THIRD EDITION

THE ROLE OF THE ATHLETIC TRAINER IN SPORTS MEDICINE

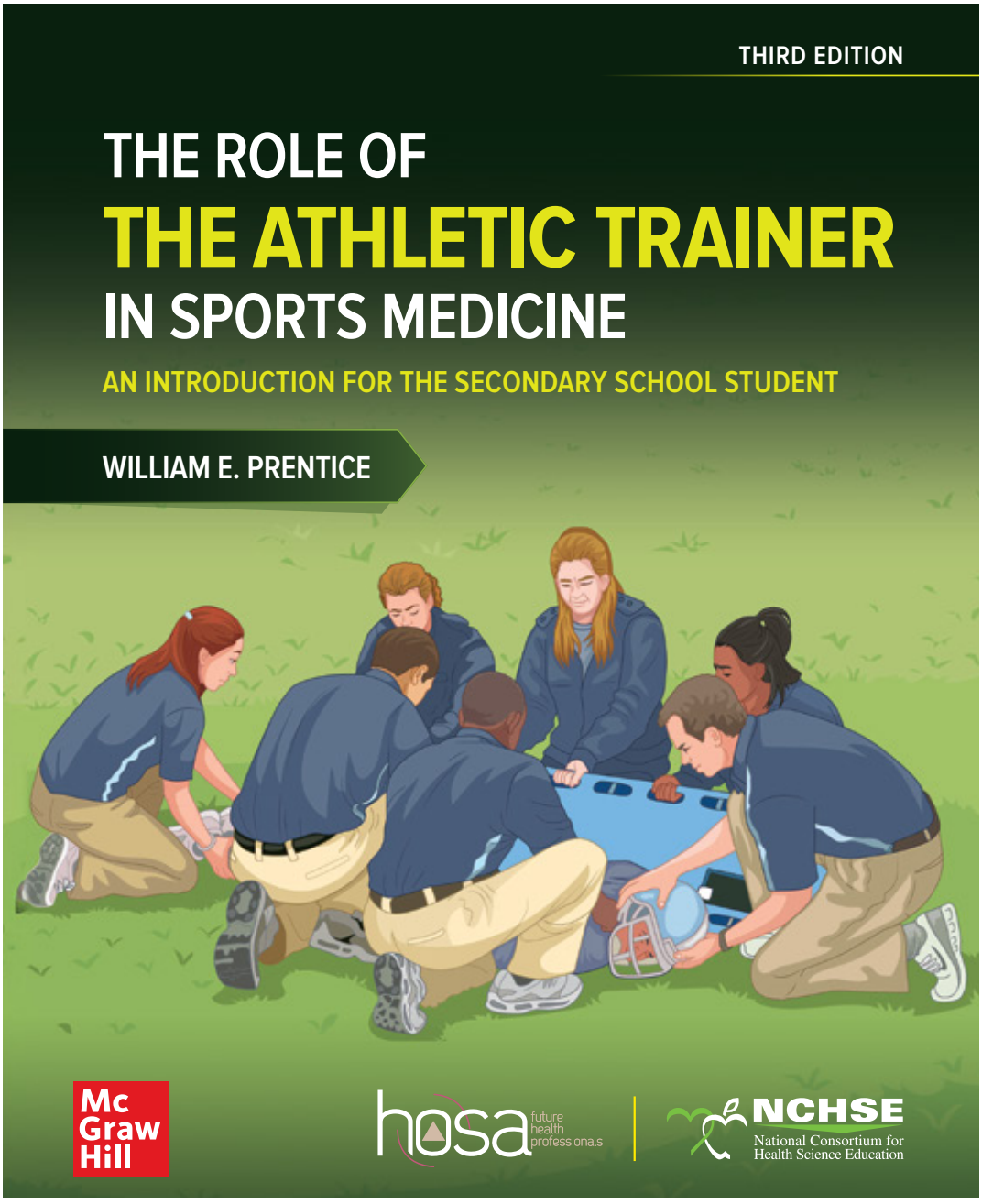
AN INTRODUCTION FOR THE SECONDARY SCHOOL STUDENT

WILLIAM E. PRENTICE

Mc Graw Hill

hosa future health professionals

NCHSE National Consortium for Health Science Education



William E. Prentice, PhD, AT Ret, PT-Retired, FNATA

Professor Emeritus Department of Exercise and Sport Science

Mc Graw Hill

Bothell, WA • Chicago, IL • Columbus, OH • New York, NY

Brief Contents

Table of Contents

Preface

WHO SHOULD USE THIS TEXT?

The updated third edition of this text, *The Role of the Athletic Trainer in Sports Medicine: An Introduction for the Secondary School Student* is designed to introduce secondary school students who may be interested in pursuing a career in some aspect of health care to the profession of athletic training and the field of sports medicine. It provides basic information for students on a variety of topics, all of which relate in one way or another to health care for the athletic or physically active patient populations. Athletic trainers are health care professionals who specialize in injury and illness prevention, wellness promotion and education, emergent care, examination and clinical diagnosis, therapeutic intervention, and rehabilitation of injuries and medical conditions. In cooperation with physicians, other allied health care personnel, administrators, coaches, and parents, the athletic trainer functions as an integral member of the health care team in clinics, secondary schools, colleges and universities, professional sports programs, and other athletic health care settings. As you will see throughout the course of this text, athletic trainers provide a critical link between the medical community and individuals who participate in all types of physical activity.

HOW WAS IT DEVELOPED AND ORGANIZED?

In 2016, the National Athletic Trainers Association (NATA) Secondary School Athletic Trainers Committee developed the *Secondary School Sports Medicine Course Outline***.** This document was designed for use as a suggested outline/template for instructors teaching courses related to athletic training and/or sports medicine which are being taught in the secondary schools. It provides a list of topics and information that the course instructor may choose from, which have been deemed appropriate for the secondary school student by NATA Secondary School Athletic Trainers' Committee. The NATA Board of Directors approved this document for use as intended for secondary school instructors. It can be accessed on the NATA official website.

This updated third edition of *The Role of the Athletic Trainer in Sports Medicine: An Introduction for the Secondary School Student* is based on the *Secondary School Sports Medicine Course Outline.* It includes the 15 Units identified in the outline, and incorporates the suggested key terms, objectives, and student applications/activities for each unit.

HOW SHOULD THIS TEXT BE USED?

This text contains the basic information about the profession of athletic training and the roles and responsibilities of the athletic trainer as a health care provider. While it is designed to be used by a course instructor to introduce the student to what an athletic trainer does, it is in no way meant to encourage, much less allow, the student, an athletic training student aide, or any other unlicensed or unqualified individual to perform the functions of any licensed health care professional. It must be made absolutely clear that state laws and statutes limit anyone other than licensed health care providers (i.e., athletic trainers, physical therapists, occupational therapists, physicians, etc.) in the extent to which he or she can legally be involved in providing patient care. Doing so is not only a violation of state practice acts, but also a violation of the NATA Code of Ethics.

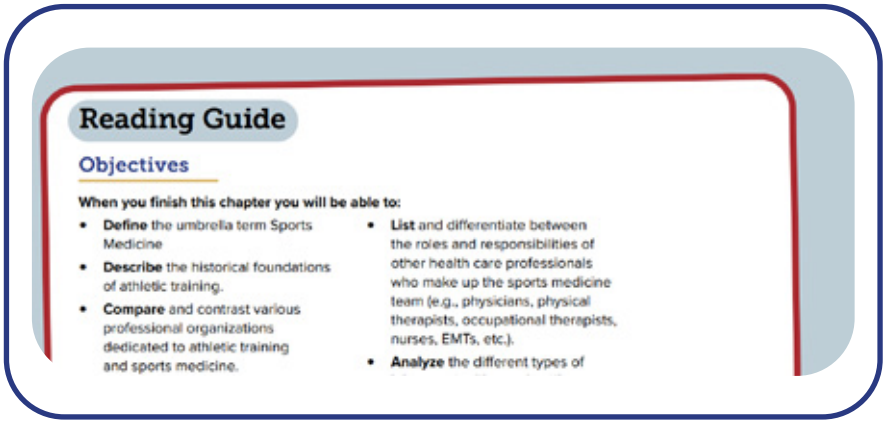
ACKNOWLEDGMENTS

This is for my family, my two son's Brian and Zach, my daughter-in-law Megan, and our granddaughter Ruthie. They keep me grounded and help me maintain focus in both my personal and professional life and I am incredibly proud of each of them. My wife, Tena is a great Mom and Grandmother. She is truly an inspiration to me and to everyone who knows her.

The Role of the Athletic Trainer in Sports Medicine

A Student Edition Designed Specifically for High School Learners

Clarity of instruction is driven through **Objectives** presented at the start of each chapter in the **Reading Guide**.



Reading Guide

Objectives

When you finish this chapter you will be able to:

- **Define** the umbrella term Sports Medicine
- **Describe** the historical foundations of athletic training.
- **Compare** and contrast various professional organizations dedicated to athletic training and sports medicine.
- **List** and differentiate between the roles and responsibilities of other health care professionals who make up the sports medicine team (e.g., physicians, physical therapists, occupational therapists, nurses, EMTs, etc.).
- **Analyze** the different types of

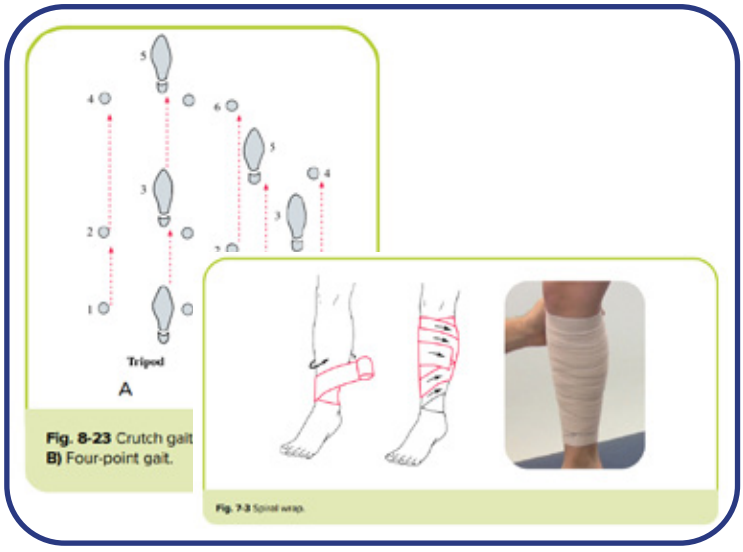
Key Terms

- liability
- duty of care
- negligence
- tort
- assumption of risk

Essential vocabulary is highlighted at the start of the chapter and bolded when defined in the reading.

Carbohydrates are the body's most efficient source of energy and should be relied on to fill that need.[65] Carbohydrates should account for at least 45 percent of total caloric intake, and some recommendations go as high as 65 percent. Carbohydrates may be considered either simpler or complex based upon their chemical structure.

Visual and relevant **charts** and **images** bring the content to life and reinforce the concepts and skills being learned.



