

INVITED CLINICAL COMMENTARY

BIOMECHANICS OF MULTI-LIGAMENT KNEE INJURIES (MLKI) AND EFFECTS ON GAIT

Mark V. Paterno PT, MS, SCS, ATC^a

Timothy E. Hewett PhD, FACSM^b

ABSTRACT

Stability at the knee joint is provided by both the static structures, including the ligaments and joint capsule and the coordinated activation of dynamic structures surrounding the joint. These dual stabilizers allow for functional movements, such as gait, to occur safely, effectively, and efficiently. In the presence of a multi-ligament knee injury (MLKI) an absence of static stability can result in an increased reliance on the dynamic knee stabilizers. If sufficient stability is not provided, the potential for an increase in abnormal movements in the knee joint can result. These potential gait alterations that may be associated with a MLKI can result in abnormally high stresses on healing tissues and potentially high shearing forces on articular cartilage, resulting in early breakdown. Early recognition of gait abnormalities and an appropriate implementation of a gait re-training program to control abnormal forces in a patient following an MLKI or a surgical intervention for a MLKI are critical for successful long-term outcomes.

Key words: Gait, knee, biomechanics, multi-ligament knee injury

CORRESPONDENCE:

Mark V. Paterno PT, MS, SCS, ATC
Cincinnati Children's Hospital
Medical Center
3333 Burnet Avenue; MLC 10001
Cincinnati, OH 45229
Telephone: 513-636-0517
Fax: 513-636-0516
Email: mark.paterno@cchmc.org

^aCincinnati Children's Hospital Research Foundation
Sports Medicine Biodynamics Center and Human
Performance Laboratory
Cincinnati, OH

^bUniversity of Cincinnati College of Medicine,
Departments of Pediatrics and Orthopaedic Surgery
Cincinnati, OH