

## Muscle Function in Human Sprinting

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Gait analysis techniques have been used for more than a century to study the biomechanics of human locomotion, yet the ability of this approach to evaluate functional performance is limited because it cannot be used to discern the actions of individual muscles. Rapid increases in computing power together with more efficient algorithms for modelling the human neuromusculoskeletal system have enabled detailed analyses of muscle function during movement. In this presentation I will show how computational modelling may be combined with gait analysis techniques to quantitatively evaluate muscle function during human running, and particularly high-speed sprinting. The contrasting roles of the hip, knee and ankle muscles in achieving maximal-effort sprinting will be highlighted. Fundamental knowledge of lower-limb muscle function during sprinting is of interest to coaches endeavouring to optimize sprint performance in elite athletes as well as sports medicine clinicians aiming to improve injury prevention and rehabilitation practices.

### Biography

Marcus Pandy is appointed as Chair of Mechanical and Biomedical Engineering at The University of Melbourne. He received a PhD in mechanical engineering from Ohio State University, Columbus, and was formerly a Professor of Biomedical Engineering at the University of Texas at Austin. A focus of Professor Pandy's research career has been the development, validation and implementation of experimental and computational tools for non-invasive assessment of muscle, tendon, ligament, and joint function. He is a Fellow of the American Institute of Medical and Biological Engineering, the American Society of Mechanical Engineers and Engineers Australia.

