

# The Principles of Animation

## Follow-Through and Overlapping: Lesson 5

### Understanding the Principle of Follow-Through and Overlapping

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**Follow-Through** is the continued, full progression of movement seen in body parts and other appendages during an action, as well as after an action has ended. For instance, when an arm swings while a character is walking, the top of the arm moves first, followed by a bend of the elbow, then a bend of the wrist and finally the hand. Another common example of follow-through would be when a tennis player holds the tennis racket back with his arm to hit the ball, then follows through with his arm to complete the swing.

**Overlapping** is seen when body parts and other appendages cross each other and move in cycles. Overlapping enables you to make an animation appear more fluid. Animating a walking character step-by-step (also known as a **walk cycle**) is a good example of an overlapping action since when a character walks, his feet cross each other. This could also be seen if a character was climbing a ladder or kicking his legs in a pool.

### Related Project Files

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The following related project files are located in the ASCurriculum-Lesson5.zip file that accompanies this course:

- **Tutorial 5.1.anime** - A final version of the project that you will complete in this lesson.
- **Tutorial 5.1.mov** - A final render of the project that you will complete in this lesson.
- **Tutorial 5.1 How To.mov** - A step-by-step video tutorial of the project that you will complete in this lesson.

### Tools Used

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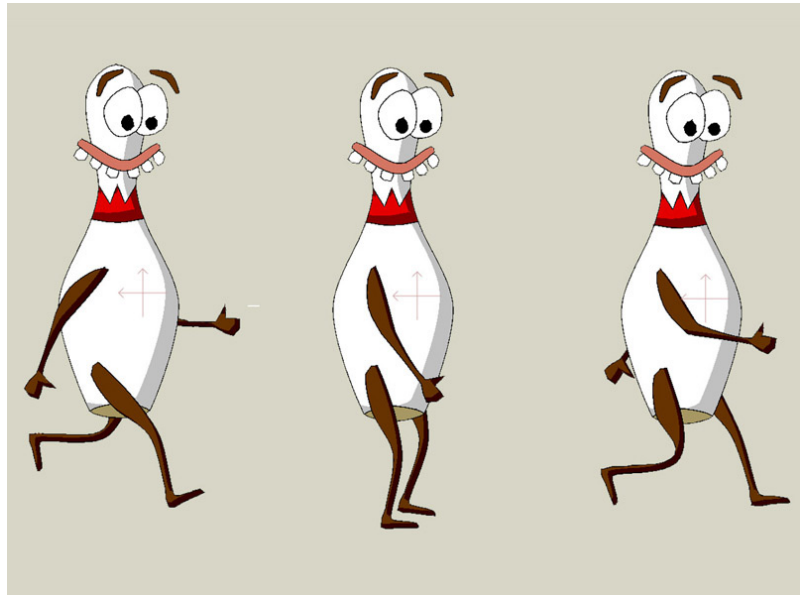
- **Manipulate Bones** tool, **Translate Layer** tool

### Tutorial 5: Overview

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Here you will create a walk cycle with a character in the Anime Studio Library called **Pinhead**.

The walk cycle incorporates both overlapping and follow-through, since when the character is walking, both arms and legs cross each other (displaying overlapping), and his appendages will show a full progression of movement (displaying follow-through).



## Tutorial 5: Step-by-Step

### Step 1: Add Pinhead

Open Anime Studio and Select **File > New**.



Choose **Window > Library** to open the Library window. From the **Characters > Random** folder in the library, choose **Pinhead**. This character already has bones created for you to animate. Close the Library window..

Select the **Translate Layer** tool.

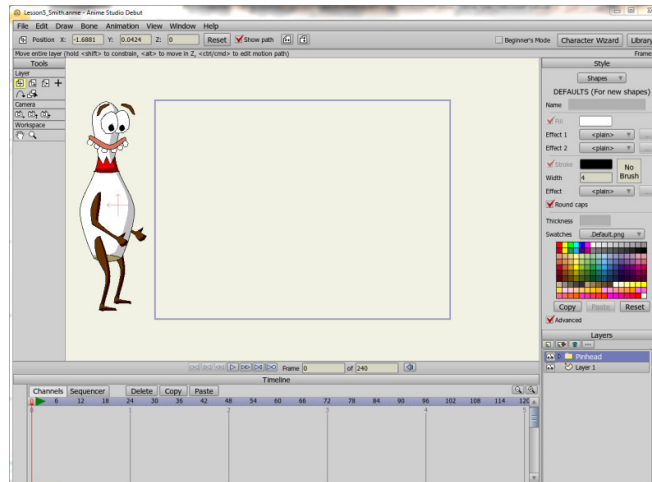


Then click the **Flip Layer Horizontally** button in the properties bar to make your character face toward the right of the screen. Then move the character off to the left of the scene, as shown.

