Third Edition

Fundamentals of ATHLETIC TRAINING

Lorin A. Cartwright • William A. Pitney

Third Edition

FUNDAMENTALS OF ATHLETIC TRAINING

Lorin A. Cartwright, MS, ATC
Ann Arbor Pioneer High School

William A. Prentice, EdD, ATC, FNATA
Northern Illinois University

Human Kinetics

Library of Congress Cataloging-in-Publication Data

Cartwright, Lorin, 1956-
Fundamentals of athletic training / Lorin A. Cartwright, William A. Pitney. -- 3rd ed.
p. cm.
Includes bibliographical references and index.
ISBN-13: 978-0-7360-8373-7 (hard cover)
ISBN-10: 0-7360-8373-1 (hard cover)
1. Athletic trainers. I. Pitney, William. II. Title.
RC1210.C36 2011
613.7'11--dc22

ISBN-10: 0-7360-8373-1 (print)
ISBN-13: 978-0-7360-8373-7 (print)

The Web addresses cited in this text were current as of October 2010, unless otherwise noted.

Acquisitions Editor: Loarn D. Robertson, PhD; **Developmental Editor:** Judy Park; **Assistant Editors:** Elizabeth Evans and Brendan Shea; **Copyeditor:** Alisha Jeddeloh; **Indexer:** Bobbi Swanson; **Permission Manager:** Dalene Reeder; **Graphic Designer:** Joe Buck; **Graphic Artist:** Yvonne Griffith; **Cover Designer:** Keith Blomberg; **Photographer (cover):** Human Kinetics; **Photo Asset Manager:** Laura Fitch; **Visual Production Assistant:** Joyce Brumfield; **Photo Production Manager:** Jason Allen; **Art Manager:** Kelly Hendren; **Associate Art Manager:** Alan L. Wilborn; **Illustrations:** © Human Kinetics; **Printer:** Courier Companies, Inc.

Printed in the United States of America 10 9 8 7 6 5 4 3 2 1

The paper in this book is certified under a sustainable forestry program.

Human Kinetics
Web site: www.HumanKinetics.com

United States: Human Kinetics
P.O. Box 5076
Champaign, IL 61825-5076
800-747-4457
e-mail: humank@hkusa.com

Canada: Human Kinetics
475 Devonshire Road Unit 100
Windsor, ON N8Y 2L5
800-465-7301 (in Canada only)
e-mail: info@hkcanada.com

Europe: Human Kinetics
107 Bradford Road
Stanningley
Leeds LS28 6AT, United Kingdom
+44 (0) 113 255 5665
e-mail: hk@hkeurope.com

Australia: Human Kinetics
57A Price Avenue
Lower Mitcham, South Australia 5062
08 8372 0999
e-mail: info@hkaustralia.com

New Zealand: Human Kinetics
P.O. Box 80
Torrens Park, South Australia 5062
0800 222 062
e-mail: info@hknewzealand.com

E4851

To educators everywhere who take a vested interest in introducing the profession of athletic training to students. *You are expanding the knowledge and horizons of future certified athletic trainers.*

Preface

The world of athletic training is ever evolving and expanding. Writing the third edition of *Fundamentals of Athletic Training* has been an opportunity to include recent changes to keep the reader updated on the latest information in the field of athletic training.

This one-of-a-kind book is designed to introduce the world of athletic training to students getting their first exposure to the profession. We present basic information for those exploring the field of athletic training, and we provide detailed information for student assistants who want to learn more about what occurs in the athletic training room or who aspire to a career as a certified athletic trainer (AT). This textbook will help students become familiar with the practices of the AT and also understand their own role.

A student assistant's most important role is to learn as much as possible. Although they cannot perform many of the AT's tasks, this text can help students understand what they will observe during their experience in the athletic training room. It will also enable them to ask the AT intelligent questions.

In this book we address the concepts, injuries, and illnesses that we have dealt with at the high school level as certified ATs. Our hope is that the material will encourage students to consider athletic training or another medical field as a profession.

HOW THIS BOOK IS ORGANIZED

The text is organized so that each unit can stand alone and be comprehended without reading previous units. We suggest, however, that units II through VI be covered to provide a solid understanding of anatomy and physiology before reading about specific injuries. Learning about injuries that occur to the body as well as the associated anatomy is necessary before learning about rehabilitation and treatment.

