

Biped Rig Creator Version 4.0

Purpose

The purpose of this document is to go over the tools for version 4.0 of the biped constraining script.

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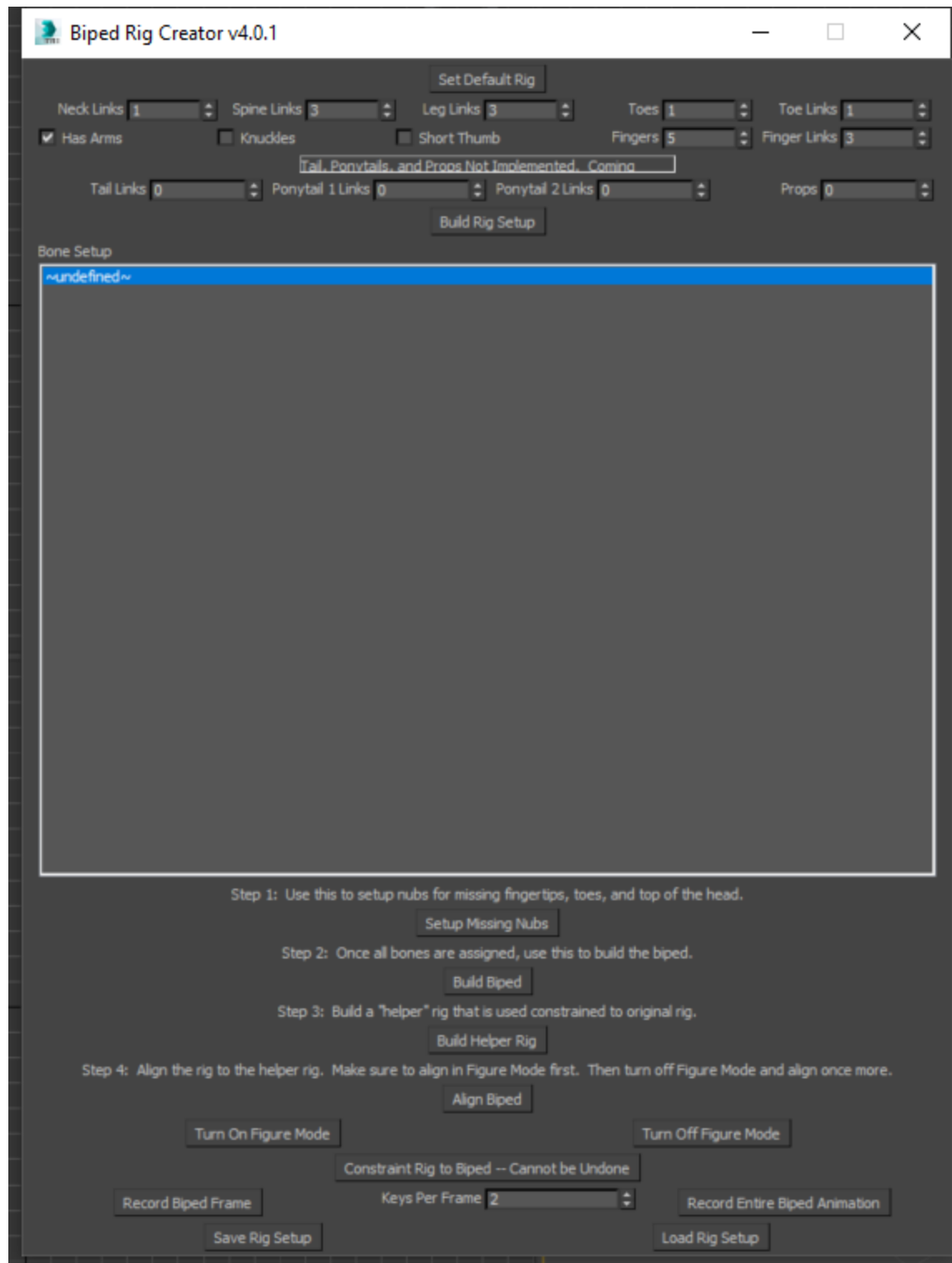
Main Difference Version 3 and 4

The main difference between this version and the previous version is that the build of the biped can be modified **before** building it in version 4. In version 3, the skeleton had very strict rules:

- 1 Neck
- 3 Spines
- 3 Legs
- 1 Toe
- 1 Toe link
- 5 Fingers
- 3 Finger Links

In version 4, this is not as strict. More necks can be utilized as well as spines. 3 or 4 legs can be used, multiple toes, and less finger and finger links if needed.

