Clinical Sports Medicine

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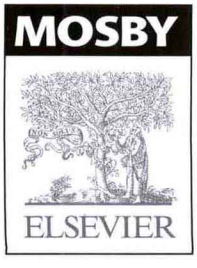

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To my girls—Donna, Lindsay, Hailey, Kiley, and Jaycie. I can't wait for your next soccer game.

—SDM

To my patients, medical students, residents, fellows, athletic trainers, physical therapists, and colleagues for all they have taught me; they have made this profession an honor and a privilege to be a part of. With love to my wife Nancy, son Brandon, and daughters Kelsey and Lauren for making my life complete.

—DLJ

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Preface

"It's what you learn after you know it all that counts."—John Wooden

Sports medicine is an ever-expanding and changing field, but the primary goal remains the same as it was decades ago—to allow the injured athlete to return safely to participation and perform to the best of his or her ability. *Clinical Sports Medicine* presents, in a concise manner, the latest techniques for achieving this goal. Emphasis is placed on summary boxes, illustrations, and algorithms in order to provide an easy reference to commonly seen medical problems and injuries. All chapters are written with the treatment of the athlete in mind. The resultant text is a useful reference to all members of the sports medicine team—trainers, therapists, physicians, and even coaches and parents. The authors were selected based on their specific areas of expertise, and were asked to cover essential material and pearls based on their personal experience.

The first 15 chapters cover general principles and medical issues. The remainder of the book is divided by anatomic areas. Emphasis is placed on physical examination and evaluation of the injured athlete because the key to proper treatment almost always starts with an accurate diagnosis. Also emphasized is appropriate rehabilitation, with five chapters devoted solely to this topic, and further mention made in each chapter addressing specific types of injuries. Surgery is addressed, not with the goal of presenting step-by-step instructions, but rather the rationale for surgical intervention, general principles, and tips based on experiences, good and bad.

Athletes seem to be getting both younger and older at the same time. As children strive to become the next Michael Jordan or Mia Hamm, the number of pediatric injuries (particularly those related to overuse) has risen dramatically. Four chapters are devoted to prevention and treatment of pediatric injuries. On the other end of the spectrum, "weekend warriors" participate into their retirement years, and chapters addressing the older athlete and arthritis in the athlete are included.

Chapters are organized for easy reference. Each starts with a section titled "In This Chapter" to emphasize what is covered. This is followed by an introductory summary box of the most important concepts. The general outline follows with clinical features and evaluation, relevant anatomy, treatment options, surgery, rehabilitation, criteria for return to sports, results and outcomes, and potential complications. We hope that the text is an easy-to-read reference that helps those who treat athletes to achieve the preceding goals. We wish to thank all of the authors for all of their work in organizing the material in a concise and interesting format.

Scott D. Mair

Darren L. Johnson

Foreword

It has been several years since a comprehensive book on the medical aspects of clinical sports medicine has been published. In the early 1990s, books by The Hughston Clinic, Drs. Fu and Stone, and Drs. Drez and DeLee made important contributions to the sports medicine literature. Since that time, the sports medicine subspecialty has come a long way.

The American Board of Orthopaedic Surgery has recognized sports medicine as a clinical subspecialty. A test leading to a certificate of subspecialization in sports medicine is presently being written and will be offered in 2007. Indeed, we have come a long way from the old concept of "orthopaedics for people with numbers."

Clinical Sports Medicine is an excellent representation of where sports medicine is in the early 21st century. Chapters dealing with the role of the team physician; preparticipation physicals; on-field emergencies and preparedness; as well as specialized chapters on the pediatric, female, and older athlete, ensure full coverage of the ever-widening spectrum of sports medicine. There is even a chapter on the psychology of the injured athlete that deals with how injury affects the athlete's well-being.

The remainder of the book is broken down into sections dealing with various anatomic regions. Each chapter is written by an expert in the field, often with assistance from their younger partners. Each chapter has a well-identified introduction. Tables throughout the book are easily readable and are quite helpful as short, quick studies for the chapter.

The authors are orthopaedic surgeons, family physicians, internists, physical therapists, and athletic trainers. Their combined experience is overwhelming, and their writing style is very compatible.

Sports medicine has a separate specialized core curriculum, and this book encompasses the aspects of that curriculum. It should be included in the library of all residency and fellowship programs and should be valued as a reference for practicing orthopaedists regardless of their training level or expertise. Drs. Johnson and Mair should be commended for their success in gathering together so many well-respected physicians to share their knowledge in this exciting book on sports medicine.

