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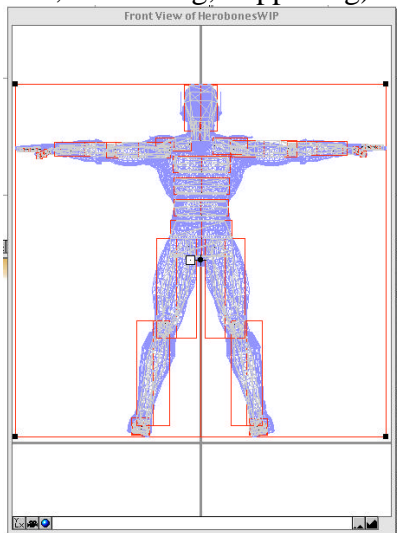
EI & Lifeforms Bones Tutorial

This tutorial focuses on exporting a segmented version of a single skin mesh as a Fact file and importing it into Lifeforms to apply motion capture using the joint map editor and blending the sequences together using a features SNAP, range edit and paste special. If you do not have Lifeforms 3.5, order the demo from our website.

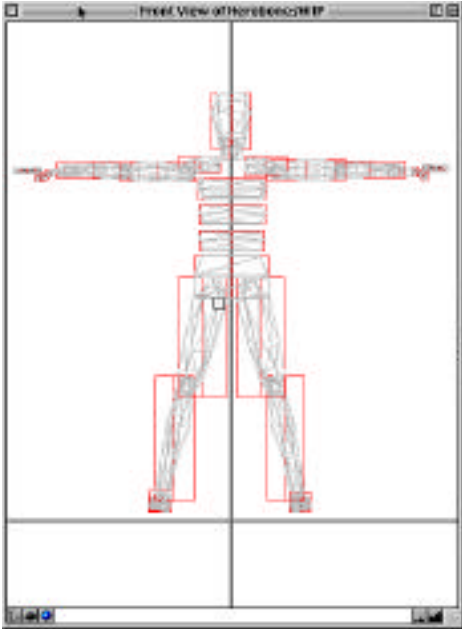
This tutorial will go through the concept of creating a segmented version of a single mesh model, linking, naming and setting pivots for the joints, but not in detail. There is another in depth tutorial about linking and setting pivots and explaining hierarchy on our website. Please see XXXXX. There are several files that are included in this tutorial that will allow you to skip steps. The file name will be located at the beginning of each step.

HeroBonesWIP (single skin mesh and a segmented, linked and pivoted version)

1. a. Bring a single skin mesh into EI. (2.9). We have supplied a single skin called HERO.DXF that you can import into a new project. Create a segmented version of the single skin mesh. You can do this by either cutting up a duplicate of your single mesh into segments that represent the joints in a hierarchy that you want to animate (ie. r finger, r hand, r lower arm, r upper arm, l finger, l hand, l lower arm, l upper arm, neck, head, pelvis, abdomen, chest, r thigh, r lower leg, r foot, r toes, l toes, l foot, l lower leg, l upper leg) or create one out of boxes that fits the single skin mesh.



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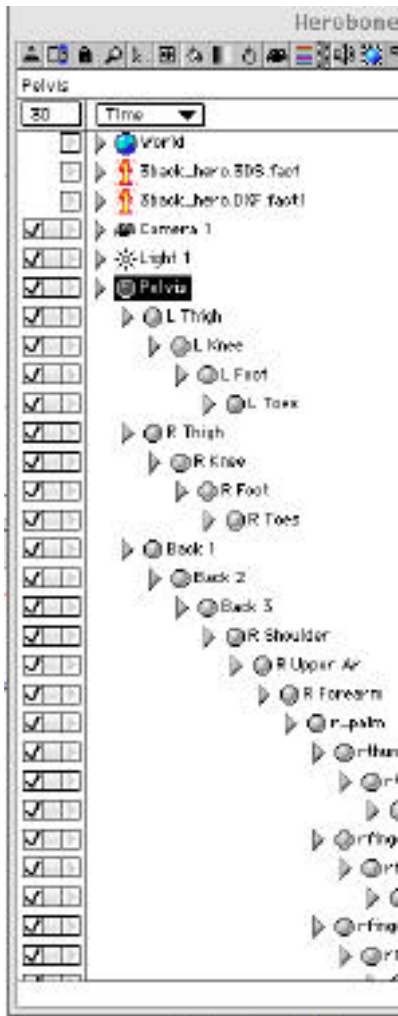


Tip on Naming convention: Name joints appropriately and get in the habit of using one naming convention ie a back is a back not a chest (be consistent), there can be upper back and lower back, or back 1 back 2 back 3 (back 1 is always closest to the Pelvis). Use L or R to describe left and right in front of twin joints. This practice will reduce confusion later and it will be easier to map motion from one model to another.

b. Link and set the pivots in the segmented version. If you don't know how to do this then see tutorial XXXX . Meanwhile you can use the file supplied with a linked hierarchy with pivots.

C. Select the pelvis of the segmented version and FILE /save model as a Fact.

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This option will come up. Choose OK to keep the hierarchy.

HeroKarate.LFA This file is a complete of the Lifeforms section below. (The fact file with mocap attached edited and blended)

2. a. Open Lifeforms 3.5 and open a new file using Command N. The under FIGURE menu import the fact file in. I had exported a file called LOWREZ.FACT that you can import.

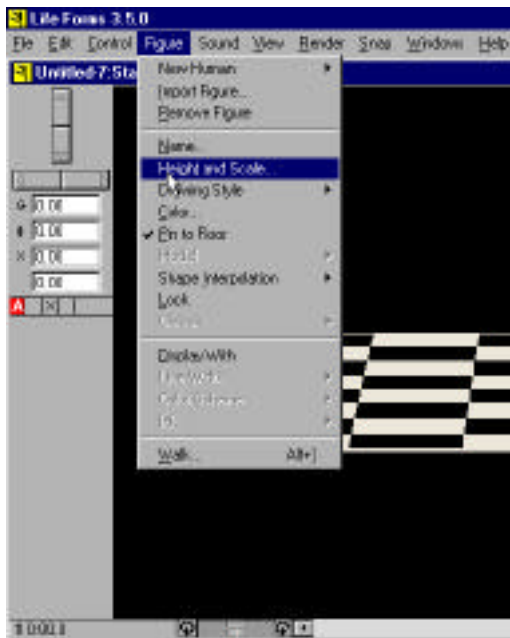
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Change file type to Fact.

