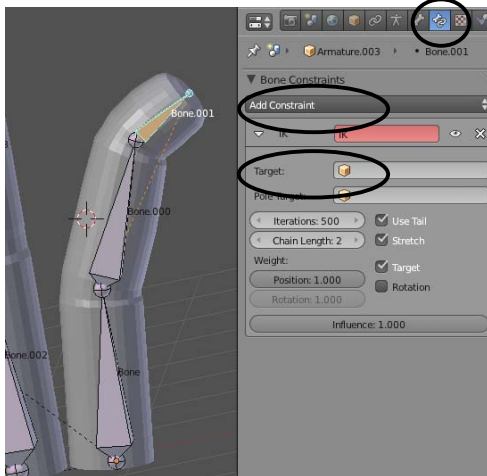


Using Inverse Kinematics (IK) and Constraints

Inverse Kinematics is used when you wish to manipulate a skeleton by simply grabbing (G key) the end bone of a chain and moving it with all of the connected bones following along. Inverse Kinematics is constantly under development and has a lot of options available depending on what you want them to do. Visit www.blender.org for more details and review the wiki documentation.



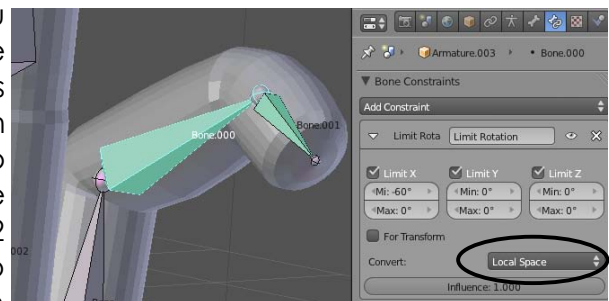
To use Inverse Kinematics, select the bone at the end of a chain, go to Bone Constraints and add an Inverse Kinematics constraint. You can control the number of bones in the chain (Chain Length) and even give it a Target to point to like an empty. There are a few other options available including Influence (amount of effect). Once applied, you can use the "G" key to move the bone around while all those in the chain below it move in relationship to it.



RoboDude Says: Press "Ctrl-A" to reset an object's rotation and scale. Works with individual bones in Pose mode. This help's a lot with these constraints!

Using Rotation Constraints:

When animating an object (like a finger), you may want to limit the direction and angle the object can bend or some "unnatural" things may occur when you try to add animation keys. Using Limit Rotation constraints can help with that. For the example to the right, I've applied a rotation constraint to the top 2 bones of the finger limiting the Y and Z axis to a limit of 0 degrees while the X axis can rotate from 0 to -60 degrees. This works because I switched the "Convert" from "World Space" to "Local Space".



Copy Rotation:

Copy Rotation can make animating chains easier. In the example, I've created a single bone armature (not a bone in the existing armature) and child-parented it to the hand armature. This bone can be placed anywhere you wish. I have mine above the finger that it will control. Set its rotation limits with the Rotation constraint discussed above, then add a "Copy Rotation" constraint to each bone that will copy its movement. Select the control bone for the Target. In my case, I needed to Invert the motion to work correctly.