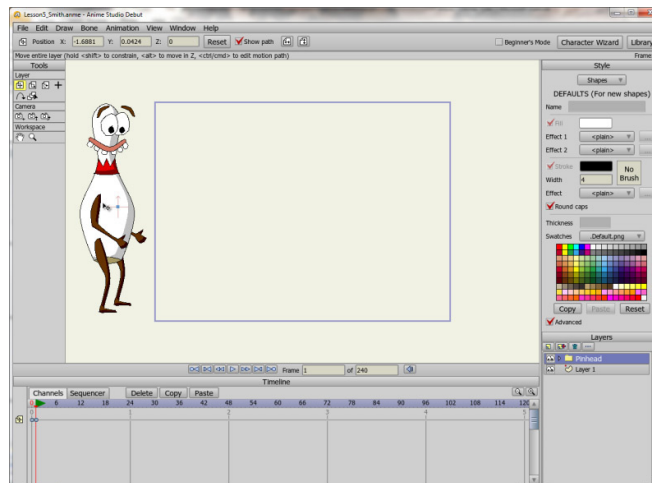
Save your project at this point, renaming it Lesson5\_YourLastName.

### Step 2: Set a Keyframe at Frame 1

We'll start the walk cycle at **Frame 1**. With the Pinhead layer selected in the **Layers** window, click **Pinhead** without moving him to add a keyframe at the first frame. .



For further information on the **Translate Layer** tool, refer to the Anime Studio Debut Users Manual.

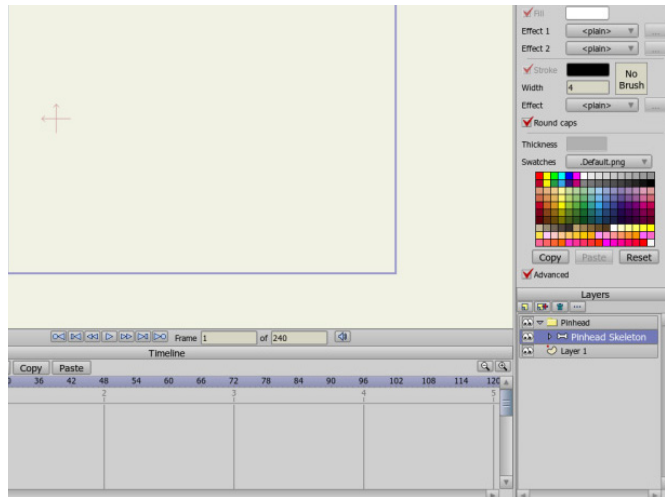


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## Step 3: Select the Skeleton Layer



In order to animate the bones in the character, you'll need to select the skeleton layer. Expand the **Pinhead** folder (in the Layers menu, make sure that the arrow is pointed down) to reveal a layer named **Pinhead Skeleton**, and select that layer to make it active. When you select the layer, notice that several tools become active in the **Bones** section of the toolbox. You'll use the **Manipulate Bones** tool to move the bones around.

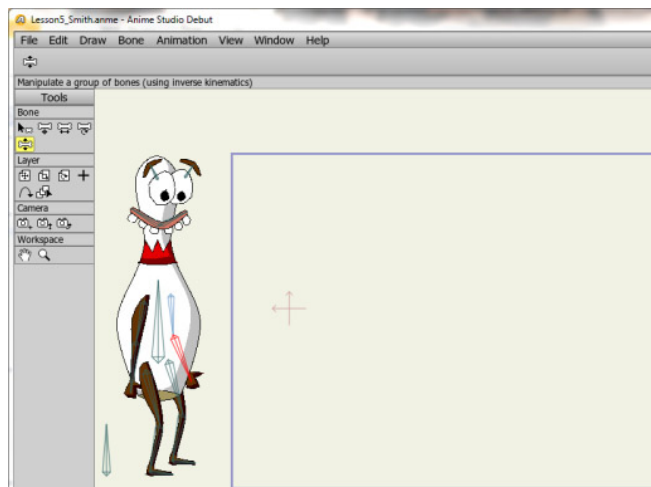


For further information on the **Manipulate Bones** tool, refer to the *Anime Studio Debut Users Manual*.