Height and Scale

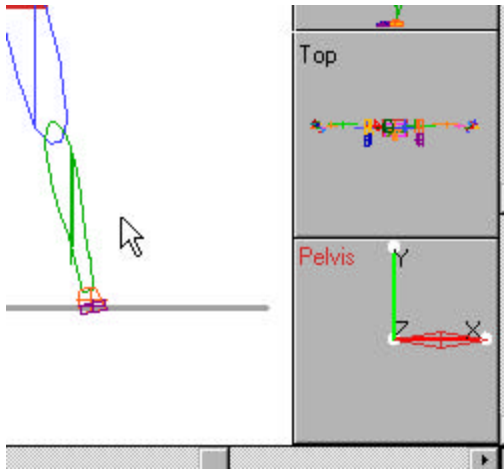
Activate the stage by clicking on it. The imported Fact figure comes in too big to see in the stage so go into the FIGURE menu and under figure height change the height to 1.7. If the figure height is greyed out then you must select the figure by clicking on the A, either in the time line or beside the stage.



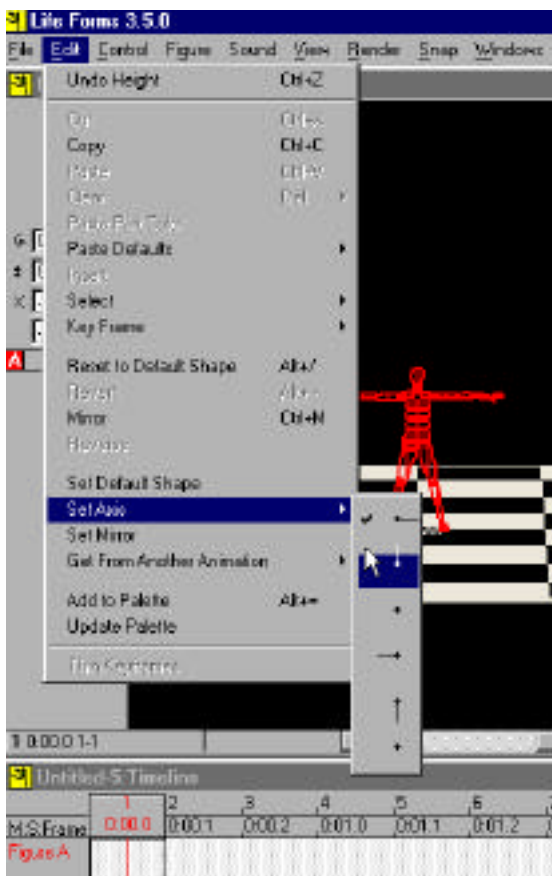
Axis

Check axis of the joints. You can do this by double clicking on the figure in the stage to bring up the FIGURE EDITOR. Click on the Pelvis. There is a picture in the lower right hand corner that shows the axis direction of the joint.

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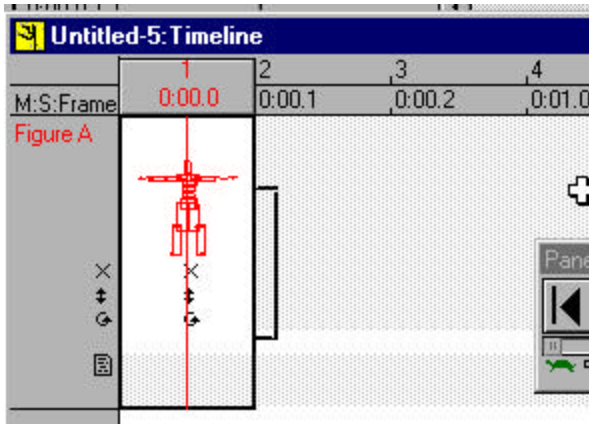
The axis is pointed the wrong way and to set it straight up go into FIGURE set axis. Pull down the menu and select the one that goes upward.



Tip: Command D will arrange the windows.

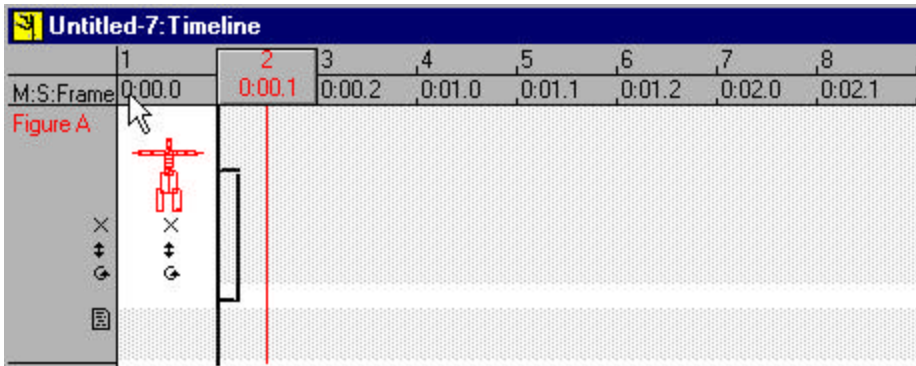
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b. Create a default position pose on Frame 1 but using quickkey Command tilde. This is so when we bring the file back into EI it will be in a position to skin to the mesh



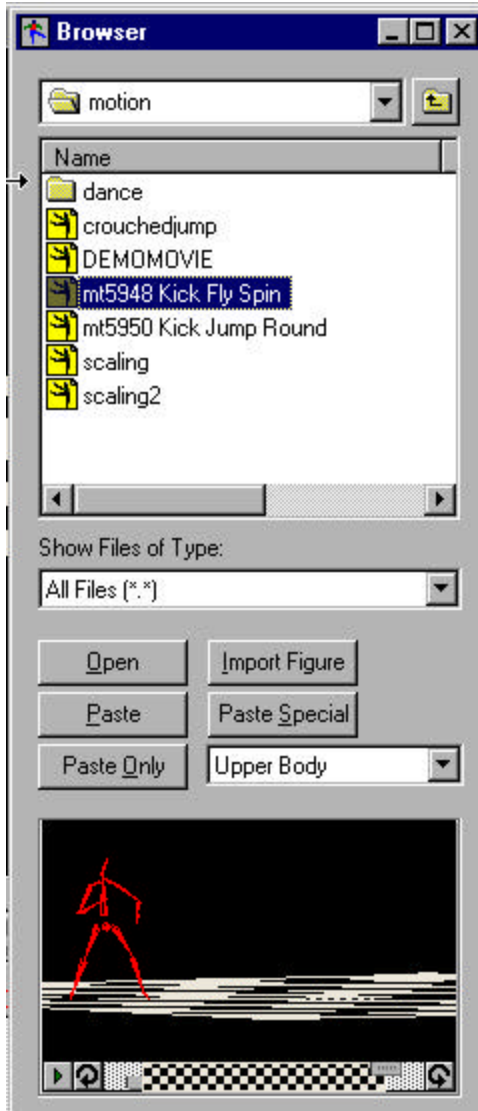
The timeline has a graphic representation for each pose that you create for your figure. The first keyframe should look like this. *By pressing F, R, T, L, you can see it from Front, Right, Top, and Left.*

c. Make sure that your figure is selected (by clicking on it – looks highlighted) and that your time line is activated and the timeline cursor is on Frame 2, like picture below.



