

Segment Mass

Every [segment](#) in a Visual3D model has a mass, which is used to calculate kinetic quantities.

Default Segment Mass

The default segment masses defined in Visual3D are based on Dempster's 1955 regression equations¹⁾ ([link](#)) and are:

Segment	Mass (% body mass)
Foot	0.0145
Shank	0.0465
Thigh	0.10
Hand	0.006
Forearm	0.016
Upper arm	0.028
Pelvis	0.142
Thorax/abdomen	0.355
Head	0.081
Trunk	0.497

Modifying Segment Mass

Users can modify Segment Mass under the [segment properties](#) tab in Visual3D's model builder.

Segments Segment Properties IK Constraints Right Thigh

Segment Name: Right Thigh

☒ Kinetic ☐ Kinetic But No Force Assignment ☐ Kinematic Only

Segment Mass: 0.1*Mass = 8.21 kgs

Segment Length: 0.420917 Meters

Segment Geometry: CONE

Inertial Values*		Center of Mass (Meters)*	
Expression	Value	Expression	Value
IXX:	0.12846	ML :	0*RTH_SEG_ 0
IYY:	0.12846	AP :	0*RTH_SEG_ 0
IZZ:	0.01735	Axial :	0.464927*RTI -0.195696

*May be modified for custom geometry

Model File: rthigh.v3g Browse

Material File: Browse

☐ Override Color Black

Rotate/Scale Graphic Model Copy Override Color to Active Subject

Modify Segment Coordinate System Apply Build Model

See Also

Visual3D also supports the [Adjusted Zatsiorsky-Seluyanov parameters](#)²⁾.

Go back to the [Segment Overview](#) for more information about segments in Visual3D.

1)

Dempster, W. T. (1955). Space requirements of the seated operator, geometrical, kinematic, and mechanical aspects of the body with special reference to the limbs (No. WADCTR55159).

2)

De Leva, P. (1996). Adjustments to Zatsiorsky-Seluyanov's segment inertia parameters. Journal of biomechanics, 29(9), 1223-1230.

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

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

Last update: **2026/06/12 17:55**

