



# Twweening

When it comes to producing smooth animations, the general rule-of-thumb is this:

**The more frames that you create per second, the smoother your animations will be.**

But creating frame-by-frame animations with a high frame rate can be a long and tedious process. So Animation Pro includes the ability to automatically create additional frames between the ones that you create, known as 'tweens'.

## TOPICS

### [How 'Twweening' Works](#)

### [Figure Settings](#)

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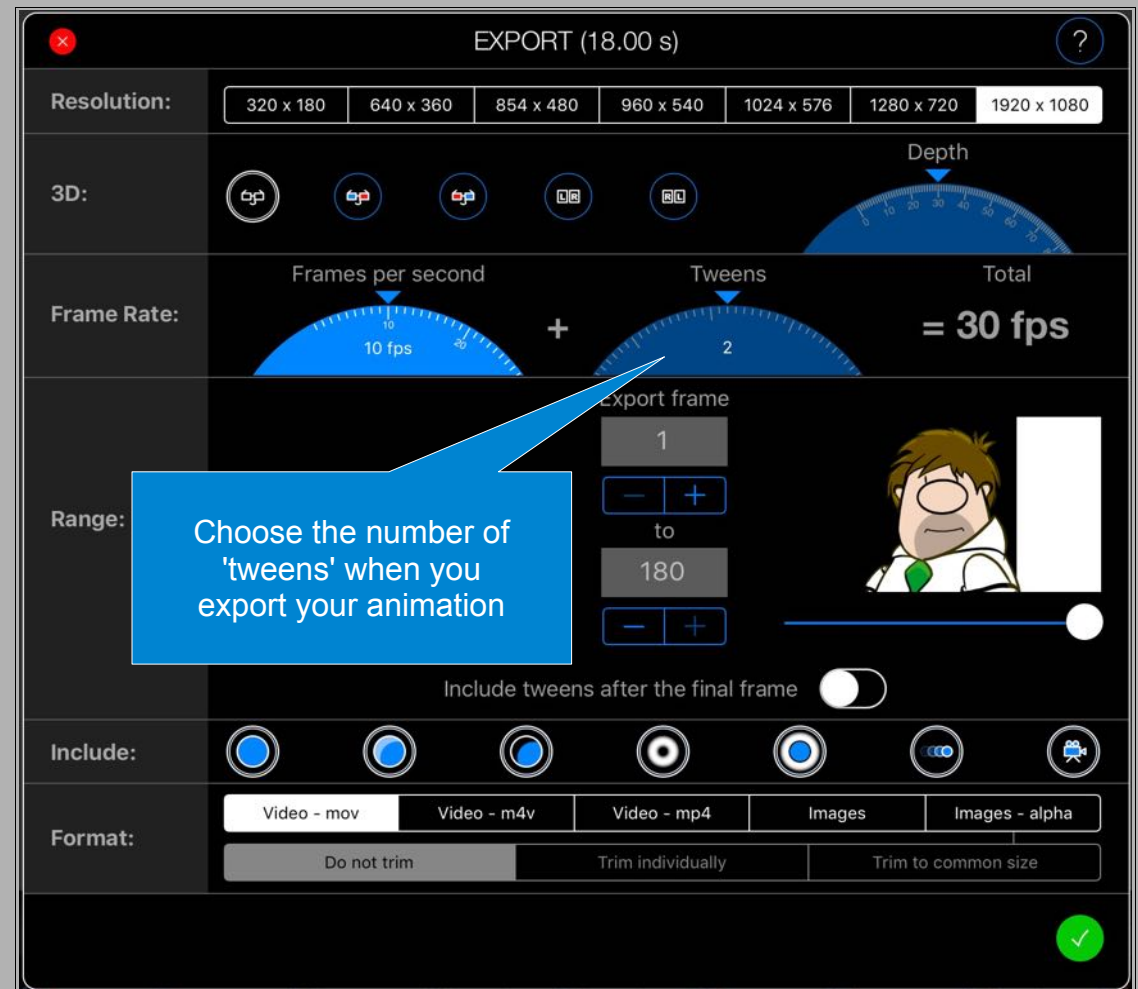
[Controlling the 'Twweening' of Item Adjustments](#)

