



# 3D Studio MAX

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## Character Studio Export

# Table of Contents

<b>Introduction.....</b>	<b>3</b>
Step 1 – Creating the Skeleton. ....	4
Step 2 – Attach the Skin to the Skeleton. ....	7
Step 3 – Applying Animation and Correcting Vertex Assignments. ....	10
Step 4 – Exporting the Skin and Animation data. ....	13

# Introduction

This tutorial is designed as a fastrack to getting started with the 3DS MAX Character Studio export functions in the RenderWare 3.10 DFF Exporter. It will show you how to:

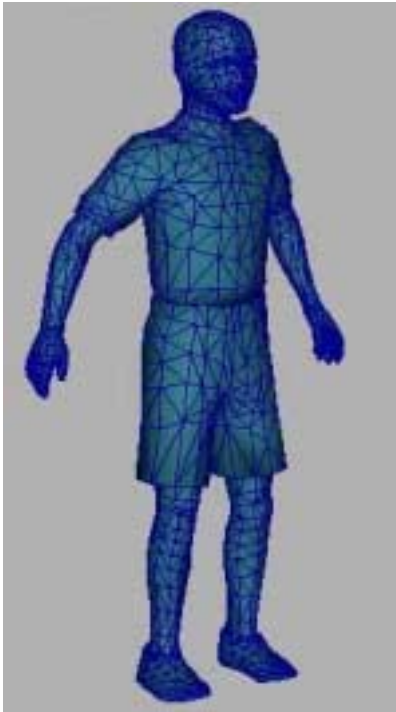
- Create and edit a bone hierarchy using Biped.
- Attach a skin to the skeleton using Physique.
- Edit the skin's vertex assignments.
- Animate and export the skin to RenderWare.

It is assumed that you have 3D Studio MAX 3.0, Character Studio 2.2 or Character Studio 3.0.1 and RenderWare Graphics 3.10 installed. It is further assumed that you have a working knowledge of these applications.



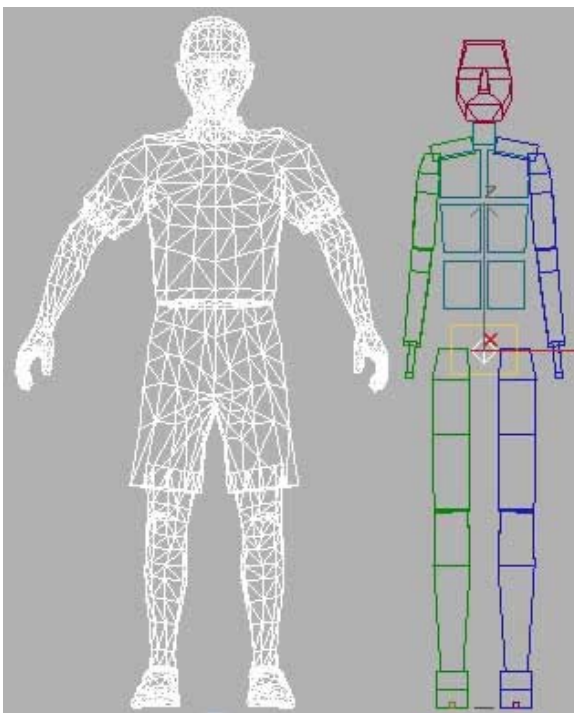
## Step 1 – Creating the Skeleton.

Assuming you already have a skin object prepared in a 'reference pose', load it into 3DS MAX.



Skin object to be animated.

Create the biped roughly the same size and orientation as the skin. For more advice on Biped parameters see the following page.



The Biped settings you use are completely up to you. However, if you're not animating hands there is really no point having fingers and likewise toes. I usually find that three spine links are adequate for most purposes. Also note that on PS2 there is a limit of 64 bones per character and the default biped has more than this!



Biped creation dialogue.

Give your Biped a unique name. This helps later if you have more than one. It's real tedious having to rename the parts by hand! This is the 'bones' hierarchy RenderWare will refer to. There is no further tagging of geometry necessary.

Next, with Bip01 selected, go to the Animation rollout and select 'Figure Mode'

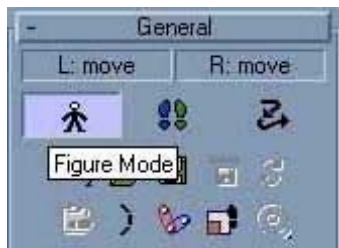


Figure Mode selected.

Make sure that the Biped's center of mass (Bip01) is positioned in the crotch of the skin then use the rotate and scale tools to get the various bones to fit within it. Make sure that the skin's joints line up with the Biped's as shown below. Ensure that the biped links are centered in the mesh and the bounding boxes closely fit the skin.



Biped scaled to fit skin.

Once this stage is completed, save your work. You are now ready to assign the skin to the Biped.

