

# Stanford

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## Jennifer Hicks

Deputy Director, Wu Tsai Human Performance Alliance

### Bio

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#### BIO

Jennifer Hicks is Deputy Director of the Wu Tsai Human Performance Alliance at Stanford, with a focus on collaborative research projects and programs to advance our understanding of the biological principles underlying human performance. Dr. Hicks also serves as the Director of Research for the Mobilize Center, an NIH Biomedical Technology Resource Center at Stanford University and the Restore Center, an NIH-funded center that brings state-of-the-art engineering tools to rehabilitation scientists. Her research is focused on interfacing biomechanical modeling with statistical and machine learning methods to predict the effects of surgery and other interventions on human movement. She is also using data from mobile phones and other novel sources to understand physical activity and performance. Dr. Hicks helps run the multi-faceted training and outreach programs of the Human Performance Alliance, the Mobilize Center and the Restore Center. In addition, as the Research and Development Manager for the OpenSim software project, she guides the project's development team and serves as the voice of the software user/researcher.

#### CURRENT ROLE AT STANFORD

Deputy Director, Wu Tsai Human Performance Alliance at Stanford

Director of Research, Mobilize Center

Director of Research, Restore Center

Research and Development Manager, OpenSim Project

#### LINKS

- OpenSim Project: <http://opensim.stanford.edu>
- Mobilize Center: <http://mobilize.stanford.edu>
- Neuromuscular Biomechanics Lab: <http://nmb.stanford.edu>

### Publications

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#### PUBLICATIONS

- **Deep reinforcement learning for modeling human locomotion control in neuromechanical simulation.** *Journal of neuroengineering and rehabilitation*  
Song, S., Kidzinski, L., Peng, X. B., Ong, C., Hicks, J., Levine, S., Atkeson, C. G., Delp, S. L.  
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- **An ecosystem service perspective on urban nature, physical activity, and health.** *Proceedings of the National Academy of Sciences of the United States of America*  
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- **The effects of motor modularity on performance, learning and generalizability in upper-extremity reaching: a computational analysis.** *Journal of the Royal Society, Interface*  
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- **Pre-operative gastrocnemius lengths in gait predict outcomes following gastrocnemius lengthening surgery in children with cerebral palsy.** *PLoS one*  
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2019; 2: 45
- **Predicting gait adaptations due to ankle plantarflexor muscle weakness and contracture using physics-based musculoskeletal simulations.** *PLoS computational biology*  
Ong, C. F., Geijtenbeek, T. n., Hicks, J. L., Delp, S. L.  
2019; 15 (10): e1006993
- **Machine learning in human movement biomechanics: Best practices, common pitfalls, and new opportunities** *JOURNAL OF BIOMECHANICS*  
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- **Learning to Run Challenge Solutions: Adapting Reinforcement Learning Methods for Neuromusculoskeletal Environments** *NIPS'17 COMPETITION: BUILDING INTELLIGENT SYSTEMS*  
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- **Preparatory co-activation of the ankle muscles may prevent ankle inversion injuries.** *Journal of biomechanics*  
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- **Muscle contributions to support and progression during single-limb stance in crouch gait** *JOURNAL OF BIOMECHANICS*  
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