Understanding and Preventing Noncontact ACL Injuries

American Orthopaedic Society for Sports Medicine; Editors: Timothy E. Hewett, PhD, FACSM; Sandra J. Shultz, PhD, ATC, CSCS, FNATA; Letha Y. Griffin, MD, PhD; Champaign, Ill; Human Kinetics; 2007; 344 pages; hard cover; $81.00 (available as an eBook for $45.00)

Understanding and Preventing Noncontact ACL Injuries is a compilation of the current evidence-based medicine regarding the prevention of noncontact anterior cruciate ligament (ACL) injuries. The incidence of ACL injuries in young, female athletes has risen during the past few decades with the increasing participation of female athletes in organized sports. Although the incidence of ACL injuries in the general population is largely unknown, it is now estimated that 1 of 100 high school female athletes will experience this physical and emotionally disabling injury. In addition, it is estimated that surgical reconstruction of an ACL-injured knee may cost more than $17,000 per procedure, bringing the overall cost to the United States to $1.5 billion per year. Anterior cruciate ligament injuries are a significant health problem comprehensively addressed in this text.

This book is appropriate for all health care professionals who assess, treat, and rehabilitate knee injuries in an athletic population. In addition, this is an excellent reference text for advanced undergraduate and graduate students in a sports medicine discipline. A final target audience is those who work with athletes and want to incorporate preventative training for lower extremity injuries, such as coaches, strength and conditioning specialists, and physical education teachers.

Part 1, edited by Letha Y. Griffin, MD, PhD, highlights the advances in ACL incidence data collection at all levels of sport participation. Despite preventive efforts, the ACL incidence in some athletic populations has not declined in the past decade. The long-term deficits associated with ACL injury, such as osteoarthritis, are highlighted in chapter 2, and chapter 3 details the financial and emotional effects of ACL injuries on athletes and families.

Part 2, edited by Timothy E. Hewitt, PhD, FACSM, begins by covering the components of ACL injury prevention programs, such as core stability, dynamic muscular control, and joint proprioception. Chapter 5 explains how neuromuscular intervention programs may influence ACL injury rates. Three intervention programs have been shown to reduce ACL injury rates, and the components of these programs are described. Chapter 6 highlights how muscular imbalance between the agonist and antagonist knee musculature affects the strain patterns on the ACL. This chapter also focuses on how muscular efficiency may improve knee stability. Chapter 7 discusses how performance measures such as vertical jump, agility, strength, and single-leg stability are addressed in ACL preventive programs. Finally, chapter 8 discusses current research on prevention programs and risk factors, and their interrelationship.

Part 3, also edited by Dr Hewitt, starts with ACL-injured athlete interviews and a review of videotapes.
of biomechanics and ACL injuries. Chapter 11 focuses on kinetic and kinematic gender differences, as well as how landing and cutting maneuvers may lead to ACL injury. Chapter 12 highlights plyometric training of lower extremity movement patterns, and chapter 13 focuses on sport-specific injury mechanisms in soccer, team handball, and basketball; a comparison of gender differences in these sports also is discussed. Chapter 14 explains neuromuscular recruitment patterns and the use of electromyography to measure gender differences in muscle activation. The next 2 chapters focus on ACL injuries in nontraditional sports such as alpine skiing, dance, and skating, and the final chapter in part 3 summarizes the role of biofeedback in the prevention of ACL injury and reinjury.

Part 4, edited by Sandra Shultz, PhD, ATC, CSCS, FNATA, comprises the final 4 chapters, which discuss hormonal and anatomical risk factors and implications for preventive bracing for ACL injuries. Recent research on ligament biology and tissue remodeling is highlighted in chapter 18. Chapter 19 describes the effects of sex hormones on the menstrual cycle, collagen structure, knee joint laxity, and stiffness; the effects of oral contraceptives on ACL injury also are covered. Chapter 20 explains the 4 risk factor classifications of ACL injury risk: environmental, hormonal, anatomical, and biomechanical. Anatomical gender differences such as notch size and width, joint laxity, and alignment also are discussed. The final chapter in the book addresses research related to intrinsic and extrinsic risk factors for ACL injury and discusses the potential affects of preventive bracing on ACL injury risk.

This textbook discusses innovative research related to the prevention of ACL injuries. Well worth the affordable price, Understanding and Preventing Noncontact ACL Injuries is an excellent resource for both young and seasoned sports medicine professionals.

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