

Prerequisites

Matlab

The script was created with Matlab R2019b but should also work with other 64-bit Matlab versions. The following additional software and tools are needed to use the script to create .mot files and calculate muscle-tendon lengths.

OpenSim

- 1) Models and muscle-tendon length calculations are based on OpenSim 4.0. Please download OpenSim 4.0 from the simtk website

Download link https://simtk.org/frs/?group_id=91

- 2) Please set up your Matlab-OpenSim Scripting Environment as described in detail on the simtk-confluence website

<https://simtk-confluence.stanford.edu/display/OpenSim/Scripting+with+Matlab>

Biomechanical ToolKit

- 3) The code is based on the open-source Biomechanical ToolKit (BTK)

Please download BTK (e.g. [btk-0.3.0 Win7 MatlabR2009b 64bit.zip](#)) and add the extracted folder to your folder, which includes the Main_createMotFile.m file.

Download link <https://code.google.com/archive/p/b-tk/downloads>

Create .mot files and calculate muscle tendon length with Matlab

Open and run Main_createMotFileAndCalculateMuscleLength.m

This script creates a .mot file from the test.c3d file and calculates muscle-tendon length using the Matlab Scripting Environment .

Code can be easily modified for different OpenSim models and c3d files.