INTERNAL AND EXTERNAL PASSIVE STABILIZERS OF THE ANKLE JOINT COMPLEX
by
Ilias Theodorakos

Lateral ankle sprains are the most common type of ankle injuries during sport participation. A lot of research has been done investigating whether and how passive stabilizers affect the biomechanical behavior of the ankle joint complex. However, more evidence is needed to determine whether external ankle stabilizers, such as ankle braces, can prevent initial ankle sprain occurrences and whether and how the influence knee kinematics and kinetics. Moreover, more evidence is needed to describe how internal ankle stabilizers, such as ligaments, influence the kinematics of the ankle joint complex. Computational models can provide insight into these research questions by computing kinematics and kinetics of structures that cannot be accessed invasively.

This PhD thesis focuses on applying computational models and methodologies to address whether and how passive stabilizers of the ankle joint complex affect ankle biomechanics. The latest findings in the literature were used to address modeling challenges of the ankle joint complex, which attributed to the complex anatomy and biomechanical behavior of the joint and the structures surrounding it. Computational models were used to investigate the effects of ankle passive stabilizers on the ankle joint complex.

The results indicate that passive stabilizers influence the biomechanical behavior of the ankle joint complex. Most importantly, it was demonstrated how the ankle kinematics was altered by the passive stabilizers. Ankle bracing can alter ankle kinematics, which subsequently may influence the kinematics and/or kinetics of the knee. Furthermore, it was demonstrated how the foot positioning and the external load may influence the execution and the interpretation of physical examination tests of the lateral ankle ligaments.
Program for Ph.D. lecture on

Monday 24 April 2017

by

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Internal and external passive stabilizers of the ankle joint complex

Chairman:  Associate Professor Ryan Godsk Larsen
Moderator:  Professor John Rasmussen

13.00       Opening by the Moderator
13.05       PhD lecture by Ilias Theodorakos
13.50       Break
14.00       Questions and comments from the Committee
            Questions and comments from the audience at the
            Moderator’s discretion
16.00       (No later than)
            Conclusion of the session by the Moderator

After the session a reception will be arranged