Tripod

A

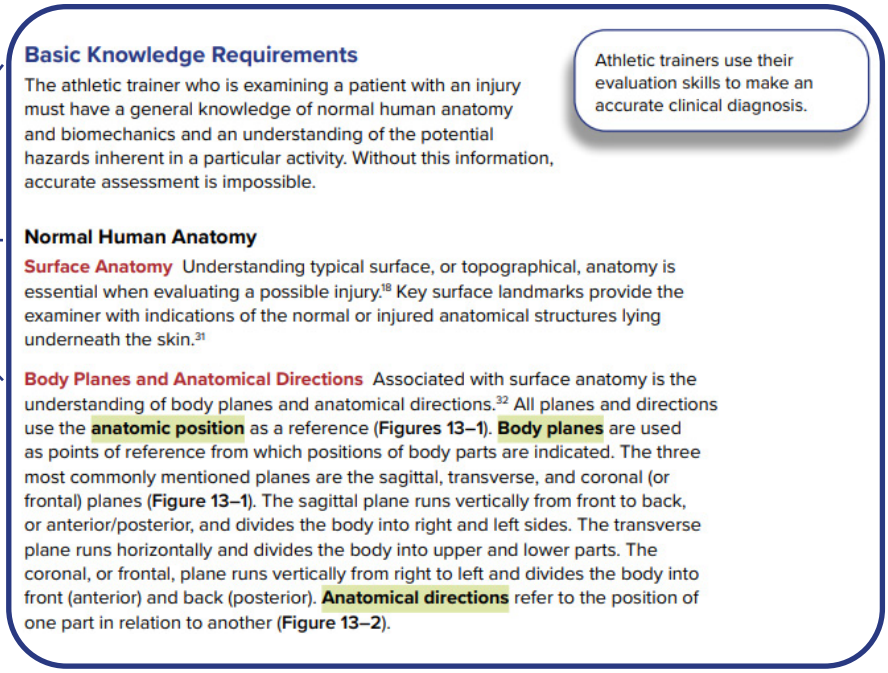
Fig. 8-23 Crutch gait
B) Four-point gait.

6–2 Critical Thinking Exercise

A recreational runner has been training to run his first marathon. He feels good about his level of conditioning but wants to make certain that he does everything that he can do to maximize his performance. He is curious about eating the right type of foods both before and during the marathon to help ensure that he does not become excessively fatigued.

Critical Thinking Exercises break up reading sections by asking students to apply their learning to real-life situations.

Readings are chunked into smaller segments with **clear headers** for students to know what they will learn, or scan for review.



Basic Knowledge Requirements

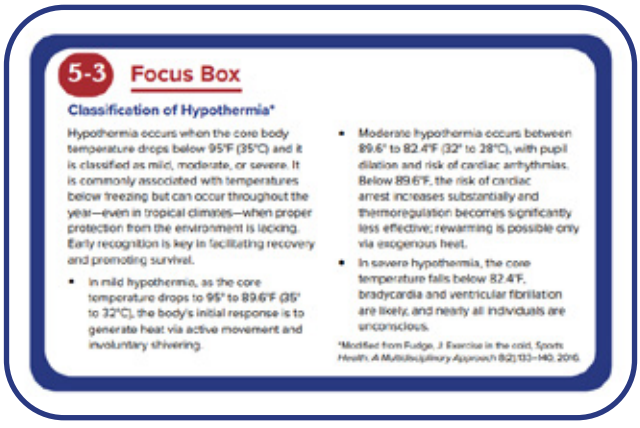
Athletic trainers use their evaluation skills to make an accurate clinical diagnosis.

The athletic trainer who is examining a patient with an injury must have a general knowledge of normal human anatomy and biomechanics and an understanding of the potential hazards inherent in a particular activity. Without this information, accurate assessment is impossible.

Normal Human Anatomy

Surface Anatomy Understanding typical surface, or topographical, anatomy is essential when evaluating a possible injury.[18] Key surface landmarks provide the examiner with indications of the normal or injured anatomical structures lying underneath the skin.[31]

Body Planes and Anatomical Directions Associated with surface anatomy is the understanding of body planes and anatomical directions.[32] All planes and directions use the **anatomic position** as a reference (**Figures 13–1**). **Body planes** are used as points of reference from which positions of body parts are indicated. The three most commonly mentioned planes are the sagittal, transverse, and coronal (or frontal) planes (**Figure 13–1**). The sagittal plane runs vertically from front to back, or anterior/posterior, and divides the body into right and left sides. The transverse plane runs horizontally and divides the body into upper and lower parts. The coronal, or frontal, plane runs vertically from right to left and divides the body into front (anterior) and back (posterior). **Anatomical directions** refer to the position of one part in relation to another (**Figure 13–2**).



5-3 Focus Box

Classification of Hypothermia*

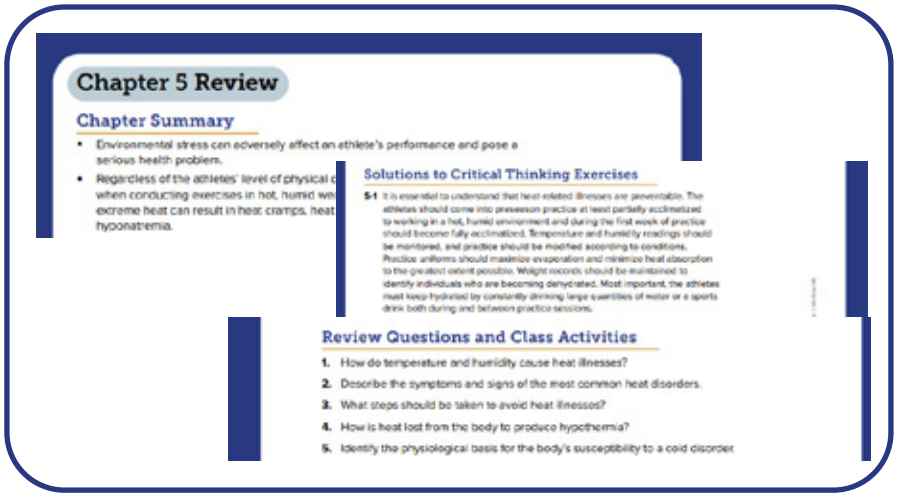
Hypothermia occurs when the core body temperature drops below 95°F (35°C) and it is classified as mild, moderate, or severe. It is commonly associated with temperatures below freezing but can occur throughout the year—even in tropical climates—when proper protection from the environment is lacking. Early recognition is key in facilitating recovery and promoting survival.

- In mild hypothermia, as the core temperature drops to 95° to 89.6°F (35° to 32°C), the body's initial response is to generate heat via active movement and involuntary shivering.
- Moderate hypothermia occurs between 89.6° to 82.4°F (32° to 28°C), with pupil dilation and risk of cardiac arrhythmias. Below 89.6°F, the risk of cardiac arrest increases substantially and thermoregulation becomes significantly less effective; rewarming is possible only via exogenous heat.
- In severe hypothermia, the core temperature falls below 82.4°F, bradycardia and ventricular fibrillation are likely, and nearly all individuals are unconscious.

*Modified from Fudge, J. Exercise in the cold. *Sports Health: A Multidisciplinary Approach* 8(2):133–140, 2016.

Focus Boxes throughout the chapter provides an easy reference list of key points related to the learning objective.

Students review the material at the end of each chapter with a **Chapter Summary**, suggested **Critical Thinking** answers, and **Review Question and Class Activities.**



Chapter 5 Review

Chapter Summary

- Environmental stress can adversely affect an athlete's performance and pose a serious health problem.
- Regardless of the athletes' level of physical c… when conducting exercises in hot, humid we… extreme heat can result in heat cramps, heat… hyponatremia.

Solutions to Critical Thinking Exercises

5-1 It is essential to understand that heat-related illnesses are preventable. The athletes should come into preseason practice at least partially acclimatized to working in a hot, humid environment and during the first week of practice should become fully acclimatized. Temperature and humidity readings should be monitored, and practice should be modified according to conditions. Practice uniforms should maximize evaporation and minimize heat absorption to the greatest extent possible. Weight records should be maintained to identify individuals who are becoming dehydrated. Most important, the athletes must keep hydrated by constantly drinking large quantities of water or a sports drink both during and between practice sessions.

Review Questions and Class Activities

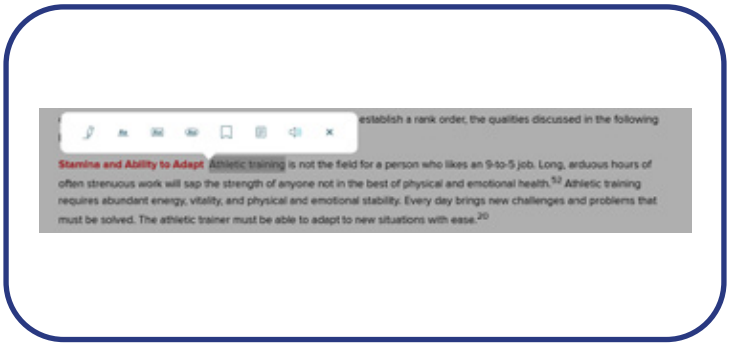
1. How do temperature and humidity cause heat illnesses?
2. Describe the symptoms and signs of the most common heat disorders.
3. What steps should be taken to avoid heat illnesses?
4. How is heat lost from the body to produce hypothermia?
5. Identify the physiological basis for the body's susceptibility to a cold disorder.

Online Learning for High School Learners

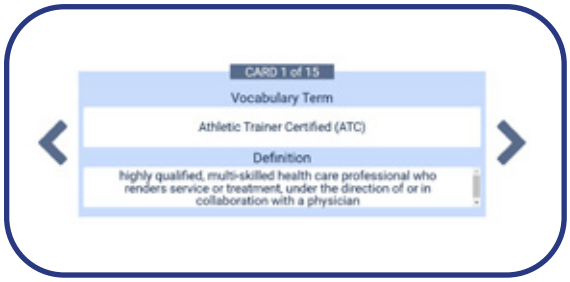
One place for students to learn, study, and assess their progress in the course.

Smartbook

Beyond an eBook, this adaptive tool personalizes learning for each student's progress. Practice questions support the reading and suggest study content based on results



Flashcards

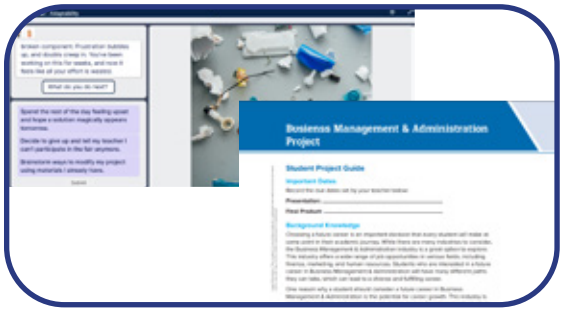


Interactive flashcards ensure students learn and retain the vocabulary of an athletic trainer.

Assessment

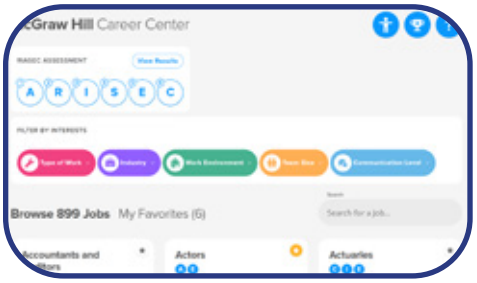
Extensive auto-graded quizzing and testing ensure students can apply learned concepts.