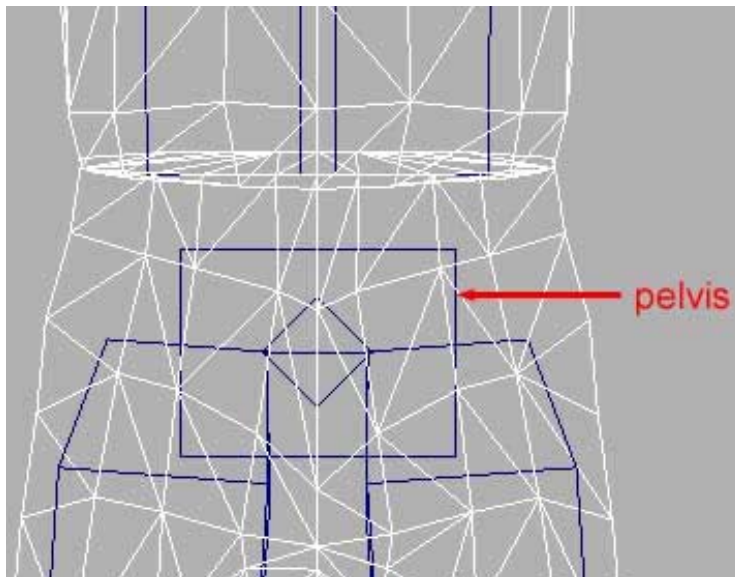
## Step 2 – Attach the Skin to the Skeleton.

Select the skin object then, on the Modify panel in the Modifiers rollout, click *more*. From the list select and apply a Physique modifier. This is the part of Character Studio, which manages vertex assignments and weighting. To attach the skin to the Biped click on *Attach to Node* in the Physique rollout.

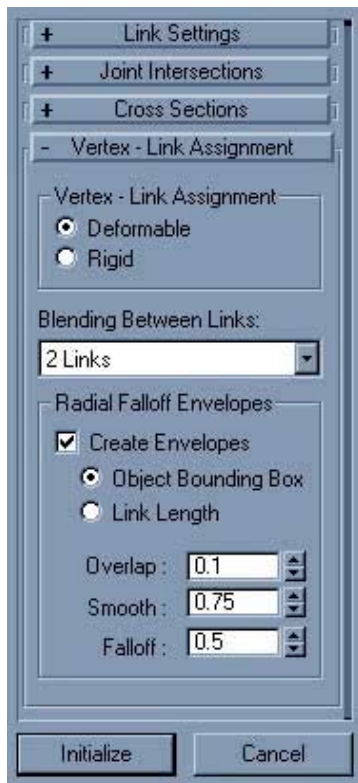


'Attach to Node' active.

As you move your cursor over the pelvis object it will change shape to a cross. Click to attach the skin to the skeleton. Alternatively, while in pick mode, you can select the pelvis from the Select by Name dialogue.



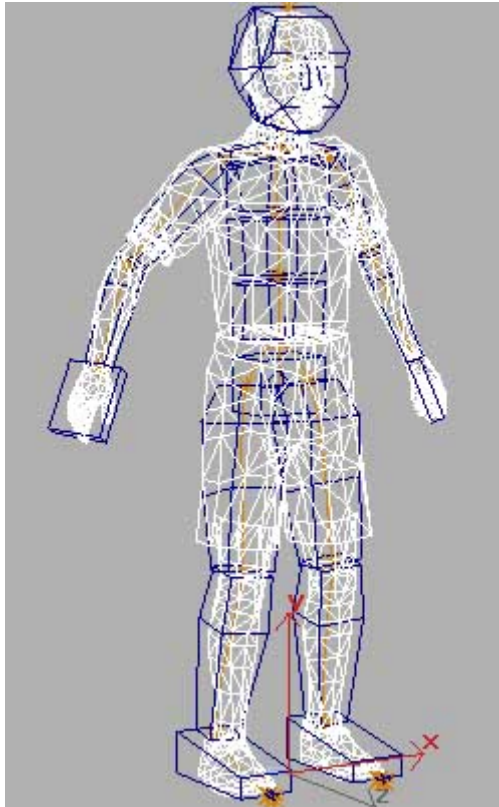
The Physique Initialization dialogue appears:



Currently RenderWare supports only rigid vertex assignment or blending between up to four links. In some ways it does not matter what Blend setting you choose, as four links are the maximum that will be exported. However, it makes sense to use one or other 'correct' setting so you can get a realistic idea of how the exported material will look in RenderWare.



After a second or two the skin is assigned to the biped. Links are created and represented by yellow lines, as in the illustration below.



Default skin assignment to Biped by Physique.

