

INTRODUCTION

An understanding of the mechanics of gait and the muscle function during the stance phase is the basis of treatment for overuse injuries. These injuries of the lower kinetic chain are at times perplexing. Pathomechanics of the lower kinetic chain contribute to abnormalities in lower extremity function. Loss of subtle movements of the pelvis and lower limb can produce microtrauma to the soft tissue structures. Rehabilitation of the lower kinetic chain must attempt to reestablish the normal mechanisms for force attenuation during the gait cycle. This issue will focus on understanding of the concepts of biomechanics of the lower extremity, the closed kinetic chain, and other issues impacting the diagnosis and treatment of lower extremity injuries. This issue complements our last issue, *Lower Extremity: Injury Assessment and Management*, by focusing on how lower extremity biomechanics impact injury and rehabilitation.

Donatelli's "Lower Kinetic Chain and Human Gait" provides a combination of the science of the human gait with applications for practice. In "Contributing Factors in Microtrauma Injuries of the Lower Extremity" Johanson discusses how the mechanics of the lower extremity contribute to microtrauma injuries; and in "Microtrauma Injuries and Rehabilitation of the Foot and Ankle" she focuses on the specific injuries and the recommended rehabilitation. In "The Application of Open and Closed Kinematic Chain Exercises in Rehabilitation of the Lower Extremity" Greenfield writes on the application of the concepts of closed

kinetic chain in the rehabilitation process for the lower extremity and carries through our educational approach from the preceding articles to how to apply these concepts in rehabilitation. In "Clinical Decision Making for Biomechanical Foot Orthoses," Brown describes the steps used to evaluate abnormal biomechanics, make the prescription, and provide follow-up care to make proper adjustments, and prevent complication. Deppen's "Indications for Referral: Orthotist, Physical Therapist, Podiatrist—What's the Difference?" provides us with practical information on how to get the most from a referral for lower extremity orthotics and delineates the different types of expertise. We are fortunate to be able to include "Radiographic Evaluation of Ankle Trauma" by Curtis, which we were unable to include in Weinik's issue on the ankle. Conway's "Magnetic Resonance and Related Modalities Used to Image Osteonecrosis of the Hip" updates us regarding imaging for osteonecrosis of the acetabulum and femur. We have also added two book reviews, which we hope will be a continuing feature when space permits.

Robert Donatelli, MA, PT, OSC, Issue Editor

I want to personally thank Robert Donatelli for being our guest editor. He has brought a wealth of experience to this issue. His selection of topics and authors is outstanding and greatly appreciated.

Karen S. Rucker, MD, Editor