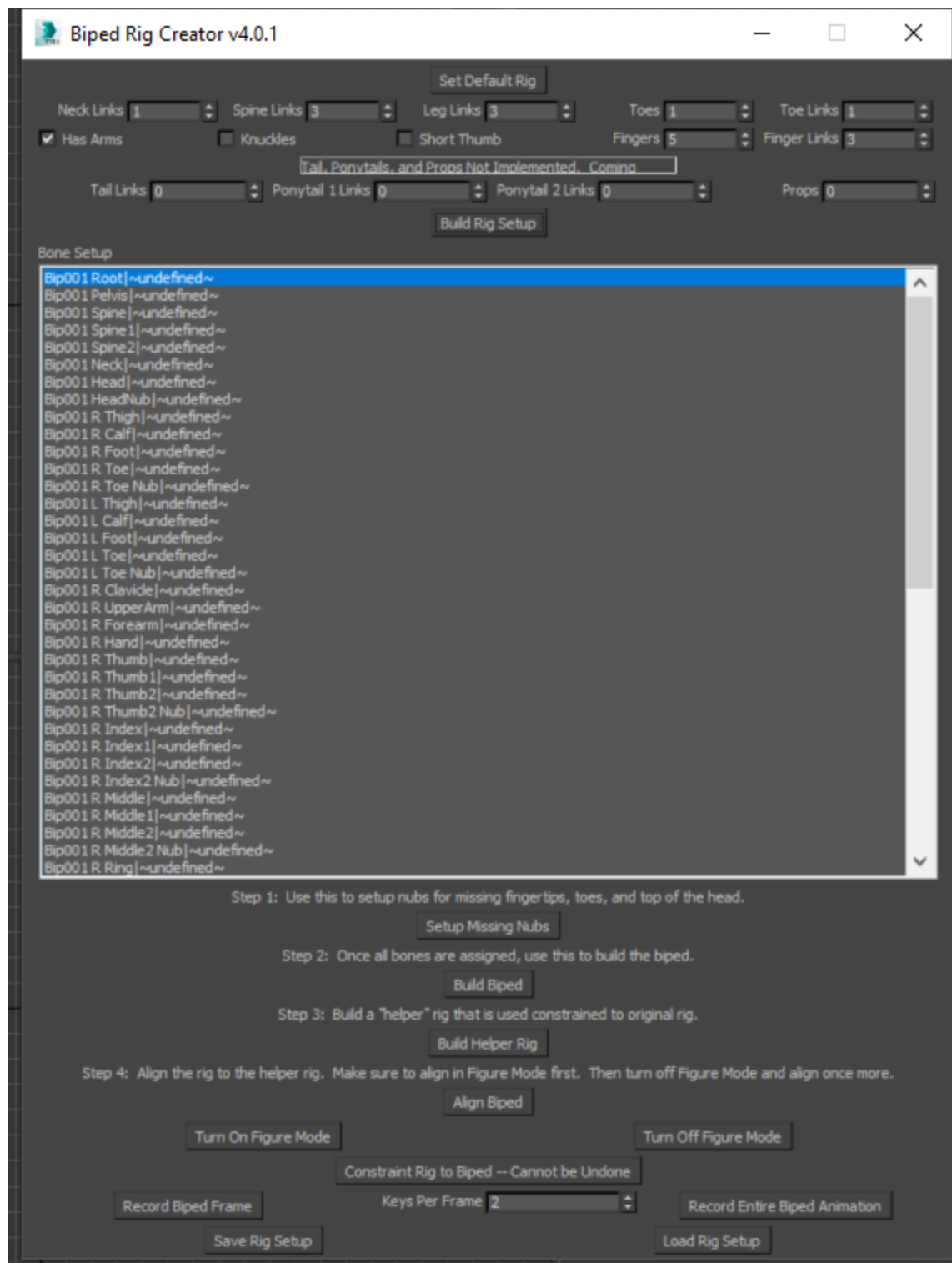
Window



The top half of the window now goes over setting up the biped. You can set how many of various limbs now so if you are working with a character with 2 spine joints instead of 3, this can be utilized here.