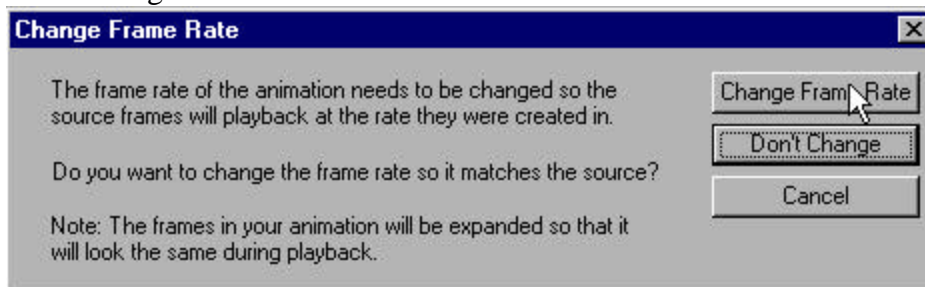
Open the File Browser under the FILE MENU or by pressing Command XXX. In the tutorial files there are a couple of motion capture sequences. Select KickFlySpin.

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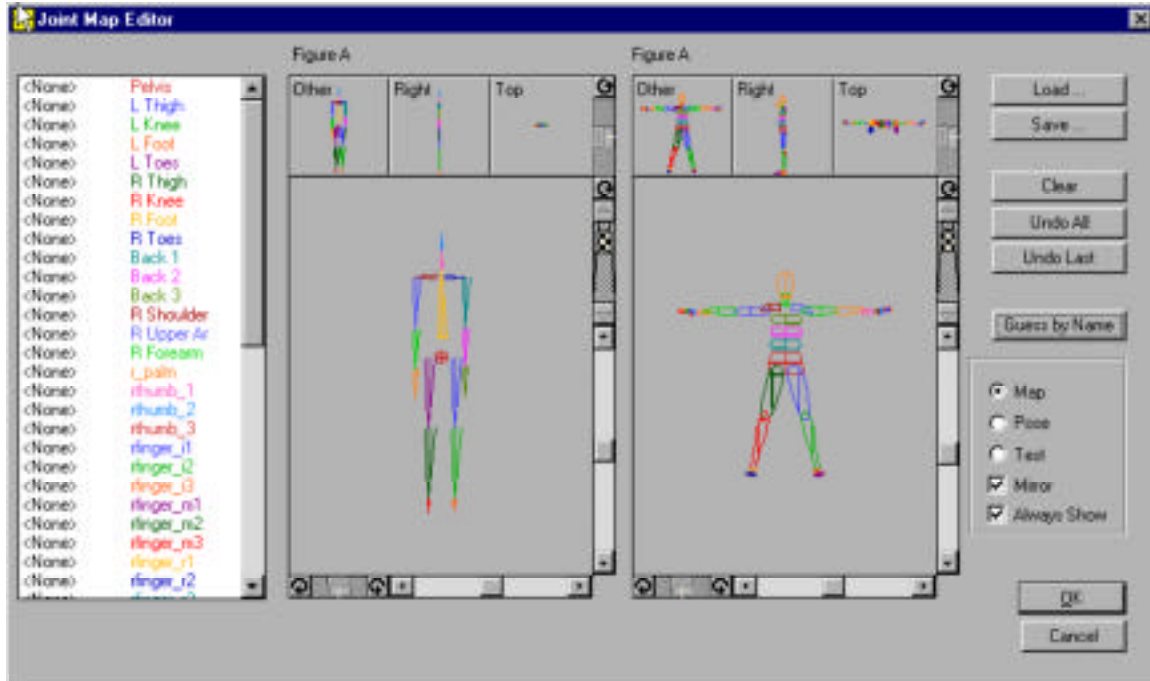
The File Browser will allow previews of stored LF animations and play back. You can use the same quick key commands as in the stage for this preview to zoom in and rotate even during playback. Lifeforms will also import BVH or Acclaim data but to get an animated preview in the Browser save them as LFA and create a motion library.

Hit the Paste button in the file browser. This box will come up asking about frame rate, select change.



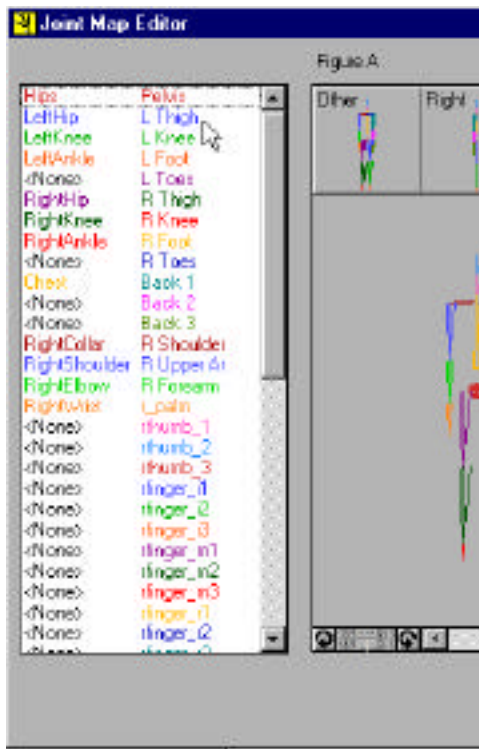
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D. The Joint Map Editor will come up at this point. The joint map editor allows for copying animation from one hierarchy that the animation was originally created with to the desired hierarchy, joint by joint. To do this you click on the joints in the destination window (your fact model hierarchy) then click on the corresponding joint in the source window (the BVH skeleton).

