

Examples and Tutorials

There are many tutorials and examples to help you learn how to use OpenSim. The examples listed below move from introductory to more advanced. Additional OpenSim-based tutorials, homework problems, and project ideas are available on the [Biomechanics of Movement classroom site](#).

Introductory Examples

- Tutorial 1 - Intro to Musculoskeletal Modeling
- Tutorial 2 - Simulation and Analysis of a Tendon Transfer Surgery
- Tutorial 3 - Scaling, Inverse Kinematics, and Inverse Dynamics
- OpenSense - Kinematics with IMU Data
- Soccer Kick Example

Intermediate Examples

- Simulation-Based Design to Prevent Ankle Injuries
- Simulation-Based Design to Reduce Metabolic Cost
- The Strength of Simulation: Estimating Leg Muscle Forces in Stance and Swing
- Working with Static Optimization
- Example - Computed Muscle Control
- Example - Estimating Joint Reaction Loads
- {WIP} Example - Output Reporter with a Jumping Simulation

Advanced Examples

- Building a Dynamic Walker in Matlab
- Dynamic Walking Challenge: Go the Distance!
- Pulling Out the Stops: Designing a Muscle for a Tug-of-War Competition
- Sky High: Coordinating Muscles for Optimal Jump Performance
- Custom Static Optimization in MATLAB
- Moco: Predict a Squat-to-stand