## Step 4: Setting a Neutral Pose

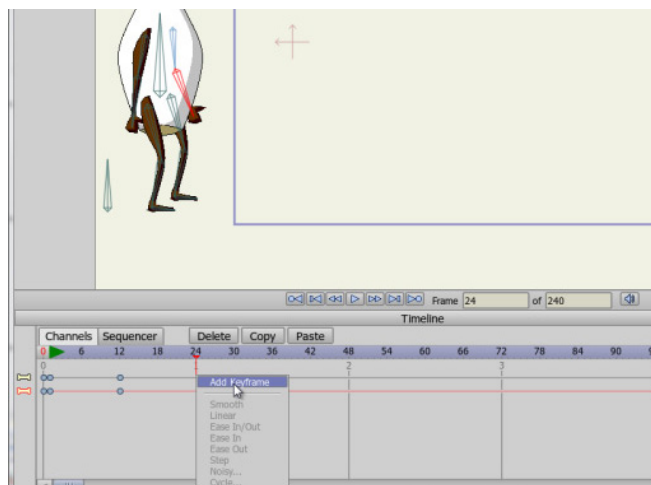


We'll start by adjusting the arms a little bit so that they are in a more neutral position for the walk cycle. Use the **Manipulate Bones** tool to reposition the arms (and the legs if you desire) to create a suitable neutral position (when both legs and arms are close together rather than extended).



## Step 5: Duplicating the Neutral Pose

Now move to **Frame 12** in the timeline. Right-click and choose **Add Keyframe** to set the same position at **Frame 12**. Repeat again at **Frame 24** to set the neutral position there as well.

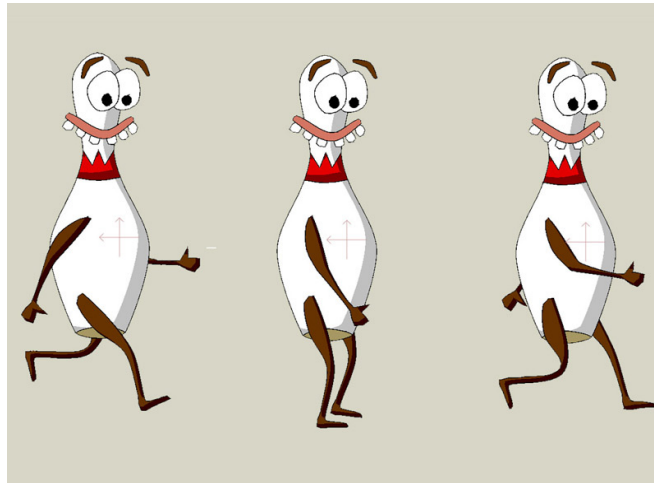


## Step 6:

### Review of Extended Poses



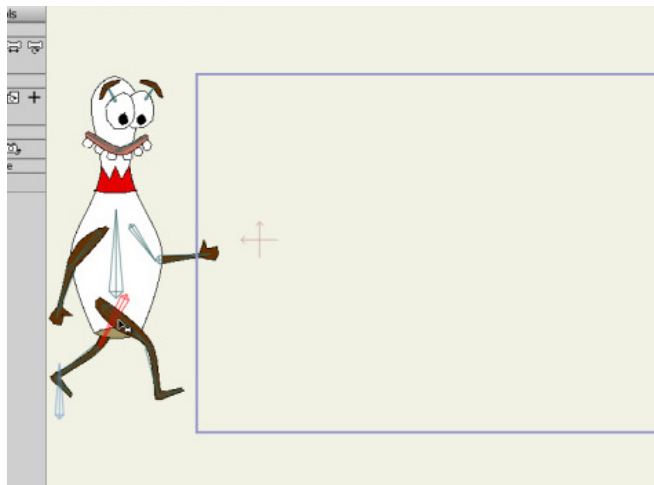
You'll extend the arms and legs at **Frames 6** and **18** in the timeline. At **Frame 6**, you'll extend one leg forward, and at **Frame 18** the opposite leg will extend forward. The arms will also be positioned appropriately to coincide with the leg positions.