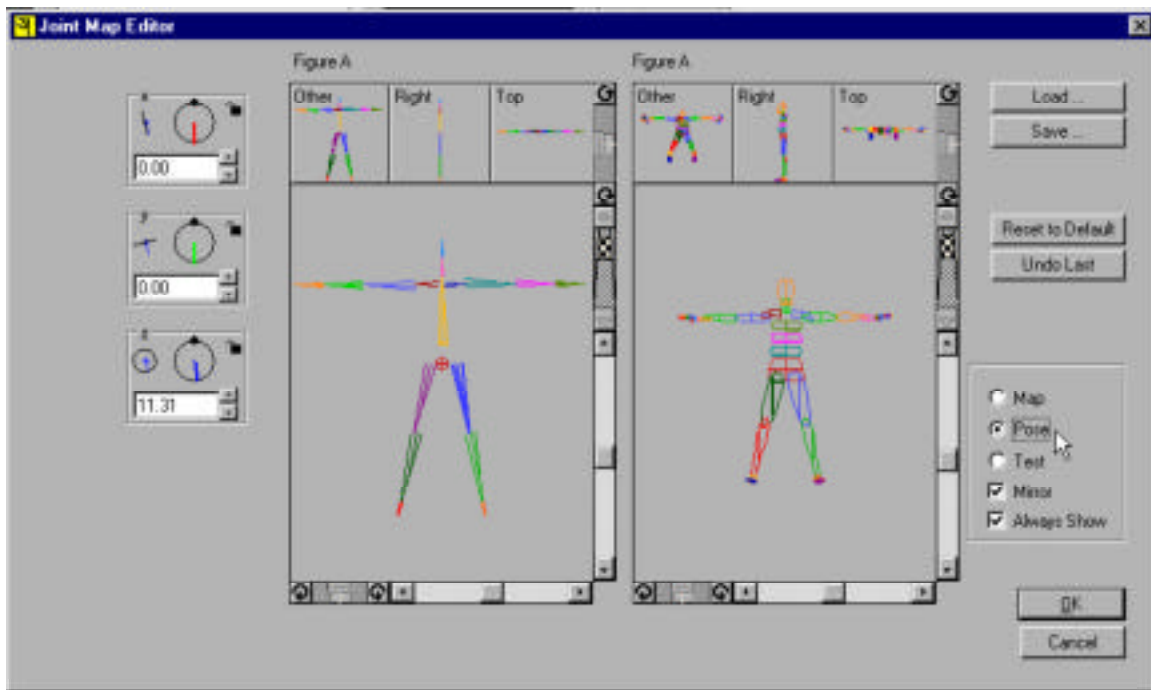


You will notice that the joint names will start to match up in the listing window. With things such as extra backs or fingers or toes leave them as none. If you make a mistake click the background of the Source window and the match will return to none. To select hard to see joints such as feet, you can select them by rotating around in the window using the window rotation tools or by holding down on the window with your mouse to pull down a list of the joint names. Don't forget the neck and head at the bottom of the list.

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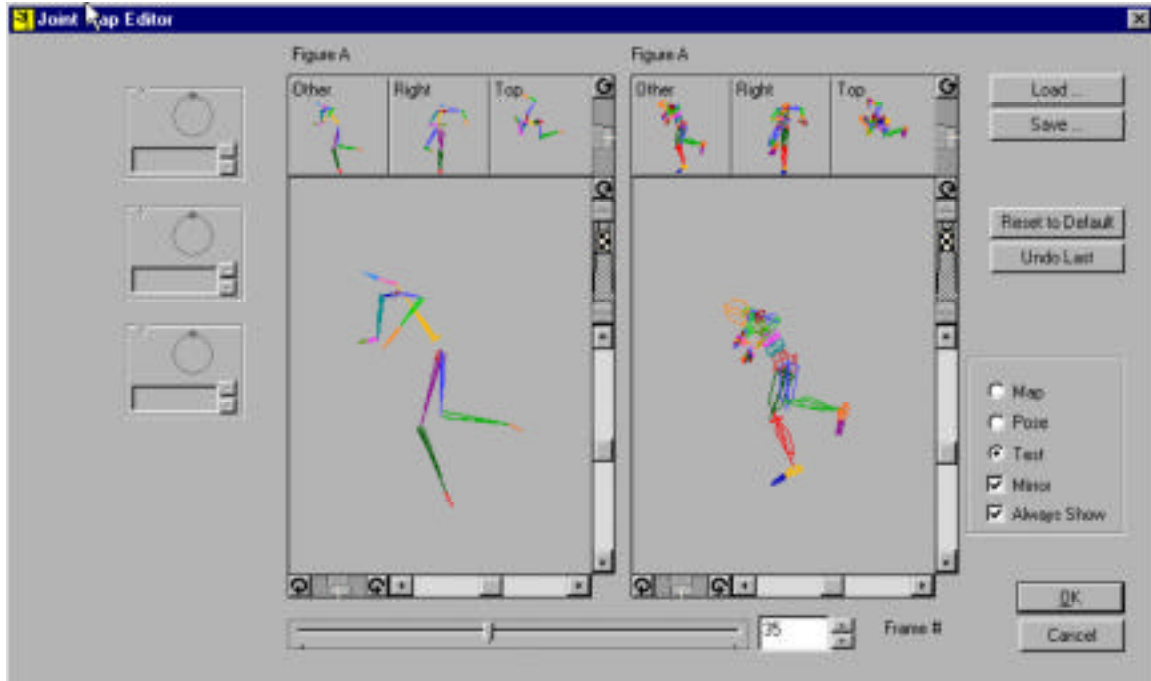


The next step for copying animation over is to click on the POSE option. Rotate the limbs by use of the dials or by selecting and dragging them in the window. Check from all sides by clicking on the different views above. The closer the poses match the closer the animation will look like the original.

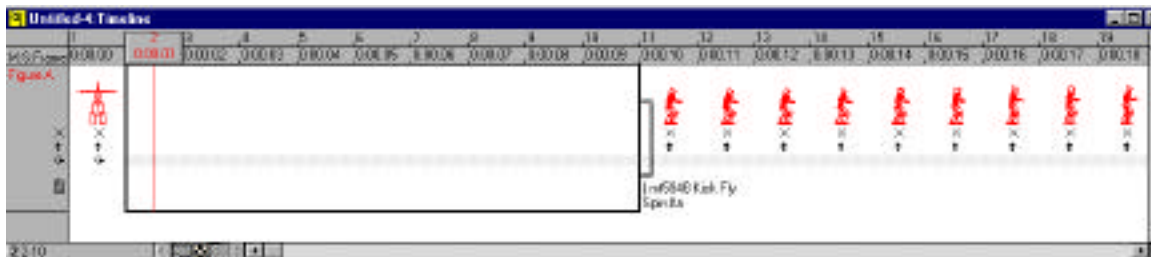


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Then select Test and scrub through your animation. By going back to pose and altering the pose you can change how the animation will be pasted. You can make horses walk on two legs or do karate by changing axis, mapping front legs to human arms, and pose standing up like a biped. *Experiment!*



You like it. Hit OK and your time line will reflect the pasted in motion capture. Cut the keyframes out that are empty at the beginning of this file because we don't need the interpolation from the default to the start of the sequence. Select the range of frames using your cursor, hold down and drag over the frames then Command x. the Kick Fly Spin will move up to frame 2. You can play the animation and view it on the stage, or by opening the rendered window. Use the panel to play or there is key commands tilde to play and esc to stop.