Extensive Soft Skills Support



Simulations, Project Based Learning, Soft Skills eBook, adaptive study tools, and assessment provide a rich opportunity for students to learn critical thinking, leadership, career researching, applied math, and many other professional skills.

Career Center



Students can explore 900 careers on their own or take a quick assessment to find careers aligned with their aptitudes and interests.

Introduction Videos

Each chapter begins with newly developed videos designed to engage and excite students about the topic.

UNIT 1

Healthcare Administration and Professional Responsibilities

Chapter 1

Investigating the Field of Sports Medicine

Athletic trainers are health care professionals who specialize in injury and illness prevention, wellness promotion and education, emergent care, examination and clinical diagnosis, therapeutic intervention, and rehabilitation of injuries and medical conditions.[26] In cooperation with physicians, other allied health personnel, administrators, coaches, and parents, the athletic trainer functions as an integral member of the health care team in clinics, secondary schools, colleges and universities, professional sports programs, and other athletic health care settings.

Reading Guide

Objectives

When you finish this chapter you will be able to:

- **Define** the umbrella term Sports Medicine
- **Describe** the historical foundations of athletic training.
- **Compare** and contrast various professional organizations dedicated to athletic training and sports medicine.
- **Delineate** the process for attaining national certification and state licensure for the athletic trainer.
- **Discuss** the roles and responsibilities of the certified athletic trainer.
- **List** and differentiate between the roles and responsibilities of other health care professionals who make up the sports medicine team (e.g., physicians, physical therapists, occupational therapists, nurses, EMTs, etc.).
- **Analyze** the different types of job opportunities and settings available to the athletic trainer as well as other members of the sports medicine team.
- **Discuss** the athletic trainers' commitment to diversity, equity, inclusion, and access.

Key Terms

- Athletic Trainer Certified (ATC)
- Licensed Athletic Trainer (LAT)
- sports medicine
- sports medicine team
- athletic training student aides
- National Athletic Trainers' Association (NATA)
- Board of Certification (BOC)
- patient
- athletic training clinic
- Commission on Accreditation of Athletic Training Education Programs (CAATE)
- American Medical Association (AMA)
- National Federation of State High School Associations (NFHS)
- accrediting agencies
- state licensing board
- athletic training

Athletic trainers work under the direction of or in collaboration with a physician, in accordance with their education, training, and the state's statutes, rules, and regulations, as licensed healthcare providers.[7] As you will see throughout the course of this text, athletic trainers provide a critical link between the medical community and individuals who participate in all types of physical activity (**Figure 1–1**). This text is designed to introduce **athletic training student aides** in secondary schools to the profession of **athletic training** and the field of **sports medicine**.

Fig. 1-1 The field of athletic training provides a critical link between the medical community and the physically active individual.

What is Sports Medicine?

The term sports medicine refers broadly to the field of health care related to physical activity and sport. The American College of Sports Medicine (ACSM) uses the term sports medicine to describe a multidisciplinary approach to health management or achievement of full potential, including the physiological, biomechanical, psychological, and pathological phenomena associated with exercise and sports.[33] The clinical application of the work of these disciplines is performed to improve and maintain an individual's functional capacities for physical labor, exercise, and sports. It also includes the prevention and treatment of diseases and injuries related to exercise and sports. The field of sports medicine encompasses under its umbrella a number of more specialized aspects of dealing with the physically active or athletic populations that may be classified as relating either to performance enhancement or to injury care and management (**Figure 1–2**). Those areas of specialization that are primarily concerned with performance enhancement include exercise physiology, biomechanics, sport psychology, sports nutrition, strength and conditioning, personal fitness training, coaching, and physical education. Areas of specialization that focus more on health care and injury/illness management specific to the athlete are the practice of medicine (physicians and physician assistants), athletic training, sports physical therapy, massage therapy, dentistry, osteopathic medicine, orthotists/prosthetists, sports chiropractic, sports podiatry, emergency medical specialists and paramedics.

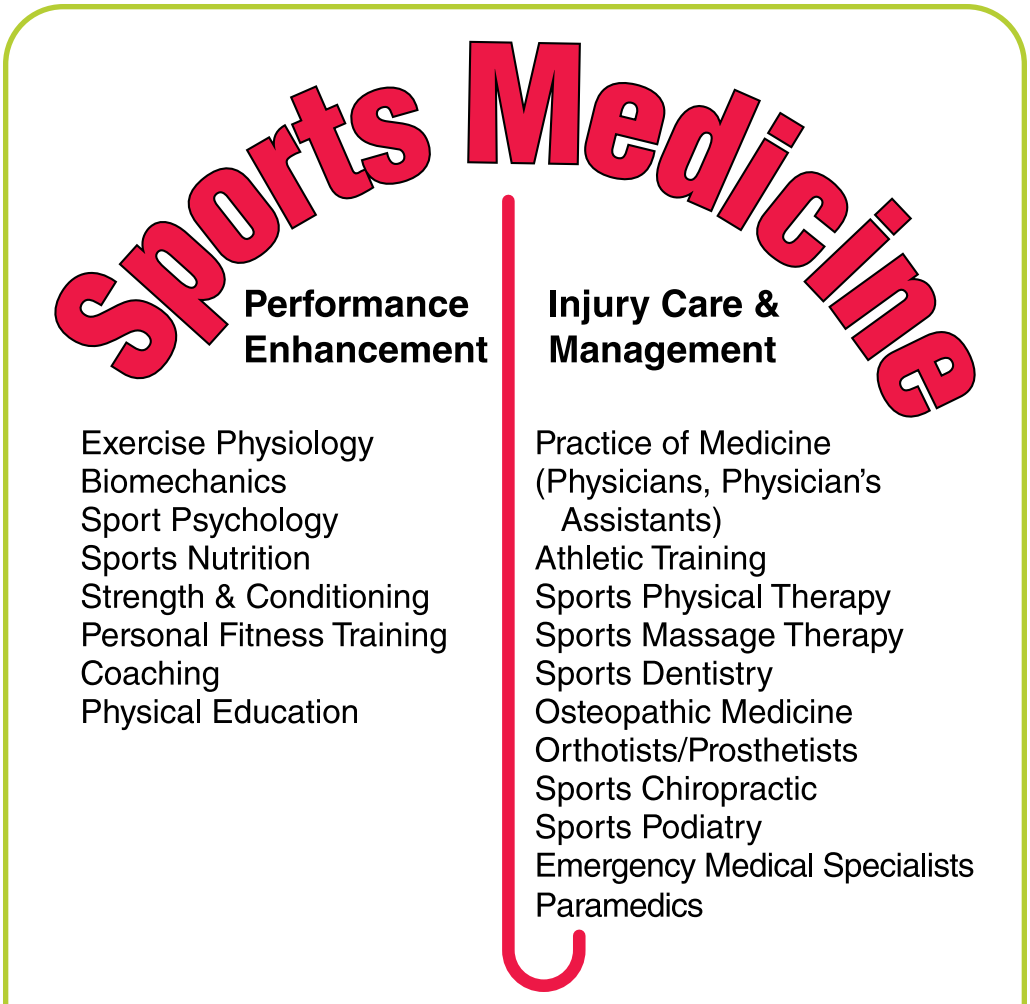


Fig. 1-2 Areas of specialization under the sports medicine "umbrella."

Certainly, some of the specializations listed under this umbrella could be concerned with both performance enhancement and injury care and management (for example, sports nutrition).

The History of the Athletic Training Profession

Early History

The drive to compete was important in many early societies. Sports developed over a period of time as a means of competing in a relatively peaceful and non-harmful way. Early civilizations show little evidence of highly organized sports. Evidence indicates that in Greek and Roman civilizations there were coaches, trainers (people who helped the athlete reach top physical condition), and physicians (such as Hippocrates and Galen) who assisted the athlete in reaching optimum performance. Many of the roles that emerged during this early period are the same in modern sports. For many centuries after the fall of the Roman Empire, there was a complete lack of interest in sports activities. Not until the beginning of the Renaissance did these activities slowly gain popularity. Athletic training as we know it came into existence during the late nineteenth century with the establishment of intercollegiate and interscholastic athletics in the United States. Because the first athletic trainers of this era possessed no technical knowledge, their athletic

training techniques usually consisted massages, applying counterirritants, and occasionally prescribing various home remedies and poultices. It has taken many years for the athletic trainer to attain the status of a well-qualified allied health care professional.[39]

Evolution of the Contemporary Athletic Trainer

Athletic training has evolved over the years to play a major role in the health care of a variety of patient populations in general and the athlete in particular.[14] This evolution occurred rapidly after World War I with the appearance of the athletic trainer in intercollegiate athletics. During this period, the major influence in developing the athletic trainer as a specialist in preventing and managing athletic injuries came from the work of S. E. Bilik, a physician who wrote the first major text on athletic training and the care of athletic injuries, called *The Trainer's Bible*, in 1917.[5] In the early 1920s, the Cramer family in Gardner, Kansas, started a chemical company and began producing a liniment to treat ankle sprains. Over the years, the Cramers realized that there was a market for products to treat injured athletes. In an effort to enhance communication and facilitate an exchange of ideas among coaches, athletic trainers, and athletes, the Cramer family began publishing *First Aider* in 1932. The members of this family were instrumental in the early development of the athletic training profession and have always played a prominent role in the education of student athletic trainers.[39]

Many professional organizations are dedicated to achieving health and safety in sports.

During the late 1930s, college and university athletic trainers made efforts to establish a national organization, the **National Athletic Trainers' Association (NATA)**. After struggling for existence from 1938 to 1944, the association essentially disappeared during World War II.

Between 1947 and 1950, university athletic trainers once again began to organize themselves into separate regional conferences, which would later become district organizations within NATA. In 1950, approximately 101 athletic trainers from various conferences met in Kansas City, Missouri, to officially form the National Athletic Trainers' Association. The primary purpose for its formation was to establish professional standards for athletic trainers.[39] Since NATA's founding in 1950, many individuals have contributed to the profession's development.

After 1950, the growth of the athletic training profession has been remarkable. In 1974, when NATA membership was first tracked, there were 4,500 members. Today those numbers have grown to more than 45,000 members, although there are another 12,000 additional certified athletic trainers who are not members of the NATA. Certified athletic trainers can be found internationally in Canada, England, Ireland, Scotland, Spain, Germany, Japan, Korea, Taiwan, China, and Australia.[17] As the athletic training profession has grown and evolved over the last 70 years, many positive milestones have occurred that have collectively shaped the future direction of the profession, including:

- the establishment of a certification exam
- recognition of athletic trainers as health care providers by the **American Medical Association**
- increased diversity of practice settings

- the passage of practice acts that regulate athletic trainers in all but the state of California
- third-party reimbursement for athletic training services
- on-going reevaluation, revision, and reform of athletic training educational programs

The Changing Face of the Athletic Training Profession

Since the origins of the athletic training profession in the 1930s, most athletic trainers have been employed at colleges and universities, secondary schools, and in professional sports such as football, basketball, and baseball, providing services almost exclusively to athletic populations. Historically, this work environment has been referred to as the "traditional setting" for athletic trainers' employment.