## Step 7: Creating the First Extended Pose



Move to **Frame 6** in the timeline. Use the **Manipulate Bones** tool to move the front arm behind the character, and move the back arm forward.



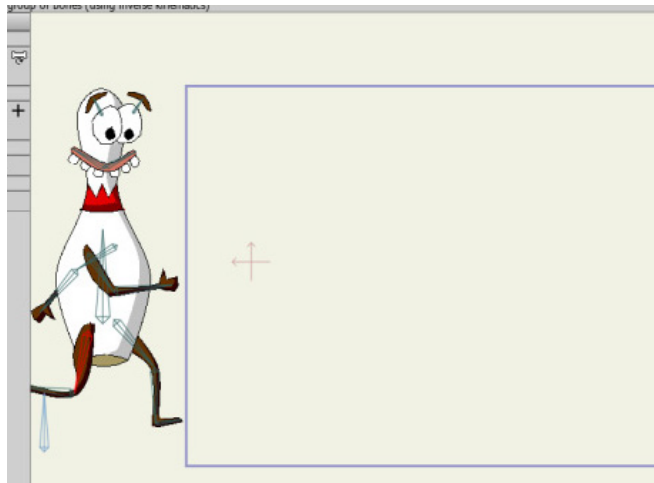
Remember that when you walk, your arms and legs usually move opposite each other. That is, when your left arm is forward, your right leg is forward. So, given the position of the arms, you'll need to move the front leg forward and the back leg backward. Tweak the position of the bones until you're satisfied with the pose.

## Step 8: Creating the Other Extended Pose



When you click **Frame 12** you'll notice that the character is back at the neutral position, because you set the keyframe earlier. Now, you can advance to **Frame 18** to create the opposite step in the walk cycle.

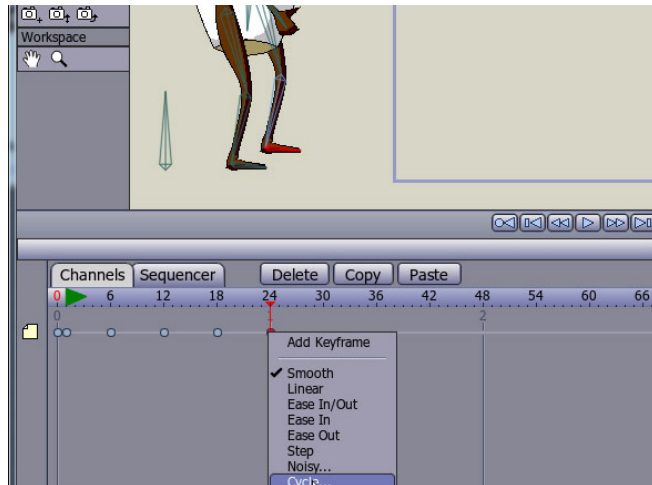
At **Frame 18**, move the front arm forward and the back arm toward the back of the character. Move the legs the opposite way, with the front leg toward the back of the character and the back leg toward the front of the character. Again, tweak the bones until you are satisfied with the positions, then save your project.



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## Step 9: Creating the Walk Cycle