The book is divided into nine units:

- Unit I gives an overview of the athletic training profession and the administrative tasks important to success in the field.
- Unit II is a discussion of the body's anatomy and the physiology of injury and tissue healing.
- Units III, IV, and V explain specific anatomy, injuries, and treatment for injured athletes.
- Unit VI discusses the fundamentals of rehabilitation and returning athletes to competition, including the psychological aspects of their return.
- Unit VII discusses how to plan and deal with emergency situations.
- Unit VIII explains injury prevention through the use of taping, wrapping, and protective equipment.
- Unit IX covers various conditions, illnesses, disabilities, communicable diseases, common drugs, and nutritional aspects that affect athletes.

SPECIAL CHAPTER ELEMENTS

A number of special features are contained within the text. At the front of the book you will find a list of all anatomical drawings and their locations within the book for quick reference. Each chapter begins with a list of objectives that the reader will be able to answer after completing the chapter. The objectives will help students focus their attention when reading the material. The Real World features share actual experiences of ATs. What Would You Do If . . . segments act as discussion openers and allow students to prioritize their thinking about the situation; these dilemmas show that being an AT involves not only medical challenges but also challenges of responsibility. FYI boxes provide more information about a particular topic that may

be challenging. We have added content related to current NATA position statements, and we have also added a segment called *Understanding Diversity* to facilitate students' thinking about various cultures and races that ATs may work with.

At the end of each chapter is a wrap-up section, which includes a summary, key terms, questions for review, activities for reinforcement, and activities for going above and beyond. The key terms are bolded within the text where they are defined and are also listed at the conclusion of each chapter. The questions for review reflect major topics and objectives. Defining the key terms and answering the questions for review allow readers to check how well they are learning and serve as a review for chapter tests. The activities for reinforcement are just that: recommended hands-on experiences that enable students to apply the theory in the chapter in practical ways. These activities clarify and reinforce the facts and techniques presented in the text. We challenge the student who wants to dig deeper with suggested projects in the Above and Beyond segments.

NEW TO THIS EDITION

In this edition, new topics include working with athletes with specific conditions or disabilities, design features of athletic training facilities, modality safety, balance activities, working with athletes of diverse cultures, and the role of the AT in school emergencies. We have added content to the chapters on the profession and professional preparation, reconditioning, primary care, environmental situations, protective equipment, drug use, and nutrition. The appendixes have been updated as well.

NOTES FOR INSTRUCTORS

The text is designed for people receiving their first exposure to content found in the athletic training profession. The information presented, therefore, is fundamental. At the end of each chapter, however, we include exercises to help students explore topics at a greater depth when necessary.

The test pacckage contains a large question bank primarily composed of multiple-choice questions. Questions are organized by chapter and answers are provided. The instructor guide includes a lecture outline to guide the presentation of material as well as worksheets for students to complete to ensure they are engaged and self-directed in their learning.

To fine-tune your presentations, the image bank includes the art and photos of the text. This will allow you to use graphics in PowerPoint presentations and help link information in your presentations to the text that the students have read.

This book and its features will make readers the best student assistants possible in support of the AT. This is the beginning of the possibility that the students may become intrigued by this field and set a goal to make a living caring for athletes.

Acknowledgments

To my friends and family for your love, support, and encouragement. To my writing partner, Bill, for great ideas and common sense. To Barb Hansen for her patience, suggestions, wisdom, balance, and support. You are the best.

Lorin A.Cartwright

To Liam and Quinlan for helping me understand my priorities in life. My students at NIU . . . you have taught me more than you will ever know! To Lorin, who is the most dedicated professional I know—it is always a pleasure working with you. To my best friend, my soul mate, my everything, Lisa, for her love and devotion. I am surely the luckiest man alive . . . did I ever tell you you're awesome?

William A. Pitney III

Contents

List of Anatomical Drawings

Shoulder

Elbow

Wrist and Hand

Lower Extremity

Hip, Pelvis, and Thigh

Knee

Foot, Ankle, and Lower Leg

UNIT I

Professional and Administrative Aspects of Athletic Training

chapter 1

Athletic Training as a Profession

Objectives

Upon completing this chapter, the student will be able to do the following:

- Define *athletic training.*
- Describe the roles of the certified athletic trainer.
- Describe the roles of other health care providers and the sports medicine team.
- List the requirements for becoming a competent certified AT.
- Describe the job opportunities available to certified ATs.