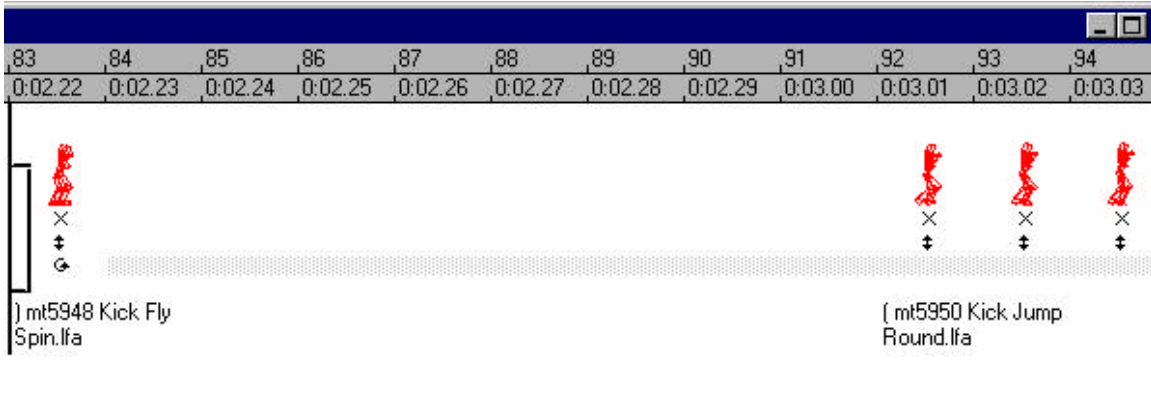
Go to the end of the sequence either by scrolling through the time line or by pressing end on your keyboard or clicking the button on the panel.

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Move the cursor ahead about 5 frames before you paste the next sequence so Lifeforms can interpolate between the sequences. Use the space bar to move your cursor. Check your paste defaults first under EDIT menu - they should be set to relative location and relative facing. Paste Kick Jump Around through the File Browser. The mapping is already done, so go straight to test and hit okay. Playback.

Tip: D on the keyboard will zoom the stage out. You can rotate the stage by pressing !!!!!ADDKEYBOARD COMMAND HERE for rotating stage

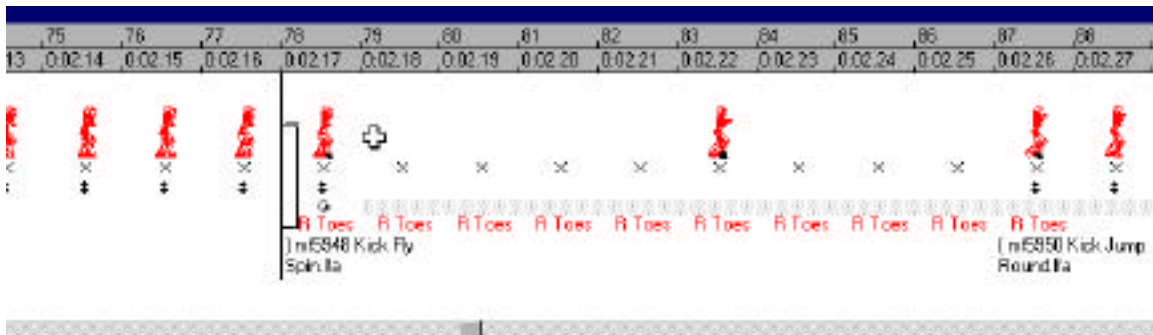
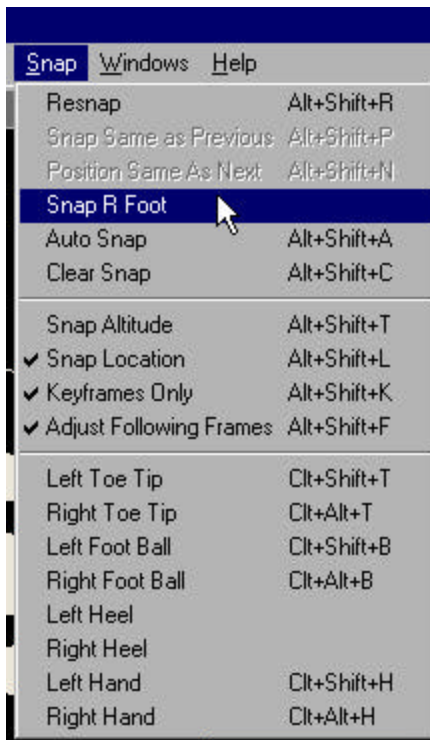


After viewing the interpolation between the two sequences, decide if that is good enough for you or if you want to blend it more.

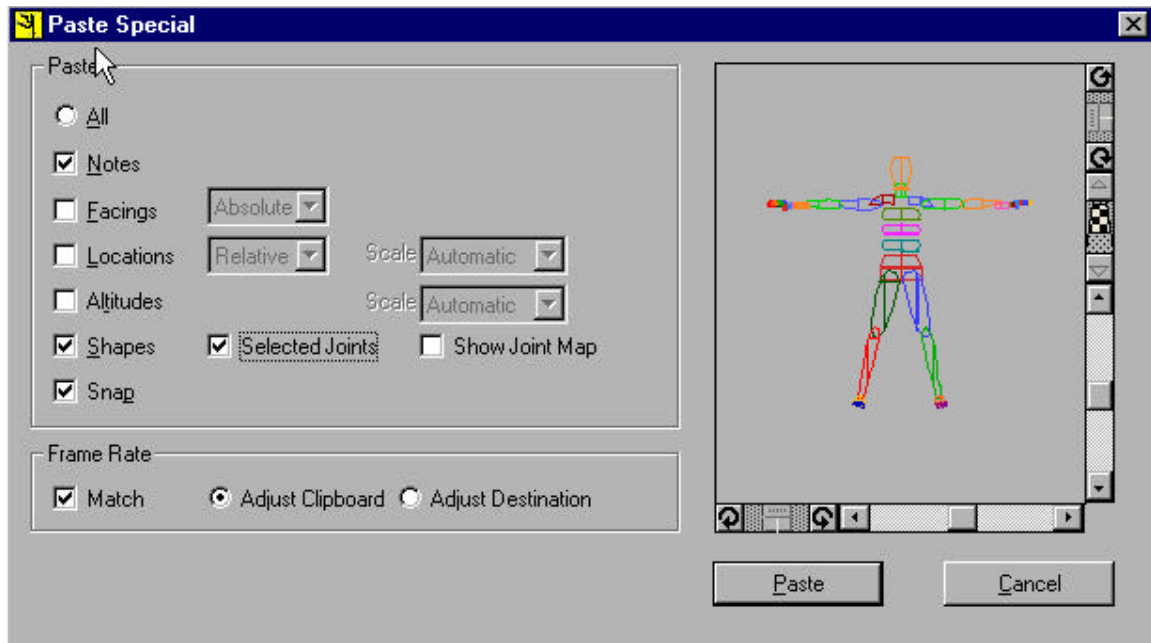
SNAP

For instance, I would use a constraint on one foot so one won't slide and the next one moves into position. Lifeforms 3.5 has a new feature called SNAP. Zoom up on frame 83 in the stage. Use the key command to get in close to the feet, scrub through 83 to 92. Under Figure Menu click on Display With then go back into the menu and under Display With/ Colours/ choose Random Colors. This will colorize the stage figure's joint differently like the editor and it's easier to see right from left when working in wire frame. Select the joint you want to SNAP in the Figure Editor (Right Foot). Select frame 83 and keyframe all by Command tilde. Then Under the SNAP menu Snap Right Foot. Try and get you menu to look like the one below with the options.

