

3-D modelling of the musculoskeletal system

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The human body is home to an immensely complex mechanical system, comprising a mechanism with 200 bones, hundreds of muscles and a control system that enables amazing and versatile performances: swimming, ballet, ice skating, gymnastics, running 40 km in two hours, or kicking a football into the corner of a goal from 30 meters distance. Human musculoskeletal ability appears to defy the laws of physics.

But it does not!

Despite the complexity, physics allows accurate and consistent models to understand the biomechanics of the human body, and this understanding leads to informed clinical decisions, new treatments, better medical devices, and improved rehabilitation.

This presentation will briefly introduce the road from physics to functional anatomy and show a range of clinical application examples from orthopaedics.