### [Virtual Camera Settings](#)

### [User Tweens](#)

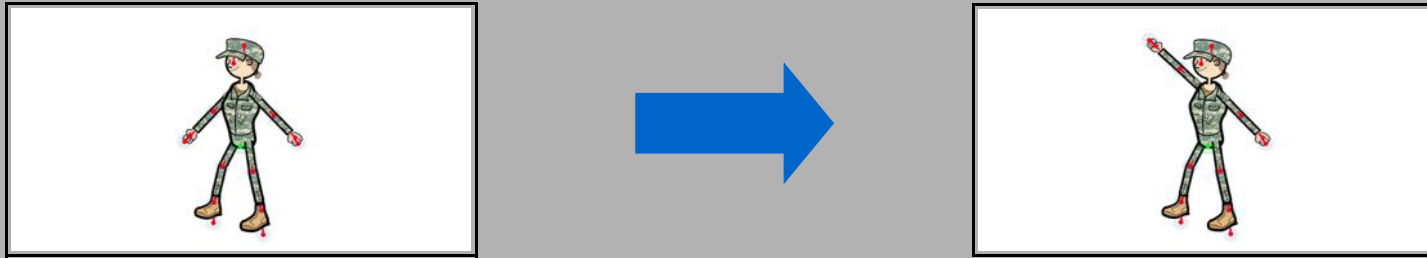
[Creating User Tweens](#)

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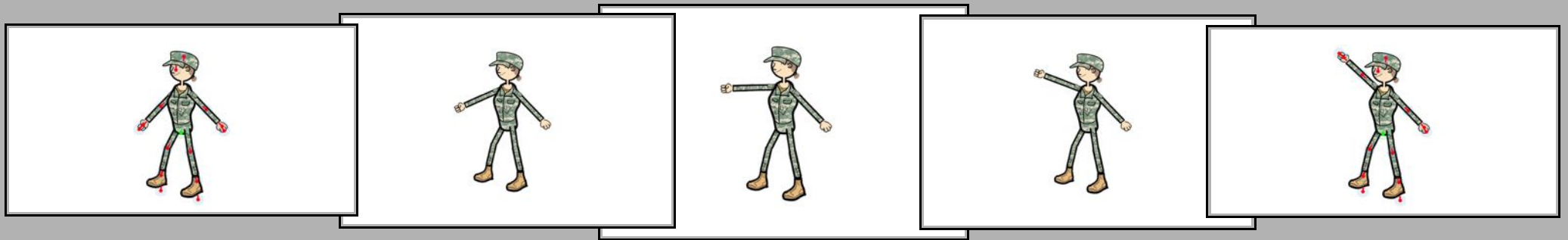


## How 'Tweening' Works

Consider an animation with only two frames, playing back at one frame per second:



The figure's arm will jerk abruptly upwards after 1 second of playback. By adding three 'tweens' however, this movement can be smoothed out:



In this example, the frame rate is effectively increased from 1 to 4 frames per second. The speed of the characters movements, however, will remain unchanged – they'll just look a whole lot smoother!

Now Animation Pro creates 'tweens' by calculating the difference between two of your frames. In the example on the last page, it determined the overall change to the position (rotation) of the figure's arm and calculated where that arm needed to be in each of the three 'tweens' it created. It is important to note that Animation Pro will always use the shortest path between such changes when calculating the intermediate positions. So if you rotate a figure's arm 270 degrees in a clock-wise direction, Animation Pro will assume that it actually moved 90 degrees in an anti-clockwise direction.

Just about anything you can animate in Animation Pro can be 'tweened' – figure transformations, camera settings, colours, effects etc. etc. The only real exceptions to the rule are:

- 1. Substitutions**
- 2. Item z-order adjustments**

and

- 3. Colour/tint blend settings**

Animation Pro cannot automatically calculate the intermediate values for those types of changes. It does, however, allow you to create '[User Tweens](#)' to get around the problem.

The good thing about 'tweens' is that you generally don't need to worry about them whilst animating. When you export your animations (see the 'Exporting' topic, left), you can simply choose the number of 'tweens' that you'd like Animation Pro to automatically produce. There are some situations, however, where you might like to take a little more control over which items are 'tweened'. You may, for example, actually want a figure to move abruptly. If that's the case then you'll be pleased to know that Animation Pro allows individual 'tween' settings to be turned on or off on a frame-by-frame basis, please see below...