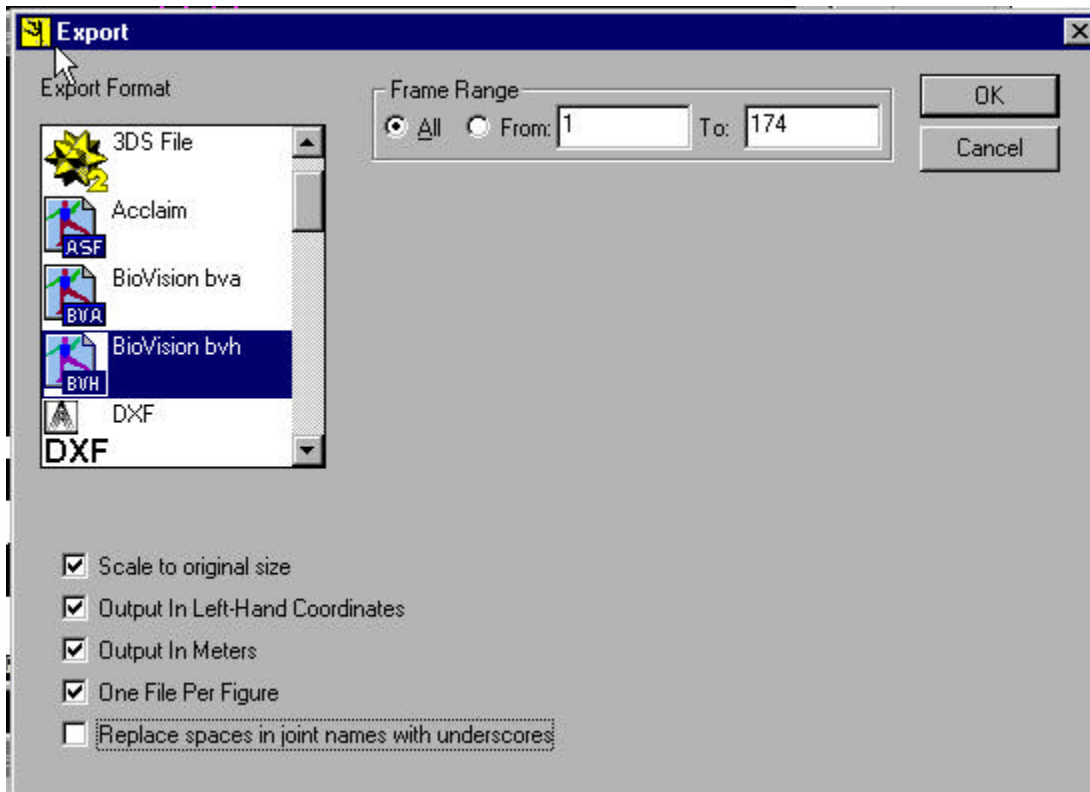
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Export the finished file as a BVH. Follow the selections below. Only click on the last box if the bvh data came directly from Poser and is going into EI.

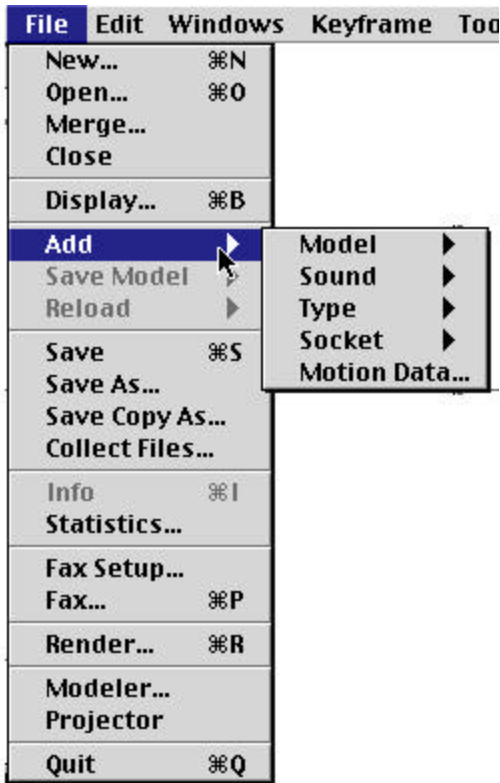


Bringing in the Animation to EI and attaching the bones to the Mesh.

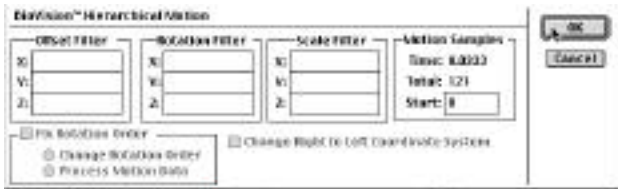
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HeroBonesWIP2 (file containing single mesh and BVH skeleton lined up but not attached)

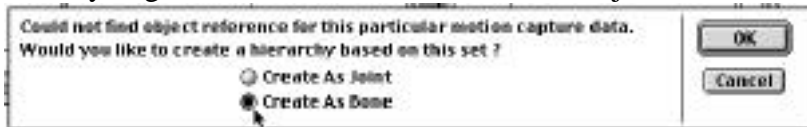
3. Open EI and delete your segmented model so you only have the single mesh. Under the File Menu/ Add/ Motion data/ add the BVH file exported from LF.



The following windows come up and click okay.

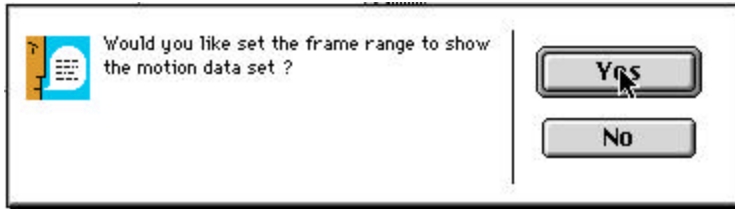


When you get to this window – select bone not joint.

