# Calculate Bone Poses from Motion Capture Data

Before beginning this tutorial, ensure that you are familiar with the steps in the Basic Bone Tracking guide.

## Creating Motion Capture Models in DSX

To create a motion capture model and use it to generate poses for the objects in a DSX trial, perform the following steps:

1. xManager: specify the C3D file for the motion trial and its associated static trial.
2. xManager: specify the model template (MDH) and build and Recalc scripts (V3S) for the static trial.
3. xManager: specify the static trial as the reference trial for the motion trial.
4. CalibrateDSX: load the calibration object trial and track the beads in it for all frames.
5. CalibrateDSX: select Mocap→Compute DSX/mocap transform.
6. X4D: load the static trial and track all of the objects in any one x-ray frame. Save the pose maps.
7. CalibrateDSX: load the static trial, then select Mocap→Create Mocap Model.
8. X4D: load the motion trial and select all of the objects. In the Mocap Model widget, select *Calculate Mocap Poses*.

## Using Motion Capture Models in DSX

Once you have created the model template and constraint scripts, the general process for using a motion capture model with a DSX trial is:

1. Calculate the transform between the x-ray lab frame and the motion capture system frame. CalibrateDSX does this using the surface markers and radiopaque beads on the calibration object.
2. Create the motion capture model using the static trial. This determines the offset between each DSX segment (e.g., right distal femur) and its corresponding motion capture segment (e.g., right thigh).
3. Apply the motion capture model to the marker data for the motion trial. This determines the poses of the motion capture segments (and thus DSX segments) for every frame of the x-ray trial.