Congratulations to you both.

Champ L. Baker, Jr., MD

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I Overview

CHAPTER
1 The Role of the Team Physician

Claude T. Moorman III and Frank H. Bassett III

In This Chapter

INTRODUCTION

- The defining role for physicians in sports medicine is to serve as team physician.
- The role of the physician in a sports medicine environment may at times require responsibility for the surgical, medical, emotional, and even spiritual well-being of the athlete.
- Specific responsibilities for the team physician can be broken down into roles that evolve over the course of the athlete's season. At different times in the year, the physician will be responsible for preparticipation clearance, practice and game injury evaluation, treatment of practice and game injuries, coordination and implementation of postseason medical and surgical treatment, and the continuing education of both him- or herself and the rest of the health care team.

RESPONSIBILITIES OF THE TEAM PHYSICIAN

The responsibilities facing the team physician are considerable, and all of them have ethical and legal ramifications. This creates some potential conflicts that need to be resolved in order to care safely and effectively for the athlete. The intention of this chapter is to outline the specific roles and responsibilities of the team physician. We also discuss potential sociopolitical conflicts and strategies for managing these conflicts.[1] Several of the great team physicians of the past generation are featured in an attempt to further understand the role of the team physician and the many subtleties that exemplify a successful sports medicine team.

Preparticipation Clearance

The team physician is responsible for the overall process through which athletes are cleared to play. This requires coordination of the various subspecialists who often assist in these evaluations as well as determining the setting and facility requirements to implement this important portion of the athlete's evaluation (Box 1-1).[2] At different levels of participation, the requirements vary, as does the sophistication of the testing measures instituted. In the high school environment, the evaluations are often carried out in the school gymnasium, usually with a relatively minimal number of subspecialty providers available. The various different governing bodies in sports medicine, including the American Orthopaedic Society for Sports Medicine (AOSSM), the American Academy of Family Physicians, the American Academy of Pediatrics, the American College of Sports Medicine, the American Medical Society for Sports Medicine, and the American Osteopathic Academy of Sports Medicine have come together with a consensus document for what is required for preparticipation physical examinations (John Bergfeld, personal communication, 1996).

At the collegiate and professional levels, oftentimes more sophisticated measures and a more comprehensive array of consulting physicians are available to assist with the screening. In many scenarios, electrocardiograms and echocardiograms are a common part of the screening. The goal is to rule out conditions such as hypertrophic cardiomyopathy, which may predispose the participating athlete to significant risk or even death. The team physician's responsibility to the athlete generally begins with this preparticipation clearance. (Please see Chapter 2 for additional detail.)

In-Season Coverage

During the athlete's season, the physician's role varies considerably depending on the sport and the setting. The majority of team physicians are involved, at some point in time, in coverage of contact sports, particularly football. The majority of the following discussion centers on football with the realization that lower risk sports will generally require less frequent on-site presence of the team physician. In the majority of situations, the physicians are involved in game coverage with a more limited role in the practice setting. At our institution, the standard has been to cover both home and away games, with training room presence of the attending team physician at the heavy contact practice during the week as well. In the collegiate environment, Tuesday practice tends to be the heaviest contact day, and this is the day that we have selected as the most important for physician presence. In our setting, this translates into the physician arriving toward the end of the practice setting with involvement in running a clinic in the training room following that practice. We have found this to be the highest yield in terms of determining the significant injuries that require physician attention.

It is also important to make a distinction between a true team physician and the "office arthroscopist."[3] With the increasing financial pressures in the health care market today, there is increasing pressure for the team physician to play a decreasing role in the true environment of the athlete. This represents a substantive threat to the team physician's persona as it has been reflected through the ages. Now more than ever before, the team physician needs to recognize work in the training room as

Box 1-1 Preparticipation Clearance

- Requires coordination of various subspecialists
- Sophistication may vary with level of participation
- Consensus document of various societies outlines requirements

a true "labor of love" as there is seldom any opportunity to financially benefit from this activity. There is clearly a large distinction between the physicians who are willing to make the sacrifices to become an integral part of the athletic environment and those who simply manage an office practice with a very limited on-site role for the athlete. This distinction, while obvious, has important ramifications for the quality of care that we deliver to the athlete. There is no question that a physician who is familiar with the athlete and his or her environment and who takes the time to get to know the players, managers, trainers, and administrators involved in the milieu that makes up the athlete's world, will be a much more effective physician when called on to manage injury and illness. The physicians highlighted in the next section have all demonstrated an excellent understanding of this concept. There is no way that the labor of love that is required to be effective in this role can ever be justified on a financial basis. Few physicians even at the professional level are financially rewarded for their role.