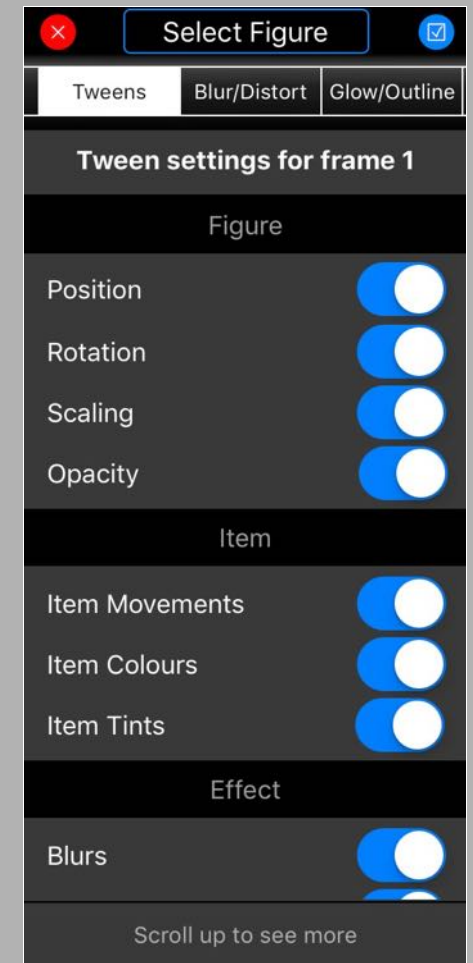
# Figure Settings

Animation Pro allows the 'tweening' of certain figure properties to be turned on and off within the Figure Inspector. For more information on how to access and use the Figure Inspector, please refer to the 'Figure Inspector' topic (left).

When 'tweening' is turned off for a given figure property on a given frame, no 'tweening' of that property will occur until the 'tweening' is turned back on again in a subsequent frame, regardless of the number of 'tweens' specified when exporting your animation.

It's also important to note that these settings are copied from one frame to the next whenever you add a new frame to your animation.

To make this easier to visualise, let's consider a series of simple animations with two frames. Let's also assume that we are going to export these animations with two 'tweens' between each frame. The following pages show the effects of turning each of the 'tweening' properties off and on in frame one.



Frame 1

TWEENS

Frame 2

Tween Position OFF



Tween Position ON



Tween Rotation OFF



Tween Rotation ON





Frame 1

TWEENS

Frame 2

Tween Scaling OFF



Tween Scaling ON



Tween Opacity OFF



Tween Opacity ON

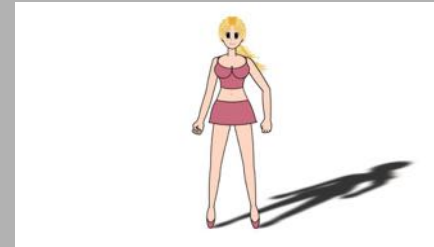


Frame 1

TWEENS

Frame 2

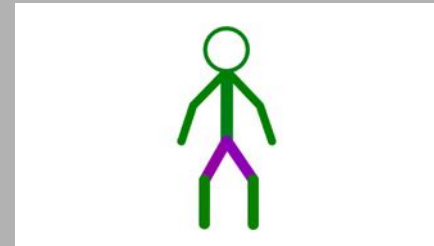
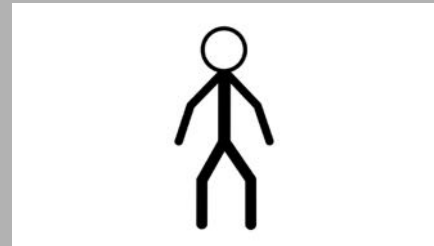
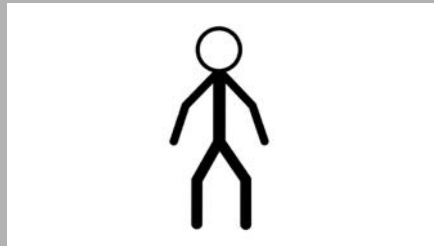
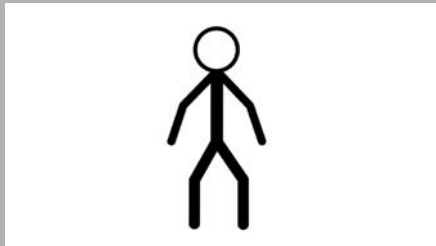
Tween Item Movements  
OFF



