

BSSM Measurements Lecture 2012

Understanding osteoarthritis of the knee using combined analysis of functional, musculoskeletal and biological response to mechanical loading

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This lecture will introduce the concepts and challenges associated with applying biomechanics research to understand the degenerative joint disease, osteoarthritis. Only by committed and ongoing collaborations with researchers from other disciplines including Biosciences, Medicine and Rehabilitation will we truly understand the mechanisms of this disease and provide answers that are of clinical benefit. The lecture will cover the following:

1. Background to gait and motion analysis – early applications to cerebral palsy
2. The contribution of gait analysis to the understanding of orthopaedic biomechanics and joint function
3. The emergence and contribution of imaging and modelling techniques – more accurate measurements to answer clinically driven questions
4. Contributions to musculoskeletal modelling – inputs to models and subject specific modelling
5. Summary of the positive contributions and limitations of in-vivo biomechanical and functional assessment: where are we and where are we going?
6. Contributions beyond implant design and surgical planning – the next generation of biomechanical engineers will work across disciplines to understand functional and biological affects of joint disease, trauma and intervention.