During the past decade, the role of the athletic trainer has gradually evolved into one that is unquestionably more aligned with that of a health care provider. Today many **certified athletic trainers (ATCs)** are employed in so-called "emerging settings," including clinics and hospitals, as well as in industrial and occupational settings, working under the direction of a physician in medical practices. Although many athletic trainers continue to work in colleges, universities, and secondary schools, others can be found working as health care providers in all kinds of professional sports, including rodeo and NASCAR; in industrial settings; in performing arts and the entertainment industry; in medical equipment sales and support; in the armed forces, with public safety agencies (e.g. police, fire); and with government agencies, including NASA, the U.S. Senate, and the Pentagon.

This expansion of potential employment settings has necessitated changes not only in how health care is delivered to diverse patient populations but also in athletic training education programs, to establish and teach professional competencies and skills that are universal across all settings.

Depending on their employment setting, athletic trainers now provide healthcare not only to athletes but also to individuals who may not be injured as a result of physical activity. Additionally, the desire to align the athletic trainer more closely with other health professionals and to establish athletic training as a clinical health care profession has led to changes in terminology that was "traditionally" accepted as appropriate. Certainly, athletic trainers continue to work with athletes. It has been suggested that a more appropriate term to use when treating an athlete who sustains an injury is **patient** or client. Thus, throughout this text the term athlete is used to refer to a physically active individual who participates in recreational or organized sport activities who is not currently injured. Any individual who is ill or injured who is being treated by an athletic trainer is referred to as a patient. It has also been recommended that instead of referring to treating athletes in the athletic training room, it is more appropriate to refer to treating patients in the athletic training clinic or facility. Thus, the term **athletic training clinic** is used to refer to a health care facility for treating individuals who have an illness or injury.

Growth of Professional Sports Medicine Organizations

The twentieth century brought the development of several professional organizations dedicated to athletic training and sports medicine. Professional

organizations have several goals: (1) to elevate the field by establishing and maintaining a set of professional standards, including a code of ethics; (2) to bring together professionally competent individuals to exchange ideas, stimulate research, and promote critical thinking; and (3) to provide individuals with an opportunity to work as a group with a unified purpose, enabling them to achieve objectives that would be difficult to accomplish individually. The organizations listed below are presented in chronological order according to their year of establishment. Several of these organizations also disseminate information to the general public about safe participation in sports through guidelines or position statements.

International Federation of Sports Medicine Among the first major organizations was the Federation Internationale de Medecine Sportive (FIMS). In English it is called the International Federation of Sports Medicine. It was created in 1928 at the Olympic Winter Games in St. Moritz, Switzerland, by Olympic medical doctors with the principal purpose of promoting the study and development of sports medicine throughout the world. FIMS is made up of the national sports medicine associations of more than 100 countries. This organization includes many disciplines that are concerned with the physically active individual. To some degree, the ACSM has patterned itself after this organization.

National Federation of State High School Athletic Associations The **NFHS** has led the development of education-based interscholastic sports to help students succeed in life since 1920. Its goals are to build awareness and support, improve the participation experience, establish consistent standards and rules for competition, and help those who oversee high school sports and activities. This organization has 50 state high school athletic/activity associations. The NFHS publishes rules in 16 sports and provides a variety of program initiatives that reach the 18,500 high schools and over 11 million students involved in athletic and activity programs.

American Academy of Family Physicians The American Academy of Family Physicians (AAFP) was founded in 1947 to promote and maintain high-quality standards for family doctors who provide continuing comprehensive health care to the public. The AAFP is a medical association of more than 131,000 members. Many team physicians are members of this organization. It publishes *American Family Physician*.

National Athletic Trainers' Association Before the formation of the National Athletic Trainers' Association in 1950, athletic trainers occupied an uncertain position in the athletic program. Since that time, as a result of the raising of professional standards and the establishment of a code of ethics, there has been considerable professional advancement. The stated mission of NATA is "To represent, engage and foster the continued growth and development of the athletic training profession and athletic trainers as unique health care providers." NATA accepts only those athletic trainers who are properly qualified and committed to subscribing to a code of ethics and upholding the association's standards. NATA currently has more than 45,000 members. It publishes quarterly journals, the *Journal of Athletic Training*, the *Athletic Training Education Journal* and the *Sports Medicine Legal Digest*. It also publishes a monthly member magazine, the *NATA News*. The NATA holds an annual convention at which members have an

opportunity to keep abreast of new developments and to exchange ideas through clinical programs. The organization is constantly working to improve both the quality and the status of athletic training.

American College of Sports Medicine As discussed previously, the ACSM is interested in the study of all aspects of sports. Established in 1954, ACSM has a membership of more than 50,000, composed of medical doctors, doctors of philosophy, physical educators, athletic trainers, coaches, exercise physiologists, biomechanists, and others interested in sports. The organization holds national and regional conferences and meetings devoted to exploring the many aspects of sports medicine, and it publishes a quarterly magazine, *Medicine and Science in Sports and Exercise*, that reports recent developments in the field of sports medicine on a worldwide basis.

American Orthopaedic Society for Sports Medicine The American Orthopaedic Society for Sports Medicine (AOSSM) was established in 1972 to encourage and support scientific research in orthopedic sports medicine; the organization works to develop methods for safer, more productive, and more enjoyable fitness programs and sports participation. Through AOSSM-developed programs, members receive specialized training in sports medicine, surgical procedures, injury prevention, and rehabilitation. AOSSM's 3,000 members are orthopedic surgeons and allied health professionals committed to excellence in sports medicine. Its official bimonthly publication is the *American Journal of Sports Medicine*.

National Strength and Conditioning Association The National Strength and Conditioning Association (NSCA) was formed in 1978 to facilitate a professional exchange of ideas in strength development as it relates to the improvement of athletic performance and fitness and to enhance, enlighten, and advance the field of strength and conditioning. NSCA has a membership of more than 45,000 professionals in 52 countries, including strength and conditioning coaches, personal trainers, exercise physiologists, athletic trainers, researchers, educators, sport coaches, physical therapists, business owners, exercise instructors, fitness directors, and students training to enter the field.[19] Additionally, the NSCA Certification Commission offers two certification programs: the Certified Strength and Conditioning Specialist (CSCS) and the NSCA Certified Personal Trainer (NSCACPT). NSCA publishes both the *Journal of Strength* and *Conditioning Research* and *Strength* and *Conditioning*.

American Academy of Pediatrics, Sports Committee The American Academy of Pediatrics, Council on Sports Medicine and Fitness was organized in 1979. Its primary goal is to educate all physicians, especially pediatricians, about the special needs of children participating in sports. It has published a list of policy statements, Preparticipation Physical Evaluation Guidelines, and information for parents and families regarding sports training and injury prevention.

American Physical Therapy Association, Sports Physical Therapy Section In 1981, the Sports Physical Therapy Section of the American Physical Therapy Association (APTA) was officially established. The mission of the Sports Physical Therapy Section is "to provide a forum to establish collegial relations between physical therapists, physical therapist assistants, and physical therapy students interested in sports physical therapy." The Section and its 7,800 members promote the prevention, recognition, treatment, and rehabilitation of injuries in an athletic

and physically active population; provide educational opportunities through sponsorship of continuing education programs and publications; promote the role of the sports physical therapist to other health professionals; and support research to further establish the scientific basis for sports physical therapy. The Section's official journal is the *Journal of Orthopaedic and Sports Physical Therapy*.

NCAA Committee on Competitive Safeguards and Medical Aspects of Sports The National Collegiate Athletic Association (NCAA) Committee on Competitive Safeguards and Medical Aspects of Sports collects and develops pertinent information about desirable training methods, prevention and treatment of sports injuries, utilization of sound safety measures at the college level, drug education, and drug testing; disseminates information and adopts recommended policies and guidelines designed to further the objectives just listed; and supervises drug-education and drug-testing programs. This committee publishes the *Sports Medicine Handbook* that contains a wealth of information related to sports medicine, which can be very useful to the athletic trainer.

National Academy of Sports Medicine The National Academy of Sports Medicine (NASM) was founded in 1987 by physicians, physical therapists, and fitness professionals; it focuses on the development, refinement, and implementation of educational programs for fitness, performance, and sports medicine professionals. According to its mission statement, "NASM is dedicated to transforming lives and revolutionizing the health and fitness industry through its unwavering commitment to deliver innovative education, solutions, and tools that produce remarkable results." In addition to offering a fitness certification (Certified Personal Trainer) and performance certification (Performance Enhancement Specialist), NASM offers advanced credentials and more than 20 continuing education courses in a variety of disciplines. NASM has trained 1.4 million fitness professionals in more than 100 countries.

The Players on the Sports Medicine Team

Providing health care to the athlete requires a group effort to be most effective. The **sports medicine team** involves a number of individuals, each of whom must perform specific functions relative to caring for the injured athlete.[18]

The Certified Athletic Trainer (ATC)

Of all the professionals charged with injury prevention and health care provision for the injured athletic patient, perhaps none is more intimately involved than the athletic trainer. The athletic trainer is the one individual who deals with the athlete from the time of the initial injury, throughout the period of rehabilitation, until the athlete's complete, unrestricted return to practice or competition. The athletic trainer is most directly responsible for all phases of health care in an athletic environment, including preventing injuries from occurring, providing initial first aid and injury management, evaluating and diagnosing injuries, and designing and supervising a timely and effective program of rehabilitation that can facilitate the safe and expeditious return of the athlete to activity.[7]

Employment settings for athletic trainers:

- Schools
- School systems
- Colleges and universities
- Professional teams
- Clinics/hospitals
- Corporations/Industry
- Armed forces/public safety/ government
- Performing arts
- Medical equipment sales/ support

The athletic trainer must be knowledgeable and competent in a variety of sports medicine specialties if he or she is to be effective in preventing and treating injuries to the athlete.[7]

How Do You Become a Certified Athletic Trainer?

Requirements for Certification The **Board of Certification (BOC)** has established specific requirements that must be met for an individual to become certified as an athletic trainer.[6] These requirements include a combination of both academic coursework and clinical experience in athletic training settings. Educational programs at colleges and universities for students interested in becoming certified athletic trainers are currently accredited by the **Commission for Accreditation of Athletic Training Education (CAATE)**. The CAATE establishes strict standards for institutions that offer educational entry-level professional programs at the Masters degree level.[10] Once these requirements for certification have been met and the individual passes a certification exam, that person earns the credential ATC. (In this text, all references to athletic trainers imply that this individual has met the requirements for certification set forth by the Board of Certification.) **Focus Box 1–1** further clarifies the differences between a certified athletic trainer and a personal fitness trainer. The specific roles and responsibilities of the athletic trainer will differ and, to a certain extent, will be defined by the situation in which he or she

ATC Credential of an individual who is certified as an athletic trainer.

1-1 Focus Box

Clarifying roles

The terms training and athletic training are often confused. Historically, training implies the act of coaching or teaching. In comparison, athletic training has traditionally been known as a field within the allied health care professions that is concerned with prevention, management, evaluation, and rehabilitation of injuries related to physical activity.