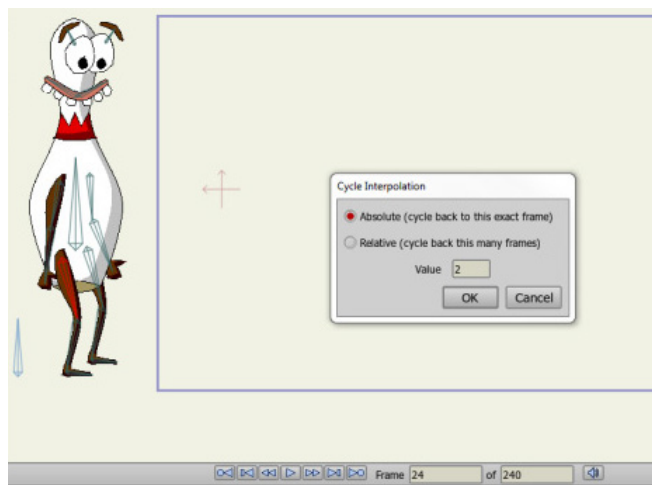
Fortunately, Anime Studio has a feature that eliminates the need to repeat this same cycle over and over again throughout your animation. You can instruct Anime Studio to use this simple four-frame animation as a cycle. To do so, make sure you are on the last frame of your cycle (**Frame 24** in this case). Then right-click in the **timeline** and choose **Cycle** from the menu that appears.



The **Cycle Interpolation** dialog appears. This allows you to create an **Absolute Cycle** (which cycles between a designated frame number and the currently selected frame) or a **Relative Cycle** (which cycles through a specified number of frames).

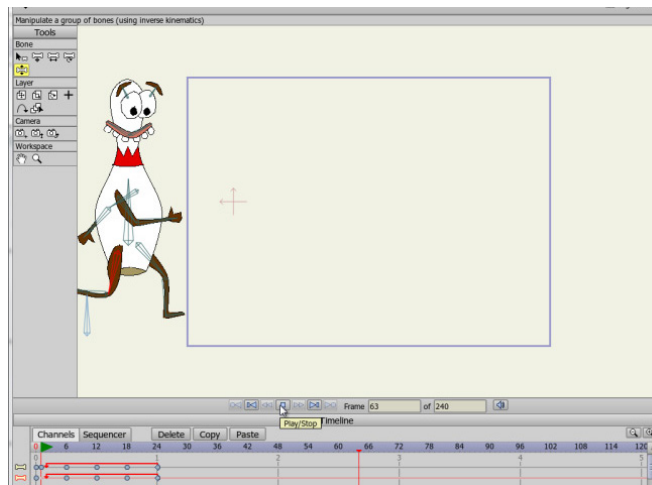
## Step 10: Creating the Walk Cycle (continued)

In this case, you want to choose **Absolute**. Because **Frame 1** and **Frame 24** are the exact same position, you don't want to duplicate the movement between those two frames, so you'll cycle back to **Frame 2** instead of **Frame 1**. This will create a smoother transition. Type the number **2** in the **Value** box on the **Cycle Interpolation** window and hit **OK** to continue.



## Step 11: Rewind and Play

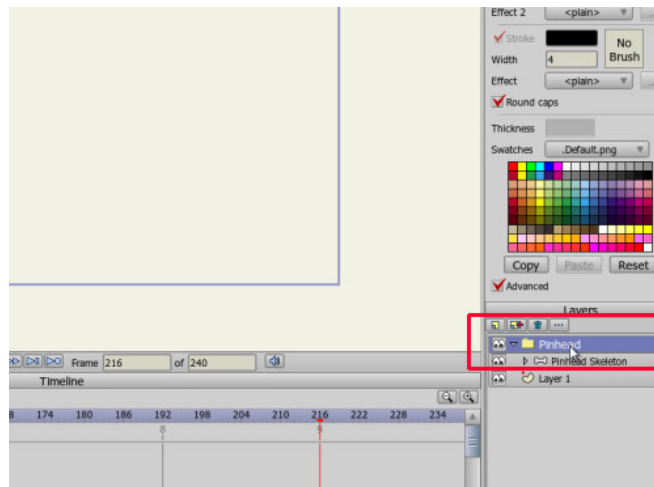
When you click the **Rewind** button and then click the **Play** button you'll notice that your character now walks in a continuous cycle. To stop the animation, click the **Stop** button in the animation player.



