsy.

*Student Learning Outcomes*
After completing this module, students should be able to:
◊ describe the pathophysiology associated with meningitis and seizures
◊ describe the clinical presentation, evaluation, and management of meningitis and seizures

**Case Study**

The case study presented in Chapter 13 presents students with the situation that one of their athletes has epilepsy. The students are asked to identify what information they would feel necessary to obtain from the athlete regarding his seizure history. Also, the students are asked to describe how they would educate the athlete’s coaches regarding epilepsy and what procedures they would include in their emergency action plan for managing a seizure should one occur.

**Lab Exercises**

There are four lab exercises included in Chapter 13. Each lab exercise focuses on an aspect of neurological assessment.
◊ Lab Exercise 13-1 Assessment of Sensory Function
◊ Lab Exercise 13-2 Assessment of Motor Function
◊ Lab Exercise 13-3 Assessment of Deep Tendon Reflexes
◊ Lab Exercise 13-4 Assessment of Cranial Nerves
Chapter 14

Psychological Conditions

Competencies

This chapter addresses the following knowledge and skills from the National Athletic Trainers’ Association’s Athletic Training Education Competencies, 5th ed.1:

<table>
<thead>
<tr>
<th>Content Area</th>
<th>Competency #</th>
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<tbody>
<tr>
<td>Prevention and Health Promotion (PHP)</td>
<td>3, 5, 46, 47, 48, 49</td>
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<tr>
<td>Clinical Examination and Diagnosis (CE)</td>
<td>16, 17, 18, 22</td>
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<tr>
<td>Acute Care of Injury and Illness (AC)</td>
<td>36n, 41</td>
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<tr>
<td>Psychosocial Strategies and Referral (PS)</td>
<td>11, 12, 13, 14, 15, 16</td>
</tr>
<tr>
<td>Clinical Integration Proficiencies (CIP)</td>
<td>5, 8</td>
</tr>
</tbody>
</table>

Chapter Outline and Objectives

Introduction

Signs and Symptoms

◊ Discuss medical history findings relevant to psychological disorders.
◊ Identify signs and symptoms of psychological disorders.
  ◦ Change in Sleep Pattern
  ◦ Change in Cognitive Status or Function
  ◦ Weight Loss and Loss of Appetite
  ◦ Emotional Lability and Change in Affect (Mood)
  ◦ Unexplainable or Bizarre Symptoms
◊ Pain Patterns
Medical History and Physical Examination

◊ Perform physical examination tasks relevant to psychological disorders.

Pathology and Pathogenesis

◊ Describe the common mental health professionals (eg, psychiatrists, psychologists, counselors, social workers) and the role they may play in treating psychosocial disorders.

◊ Describe basic psychological concepts such as behavior, mood, orientation, and perception.

◊ Identify risk factors associated with common psychological disorders.

◊ Identify and describe the signs, symptoms, interventions and, when appropriate, the return-to-participation guidelines for the common psychological disorders.

- Substance Abuse
- Eating Disorders and Disordered Eating
- Mood Disorders
- Anxiety Disorders
- Somatoform Disorders
- Personality Disorders
- Psychoses

Pediatric Concerns

- Child Abuse
- Behavioral or Conduct Disorders

Summary

Case Study

◊ Develop critical-thinking and clinical decision-making skills.

**CHAPTER OVERVIEW**

Chapter 14 places the greatest emphasis on substance abuse and disordered eating since these are the most common psychological disorders encountered by athletic trainers. Other conditions discussed include depression, bipolar disorder, seasonal affective disorder, obsessive-compulsive disorder and phobias. The recognition of child abuse and the health care professional’s obligation to report suspected abuse is also addressed.

Chapter 14 includes the latest evidence and recommendations presented in the following NATA Position Statement:

◊ Preventing, Detecting and Managing Disordered Eating in Athletes (http://www.nata.org/sites/default/files/PreventingDetectingAndManagingDisorderedEating.pdf)

The content within Chapter 14 is divided into two power point modules, which are summarized below.
Power Point Modules

Module I: History, Signs and Symptoms, and Evaluation (16 slides)

Summary
Module I presents the personal and family history findings related to possible psychological disorders. The general signs and symptoms for these disorders are also discussed. Potential screening questions for evaluating mental status are identified.

Student Learning Outcomes
After completing this module, students should be able to:
◊ discuss medical history findings relevant to psychological disorders.
◊ identify signs and symptoms of psychological disorders.
◊ perform physical examination tasks relevant to psychological disorders

Module II: Common Disorders (15 slides)

Summary
Module I presents the personal and family history findings related to possible psychological disorders. The general signs and symptoms for these disorders are also discussed. Potential screening questions for evaluating mental status are identified.

Student Learning Outcomes
After completing this module, students should be able to:
◊ describe the common mental health professionals (eg, psychiatrists, psychologists, counselors, social workers) and the role they may play in treating psychosocial disorders
◊ identify signs of common psychological disorders.

Case Study
The case study presented in Chapter 14 asks students to develop an educational program for coaches and athletes regarding the prevention, recognition, and treatment of substance abuse. Instructors can make this project more realistic by asking the students to actually prepare the instructional materials rather than describing “what they would do” (ie, a PowerPoint and/or instructional brochure or flyer).

Lab Exercises
There are no lab exercises for Chapter 14.