Recently, there has been confusion in the general public among the terms trainers, certified athletic trainers, person fitness trainers, and strength and conditioning coaches. A trainer refers to someone who trains dogs or horses. A certified athletic trainer (certified by the Board of Certification) is a highly educated allied health care professional who is a credentialed specialist in athletic training. These individuals hold the credential ATC. Certified athletic trainers play a major role in the health care of physically active individuals in general and the athlete in particular.[7] Personal fitness trainers may also have some level of certification from any one of at least 400 existing certifying organizations. They are primarily concerned with developing fitness and wellness and improving levels of physical conditioning in a healthy population.[3] Strength and conditioning coaches (certified by the National Strength and Conditioning Association) work primarily with athletes at the professional or collegiate levels to enhance their levels of physical conditioning and optimize performance.[19]

works.[7] Different states have different requirements as to who can call themselves an athletic trainer. It should be reemphasized that athletic trainers working with athletes should be certified athletic trainers (ATC). Once an individual becomes certified as an athletic trainer, the BOC has established *Standards of Professional Practice* which identifies essential responsibilities and duties that are mandatory for all individuals who hold the ATC credential. It also mandates that BOC-certified athletic trainers must act in a professionally responsible manner in all athletic training services and activities.[8]

Roles and Responsibilities of the Athletic Trainer

Risk Reduction, Wellness, and Health Literacy A major responsibility of the athletic trainer is to educate the athletes and manage risks by making the competitive environment as safe as possible to reduce the likelihood of injury. The athletic trainer is responsible for organizing and arranging physical examinations and preparticipation screenings to identify conditions that predispose an athlete to injury, and for educating parents, coaches, and athletes about the risks inherent to sports participation. Injury prevention includes (1) conducting preparticipation physical examinations; (2) ensuring appropriate training and conditioning of the athlete; (3) monitoring environmental conditions to ensure safe participation; (4) selecting, properly fitting, and maintaining protective equipment; (5) explaining the importance of proper nutrition, wellness and living a healthy lifestyle; and (6) using medications appropriately.

Roles and Responsibilities of the Athletic Trainer

- Risk reduction, wellness, and health literacy
- Assessment, evaluation, and diagnosis
- Critical incident management
- Therapeutic intervention
- Healthcare administration and professional responsibilities

Assessment, Evaluation, and Diagnosis The athletic trainer must be skilled in recognizing the nature and extent of an injury through competency in injury evaluation. The athletic trainer must be able to efficiently and accurately evaluate an injury (see Chapter 8). The athletic trainer must be able to understand the pathology and healing process following injury and illness. The athletic trainer is responsible for referring the injured athlete to appropriate medical care or support services.

Critical Incident Management Once the initial on-the-field assessment is done, the athletic trainer then must assume responsibility for administering appropriate first aid to the injured athlete and for making correct decisions in the management of acute injury (see Chapter 8).[11] Thus the athletic trainer must possess sound skills not only in the initial recognition and evaluation of potentially serious or life-threatening injuries but also in emergency care.

The athletic trainer is required to be certified in CPR/AED and should be certified in first aid by the American Red Cross, the American Heart Association or the National Safety Council.

Therapeutic Intervention An athletic trainer must be proficient in designing and supervising rehabilitation and reconditioning protocols that make use of appropriate rehabilitative equipment, manual (hands on) therapy techniques, or therapeutic modalities. In certain settings the athletic trainer may work closely with physical therapists and/or strength and conditioning specialists in designing functional return to play activities.

Athletic trainers should also recognize patients that may exhibit abnormal social, emotional, and mental behaviors. They should also be able to recognize the role of mental health in injury and recovery, and use intervention strategies to maximize the connection between mental health and restoration of participation. If the athletic trainer recognizes that a problem exists, he or she should refer the patient to the appropriate medical personnel for intervention.[40]

Healthcare Administration and Professional Responsibilities The athletic trainer is responsible for the organization and administration of the athletic training program, including maintaining health and injury records for each athlete, developing emergency action plans, requisitioning and maintaining an inventory of necessary supplies and equipment, submitting insurance information to insurance companies, supervising assistants, athletic training students and establishing policies and procedures for day-to-day operation of the athletic training program.

The athletic trainer must educate the general public, in addition to a large segment of the various allied medical health care professions, as to exactly what athletic trainers are and what their roles and responsibilities are. This education is perhaps best accomplished by holding professional seminars, publishing research in scholarly journals, meeting with local and community organizations, and, most important, doing a good and professional job of providing health care to the injured athlete.

Professional Behaviors of the Athletic Trainer

Personal Qualities The field of athletic training can provide work excitement, variety of tasks, and personal satisfaction.[52] A person contemplating going into this field must love sports and must enjoy the world of competition, in which there is a level of intensity seldom matched in any other area.

An athletic trainer's personal qualities, not the facilities and equipment, determine his or her success. Personal qualities are the many characteristics that identify individuals in regard to their actions and reactions as members of society. Personality is a complex mix of the many characteristics that collectively give an image of the individual to those with whom he or she associates.[13] The personal qualities of athletic trainers are important, because they in turn work with many complicated and diverse personalities. Although no attempt has been made to establish a rank order, the qualities discussed in the following paragraphs are essential for a good athletic trainer.

Stamina and Ability to Adapt Athletic training is not the field for a person who likes an 9-to-5 job. Long, arduous hours of often strenuous work will sap the strength of anyone not in the best of physical and emotional health.[52] Athletic training requires abundant energy, vitality, and physical and emotional stability. Every day brings new challenges and problems that must be solved. The athletic trainer must be able to adapt to new situations with ease.[20]

1–1 Critical Thinking Exercise

A basketball player suffers a grade 2 ankle sprain during midseason of the competitive schedule. After a 3-week course of rehabilitation, most of the athlete's pain and swelling has been eliminated. The athlete is anxious to get back into practice and competitive games as soon as possible, and subsequent injuries to other players have put pressure on the coach to force this player's return. Unfortunately, the athlete is still unable to perform functional tasks (cutting and jumping) essential in basketball.

Who is responsible for making the decision regarding when the athlete can fully return to practice and game situations?

Work-Life Balance

Individuals entering the field of athletic training must realize that it is extremely demanding. Even though the field is often difficult, they must learn that they cannot be "all things to all people." They must learn to say no when their health is at stake, and they must make leisure time for themselves beyond their work.[24] It is critical for the athletic trainer to develop some balance between their job responsibilities and their personal life. Work–life balance means being able to manage the demands of the job (long hours, travel, etc.) with the responsibilities of being a spouse, parent, friend, or co-worker.[47]

Empathy Empathy is the capacity to enter into the feeling or spirit of another person. Athletic training is a field that requires both the ability to sense when an athlete is in distress and the desire to alleviate that stress.[12]

Sense of Humor Many patients rate having a sense of humor as the most important attribute that an athletic trainer can have. Humor and wit help release tension and provide a relaxed atmosphere. The athletic trainer who is too serious or too clinical will have problems adapting to the often lighthearted setting of the sports world.[15]

Ability to Communicate Athletic training requires a constant flow of both oral and written communication. As an educator, a psychologist, a counselor, a therapist, and an administrator, the athletic trainer must be a good communicator. The athletic trainer must communicate on a daily basis with athletes, coaches, physicians, administrators, school boards, and members of the patient's family.

Intellectual Curiosity and Critical Thinking Ability The athletic trainer must always be a student. The field of athletic training is so diverse and ever changing that it requires constant study. The athletic trainer must have an active intellectual curiosity. Through reading professional journals and books, communicating with the team physician, and attending professional meetings, the athletic trainer stays abreast of the field.

Ethics The athletic trainer must act at all times with the highest standards of conduct and integrity. To ensure this behavior, in 2018 NATA released the most recent code of ethics.[31] The four basic ethics principles are as follows:

1. Members shall practice with compassion respecting the rights, welfare, and dignity of others.
2. Members shall comply with the laws and regulations governing the practice of athletic training, National Athletic Trainers Association, NATA membership standards, and the NATA Code of Ethics.
3. Members shall maintain and promote high standards in their provision of services.
4. Members shall not engage in conduct that could be construed as a conflict of interest, reflects negatively on the athletic training profession, or jeopardizes a patient's health and well-being.

Professional Memberships It is essential that an athletic trainer become a member of and be active in professional organizations. Such organizations are continuously upgrading and refining the profession. They provide an ongoing source of information about changes occurring in the profession and include the NATA, district associations within the NATA, various state athletic training organizations, and ACSM. Some athletic trainers are also physical therapists (PT). Increasingly, physical therapists are becoming interested in working with physically active individuals. Physical therapists and athletic trainers often have a good working relationship. Other athletic trainers may also be occupational therapists (OT), physician assistants (PA), certified strength and conditioning specialists (CSCS), nurses, or performance enhancement specialists (PES).

The Role of a Coach in the Sports Medicine Team

It is critical for the coach to understand the specific roles and responsibilities of each individual who could potentially be involved in the sports medicine team. This becomes even more critical if there is no athletic trainer to oversee the health care and the coach is forced to assume this responsibility. It must be stressed that individual states differ significantly in the laws that govern what nonmedical personnel can and cannot do when providing health care. Coaches have the responsibility to clearly understand the limits of their ability to function as a health care provider in the state where they are employed.

Coaches are directly responsible for preventing injuries by seeing that athletes have undergone a preventive injury conditioning program. The coach must ensure that sports equipment, especially protective equipment, is of the highest quality and is properly fitted. The coach must also make sure that protective equipment is properly maintained. A coach must be keenly aware of what produces injuries in his or her particular sport and what measures must be taken to avoid them (**Figure 1–3**). A coach should be able, when called on to do so, to apply proper first aid. This knowledge is especially important in serious head and spinal injuries. All coaches (both head and assistant) should be certified in CPR/AED by the American Red Cross, the American Heart Association, or the National Safety Council. Coaches should also be certified in first aid by the American Red Cross or the National Safety Council.

Fig. 1-3 The coach is directly responsible for preventing injuries in his or her sport.

For the coach, obtaining these certifications is important in being able to provide correct and appropriate first aid and emergency care for the injured athlete. But it is also true that not having these certifications can potentially have some negative legal implications for the coach and his or her employer.

It is essential that a coach thoroughly understand the skill techniques and environmental factors that may adversely affect the athlete. Poor biomechanics in skill areas such as throwing and running can lead to overuse injuries of the arms and legs, whereas overexposure to heat and humidity may cause death. Just because a coach is experienced in coaching does not mean that he or she knows proper skill techniques. Coaches must engage in a continual process of education to further their knowledge in their particular sport through organizations such as the American Sport Education Program (ASEP) or the National Council for Accreditation of Coaching Education (NCACE). When a sports program or specific sport is without an athletic trainer, the coach very often takes over this role.

Coaches work closely with athletic trainers; therefore both must develop an awareness and an insight into each other's roles and responsibilities so that they can function effectively. The athletic trainer must earn the respect of the coaches so that his or her judgment in all medical matters is fully accepted. In turn, the athletic trainer must avoid questioning the abilities of the coaches in their particular fields and must restrict opinions to athletic training matters. To avoid frustration and hard feelings, the coach must coach, and the athletic trainer must conduct athletic training matters. In terms of the health and well-being of the athlete, the physician and the athletic trainer have the last word and should always be supported by the athletic administrators.

This is not to say, however, that the coach should not be involved with the decision-making process. For example, during the time the athlete is rehabilitating an injury, there may be drills or technical instruction sessions that the athlete can participate in that will not exacerbate the existing problem. Thus, the coach, the athletic trainer,

and the team physician should be able to negotiate what the athlete can and cannot do safely in the course of a practice.

