New U of M Body Shape Avatar – The body shape of the new modeled shape avatar varies depending upon height, weight, BMI, age, and seated/standing height ratio. Either the fixed shape or the new modeled body shape avatar can be displayed.

New Model of mass distribution and centers of mass – The model is based on the same variables used in the new modeled shape avatar. Either the fixed distribution or the new modeled distributions can be selected.

Updated Anthropometry – The height and bodyweight values have been updated from the latest NHANES data and any percentile can be selected. BMI is displayed.
Localized Fatigue – Limit values for the upper extremity are now included based upon Duty Cycle and displayed in the Status Window. The user must enter the Exertion Time Values and press Calculate. The calculated Duty Cycle is then compared with the recommended maximum values as calculated in the Localized Fatigue Report. For this example the calculated 20% duty cycle exceeds the 18 and 10% duty cycle limits for the wrist and the shoulder respectively, but the elbow is okay. The 4 seconds of exertion duration does not exceed the maximum static durations. The calculations can be based on an average, a somewhat weak, or a very weak population.

Changes to Support Selection Mode – Manual Foot Support has been added to include foot pushing and avatar seated position can now be adjusted.
**Balance Improvements** – The Functional Stability Region is now smaller based on more recent data. Foot force centers are also indicated. Back rest forces are now properly included in calculations of L5S1 forces and moments. When the balance is unacceptable there is no possible solution for loads in the legs. In this case the reported values for strength percent capable in the status window have been replaced with “//” to warn the user.

**A New Center of Mass Report** – The report lists the center of mass locations of all body segment along with the whole body.

**Animation** – Frames can now have names, can have different Support Selections, movies can be exported from Stick-View windows, posture can be loaded from a C3D file, and data can be exported for a range of frames.

**Hand Forces** – A Hand Force Solver can be used to find the maximum hand force that satisfies various constraints like Back Compression, Balance, and Strength. This feature can be opened using a button found in the Hand Force Dialog.
**Stick Views** – Stick figures can now be moved, zoomed, grid lines can be added, and Center of Mass can be displayed.

**Posture Prediction** – Control Key and Left Mouse Select can be used to move right and left joints together. Posture Prediction is also more accurate and attempts to place the Center of Pressure closer to the center of the Basis of Support.

**Improved Posture Prediction Dialog** – Foot locations have been added to the Posture Prediction Dialog. In addition leg posture prediction has been improved when the feet are moved laterally.

**Percentage of Maximum Voluntary Contraction** – Limit values for the upper extremity are now included based upon Duty Cycle and displayed in the Status Window. The user must enter the Exertion Time Values and press Calculate.
Head/Neck – The neck now has multiple segments and includes biomechanics with strength data.

New External Forces and Moments – Values can now be entered at the balls and heels of the feet and at the center of the hips.

New Batch Commands – Commands have been added to choose between the two avatars with fixed or modeled body mass distributions: ANF and ANM. The previous ANT command is still available.

Mouse Roller Button – The roller button can be used to increment and decrement selected dialog values including segment angles, hand force values, and more. This works in conjunction with the increment/decrement buttons in some of the dialogs.