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: software application, simulation software, 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: 20260728T043132+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 546 mentions in open access literature.

Listed below are recent publications. The full list is available at SPARC SAWG .

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

Zhao H, et al. (2026) A predictive model of joint dynamics and ground reaction force using only leg length, body mass, and walking cadence. PloS one, 21(1), e0338041.

Gwerder M, et al. (2025) The effects of weight-bearing manipulations on gait and its underlying neural control mechanisms in toe walking children. Frontiers in human neuroscience, 19, 1701454.

Funaro A, et al. (2025) Subject-specific biomechanics influences tendon strains in patients with Achilles tendinopathy. Scientific reports, 15(1), 1084.

Goell F, et al. (2025) Advancing knee adduction moment prediction for neuromuscular training via functional joint definitions and real-time simulation using OpenSim. PloS one, 20(6), e0324985.

Hu X, et al. (2025) An Augmented Full-Body Model that Improves Upper Body Tracking and Reduces Dynamic Inconsistency in Complex Motion. Annals of biomedical engineering, 53(9), 2346.

Chen T, et al. (2025) Enhanced gastrocnemius-mimicking lower limb powered exoskeleton robot. Journal of neuroengineering and rehabilitation, 22(1), 175.

Koller W, et al. (2025) Femoral bone growth predictions based on personalized multi-scale simulations: validation and sensitivity analysis of a mechanobiological model. Biomechanics and modeling in mechanobiology, 24(3), 879.

Wei Y, et al. (2025) A Bioinspired Multi-Level Numerical Model of the Tibiofemoral Joint for Biomechanical and Biomimetic Applications. Biomimetics (Basel, Switzerland), 10(2).

Ahn J, et al. (2025) A comprehensive assessment of a passive back support exoskeleton for load handling assistance. Scientific reports, 15(1), 3926.

Darvishi M, et al. (2025) Generalizability of motor modules across walking-based and in-place tasks - a distribution-based analysis on total knee replacement patients. Frontiers in bioengineering and biotechnology, 13, 1471582.

Pataky J, et al. (2025) Development of a breast reconstruction-specific computational model to predict shoulder function in breast cancer survivors. Supportive care in cancer : official journal of the Multinational Association of Supportive Care in Cancer, 33(5), 390.

Hur B, et al. (2025) Learning based lower limb joint kinematic estimation using open source IMU data. Scientific reports, 15(1), 5287.

Scott B, et al. (2025) Assessing single camera markerless motion capture with OpenSim inverse kinematics during upper limb activities of daily living. International biomechanics, 12(1), 1.

Han S, et al. (2025) Influence of Manipulating Running Foot Strike Angle on Internal Loading of the Tibia. Scandinavian journal of medicine & science in sports, 35(5), e70066.

Liu J, et al. (2025) Patient-specific musculoskeletal modeling to enhance preoperative planning for pelvic fracture reduction. Communications medicine, 5(1), 532.

Iijima M, et al. (2025) Biomechanical simulations of hindlimb function in Alligator provide insights into postural shifts and body size evolution. Science advances, 11(43), eadx3811.

Van Den Bosch B, et al. (2025) Estimating the contribution of musculoskeletal impairments to altered gait kinematics in children with cerebral palsy using predictive simulations. Journal of neuroengineering and rehabilitation, 22(1), 225.

Eghan-Acquah E, et al. (2025) Comparative analysis of the effects of blade plate retention versus removal on paediatric bone remodelling following proximal femoral osteotomy. Archives of orthopaedic and trauma surgery, 145(1), 521.

Alizadeh Noghani M, et al. (2025) Whole-body optical marker and ground reaction force data of healthy humans performing non-cyclic activities. Scientific data, 12(1), 1971.