Any personal relationship takes some time to grow and develop. The relationship between the coach and the athletic trainer is no different. The athletic trainer must demonstrate to the coach his or her capability to correctly manage an injury and guide the course of a rehabilitation program. It will take some time for the coach to develop trust and confidence in the athletic trainer. The coach must understand that what the athletic trainer wants for the athlete is exactly the same as what the coach wants—to get an athlete healthy and back to practice as quickly and safely as possible

Team physicians must have absolute authority in determining the health status of an athlete who wishes to participate in the sports program.

Responsibilities of the Team Physician

The team physician assumes a number of roles and responsibilities with regard to injury prevention and the health care of the athlete.[38]

Compiling Medical Histories The team physician should be responsible for compiling medical histories and conducting physical examinations for each athlete, both of which can provide critical information that may reduce the possibility of injury. Preparticipation screening by both the athletic trainer and physician is important in establishing baseline information to be used for comparison should injury occur during the season.[22]

Diagnosing Injury The team physician should assume responsibility for diagnosing an injury and should be keenly aware of the program of rehabilitation as designed by the athletic trainer following the diagnosis[25] (**Figure 1–4**). The physician is ultimately responsible for deciding when an injured athlete may return to full activity.[23]

Fig. 1-4 In treating the athlete, the physician supervises the athletic trainers.

Deciding on Disqualification The physician should determine when an athlete should be disqualified from competition on medical grounds and must have the final say in when an injured athlete may return to activity. The physician's judgment must be based not only on medical knowledge but also on knowledge of the psychophysiological demands of a particular sport.[16]

Attending Practices and Games Under the most ideal circumstances, a team physician should make an effort to attend as many practices, scrimmages, and competitions as possible. This attendance obviously becomes very difficult at an institution with 20 or more athletic teams.[48]

It is essential that the team physician promote and maintain consistently high-quality care for the athlete in all phases of the sports medicine program.[48] The team physician may work closely with the athletic trainer and must rely on their abilities as a health care provider.[51]

The Relationship Between the Sports Medicine Team and Athlete

If a coach has an athletic trainer and/or a physician who work together in providing health care, the relationships that exist can significantly affect the success of that team or athletic program.[51] The major concern of everyone on the sports medicine team should always be the athlete. If not for the athlete, the coach, athletic trainer, and team physician would have nothing to do in sports. All decisions made by the physician, coach, and athletic trainer ultimately affect the athlete. It should be clear that the physician working in cooperation with the athletic trainer assumes the responsibility of making the final decisions about medical care for the athlete from the time of injury until full return to activity. The coach must defer and should always support the decisions of the medical staff in any matter regarding health care for the athlete.[51]

Athletes are frequently caught in the middle between coaches who tell them to do one thing and medical staff who tell them something else. Close communication between the coach and athletic trainer is essential so that everyone is on the same page.

The injured athlete must always be informed and made aware of the why, how, and when factors that collectively dictate the course of an injury rehabilitation program. Both the coach and the athletic trainer should make it a priority to educate student-athletes about injury prevention and management. Athletes should learn about techniques of training and conditioning that may reduce the likelihood of injury. They should be well informed about their injuries and about listening to what their bodies are telling them to prevent reinjury.

The Importance of the Family in the Sports Medicine Team

In a secondary school or middle school setting, the coach, the athletic trainer, and the physician must also take the time to explain to and inform the parents about injury management and prevention.[46] With an athlete of secondary school age, the parents' decisions regarding health care must be a primary consideration.

In certain situations, particularly at the high school and middle school levels, many parents will insist that their child be seen by their family physician rather than by the individual who may be designated as the team physician. It is also likely that the

1–2 Critical Thinking Exercise

What are some things that a coach working in cooperation with an athletic trainer can do to help minimize the chances of injury?

choice of a physician will be dictated by the parents' insurance plan. This creates a situation in which the athletic trainer must work and communicate with many different "team physicians." The opinion of the family physician must be respected even if the individual has little or no experience with injuries related to sports.

The athletic trainer, and team physician should make certain that the athlete and his or her family are familiar with the Health Insurance Portability and Accountability Act (HIPAA), which regulates how individuals who have health information about an athlete can share that information with others and not be in violation of the privacy rule.[41] HIPAA was created to protect a patient's privacy and limit the number of people who could gain access to the athlete's medical records. HIPAA regulations will be discussed in more detail in Chapter 2.

Other Members of the Sports Medicine Team

In certain situations, an injured athlete may require treatment from or consultation with a variety of both medical and nonmedical services or personnel other than the athletic trainer or team physician. After the athletic trainer consults with the team physician about a particular matter, either the athletic trainer or the team physician can arrange for appointments and refer the athlete as necessary. When referring an athlete for evaluation or consultation, the athletic trainer must be aware of the community-based services available to that athlete.

A sports program may use a number of support health services. Those people may include a nurse; physicians in specialties such as orthopedics, dentistry, and podiatry; physician's assistants; strength and conditioning coaches; nutritionists; sport psychologists; exercise physiologists; biomechanists; physical therapists; equipment personnel; and referees.

Nurse/Nurse Practitioner As a rule, the nurse (RN, LPN) is not usually responsible for the recognition of sports injuries. Education and background, however, render the nurse quite capable in the recognition of skin disease, infections, and minor irritations. The nurse works under the direction of the physician and in liaison with the athletic trainer and the school health services. A nurse practitioner (NP) is a registered nurse with advanced education and clinical training. NPs diagnose and treat common acute and chronic problems, and prescribe and manage medications.

Physicians A number of physicians with a variety of specializations can aid the sports medicine team in treating the athlete.

Orthopedist The orthopedist is responsible for treating injuries and disorders of the musculoskeletal system. Many colleges and universities have a team orthopedist on their staff.

Dermatologist A dermatologist should be consulted for problems and lesions occurring on the skin.

Gynecologist A gynecologist is consulted in cases where health issues in the female athlete are of primary concern.

Family Medicine Physician A physician who specializes in family medicine is concerned with supervising or providing medical care to all members of a family. Many team physicians in colleges and universities and particularly at the secondary school level are engaged in family practice.

Internist An internist is a physician who specializes in the practice of internal medicine. An internist treats diseases of the internal organs by using measures other than surgery.

Neurologist A neurologist specializes in treating disorders of and injuries to the nervous system. Consultation with a neurologist is warranted in certain common situations in athletics, such as cases of head injury or peripheral nerve injury.

Ophthalmologist Physicians who manage and treat injuries to the eye are ophthalmologists. An optometrist is an individual who evaluates and fits patients with glasses or contact lenses.

Osteopath An osteopath emphasizes the role of the musculoskeletal system in health and disease, using a holistic approach to the patient. An osteopath incorporates a variety of manual and physical treatment interventions in the prevention and treatment of disease.

Pediatrician A pediatrician is concerned with the practice of caring for or treating injuries and illnesses that occur in young physically active children and adolescents.

Physiatrist Physical Medicine and Rehabilitation (PM&R) is a branch of medicine that provides integrated care in the prevention, diagnosis, and treatment of disorders related to the brain, muscles, and bones, spanning from traumatic brain injury to lower back pain.

Psychiatrist Psychiatry is a medical practice that deals with the diagnosis, treatment, and prevention of mental illness.

Dentist The role of team dentist is somewhat analogous to that of team physician. He or she serves as a dental consultant for the team and should be available for first aid and emergency care. Good communication between the dentist and athletic trainer should ensure a good dental program. The team dentist has three areas of responsibility:

1. Organizing and performing the preseason dental examination
2. Being available to provide emergency care when needed
3. Fitting mouth protectors

Podiatrist Podiatry, the specialized field dealing with the study and care of the foot, has become an integral part of sports health care. Many podiatrists are trained in surgical procedures, foot biomechanics, and the fitting and construction of orthotic devices for the shoe. Like the team dentist, a podiatrist should be available on a consulting basis.

Physician's Assistants Physician's assistants (PA) are trained to assume some of the responsibilities for patient care traditionally done by the physician. They assist the physician by conducting preliminary patient evaluations, arranging for various hospital-based diagnostic tests, and dispensing appropriate medications. A number of athletic trainers have also become PAs in recent years.

Strength and Conditioning Coaches (CSCS) Most colleges and universities and some high schools employ full-time strength coaches to advise athletes on training and conditioning programs. Athletic trainers should routinely consult with these individuals to advise them about injuries to a particular athlete and exercises that should be avoided or modified relative to a specific injury.

Sport Psychologists The sport psychologist can advise the athlete on matters related to the psychological aspects of the rehabilitation process. The way the athlete feels about his or her injury and how it affects his or her social, emotional, intellectual, and physical dimensions can have a substantial effect on the course of a treatment program and how quickly the athlete may return to competition. The sport psychologist uses different intervention strategies to help the athlete cope with injury.

Sports Physical Therapists Some athletic trainers use sports physical therapists to supervise the rehabilitation programs for injured athletes while the athletic trainer concentrates primarily on getting a player ready to practice or compete. A number of athletic trainers are also physical therapists.

The individual who achieves both certification as an athletic trainer and licensure as a physical therapist is extremely well qualified to function in various sports medicine settings, including both the private clinic and the colleges and universities.

Sports Chiropractors Chiropractors emphasize diagnosis and treatment of mechanical disorders of the musculoskeletal system, thinking that these disorders affect general health by way of the nervous system. They make use of spinal and extremity manipulations in their treatments.

Orthotists/Prosthetists These individuals custom fit, design, and construct braces, orthotics, and support devices based on physician prescriptions.

Exercise Physiologists Exercise physiologists monitor and assess cardiovascular and metabolic effects and mechanisms of exercise, replenishment of fluids during exercise, and exercise for cardiac and musculoskeletal rehabilitation.

Biomechanists Biomechanists are scientists who study and investigate how athletes move. They analyze movement techniques, using mathematical models, and make corrections and adjustments that can potentially increase efficiency of movement, thus improving performance.

Support personnel concerned with athletes' health and safety:

- Nurse
- Physician
- Dentist
- Podiatrist
- Sports chiropractor
- Orthotist/prosthetist
- Physician's assistant
- Strength and conditioning coach
- Sport psychologist
- Sports physical therapist
- Exercise physiologist
- Biomechanist
- Nutritionist
- Massage therapist
- Emergency medical specialist
- Equipment personnel
- Referee

1–3 Critical Thinking Exercise

A new high school has hired a coach to establish and develop the football program. Unfortunately, the school does not have enough funds to also hire an athletic trainer. Thus the coach must assume the responsibility of creating a safe playing environment for the athletes.

What considerations should the coach make to ensure that his athletes will be competing under the safest possible conditions?

Nutritionists (RD) Increasingly, individuals in the field of nutrition are becoming interested in athletics. Many large sports programs hire a nutritionist who plans eating programs that are geared to the needs of a particular sport. He or she also assists individual athletes who need special nutritional counseling.

Sports Massage Therapists Qualified massage therapists have training and experience in all areas of massage. They may use their skills primarily in the precompetition and postcompetition phases of an athletic event.

