ANYBODY – INVERSER DYNAMICS

The AnyBody™ Modeling System performs inverse dynamics as one of its central operations. In biomechanics, inverse dynamics is traditionally understood at the process of computing from measured ground reaction forces in a gait analysis to net moments in the anatomical joints.
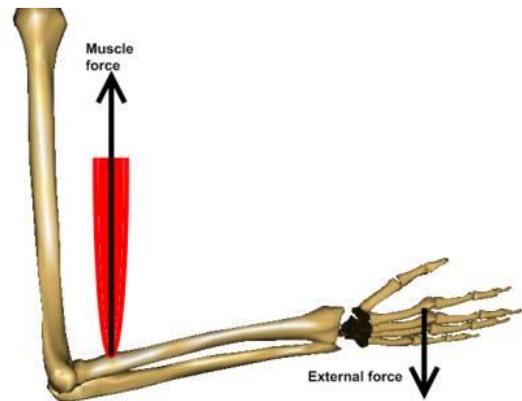

Fig. 1 © Anybody

Simple arm model:

If we know the magnitude of the external force, the length of the forearm and the insertion point of the biceps muscle on the forearm, then it is not difficult to compute the muscle force from simple moment equilibrium about the elbow.

Load the anybody working script "arm" from the course page. This will load a simple model of the forearm and one muscle.
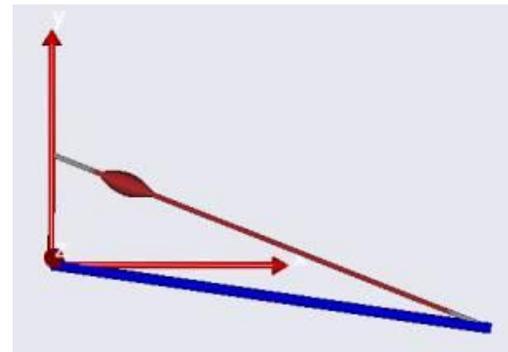

Fig. 2 Initial model © Anybody

Tasks:

1. Add a second muscle to the system, which starts at {0, 0.1,0} to {0, 0.08, 0} on the segment and has the half strength of the first muscle. Look at the muscle force results (Window->ChartFX (2D))

2. Add different optimization criteria by adding in the AnyBodyStudy the command:

   ```
   InverseDynamics.Criterion = {
    Type = XXXX;

   };
   ```

   For details look into the AnyScript Reference Manual under "AnyEnumMuscleRecruitmentType"

3. Load the more complicated model "arm2" play around with the load and optimization criteria. Compare the resultant muscle forces.