## Step 12: Moving the Character

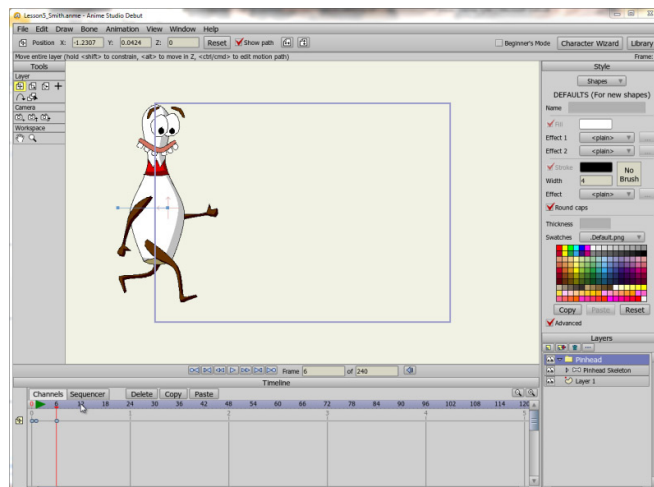


Now you'll move the character from the left side of the screen to the right. Make sure before you move the character that you have the **Pinhead** layer selected in the **Layers** window and not the **Pinhead Skeleton**, otherwise you'll end up moving the skeleton without the figure.



## Step 13: Moving the Character (continued)

Next, advance to **Frame 6** in the timeline. This positions the legs at the first step. Use the **Translate Layer** tool to move your character to the right, approximating where his foot will land when he takes the first step. To make sure that Pinhead walks in a straight line, hold down the **Shift** key when you move the character to the right.

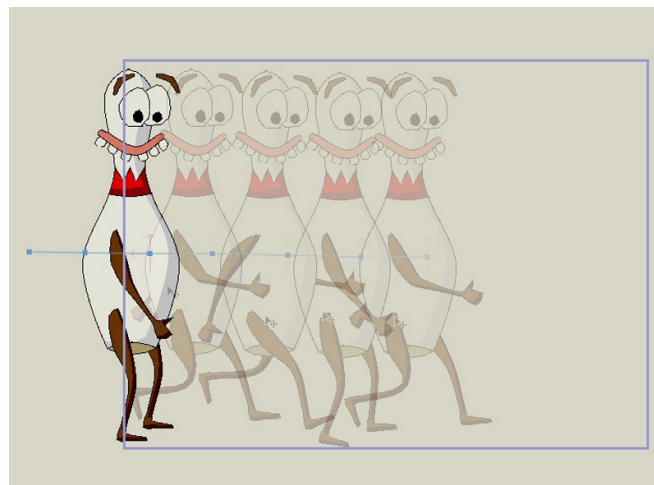


## Step 14: Moving the Character (continued)



Continue in this manner, advancing through about every 6th frame, moving your character forward at each step. If you want a slower walk, you can use every 12th frame instead, which would be about two steps per second at a 24 frame-per-second speed.

Please note, you can **delete** a Keyframe at anytime. To delete Keyframe 6, click the dot on the timeline at Frame 6 until it turns red. Then click **Delete** above the number line.



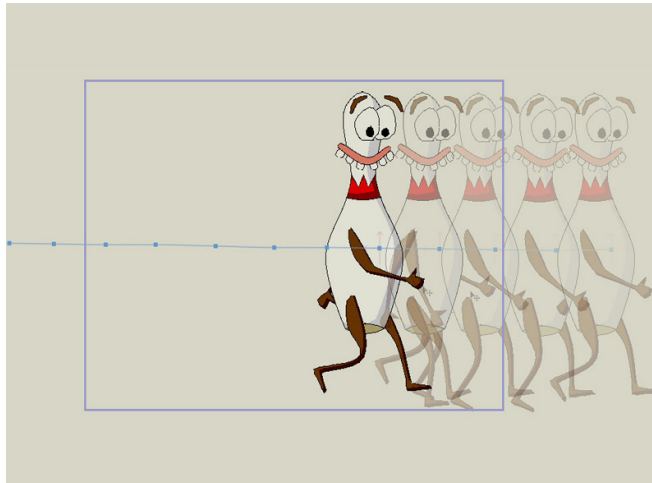
Twelve frames-per-second is the common speed used to animate a strut.

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## Step 15: Moving the Character (continued)



Continue moving the character through the scene until he walks completely off the stage. After your walk is complete, rewind the project and press the Play button to preview your walk. After you are satisfied, save your project and render the animation.



You can increase the spacing between the keyframes to make the walk slower or decrease the spacing to speed up the walk. Just remember to create the same number of frames between each keyframe to make the walk even.