Resource Summary Report

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OpenSim

RRID:SCR_002683
Type: Tool

Proper Citation

OpenSim (RRID:SCR_002683)

Resource Information

URL: http://opensim.stanford.edu

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Description: OpenSim is an open-source software system that lets users develop models of musculoskeletal structures and create dynamic simulations of movement. The software provides a platform on which the biomechanics community can build a library of simulations that can be exchanged, tested, analyzed, and improved through multi-institutional collaboration. The underlying software is written in ANSI C++, and the graphical user interface (GUI) is written in Java. OpenSim technology makes it possible to develop customized controllers, analyses, contact models, and muscle models among other things. These plugins can be shared without the need to alter or compile source code. Users can analyze existing models and simulations and develop new models and simulations from within the GUI.

Resource Type: simulation software, software application, software resource

Keywords: muscle-driven simulation, musculoskeletal biomechanics, neuromuscular simulation, modeling software, simulation software

Funding: Simbios ;
NIGMS U54 GM072970;
DARPA

Availability: Public, Free, Acknowledgement requested

Resource Name: OpenSim

Resource ID: SCR_002683

Alternate IDs: nif-0000-23308

Alternate URLs: https://simtk.org/home/opensim, http://opensim.stanford.edu/support/index.html

Record Creation Time: 20220129T080214+0000

Record Last Update: 20260903T235753+0000

Ratings and Alerts

No rating or validation information has been found for OpenSim.

No alerts have been found for OpenSim.

Data and Source Information

Source: SciCrunch Registry

Usage and Citation Metrics

We found 612 mentions in open access literature.

Listed below are recent publications. The full list is available at nidm-terms .

Choi E, et al. (2026) Effects of external hand force modeling on validity of inverse analysis of lifting. iScience, 29(1), 114146.

Sørensen MS, et al. (2026) Dynamic Knee Stability and Movement Strategy During a Forward Lunge After Anterior Cruciate Ligament Reconstruction: A Comparison of Individuals With and Without Knee Pain. Journal of applied biomechanics, 1.

Salehi P, et al. (2026) Computational biomechanics of human knee joint in maximum voluntary isometric extension with focus on the role of joint center positioning. Scientific reports, 16(1).

Chen T, et al. (2026) AI-powered biomechanical modeling for ACL-reconstructed knees: predicting knee joint contact forces via computer vision and deep learning. Journal of neuroengineering and rehabilitation, 23(1).

Jia M, et al. (2026) Finite element analysis of stress distributions in knee ligaments and menisci during the Taekwondo Roundhouse Kick. Scientific reports, 16(1).

Chen IJ, et al. (2026) Effects of muscle mass on muscle force predictions in human movement. bioRxiv : the preprint server for biology.

Jakubowski KL, et al. (2026) Center of Mass Feedback for joint torque control: a generalizable approach for balance augmentation in wearable robots. Research square.

Gambietz M, et al. (2026) From body hulls to musculoskeletal models: Personalized inertial parameter estimation. PloS one, 21(6), e0349886.

Zhang P, et al. (2026) Deep self-attention reinforcement learning adaptive gait planning and control for lower limb rehabilitation exoskeletons robot. iScience, 29(6), 115986.

Alavi F, et al. (2026) Importance of UIV+1 Slope on Shear Force and Risk of PJK Development: Mathematical and Musculoskeletal Modeling With Clinical Confirmation. Global spine journal, 16(4), 1814.

Lecuona A, et al. (2026) Hindlimb functional morphology and locomotor biomechanics of the small Late Triassic pseudosuchian reptile Gracilisuchus stipanicicorum (Archosauria: Gracilisuchidae). Journal of anatomy, 248(6), 1026.

Chang S, et al. (2026) Development of a training-oriented wearable knee joint exoskeleton for forming a scientific force application pattern in squat tasks. Frontiers in bioengineering and biotechnology, 14, 1719023.

Joyce MR, et al. (2026) Retraining Gastrocnemius Muscle Coordination Reduces Late-Stance Knee Contact Force in Individuals With Knee Osteoarthritis. IEEE transactions on neural systems and rehabilitation engineering : a publication of the IEEE Engineering in Medicine and Biology Society, 34, 1417.

Yu Z, et al. (2026) Expertise shapes the kinematic and electromyographic characteristics of on-ice side-cutting in elite versus beginner ice hockey players. Scientific reports, 16(1).

Williams S, et al. (2026) Synergy Feedback Control Predicts Walking Across Multiple Cycles. bioRxiv : the preprint server for biology.

Mohr M, et al. (2026) Laser tag training reduces knee abduction moments and improves performance during change-of-direction movements. Frontiers in sports and active living, 8, 1686129.

Guven G, et al. (2026) X2BR: High-fidelity 3D bone reconstruction from a planar X-ray image with hybrid neural implicit methods. Medical & biological engineering & computing, 64(5), 1931.

Shanbhag J, et al. (2026) Predictive simulations of postural control: exploring the role of signal noise and neural delays in Parkinson's disease. Scientific reports, 16(1).

Färber B, et al. (2026) Concurrent validation of OpenCap for identifying ACL re-injury risk factors during a drop jump test in a healthy cohort. Scientific reports, 16(1).

Diaz MT, et al. (2026) A hand biomechanics dataset of kinematics, kinetics, electromyography, and imaging in healthy adults. Scientific data, 13(1).