Setting Up a Rig

Once you know the layout of your character and set the correct parameters, press the “Build Rig Setup” button. The window will now look as follows:



Like version 3, you now select the character joint and then the line you want to populate. A completed character should look as follows:



Biped Rig Creator v4.0.1



Set Default Rig

Neck Links

Spine Links

Leg Links

Toes

Toe Links

☒ Has Arms

☐ Knuckles

☐ Short Thumb

Fingers

Finger Links

Tail, Ponytails, and Props Not Implemented. Coming

Tail Links

Ponytail 1 Links

Ponytail 2 Links

Props

Build Rig Setup

Bone Setup

Bip001 Root|CC_Base_Hip
Bip001 Pelvis|CC_Base_Pelvis
Bip001 Spine|CC_Base_Waist
Bip001 Spine1|CC_Base_Spine01
Bip001 Spine2|CC_Base_Spine02
Bip001 Neck|CC_Base_NeckTwist01
Bip001 Neck1|CC_Base_NeckTwist02
Bip001 Head|CC_Base_Head
Bip001 HeadNub|~undefined~
Bip001 R Thigh|CC_Base_R_Thigh
Bip001 R Calf|CC_Base_R_Calf
Bip001 R Foot|CC_Base_R_Foot
Bip001 R Toe|CC_Base_R_ToeBase
Bip001 R Toe Nub|~undefined~
Bip001 L Thigh|CC_Base_L_Thigh
Bip001 L Calf|CC_Base_L_Calf
Bip001 L Foot|CC_Base_L_Foot
Bip001 L Toe|CC_Base_L_ToeBase
Bip001 L Toe Nub|~undefined~
Bip001 R Clavide|CC_Base_R_Clavide
Bip001 R UpperArm|CC_Base_R_Upperarm
Bip001 R Forearm|CC_Base_R_Forearm
Bip001 R Hand|CC_Base_R_Hand
Bip001 R Thumb|CC_Base_R_Thumb1
Bip001 R Thumb1|CC_Base_R_Thumb2
Bip001 R Thumb2|CC_Base_R_Thumb3
Bip001 R Thumb2 Nub|~undefined~
Bip001 R Index|CC_Base_R_Index1
Bip001 R Index1|CC_Base_R_Index2
Bip001 R Index2|CC_Base_R_Index3
Bip001 R Index2 Nub|~undefined~
Bip001 R Middle|CC_Base_R_Mid1
Bip001 R Middle1|CC_Base_R_Mid2
Bip001 R Middle2|CC_Base_R_Mid3
Bip001 R Middle2 Nub|~undefined~

Step 1: Use this to setup nubs for missing fingertips, toes, and top of the head.

Setup Missing Nubs

Step 2: Once all bones are assigned, use this to build the biped.

Build Biped

Step 3: Build a "helper" rig that is used constrained to original rig.

Build Helper Rig

Step 4: Align the rig to the helper rig. Make sure to align in Figure Mode first. Then turn off Figure Mode and align once more.