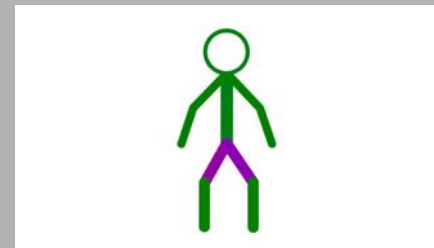
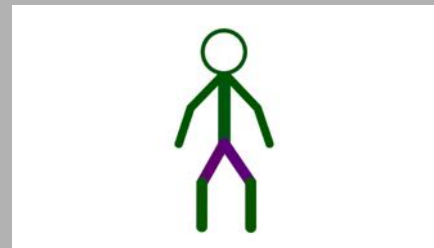
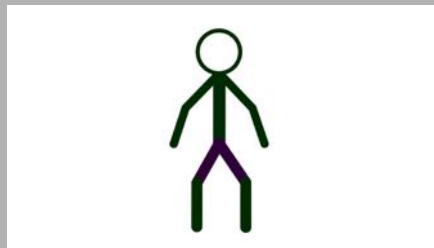
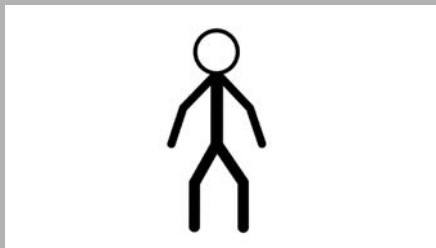
Tween Item Movements  
ON



Tween Item Colours OFF



Tween Items Colours ON

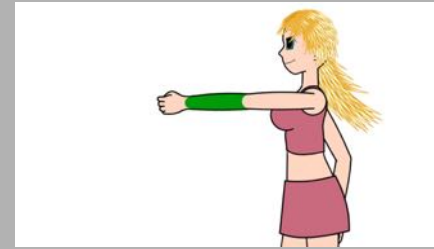
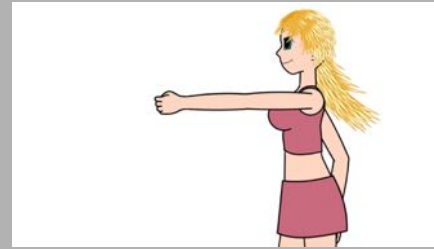
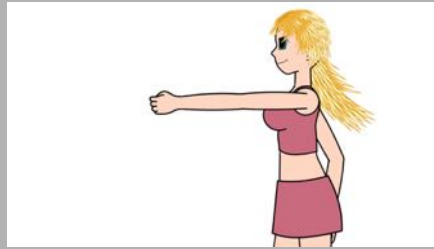
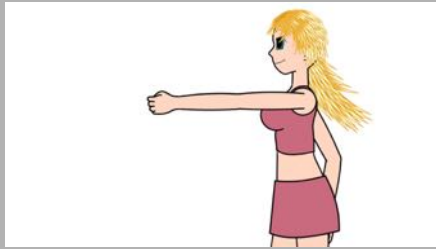


Frame 1

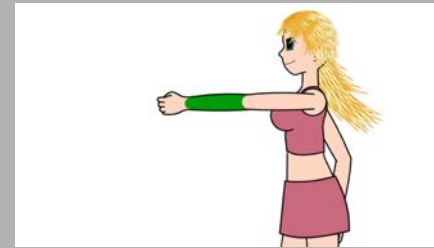
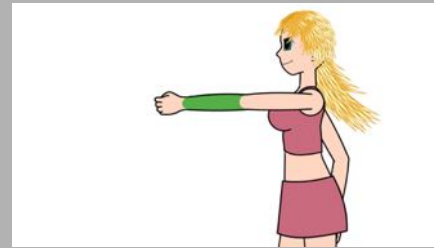
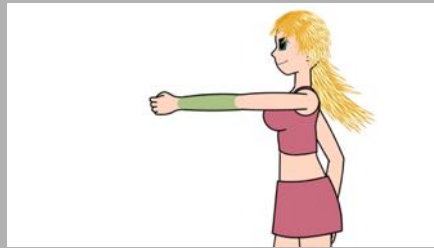
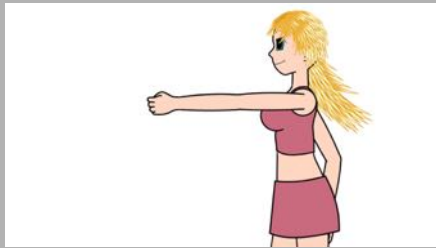
TWEENS

