CONCURRENT SIMULATION OF A SUBJECT SPECIFIC MUSCOLUSKELETAL MODEL WITH ANATOMICAL KNEE

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ABSTRACT

Computational models of the knee provide us with a better understanding of ligament and joint contact forces during ambulatory activities. Thus, such models can be used to devise better injury prevention methods, as well as surgical and therapeutic treatments for musculoskeletal disorders. This manuscript presents a method to develop a subject specific model in a multi-body framework. The muscle-driven computational model is created by segmenting the magnetic resonance imaging data and uses motion capture data to predict the knee mechanics. The model is validated against the ground reaction forces and then is used to evaluate the function of menisci as well as pressure distribution in the patellofemoral joint.