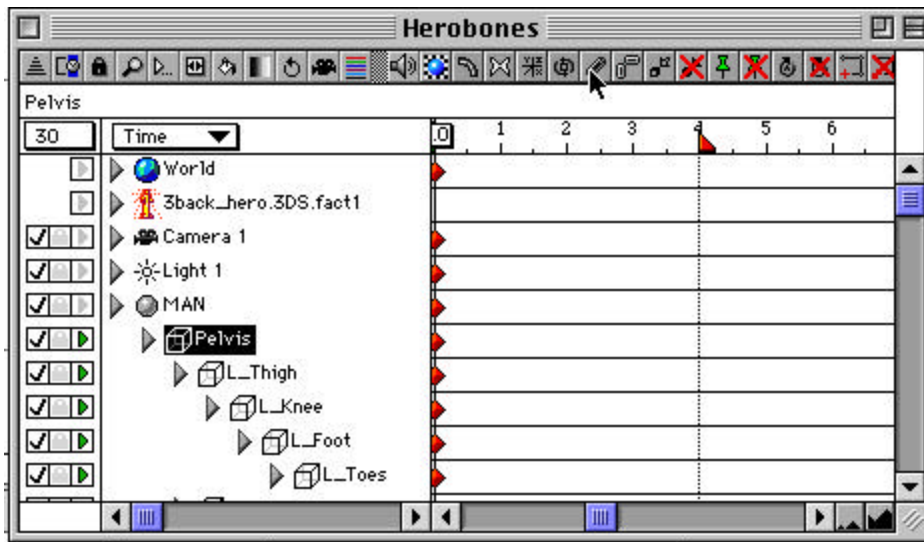



Then a final YES

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Make sure you are on frame 0 for that default position we created for attaching mesh purpose. Make sure that the bones are lined up. Move the mesh if needed rather than the bones. Open the Project window, select the pelvis, then the link tool and link it to the single mesh MAN by clicking on it's name in the Project Window. You will see the pelvis indent under the MAN in the Project Window.

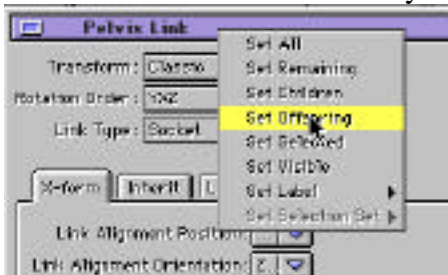


Now with Pelvis still selected click on the linkages tool to the right of the link tool. 

Pelvis Link will come up. Scroll down on the Link type and set it on socket.

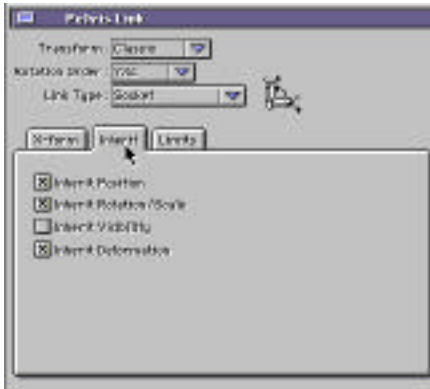


Then hold down the Control key and scroll in the same place to Set Offspring.

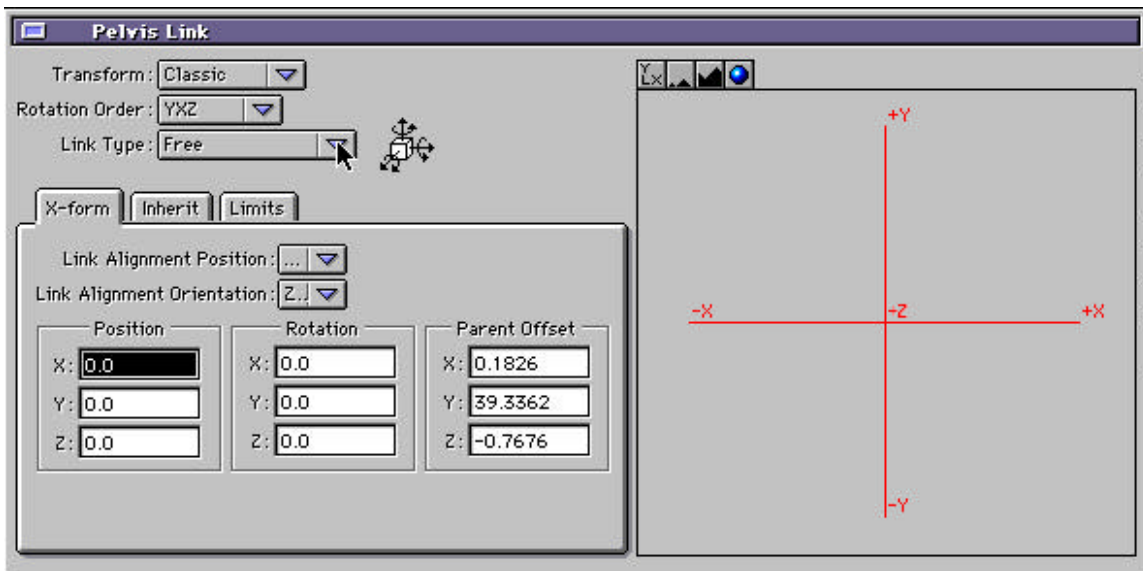


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After that, under the Inherit submenu, click on Deformation.



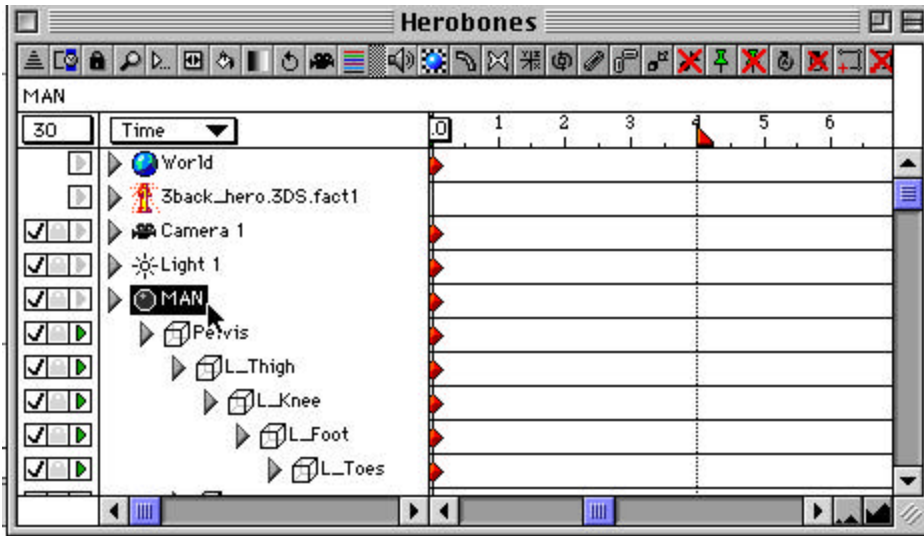
Not holding the Control key any longer, set the link type back to FREE. (This sets the Pelvis free and nothing else)