Emergency Medical Technician (EMT) and Paramedic There are four levels of emergency medical service (EMS) providers:

- Emergency Medical Responder (EMR)
- Emergency Medical Technician (EMT)
- Advanced Emergency Medical Technician (AEMT)
- Paramedic

Emergency Medical Responders are the first to arrive at the scene of an incident and are trained to provide emergency medical care. The EMT is trained to care for patients at the scene of an accident and while transporting patients by ambulance to the hospital under medical direction. An Advanced EMT (AEMT) has more advanced training that allows the administration of intravenous fluids, the use of manual defibrillators, and the application of advanced airway techniques. Paramedics provide the most extensive prehospital care by administering drugs orally and intravenously, interpreting electrocardiograms (ECGs), performing endotracheal intubations, and using monitors and other complex equipment.[45]

Equipment Personnel Sports equipment personnel are becoming specialists in the purchase and proper fitting of protective equipment. They work closely with the coach and the athletic trainer.

Referees Referees must be highly knowledgeable regarding rules and regulations, especially those that relate to the health and welfare of the athlete. They work cooperatively with the coach and the athletic trainer. They must be capable of checking the playing facility for dangerous situations and equipment that may predispose the athlete to injury. They must routinely check athletes to ensure that they are wearing adequate protective pads.

State Regulation of the Athletic Trainer

During the early 1970s, the leadership of the NATA realized the necessity of obtaining some type of official recognition of the athletic trainer as a health care professional by other medical allied health organizations. Laws and statutes specifically governing the practice of athletic training were nonexistent in most states. Based on this perceived need, the athletic trainers in many states organized their efforts to secure recognition by seeking some type of regulation by state licensing agencies. To date, this ongoing effort has resulted in 49 of the 50 states enacting some type of regulatory statutes governing the practice of athletic training.[33]

Rules and regulations governing the practice of athletic training vary tremendously from state to state. Regulation may be in the form of licensure, certification, or registration.[36] **Figure 1–5** shows how the athlete trainer is regulated in each state.

Licensure

Licensure limits the practice of athletic training to those who have met minimal requirements established by a **state licensing board.** A certified athletic trainer who is licensed by a state to practice athletic training holds the credential **LAT (Licensed Athletic Trainer)**. Through this licensing board, the state limits the number of individuals who can perform functions related to athletic training as dictated by the practice act. Requirements for licensure vary from state to state, but most require a specific educational and training background, evidence of good moral character, letters of recommendation from current practitioners, and minimal acceptable performance on a licensing examination. Licensure is the most restrictive of all the forms of regulation. Individuals who are providing health care services to an athlete

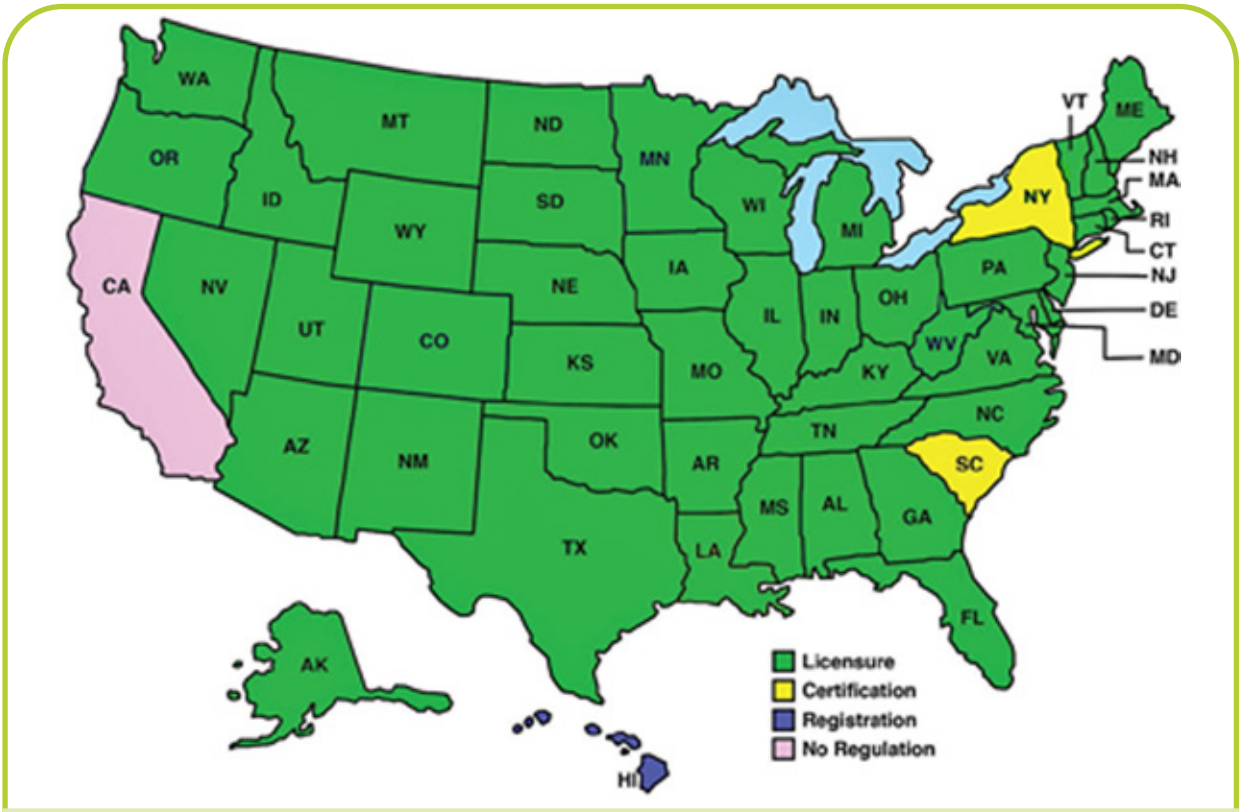


Fig. 1-5 With the exception of California, 49 of the 50 states have some type of regulation for the athletic trainer

cannot call themselves athletic trainers in a particular state unless they have met its requirements for licensure.[9]

Certification

State certification as an athletic trainer differs from certification as an athletic trainer by the BOC. An individual who has passed the BOC exam does not automatically obtain a state certification. Although certification does not restrict the use of the title of athletic trainer to those certified by the state, it can restrict the performance of athletic training functions to only those individuals who are state certified. State certification indicates that a person possesses the basic knowledge and skills required in the profession and has passed a certification examination. Many states that offer certification use the BOC exam as a criterion for granting state certification.[9]

Registration

Registration means that, before an individual can practice athletic training, he or she must register in that state. The individual has paid a fee for being placed on an existing list of practitioners. The state may or may not have a mechanism for assessing competency.

However, registration does prevent individuals who are not registered with the state from calling themselves athletic trainer.[9]

Employment Settings for The Athletic Trainer

Opportunities for employment as an athletic trainer have changed dramatically in recent years. Athletic trainers no longer work only in athletic training clinics at the college, university, or secondary school level. The employment opportunities for athletic trainers can be found in several "emerging" settings which include occupational/industrial health, performing arts, public safety, and the armed forces. A discussion of the various employment settings follows (**Table 1–1**).

Clinics and Hospitals

Currently, a significant percentage of certified athletic trainers are employed in clinics and hospitals. The role of the athletic trainer varies from one clinic to the next. Athletic trainers may be employed in an outpatient ambulatory rehabilitation clinic working in general patient care; as health, wellness, or performance enhancement specialists; or as clinic administrators. Their job may also involve ergonomic assessment, work hardening, CPR training, or occasionally overseeing drug-testing programs.[28] They may also be employed by a hospital but work in a clinic. Other clinical athletic trainers see patients during the morning hours in the clinic. In the afternoons, athletic trainers' services are contracted out to local high schools or small colleges for practice, game, or single event coverage. For the most part, private clinics have well-equipped facilities in which to work. In many sports medicine clinics, the athletic trainer may be responsible for formulating a plan to market or promote athletic training services offered by that clinic throughout the local community (**Figure 1–6A**).

Athletic Trainers in Physician Practices Some athletic trainers work in clinics that are owned by physicians. Although virtually all athletic trainers work under the direction of a physician, those employed as athletic trainers in physician practices actually work in

Table 1–1 Potential Employment Settings for Certified Athletic Trainers

Clinic
- Hospital-based (employed by hospital; work in a clinic)
  - General patient care
  - Health/wellness/performance enhancement
  - Occupational/industrial (100%/split)
  - Administration
- Outpatient/ambulatory/rehabilitation clinic
  - General patient care
  - Health/wellness/performance enhancement
  - Occupational/industrial (100%/split)
  - Administration
- Physician-owned clinic (patient care or administration)
  - Orthopedic
  - Primary care
  - Family practice
  - Pediatric
  - Physiatry
  - Other
- Secondary school/clinic (employed by clinic; work in school)
  - Secondary school (100%)
  - Secondary school (split)
- Clinic, other

Hospital (work in a hospital but not in a hospital-based clinic)
- Administration
- Emergency department
- Orthopedics
- Other

Industrial/occupational (work on-site at an industrial or occupational facility)
- Clinic
- Ergonomics
- Health/wellness/fitness
- Other

Corporate (work for company that sells to the profession or in patient care for that company)
- Business/sales/marketing
- Ergonomics
- Health/wellness/fitness
- Patient care

College/university
- Professional staff/athletics/clinic
- Faculty/academic/research
- Split appointment
  - Division 1
  - Division 1AA
  - Division 2
  - Division 3
- Administration

Two-year institution
- Professional staff/athletics/clinic
- Faculty/academic/research
- Split appointment
- Administration

Secondary school (employed by school or district)
- High school (teacher/clinical/split)
  - Public
  - Private
- Middle school (teacher/clinical/split)
  - Public
  - Private

Professional sports
- Baseball, M
- Basketball, M/W
- Football, M
- Hockey, M
- Soccer, M/W
- Lacrosse, M
- Softball, W
- Golf, M/W
- Tennis, M/W
- Wrestling
- Boxing
- Rodeo
- Auto racing (NASCAR, Indy Car)

Amateur/recreational/youth sports
- Amateur (work for NGB, USOC, or amateur athletics)
- Recreational (work for municipal or recreational league or facility)
- Youth sports (AAU)

Performing Arts
- Dance
- Theater
- Entertainment industry (Disney, casinos, tour bands)

Armed forces/public safety/government
- Armed forces (Air Force, Army, Navy, Marines, Coast Guard, Merchant Marines, National Guard)
  - Active duty/civilian
- Academy
- Administration
- Hospital/clinic
- Other
- Public safety/law enforcement
  - Local department or agency (police/fire/rescue)
  - State department or agency (police/investigation)
  - Federal department or agency (FBI, CIA, ATF)
- Government
  - Local
  - State
  - Federal (Senate, House, judicial)
  - Agencies (NASA, FDA)

Health/fitness/sports/performance enhancement clinics/clubs (work for franchise, chain, or independent club)

Independent contractor (work for themselves and are not employees)

the physician's office, where patients of all ages and backgrounds are being treated.[30] The educational preparation for athletic trainers allows them to function in a variety of domains, including injury prevention, evaluation, management and rehabilitation, health education, nutrition, training and conditioning, preparticipation physicals, and maintenance of essential documentation.[30] Although the contact with only the physically active population may not be as great as in other employment settings, the athletic trainers in physician practices can expect regular hours, few weekend or evening responsibilities, opportunity for growth, and, in general, better pay.[43] All these factors collectively make these positions attractive for the athletic trainer. Potentially, many new jobs can be created as physicians become more and more aware of the value that an athletic trainer in a physician practice can provide.[42] (**Figure 1–6B**).