Align Biped

Turn On Figure Mode

Turn Off Figure Mode

Constraint Rig to Biped -- Cannot be Undone

Record Biped Frame

Keys Per Frame

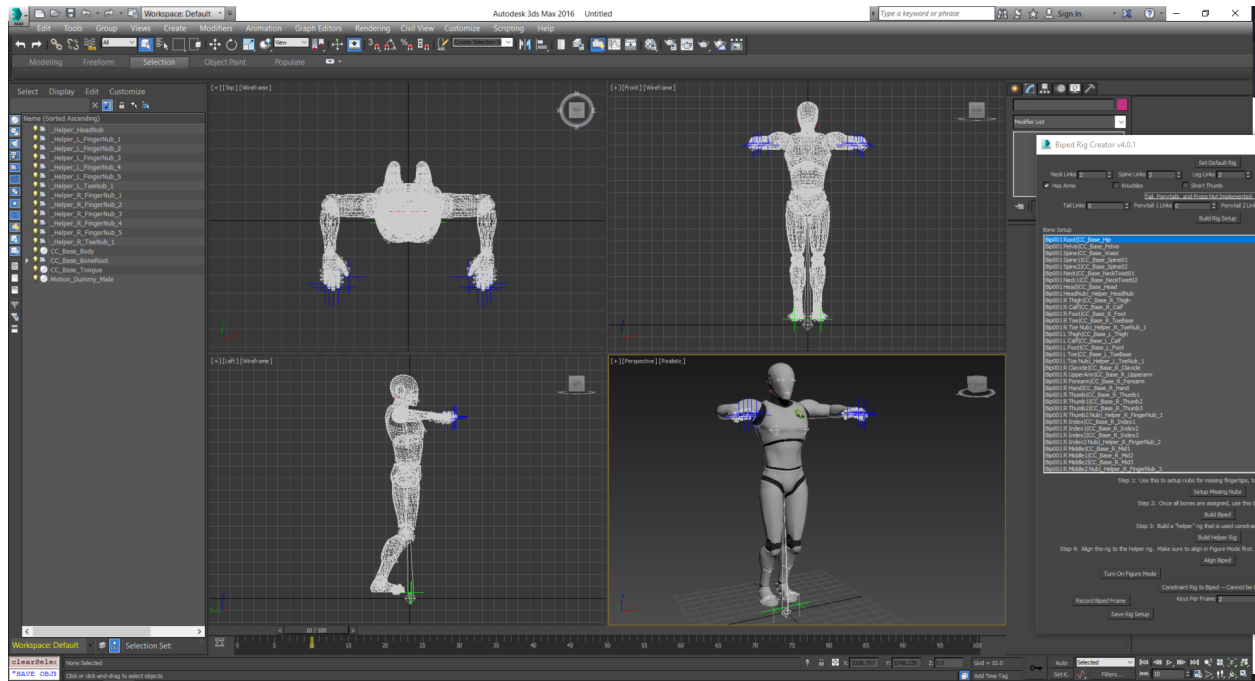
Record Entire Biped Animation

Save Rig Setup

Load Rig Setup

Creating Helpers

Now if your rig is missing any nubs such as the fingertips or top of the head, you can click the “Setup Missing Nubs” button to create the needed pointers.

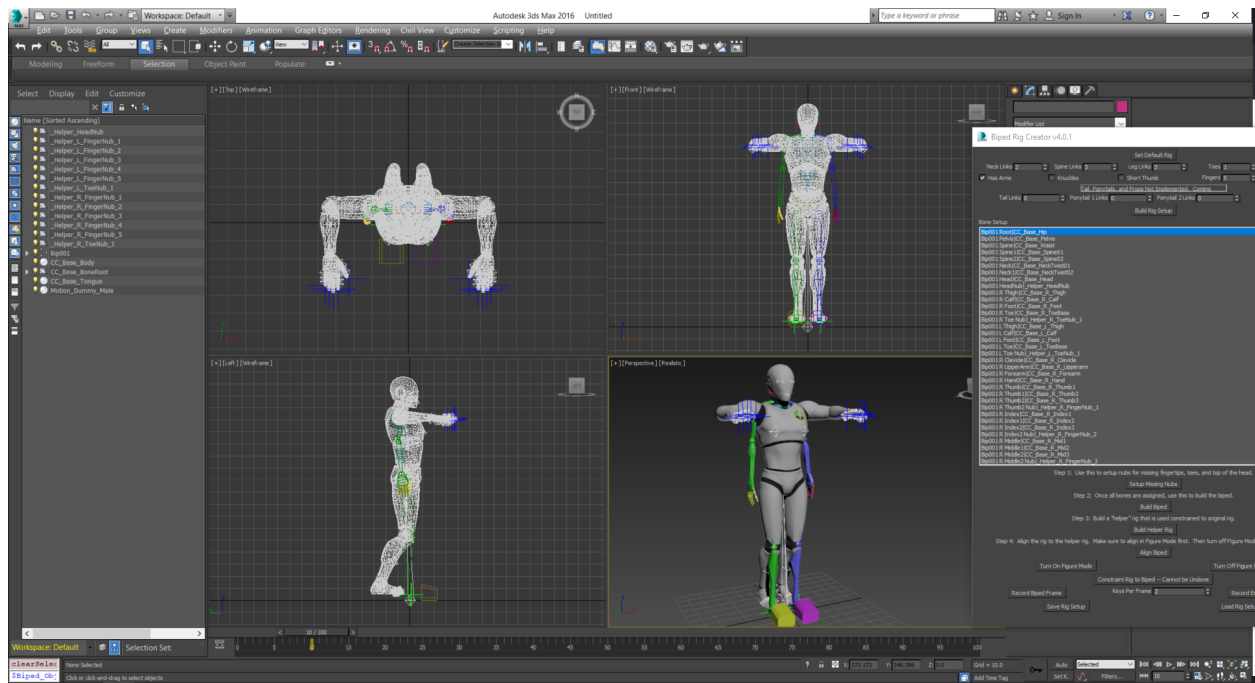


The script will attempt to place them appropriately but some fine tune adjustment will most likely be necessary.