Frame 2

Tween Item Tint OFF



Tween Item Tint ON



Tween Blur OFF



Tween Blur ON





## Frame 1

## TWEENS

## Frame 2

## Tween Distortions OFF



## Tween Distortions ON



## Tween Shearing OFF



## Tween Shearing ON



Frame 1

TWEENS

Frame 2

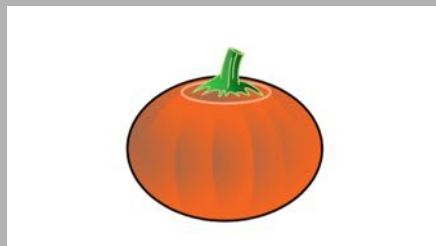
Tween X/Y Scaling OFF



Tween X/Y Scaling ON



Tween Accent/Highlight OFF



Tween Accent/Highlight ON





# Item Settings

The items within Animation Pro figures can be moved or adjusted. The 'tweening' of these movements or adjustments may thus be controlled as shown below.

When 'tweening' is turned off for a given item property on a given frame, no 'tweening' of that property will occur until the 'tweening' is turned back on again in a subsequent frame, regardless of the number of 'tweens' specified when exporting your animation.

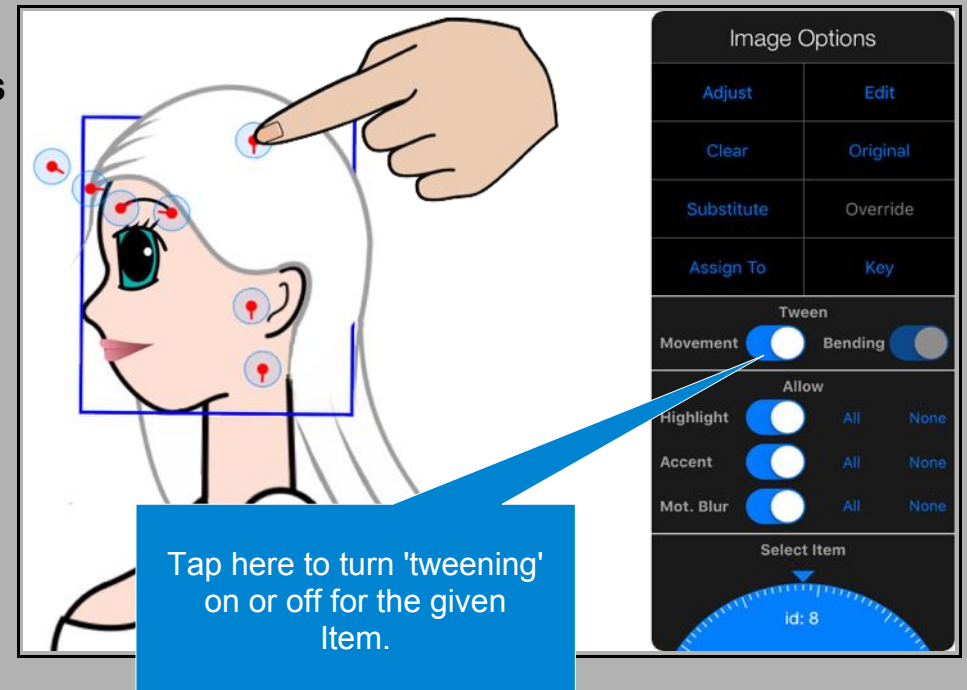
It's also important to note that these settings are copied from one frame to the next whenever you add a new frame to your animation.

