The segment properties include the inertial properties of the segment and its decorations:

- Name See also: Segment Default Names
- Mass
- Geometry
- Center of Mass
- Moment of Inertia
- Wireframe animation model

Note: the inertial properties are computed using geometric primitives.

Hanavan E. (1964) A Mathematical Model for the Human Body. Technical Report, Wright-Patterson Air Force Base. Length might be considered a segment property, but the length is defined by the segment definition and is not editable by the user.

Segment Mass

The default segment masses are relative to total body mass (Dempster). See Segment Mass for the relative values.

Segment Geometry

Visual3D models segments as cones, cylinders, spheres, and ellipsoids. VISUAL3D calculates the mass, moments of inertia (IXX, IYY, IZZ) and center of gravity location for each segment. Refer to Segment Geometry for the details.

Segment Inertia

By default the moment of inertia of a segment is computed from the segment mass, the proximal and distal radii, and the Segment Geometry. The default Visual3D segments are treated as geometric objects that have inertial properties based on their shape (Hanavan E. (1964) A Mathematical Model for the Human Body. Technical Report, Wright-Patterson Air Force Base). Refer to Segment Inertia for more details.

Modify Segment Coordinate System

Segment and laboratory coordinate systems can be modified to suit your preference. Refer to Modify Segment Coordinate System for more details.

Animation Surface Models

A surface mesh can be associated with each segment. Refer to Animation Surface Models for details.

Wavefront obj file format

Refer to Wavefront_obj_file_format for how to export for use in Visual3D.

Transforming an obj file

The Transforming an obj file shows a very simple obj file that describes the polygons for a cone.

Segment Properties Example1

This page specifies segment properties from pipeline commands. Specifically, depth measures for the Pelvis and Thorax.

NOTE: As of Visual3Dv5.01.20, user's are able to enter equations into the depth measurements for the Pelvis and Thorax.

Modify Segment Properties

The **Segment Properties** dialog modifies general segment properties which are common to most segments.

To modify a segment's properties, select the segment name in the **Segment Name** combo box. The selected segment's properties will be displayed in the dialog.

To modify the properties, make the desired change in the dialog, and click the **Apply** button.

The following properties may be modified:

- Segment Geometry - The segment may be represented internally as a CONE, .CYLINDER, SPHERE, ELLIPSOID or CUSTOM SEG (ment). The geometry of a segment affects the segment's inertial properties and center of mass location. This also affects the segment geometry drawn when view segment geometry is selected in the animation/model builder window.
- Segment Mass - The segment mass is defaulted based on the type of segment and the subject mass. To change this value, you may type in a specific value for the mass (in kilograms), or use a formula using existing Subject Data (such as a percentage of the subject Mass).
- Segment Length - This is computed based upon the calibration of the segment proximal and distal endpoints.
- Inertial Values - This is computed based upon the segment mass and geometry. These values may be modified only for segments with a CUSTOM SEG (ment) selected for the Segment Geometry.
- Distance from CM (Center of Mass) to Proximal end - This is a multiplier used to modify the

distance from the center of mass from the segment's proximal end. This field is only used when CUSTOM SEG (ment) is selected for the Segment Geometry.

- Model File/Material File - This is the graphic model file (.obj or .wrl) used to draw the segment in the animation/model window.

From:
https://has-motion.com/wiki/ - **Wiki Documentation Site**

Permanent link:
https://has-motion.com/wiki/doku.php?id=visual3d:documentation:modeling:segments:segment_properties&rev=1718717369

Last update: **2024/06/18 13:29**