A B

Fig. 1-6 Athletic trainers work in a variety of settings. **A)** Clinics and hospitals. **B)** Physician Practices

Occupational/Industrial Settings

It is becoming relatively common for industries to employ athletic trainers to oversee fitness and injury rehabilitation programs for their employees. The athletic trainer working in an industrial or occupational setting must have a sound understanding of the principles and concepts of workplace ergonomics, including inspecting, measuring, and observing dimensions of the work space, as well as specific tasks that are performed at the workstation.[28] Once a problem has been identified, the athletic trainer must be able to implement proper adjustments to workplace ergonomics to reduce or minimize possible risks for injury. In addition to these responsibilities, athletic trainers may be assigned to conduct wellness programs and provide education and individual counseling.[21] It is likely that many job opportunities will exist for the athletic trainer in industrial/occupational settings in the next few years (**Figure 1–6C&D**).

Corporate Settings

Opportunities are expanding for athletic trainers to use their educational background as preparation for working in business, sales, or marketing of products that other athletic trainers may use. Athletic trainers might also be employed by a company to administer health, wellness, and fitness programs or to provide some patient care to their employees.

C

D

Fig. 1-6 C) Industrial rehabilitation. **D)** Work hardening/occupational.

Colleges or Universities

At the college or university level, clinical positions for athletic trainers vary considerably from institution to institution. In smaller institutions, the athletic trainer may be a half-time professor in exercise and sport science courses and half-time athletic trainer. In some cases, if the athletic trainer is a physical therapist rather than a teacher, he or she may spend part of the time in the school health center and part of the time in athletic training. Increasingly at the college level, athletic training services are being offered to members of the general student body who participate in intramural and club sports. In most colleges and universities, the athletic trainer is full-time, does not teach, works in the department of athletics, and is paid by the institution. However, it has been suggested that athletic trainers at colleges and universities should be employed by the campus or student health services rather than by the athletic department.[4] A number of athletic trainers working at colleges and universities are employed as faculty members. These individuals may or may not be assigned clinical responsibilities. In addition to faculty responsibilities, it is most likely that these faculty members serve as program directors and/or as researchers.[37]

Secondary Schools

There are more than 27,000 public and private secondary schools in the United States.[49] It would be ideal to have certified athletic trainers serve every secondary school and middle school in the United States.[44] Many of the physical problems that occur later in life from improperly managed sports injuries could potentially be mitigated if proper initial care from an athletic trainer had been provided.[35] If a secondary school or middle school hires an athletic trainer, it may be in a faculty–athletic trainer capacity. This individual is usually employed as a teacher who carries a reduced teaching load and performs athletic training duties. In this instance, compensation usually is on the basis of both teaching, a stipend as an athletic trainer, or both. Some school districts have found it effective to employ a centrally placed certified athletic trainer. In this case, the athletic trainer, who may be full- or part-time, is a nonteacher who serves a number of schools. The advantage is savings; the disadvantage is that one individual cannot provide the level of service usually required by a typical school.[2] Another less desirable means of obtaining secondary-school athletic training coverage is using a certified

graduate student from a nearby college or university. However, this practice may prevent a school from employing a certified athletic trainer on a full-time basis.[2] Salaries for the secondary-school athletic trainer are continuing to improve.[34]

Professional Sports

Although the availability of positions for athletic trainers working at the professional level is limited, opportunities to work in this setting continue to expand. Virtually every professional team, regardless of the sport, employs at least one and occasionally as many as four certified athletic trainers. Athletic trainers work with both male and female professional teams, including football, basketball, baseball, hockey, soccer, lacrosse, softball, golf, and tennis. They are also employed in professional rodeo, auto racing (NASCAR), and wrestling. The athletic trainer for professional sports teams usually performs specific team athletic training duties for 6 to 8 months out of the year; the other 4 to 6 months are spent in off-season conditioning and individual rehabilitation. The athletic trainer working with a professional team is involved with only one sport and is paid according to contract, much as a player is. Playoff and championship money may be added to the yearly income (**Figure 1–6 E&F**).

E

F

Fig. 1-6 E) NASCAR. **F)** Rodeos.

Amateur/Recreational/Youth Sport

Athletic trainers are working at all levels of amateur sport. The United States Olympic Committee employs athletic trainers and interns at three training centers. Every national governing body (NGB) for each of the Olympic sports employs either a single athletic trainer or a group of athletic trainers to work with the national teams and developmental programs for younger athletes. Some municipal or community-based recreational programs employ athletic trainers either full-time or as independent contractors to cover their programs. The Amateur Athletic Union (AAU) also employs athletic trainers to cover its tournaments (**Figure 1–6 G**).

Performing Arts

A relatively new and expanding employment opportunity exists in the performing arts and entertainment industry.[29] Athletic trainers can be found working with dance companies, musicians, vocalists and theater performance groups. They are employed by Disney and the large casinos. Some touring bands even employ

athletic trainers to work with their performers and road crew who sustain injuries while traveling (**Figure 1–6 H**).

G

H

Fig. 1-6 G) Youth sports. **H)** Performing arts.

The Armed Forces/Public Safety/Government

The United States military, has demonstrated increased emphasis on injury prevention and health care for the troops.[27] Treatment centers are being developed that closely resemble and, to a great extent, function as athletic training clinics.[50] The centers are staffed by sports medicine physicians, orthopedists, athletic trainers, physical therapists, and support staff. Injured personnel are seen as soon as possible by an athletic trainer, who evaluates an injury, makes decisions on appropriate referral, and begins an immediate rehabilitation program. Currently, athletic trainers Working with armed forces are either active duty or reserve personnel non-military private practice contractors. Occasionally, some contract positions are available. It is likely that the role of the athletic trainer in the military will increase substantially over the next several years (**Figure 1–6 I**). Opportunities are increasing for athletic trainers to become involved with local, state, and federal public safety groups and agencies. Athletic trainers are working with police and firefighters as well as with agencies such as the FBI (**Figure 1–6 J**). Other athletic trainers are employed by government agencies such as the United States Senate, NASA, and the Pentagon (**Figure 1–6 K**).

I

J

Fig. 1-6 I) Military. **J)** Law Enforcement.

Health and Fitness Clubs

It is likely that a significant number of job opportunities for athletic trainers exist in health and fitness clubs. Some clubs may offer patient care, but it is more likely that the athletic trainer is a performance-enhancement specialist or an instructor. These clubs may be a chain, a franchise, or an independent club (**Figure 1–6 L**).

K

L

Fig. 1-6 K) NASA. **L)** Health clubs

Commitment to Diversity, Equity, Inclusion, and Access (DEI&A)

Diversity, equity, inclusion, and access has become a universally recognized concept that takes into account our multicultural society and the unique differences that exist between individuals and groups within the world in which we live.[1] There are countless biases, traditions, perspectives, values, and misunderstandings often fueled by religious, moral, political, and emotional convictions that collectively dictate our inability to accept, or at minimum live with the possibility that these differences will always exist.

Athletic trainers are not immune to these issues and thus it becomes critical to focus on how to effectively address diversity, equity, inclusion, and access within the athletic training profession. The NATA has fully embraced the concept of diversity, equity, inclusion, and access and encourages athletic trainers to become leaders in championing diversity within the profession.[32]

Athletic Training Checklist

The following checklist contains things the sports medicine team can do to minimize the chance of injury.

1. Arrange for physical examinations and preparticipation screening.
2. Ensure appropriate training and conditioning of the athlete.
3. Monitor environmental and field conditions to ensure safe participation.
4. Select and maintain properly fitting protective equipment.
5. Educate parents, coaches, and athletes about the risks inherent in sports participation.
6. Teach proper techniques.
7. Be certified in CPR/AED.
8. Be certified in first aid.

Chapter 1 Review

Chapter Summary

- The term *sports medicine* has many connotations, depending on which group is using it. The term encompasses many different areas of sports related to both performance enhancement and injury care and management.
- Providing health care to the athlete requires a group effort to be most effective.
- The coach must ensure that the environment and the equipment that is worn are the safest possible, that all injuries and illnesses are properly cared for, that skills are properly taught, and that conditioning is at the highest level.
- The athletic trainer is responsible for preventing injuries from occurring, providing initial first aid and injury management, evaluating injuries, and designing and supervising a program of rehabilitation that can facilitate the safe return to activity.
- The team physician is responsible for preparticipation health examinations; diagnosing and treating illnesses and injuries; advising and teaching athletic trainers; attending games, scrimmages, and practices; and counseling the athlete about health matters.
- Other members of the sports medicine team may include nurses, physicians in specializations such as orthopedics, dentists, podiatrists, physician's assistants, strength and conditioning coaches, nutritionists, sport psychologists, exercise physiologists, biomechanists, physical therapists, chiropractors, equipment personnel, and referees.
- Diversity, equity, inclusion, and access has become a universally recognized concept that takes into account our multicultural society and the unique differences that exist between individuals. The NATA encourages athletic trainers to become leaders in championing diversity within the profession.

Solutions to Critical Thinking Exercises

1-1 Ultimately, the team physician is responsible for making that decision. However, that decision must be based on collective input from the coach, the athletic trainer, and the athlete. Remember that everyone in the sports medicine team has the same ultimate goal—returning the athlete to full competitive levels as quickly and safely as possible.

1-2 To help prevent injury, the athletic trainer should (1) arrange for physical examinations and preparticipation screenings to identify conditions that predispose an athlete to injury; (2) ensure appropriate training and conditioning of the athlete; (3) monitor environmental conditions to ensure safe participation; (4) select and maintain properly fitting protective equipment; and (5) educate parents, coaches, and athletes about the risks inherent to sports participation.

1-3 The coach should be responsible for designing an effective conditioning program and ensuring that protective equipment is of the highest quality, properly fitted, and properly maintained; able to apply proper first aid; certified in CPR/AED and first aid; and aware of the environmental factors that may adversely affect the athlete.

Review Questions and Class Activities

1. Draw a timeline and give brief explanations of the significance that specific past events have on the present, as well as infer possible implications those events may have on the profession's future.
2. Create a scenario involving a minimum of five members of the sports medicine team and explain how they work together.
3. Pick 5 states, locate their practice acts and determine the process required to be able to practice athletic training or physical therapy in each state. How is each different or the same?
4. Discuss the sports medicine team and all its members. This can include: physicians, athletic trainers, personal trainers, massage therapists, physician assistants, nurse practitioners, physical therapists, sports psychologists, nutritionist, dentists, chiropractors, nurses, exercise physiologists, biomechanists, strength and conditioning coaches, emergency medical technicians, paramedics, orthotists and prosthetists.

What if you could easily understand how the human body is affected by exercise, training, and sports performance and begin to use that information right away? What if the materials came from a world class expert in the field? Step into the exciting world of an athletic trainer working in a sports medicine setting with the third edition of *The Role of the Athletic Trainer in Sports Medicine: An Introduction for the Secondary School Student* by Dr. William Prentice. He is a highly regarded Hall of Fame athletic trainer and physical therapist who spent more than four decades as a professor at the University of North Carolina at Chapel Hill. In his time as the head athletic trainer for the women's soccer team that won 18 national championships and 16 ACC championships! This textbook presents your pathway to a career in athletic training, designed in alignment with curriculum standards from NATA, targeted specifically for secondary school students. Embark on your athletic training journey today!

mheducation.com/cte

978-1-26-525367-7
MHID: 1-26-525367-6

99701

EAN
9 781265 253677

Mc Graw Hill