

# General Modeling and Simulation Publications

Seth, A., Hicks J.L., Uchida, T.K., Habib, A., Dembia, C.L., Dunne, J.J., Ong, C.F., DeMers, M.S., Rajagopal, A., Millard, M., Hamner, S.R., Arnold, E.M., Yong, J.R., Lakshmikanth, S.K., Sherman, M.A., Delp, S.L. **OpenSim: Simulating musculoskeletal dynamics and neuromuscular control to study human and animal movement.** Plos Computational Biology, 14(7). [Download PDF Document](#)

Delp, S.L., Anderson, F.C., Arnold, A.S., Loan, P., Habib, A., John, C.T., Guendelman, E., Thelen, D.G. **OpenSim: open-source software to create and analyze dynamic simulations of movement.** IEEE Transactions on Biomedical Engineering 54(11):1940–1950, 2007. [Download PDF Document](#)

Seth, A., Sherman, M., Reinbolt, J.A., Delp, S.L. **OpenSim: a musculoskeletal modeling and simulation framework for *in silico* investigations and exchange.** Procedia IUTAM 2:212–232, 2011. [Download PDF Document](#)

Hicks, J.L., Uchida, T.K., Seth, A., Rajagopal, A., Delp, S.L. **Is my model good enough? Best practices for verification and validation of musculoskeletal models and simulations of movement.** ASME Journal of Biomechanical Engineering 137(2):020905, 2015. [Download PDF Document](#)

Arnold, E.M., Hamner, S.R., Seth, A., Millard, M., Delp, S.L. **How muscle fiber lengths and velocities affect muscle force generation as humans walk and run at different speeds.** Journal of Experimental Biology, vol 216, pp 2150-2160. [Download PDF Document](#)

Anderson, F.C., Pandy, M.G. **A dynamic optimization solution for vertical jumping in three dimensions.** Computer Methods in Biomechanics and Biomedical Engineering 2(3):201–231, 1999. [Download PDF Document](#)