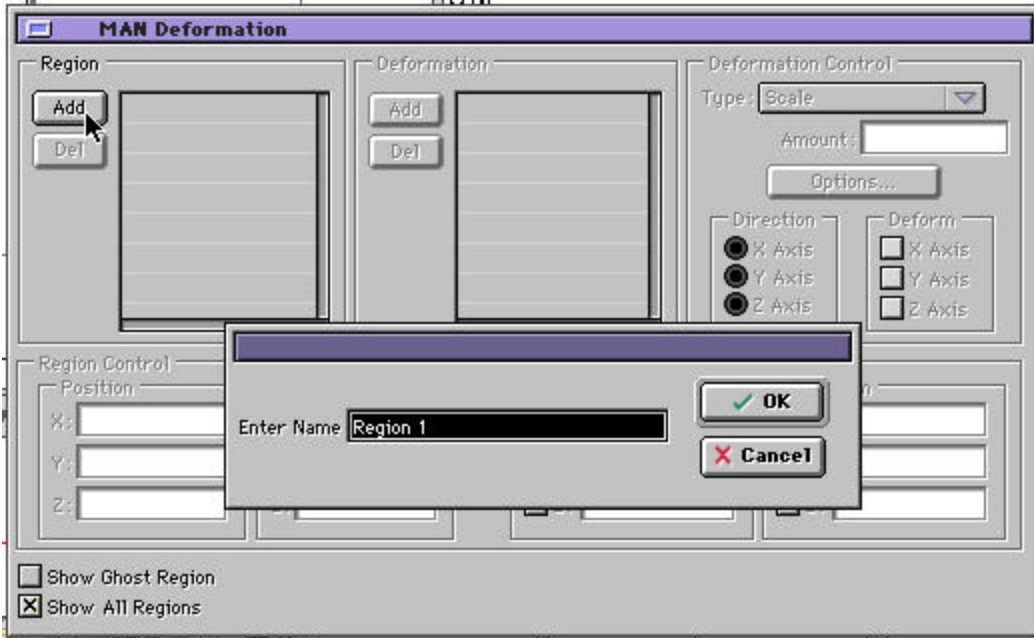
Shut that window and go back into the Project Window and click on the single mesh MAN and select the deformation tool



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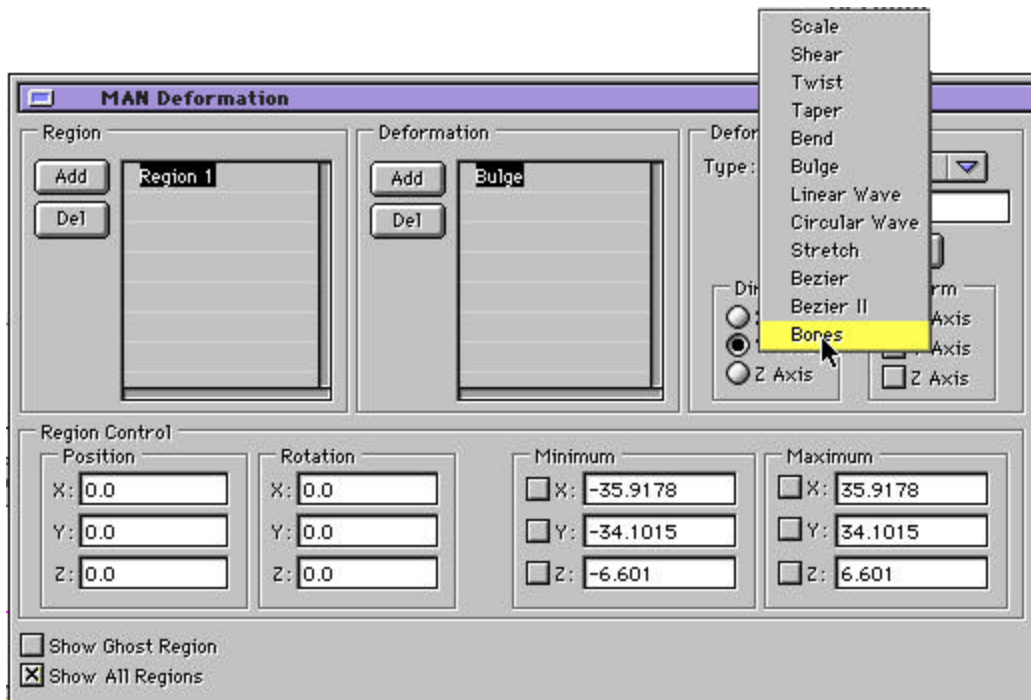


The deformation window for man will come up. Hit the Add button and okay.

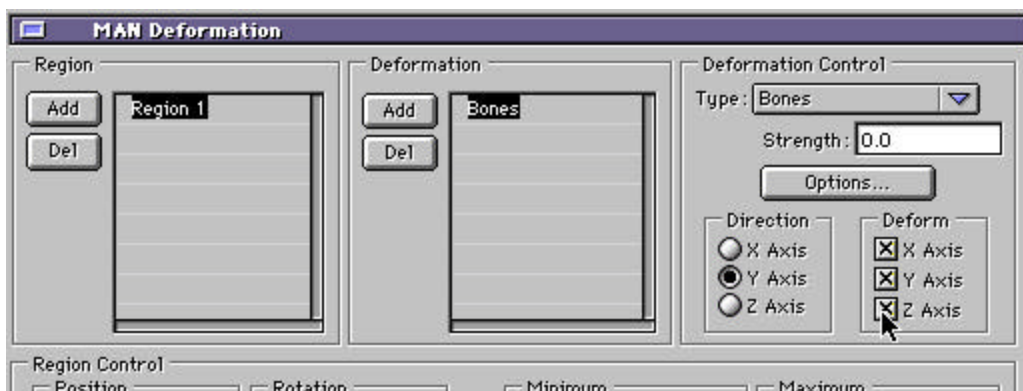


You want to change the deformation type to bones.

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Set the deform to XYZ axis



The mesh now moves with the animation.

OPTION:

If you want to move the path, create and link an effector to the mesh and translate that.

ADVANCED:

If you want to make changes to the animation itself, you can convert the custom keyframes that the BVH data came in as to keyframes with Fcurves. Change the Project Window to view Keyframes and under x forms you can see the numerical value of the keyframes and they are underlined. Select all by shift click, then under the Keyframe or Edit menu, select **fit keyframes to Fcurves**. Then if you double click on Pitch, Yaw and Roll in the Project Window, they will be automatically added to the Fcurve window.

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