Seminar über Fragen der Mechanik

zu folgendem Vortrag wird herzlich eingeladen

Dienstag, 07.11.2023, 14:00 Uhr

Immerwahrstr. 1, Raum 01.025 / https://fau.zoom.us/j/97303812645

Assessment of shoulder musculoskeletal modelling procedures for clinical applications

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Abstract

The shoulder is the most complex and redundant structure in the human body, able to achieve its broadest range of motion. On the downside, such complexity is likely responsible for the inherent instability of the joint as well as the challenging nature of biomechanical shoulder research and the lack of understanding of shoulder dynamics.

Musculoskeletal modelling is a computational technique that has become increasingly popular thanks to its ability to estimate the internal dynamics of the human musculoskeletal system via multi-body models and the use of recruitment optimisation to solve the shoulder muscle redundancy problem.

The presented work will apply current knowledge of OpenSim-based shoulder modelling to study internal dynamics after the fascinating Latarjet surgery; the gold-standard surgery to restabilise shoulders after recurrent anterior dislocations. Then, the talk will showcase a benchmark study of different state-of-the-art muscle recruitment strategies and will aim to validate them against the most unique experimental dataset in shoulder dynamics, which includes synchronised instrumented implant, motion and electromyography data.

Biography

Dr. Maxence Lavaill is a postdoctoral fellow at the ARC Training Centre for Joint Biomechanics at QUT. He specialises in the area of shoulder biomechanics in which he received his PhD at QUT earlier this year. Before that, he obtained a double master's degree in biomedical and biomechanical engineering from the University of Technology of Compiegne in France. His research mainly focuses on computational musculoskeletal modelling of the shoulder joint using experimental methods such as medical images, motion and electromyography, to build and drive models. Dr Lavaill's models are developed to investigate complex surgical scenarios, such as the Latarjet surgery, to inform and improve clinical practice.

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