Athletic training is a profession dedicated to maintaining and improving the health and well-being of the physically active population and preventing athletics-related injuries and illnesses. The credential for the **certified athletic trainer (AT)** is the **ATC**. The credential *ATC* after one's name is evidence that the person has the appropriate education and training to work as a certified AT. Although individuals have provided health care to injured athletes for centuries, it was not until 1991 that the American Medical Association formally recognized athletic training as an allied health care profession. The **National Athletic Trainers' Association (NATA)**, which is responsible for setting professional standards, was formed in 1950. The NATA **Board of Certification (BOC)** is responsible for conducting the national certification process.

ROLES OF THE ATHLETIC TRAINER

The BOC has studied and established the various roles of the AT, which include the following practice domains:

- ***Injury prevention.*** The prevention of athletic injuries includes preparticipation physical exams;

proper strength and conditioning programs; proper equipment and equipment fitting; taping, bandaging, and bracing; and good nutrition.

- ***Clinical evaluation and diagnosis.*** The AT must be able to recognize the type of injury and its severity so that she will know how to treat it or when to refer the athlete to a physician.

- ***Immediate care of athletic injuries.*** When an athlete is injured, the AT must be ready to respond. He must maintain first aid and cardiopulmonary resuscitation (CPR) certification through such organizations as the **American Red Cross** and the **National Safety Council**.

- ***Treatment, rehabilitation, and reconditioning of athletic injuries.*** After initial treatment, the AT directs the athlete through exercises and treatments to help her return to normal function. This is called **rehabilitation**. **Reconditioning** is getting the athlete back into physical shape for athletic participation.

- ***Organization and administration.*** ATs are often responsible for managing state-of-the-art facilities, so they must have the administrative skills necessary for preparing work and purchase orders and scheduling staff. Additionally, injuries, treatments, and rehabilitation progress must be documented accurately.

- ***Professional development and responsibility.*** Technology changes rapidly, and ATs must continue their education to remain current with the latest developments in health care. To do so, they attend seminars, read journals, write articles and books, and conduct research. ATs must conduct themselves professionally and with integrity. No one likes receiving medical treatment from someone who is unprofessional. A professional understands that she cannot accomplish everything by herself, so she works as part of a sports medicine team.

THE SPORTS MEDICINE TEAM

In this book, **sports medicine** refers to the care of physically active people who have suffered athletic injury or illness. The sports medicine profession includes ATs, medical doctors, physical therapists, dentists, chiropractors, coaches, sport psychologists, strength and conditioning specialists, school nurses, sport nutritionists, and student assistants (see figure 1.1). A sports medicine team may include any or all of these people.

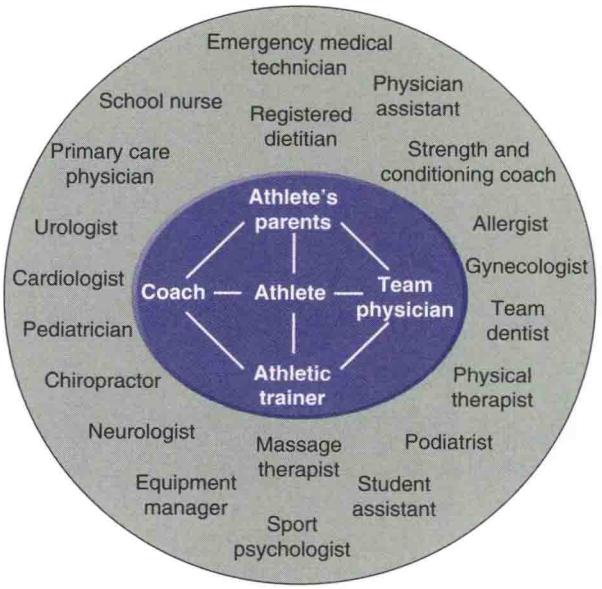

Figure 1.1 The sports medicine team consists of central and peripheral members, each of whom has specific responsibilities and areas of expertise.

As with any team, the sports medicine team must work cooperatively. If a football running back runs wherever he wants with the ball regardless of where the blockers are, his team will never win. The team must coordinate its plays if it is ever to be successful. This is how an effective sports medicine team works.

Central Team

Ideally, the central team is composed of the injured athlete, the athlete's parents, the AT, the team physician, and the coach. The central team works together to make initial decisions about injuries, illness, and even sport performance.

- ***The athlete.*** The athlete is the center of the team. She provides other members with vital information about the injury.

- ***The athlete's parent or guardian.*** Because the sports medicine team is concerned about making decisions in the athlete's best interest, both the athlete and her parent or guardian must be involved in the central team.

- ***Team physician.*** The team physician is the medical authority who oversees the sports medicine team effort. The physician examines the athlete for