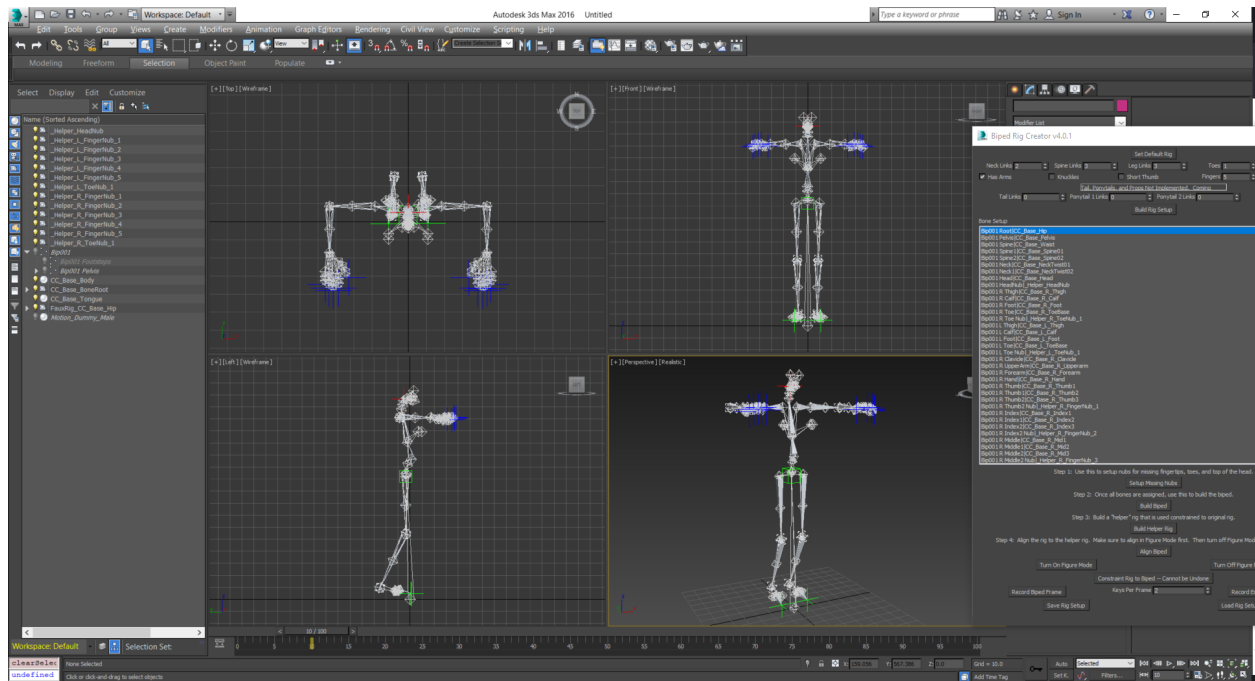
Once these helpers are placed, you can proceed to the next step.

Building & Aligning The Biped

Once the bones have been defined and the helpers placed, you can press the “Build Biped” button. A biped will then be constructed to match your character:

