

NEURAL ENGINEERING SEMINAR SERIES

Effort Minimization: A Fundamental Objective in the Control Scheme of Movement?

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Complex



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ABSTRACT:

Effort minimization is often thought of as a fundamental objective of limbed movement, impacting how the nervous system controls locomotion in real time. In this talk I spotlight three recent questions from my lab group focusing on the neuromechanics of locomotor effort minimization (human & animal models). The first explores the role that energy expenditure plays in dictating acute movement behavior under different locomotor contexts (e.g. fatigue). The second asks if, and how, locomotor effort adapts over an individual's growth span. Finally, I present our recent work on 'myobionics', the development of bionic muscle implants, and whether locomotor energy minimization can be 'engineered'.

BIOGRAPHY:

Jonas Rubenson is an Associate Professor in the Dept. of Kinesiology's Biomechanics Lab and the Integrative & Biomedical Physiology IDGP at PSU. His research focuses on the neuromechanics and energetics of limbed locomotion. He is especially interested in locomotor muscle mechanics and energy use, and how these factors shape locomotor control. Jonas adopts various approaches ranging from human gait analyses, in vivo animal studies, musculoskeletal modeling and biomechatronics. He launched the Comparative Neuromuscular Biomechanics Working Group of the Int. Society of Biomechanics, aimed at accelerating interaction between human and comparative biomechanics fields; sites.psu.edu/cnb/group/