

Joint Biomedical Engineering Seminar Series

MU ▪ MCW ▪ UWM

Friday, April 8th, 2016

Noon-1pm

Olin Engineering 202

Marquette University

John Kyle Mueller, PhD

Principal Research Engineer

Zimmer Biomet

Abstract

Kinematic Evaluation of the Knee and Arthroplasty Design

Total Knee Arthroplasty (TKA) is a clinically successful treatment for advanced osteoarthritis (OA). However, it has been reported that up to a quarter of TKA patients are not satisfied with their artificial knees. Closing this satisfaction gap is one of the next challenges for surgeons and their industry partners. As an industry leader in orthopaedic medical devices, Zimmer Biomet has developed a set of tools with the goal to develop and market devices that allow surgeons to not only consistently achieve and surpass the expected clinical success of TKA for their patients, but also improve patient satisfaction. This presentation will review published work on a pair of complimentary kinematic tools including a robotic in vitro kinematic evaluation of cadaveric knees and a computational model of these experiments. These tools allow for evaluation of intact and implanted cadaveric knees by replicating functional activities and measuring laxity envelopes of motion. The computational tool incorporates specimen specific boney geometry and soft tissue, allowing for evaluation of new TKA designs or design changes over a range of validated knee specimen models. A review of methods, results and application of this work will be presented. Other published methods such as the ZiBRA™ Anatomic Modeling System and computational and physical testing for product development will also be discussed.

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Olin Engineering Center is located at 1515 W. Wisconsin Ave, Milwaukee, WI. Parking is available in Structure 1 on 16th Street between Wisconsin Ave. and Wells Ave. Refreshments will be served.