Game Coverage

The team physician needs to be present on the game day for contact sports such as football. There are several different logistical arrangements, depending on the level (Box 1-2). At our institution, the team physician arrives 90 minutes prior to the posted kick-off time. Final evaluations are made at this time and any concerns addressed. Under some circumstances, it may be appropriate for athletes with soft-tissue injuries to receive intramuscular ketorolac (Toradol) injections 1 hour prior to the kickoff, which may help to minimize their pain. Additionally, it is occasionally appropriate to consider a local anesthetic injection for a limited number of conditions. In our practice, it has been safe and effective to consider Marcaine injections for grade 1 acromiodavicular (AC) separations, hip pointers, and bruised ribs. These are the only three conditions for which pregame local anesthetics are considered to be both safe and effective. We do discourage the use of local anesthetics for any joint, muscular, and/or bony lesion that does not fall into these three categories. While the skill and expertise of the individual physician may allow for additional indications, this intervention must be very carefully balanced with risks and carefully agreed to by the athlete with full informed consent. Few areas of the physician-athlete relationship generate more controversy or concern on the part of the general public.

It is important for the physician to understand the subtleties of game flow to position him- or herself effectively on the sideline. In most scenarios, this requires the physician to be on the sideline on the end of the field in which the ball is in play. This will allow ready access to injured players while staying out of the way of the coaches and players as they orchestrate the game. Each staff member must determine the appropriateness of the initial on-field evaluations. At our institution, the trainers make the initial evaluations; they call for the physician, should this be necessary. In the majority of cases, the trainers evaluate the players on the field and escort them off without the physician needing to be involved directly until the player reaches the sideline. We do have an examination table set up on the sideline for evaluations. In most scenarios, it is best to get the player off of the field as soon as it is safely possible following an injury and to do the more detailed evaluations on the sideline. This allows the game to continue and minimizes the crowd's focus on management of the athlete's injury. Obviously, when a player has a significant cervical spine or head injury, this scenario is considerably different (see Chapter 15 on cervical spine injury). For injuries that may represent fracture or significant joint injury, radiographs are oftentimes appropriate. It is important to have a scenario whereby imaging studies can be obtained when necessary. At our institution, we have a radiology technician on the sideline and imaging apparatus within 100 yards of the playing field. Many institutions and stadiums have portable fluoroscopy machines available that may serve the same purpose. Additional personnel who can be quite helpful are a paramedic or emergency medical team with medical evacuation equipment if transfer of the athlete is necessary. Some health care teams have anesthesiologists and neurosurgeons available depending on the sport and the setting.

Box 1-2 Game Coverage

- Pregame injections considered only for certain conditions
- Trainers make initial on-field evaluations
- Detailed evaluation done on the sideline
- Postgame checks in the training room

Postgame evaluations are done in the training room with careful attention to any injuries that may require further evaluation. A true team approach with trainers, primary care team physicians, and orthopaedic surgeons is helpful to provide a comprehensive approach to the myriad of injuries from muscle strains to concussions that are seen in contact athletics. Neuropsychological testing is used at our institution for mild traumatic brain injuries; the testing is performed following the game with comparison to baseline testing performed during the preparticipation examinations.

An injury clinic is commonly held on the day following the game. This allows further identification of potential and real injury problems that may not have been obvious to the athlete or physician on the day of the game. It has also been our experience that following a victory, many of the athletes who actually have seemingly smaller injuries do not report for postgame evaluation and are better assessed on the day following the game. This provides a less harried environment after the excitement of the game has passed to get a true handle on the extent of injuries and to provide a plan for timely imaging and other treatments. This training room clinic generally sets the tone for the week to come and prepares the coaches and players for the availability or lack thereof of key players.

LIABILITY

Team physicians have come under increasing scrutiny in recent years, an extension of what has become commonplace in the medicolegal environment in the rest of medicine. As recently as 2003, there were 18 active lawsuits against National Football League team physicians. This is reflective of the general attitude in society of persons seeking financial compensation through the legal system in the case of injury. In many environments, it is common for professional athletes who have not been able to fit into the plans of the various franchises to seek remu-