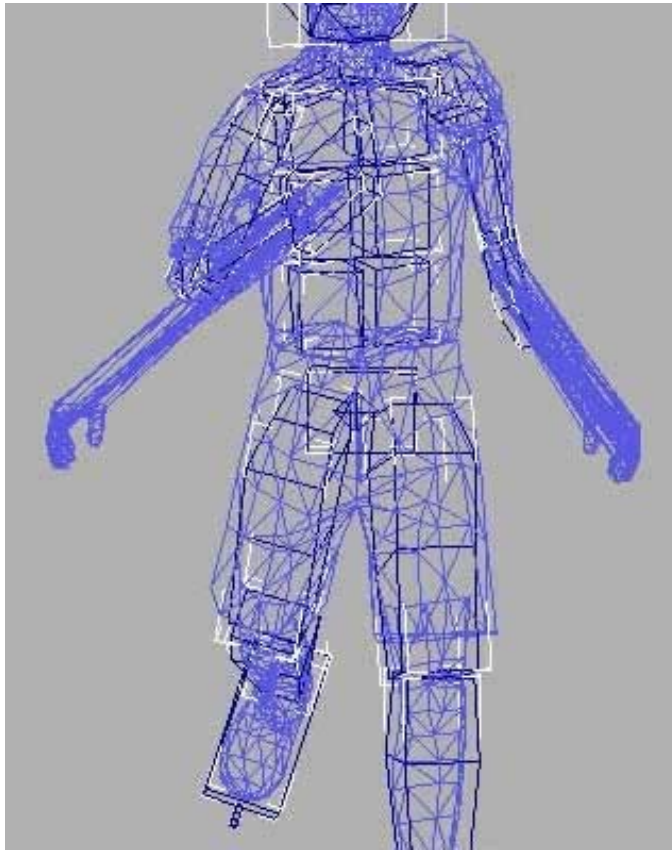
## Step 3 – Applying Animation and Correcting Vertex Assignments.

Now is the time to add some animation. This will also show up any vertices that Physique failed to auto assign correctly.

Select Bip01, go to the Animation roll out and exit Figure Mode by unchecking the icon. The Biped will spring back to the neutral position taking the skin with it. You may notice some inconsistencies at this point, but carry on and add an animation file. If you have none of your own use one of the .bip files that come with Character Studio. Go to Load File in the General part of the Character Studio rollout:

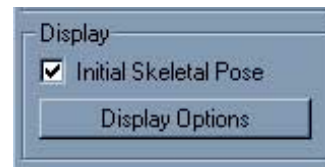
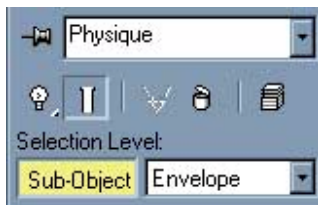


Once you have loaded your **.bip** animation file check the vertex assignments. You can now clearly see in the following case that the hands have failed to be assigned to a bone and are 'left behind' by the rest of the skin:



Ouch! The hand vertices are not assigned to the Skeleton.

To remedy this, go to the Modeler rollout, select the skin and access Physique, Sub-Object, Envelope. To make it easier to work with, check Initial Skeletal Pose under Display at the bottom of the Physique rollout.

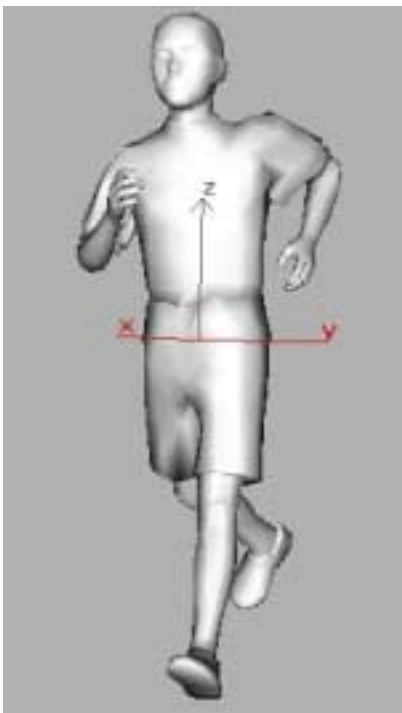


By selecting the various links in the hierarchy their associated vertices and assignment envelopes are displayed. As you can see below the hand vertices fall outside the envelope's outer boundary. By using the scale and move tools you can expand the envelope's sphere of influence to encompass the 'escaped' fingers:



Vertex assignment on hands corrected by scaling link envelopes.

Once these operations are completed uncheck Initial Skeletal Pose and view the results. If all is correct you are now ready to export your data. Save your work.



*Finished Model with animation.*

## Step 4 – Exporting the Skin and Animation data.

To export from 3DS MAX first select the skin or the biped, then go to *File->Export->RW3.ODFF* and choose a file name. Referring to the previous page, set the DFF Exporter dialog animation options as shown and click OK. The Character Studio *Export->Save RpSkin SKA->Normals and Light* options need to be checked.

That's pretty much it. Under Geometry Creation: Pre-lighting, Vertex Color Lighting and Tri Strip Meshes are optional. For explanations of these and other exporter functions, please refer to the Artists' Guide.

In order to view what you have exported use the **clmpview.exe** supplied with the RenderWare SDK. Open the viewer, then drag and drop the exported **.dff** file onto the viewer's window and you should see your figure animating.

You should now be able to create a skeleton, attach a skin, edit vertex assignments, add animation and export an animated file in a form that RenderWare can interpret. Have fun...!