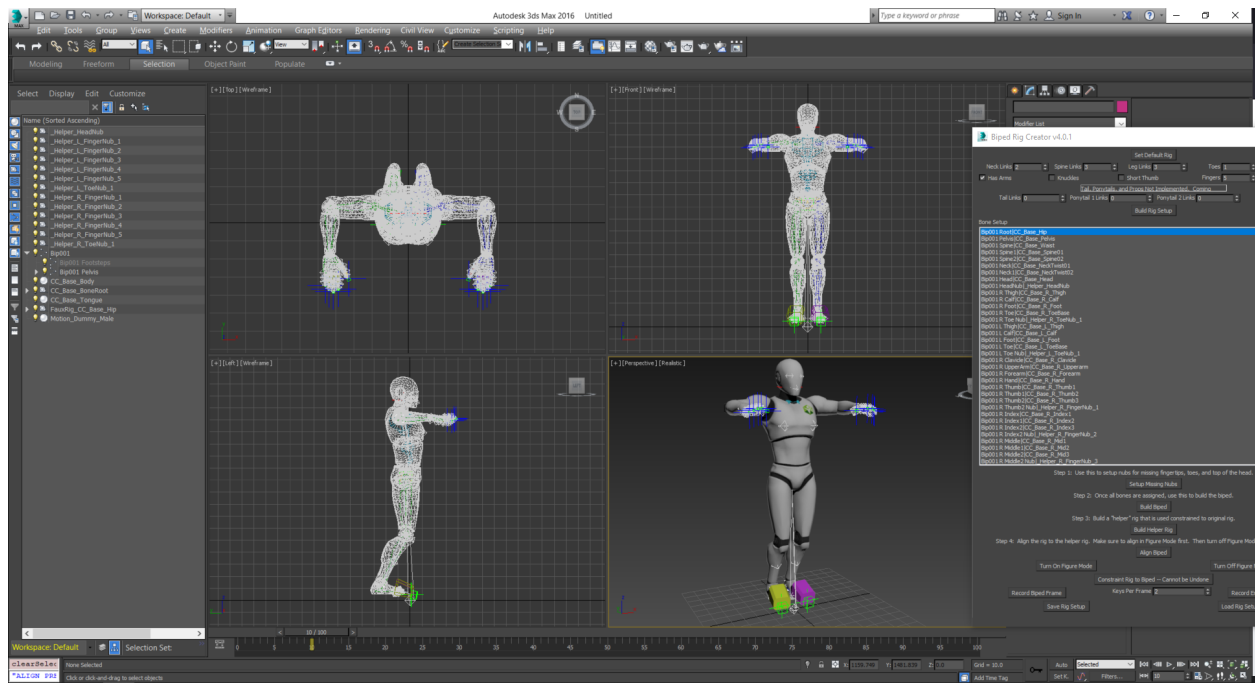


Once the biped is built, you must press the “Build Helper Rig” button. This creates a *faux rig* that acts as the middle ground between your original rig and the 3ds Max biped. The following is the *faux rig* with the original mesh hidden.

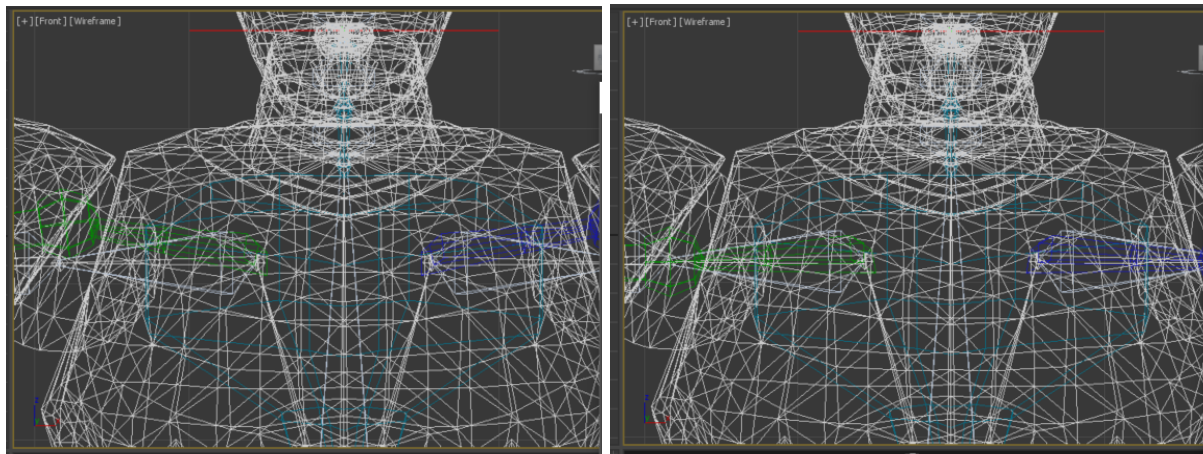


Finally, once the *faux rig* is built, press the “Align Biped” button. This will align the biped to the faux rig.

NOTE: you must do this while the biped is in Figure Mode. When created, it should be in figure mode by default; however, you can press the “Turn On Figure Mode” button just to be sure.



After you align the biped with figure mode ON; you have to align it again with figure mode OFF. You can turn off figure mode by pressing the “Turn Off Figure Mode” button.



In the previous two images, the image on the left is the collar bones aligned with figure mode on. They are placed properly but not rotated properly. On the right, the collar bones are rotated properly now that figure mode is off. You have to do this in this order because when figure mode is ON, the spine and collarbones and neck are properly placed but they are not rotated properly.

