

Motion Capture Model

The screenshot shows a software window titled "Mocap Model". It has a close button in the top right. Inside, there are three input fields: "Time Offset" with the value "1.0000", "Fixed Body" with a dropdown menu showing "none", and "Mocap Seed Spacing" with a slider set to "5". Below these is a button labeled "Calculate Mocap Poses". A horizontal line separates this section from the next. Below the line is a checkbox labeled "Apply Joint Constraints" which is checked. Underneath the checkbox are three sliders with numerical values: "Elv_Angle" at 15.4, "Shoulder_Elv" at 10.3, and "Shoulder_Rot" at 38.6. Each slider has a blue arrow pointing to its current value.

- **Time Offset** The offset between the start of the x-ray data capture and the surface-marker motion capture. It is specified as the x-ray start time minus the motion capture start time.
- **Calculate Mocap Poses, Fixed Body, Mocap Seed Spacing** If *Fixed Body* is set to *none*, then *Calculate Mocap Poses* will clear the pose maps for the objects selected in the *Configuration* widget and create new poses based on the motion capture data. Poses are created for the entire trial, using the value of the *Mocap Seed Spacing* parameter. For example, if the spacing is 5, then a motion capture pose will be calculated for every 5th reporting time in the trial. If *Fixed Body* is set to one of the tracked objects in the trial, then that object's pose map will not be modified by *Calculate Mocap Poses*. Instead, the pose maps for the other selected objects will be cleared. Then for each pose in the fixed object's pose map, the poses of the other objects will be calculated such that they satisfy the joint constraints relative to the fixed object and the generalized coordinates of the motion capture data.

Note: One strategy for tracking multiple bones in a trial is to first *Calculate Mocap Poses* with no fixed body. This will position all of the bones using the surface markers in the motion capture data. Then track one of the bones for all frames in which it is trackable, deleting the extra mocap-based poses when you are done. Then *Calculate Mocap Poses* again, with *Fixed Body* set to the bone that you just tracked. The other bones will “snap into place” relative to the tracked bone. In other words, it will use the motion capture data to pose all the bones, then move them as a group so that the fixed bone lines up with its tracked pose.

- **Apply Joint Constraints** When this option is selected, the constraints in the kinematic model specified for the trial are applied to the tracking objects. When you select it, the root object remains in its current pose, and the other objects are moved so as to satisfy the kinematic constraints. You can then move the entire model as a rigid unit by selecting and moving any object in it, and you can move the joints of the model by moving the generalized coordinate sliders below the checkbox.

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