## Controlling the 'Tweening' of Individual Item Movements




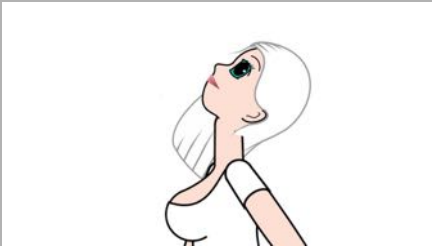



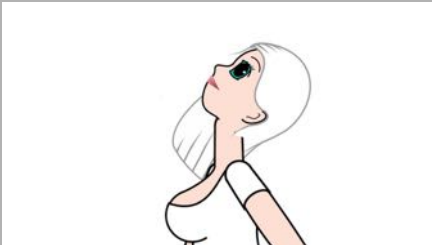
1. **Tap on the item's handle** 

The 'Item' popover will be displayed (as shown, right)

2. **Tap the 'Tween Movement' switch to turn the setting on or off**



The following table shows the effects of turning the 'Tween Movement' switch off and on, for a figure's head, in frame one of an animation with two 'twens':

	Frame 1	TWEENS		Frame 2
Tween Movements OFF				
Tween Movements ON*				

\* Turning 'Tween Item Movements' **OFF** at a figure level (see 'Figure Settings, above) will override this setting.