Constraining the Rig OR Capturing Animations

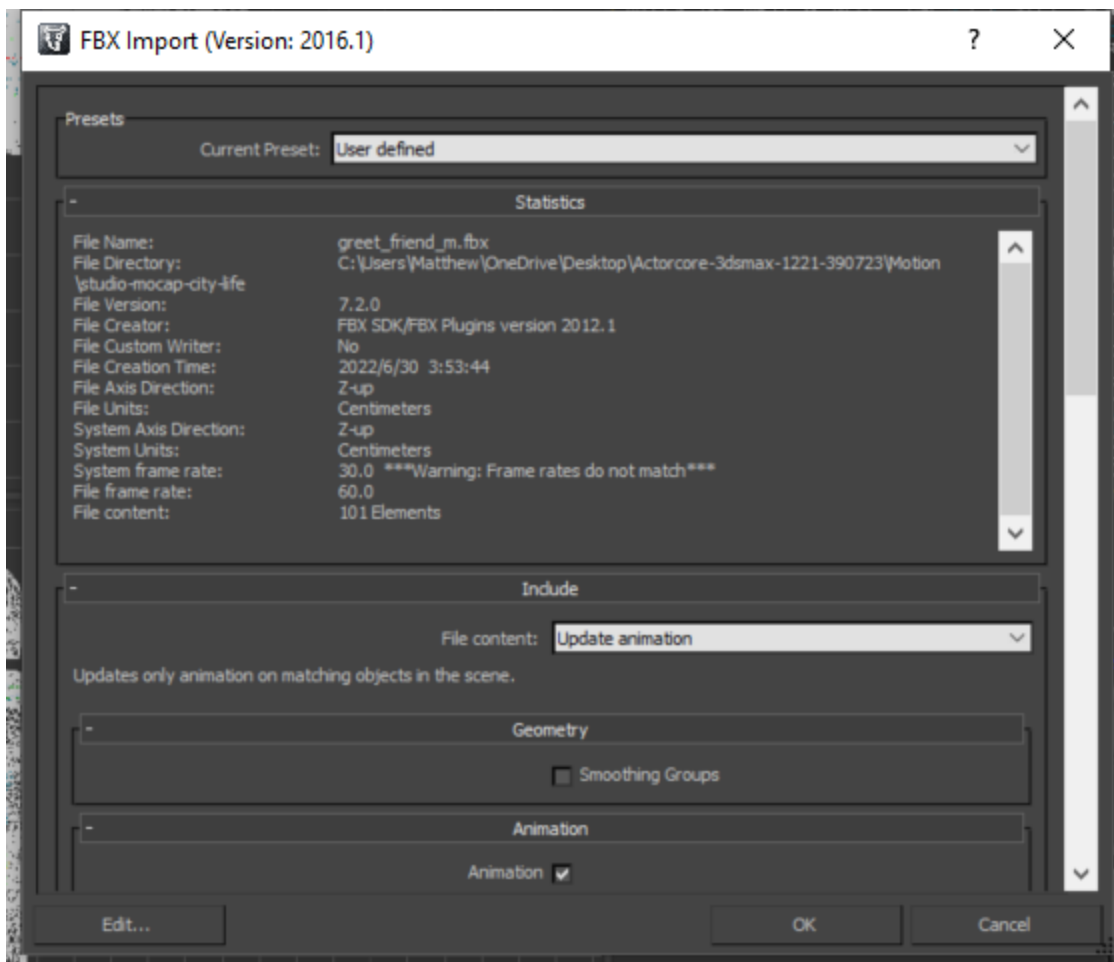
Once the biped as been aligned properly you can do one of two things. You can either constrain or original rig to the biped and use the biped to animate or character OR capture animations from the original animation to the biped.

Constraining

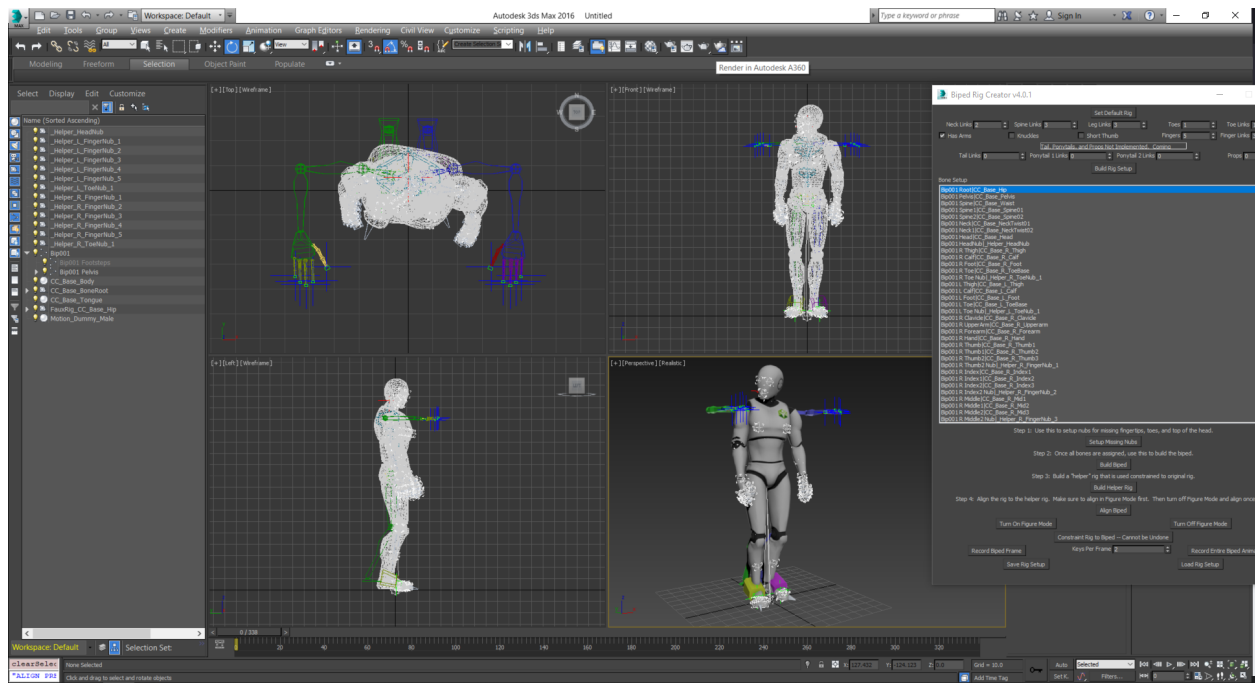
To constrain, can click the “Constaint Rig to Bipod” button. This CANNOT be undone so if you want to use the biped to drive your original rig’s animation, this is what you should use. Once this is done, you can now animate the biped however you want and your original rig will animate to it.

