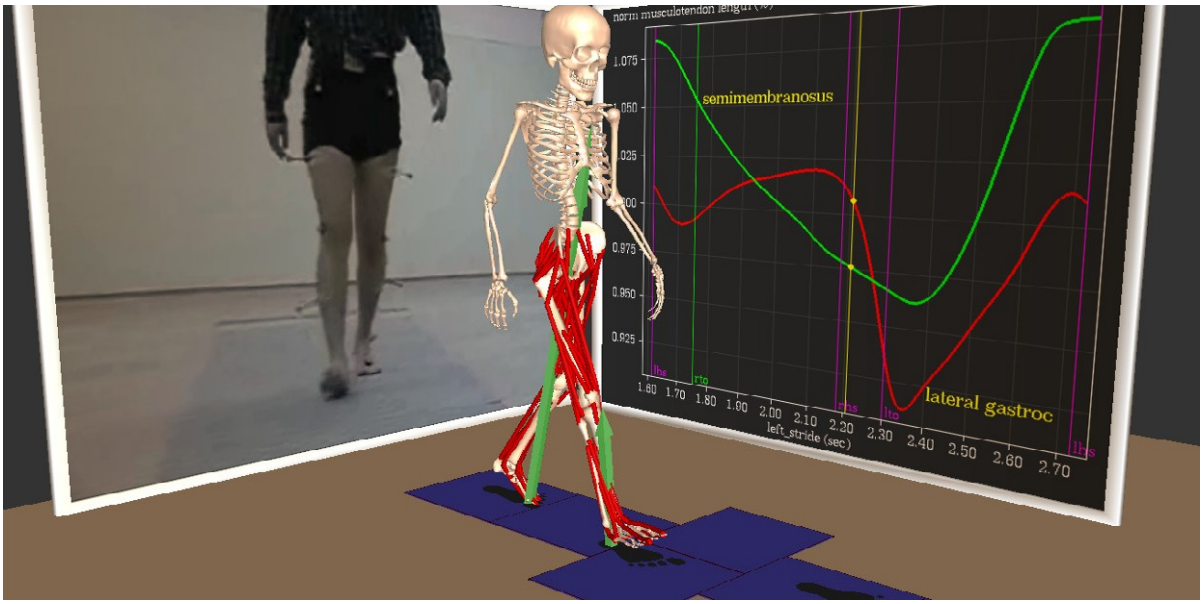
RealTime Motion Module

The Real Time Motion Module imports motion files created by Motion Analysis systems. Motions imported into SIMM are mapped onto a pre-built, customizable, full-body model with 344 anatomically accurate muscles. The body segments, joint kinematics, and muscle attachment sites of the model are scaled to match the size of the subject whose motion is being recorded. To accompany a motion, SIMM can also import analog data such as ground-reaction forces and muscle activation levels (EMG data).

The Motion Analysis file formats that SIMM can import are: TRC, TRB, ANB, ANC, and XLS. The Real Time Motion Module makes an excellent post-processing tool for analyzing a recorded motion in detail. Once the motion is imported into SIMM, it can be played back in a 3D graphical display showing the skeleton, ground-reaction forces, and muscle activations. Ground-reaction forces are displayed as vectors superimposed on the model, and the muscle activation data is used to change the size and colors of the muscles. In addition, plots can be made of joint angles, ground forces, muscle activations, and muscle lengths.

The Real Time Motion Module has the ability to receive motion data in real-time, as it is being collected. It works by connecting to the machine that is running Motion Analysis software using a standard Ethernet connection. As motion data is collected and processed, it is sent out over the network to the machine running SIMM. SIMM can then animate the musculoskeletal model and display streaming plots of the data. Because the model being animated has accurate muscle-tendon actuators, you can even display real-time plots of the subject's muscle lengths as the motion is being captured.

The Real Time Motion Module is the ideal tool for coaches and researchers who want to visualize the relationships between muscle activity, external forces, and the resulting body motion. It is particularly useful in task training and other applications that benefit from real-time feedback. A subject's motion can be recorded and instantly compared to a desired motion. The SIMM display can also be used as real-time visual biofeedback so that the subject can monitor his own activity. Gait analysis and sports performance centers can use SIMM and the Real Time Motion Module to analyze in detail an individual's motion. Biomechanical research and industrial applications include product design, ergonomics research, and anthropology.



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