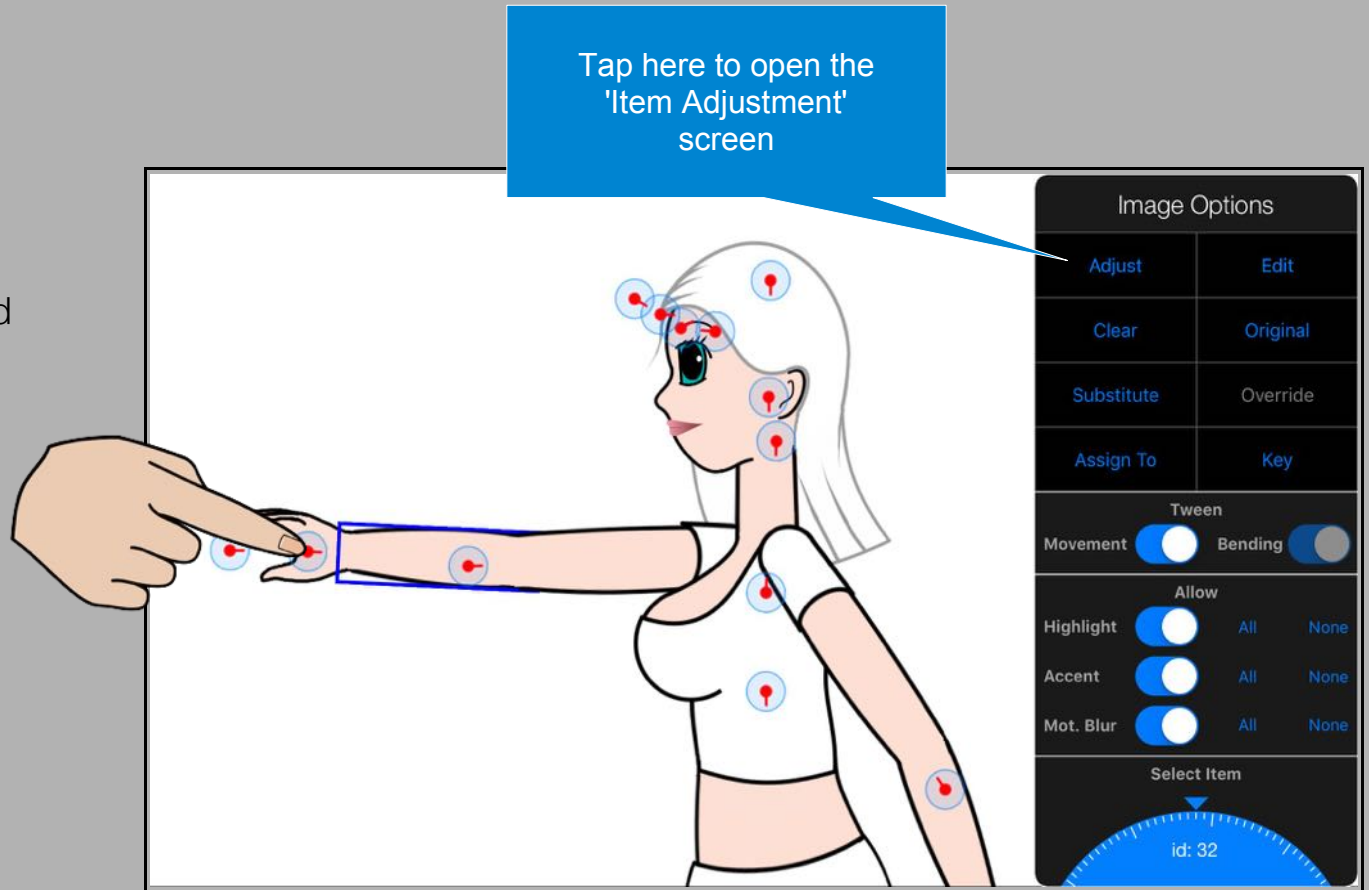


## Controlling the 'Tweening' of Item Adjustments

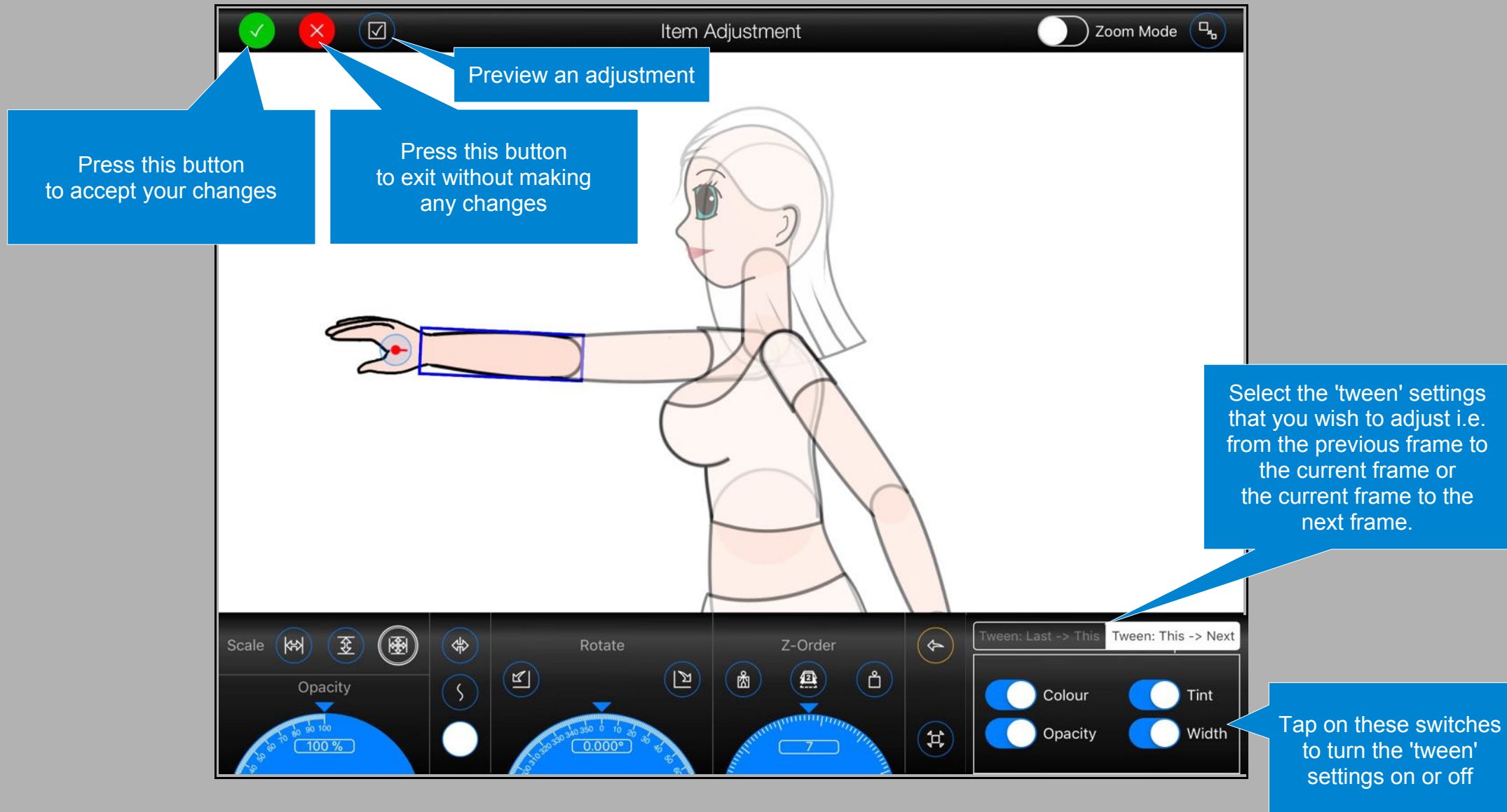
### 2. Tap on the item's handle

The 'Item' popover will be displayed (as shown, right)