Capturing Animations

The other use of this tool is to capture animations. You CANNOT do this if the rig is constrained. The best way to set this up is to create and align your biped to the character in a near t-pose with the knees and elbows slightly bent as shown in the previous images. Then, if you have animation, you can import them but ONLY update the animation as in this fbx import window:



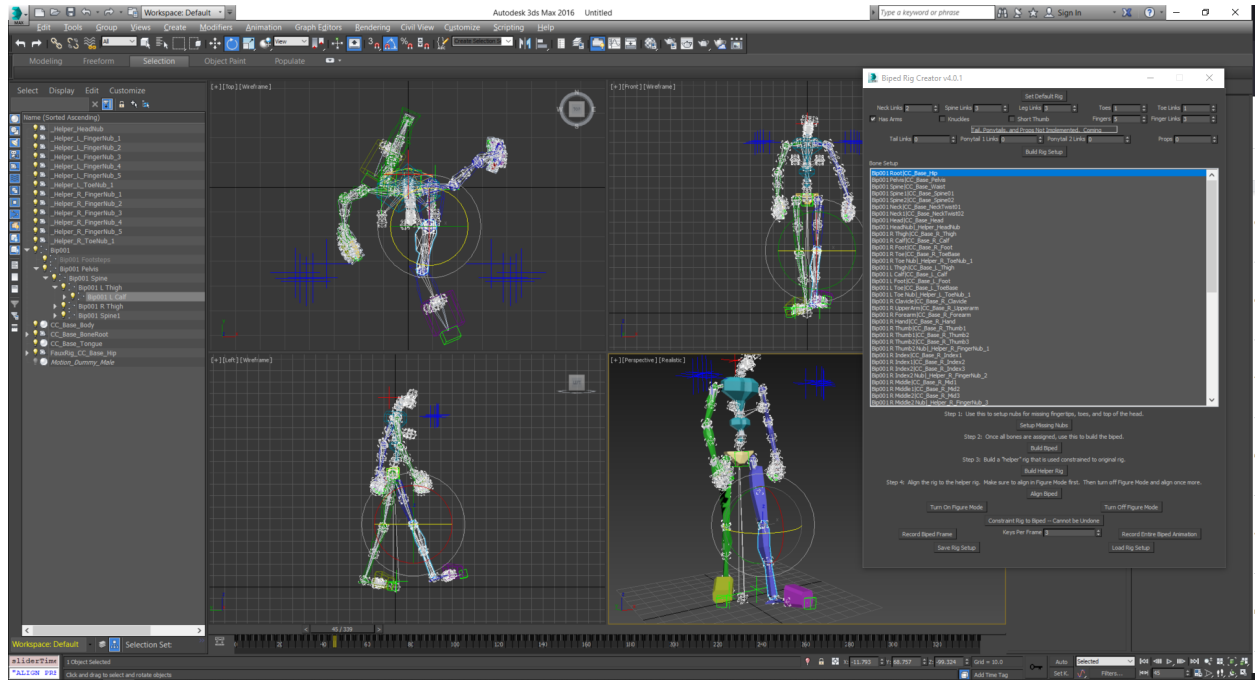
Once imported, the original rig will be animated but your biped in place as shown:



When capturing, setting the “Keys Per Frame” slider will set every frame; however, this process is SLOW, so it is not recommended to capture every frame unless you have time or the animation is short. But, once you have a good number determined, click the “Record Entire Biped Animation” button.

The script will now align the biped by the determined frame amount and set a keyframe for the biped.

Once finished, the biped will be animated to the original rig’s animation; however, note, some key frames may need adjustment. Any time a leg or arm is perfectly straight, it can be rotated incorrectly as in the following image:



The right leg (blue) is rotated incorrectly because on frame 45 it is perfectly straight. You can adjust this however.