### 2. Tap the 'Adjust' button

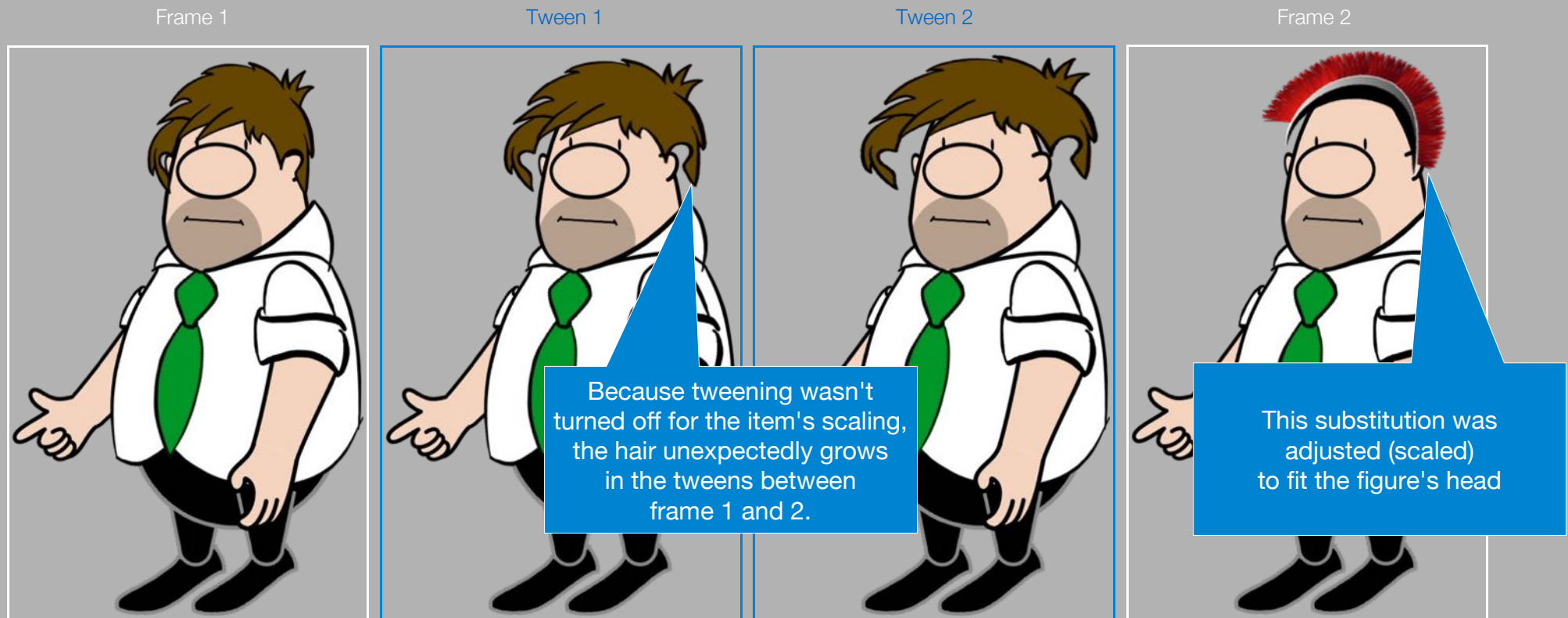


3. Tap the switches (bottom-right) to turn the various 'tween' settings on or off.



4. Press the  button to accept your changes.

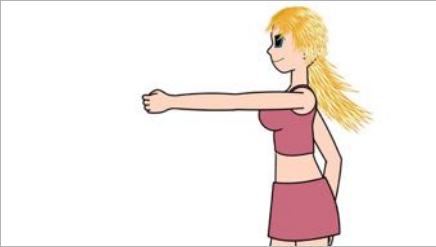
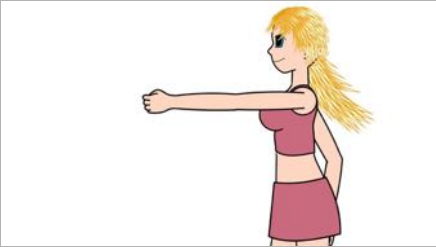
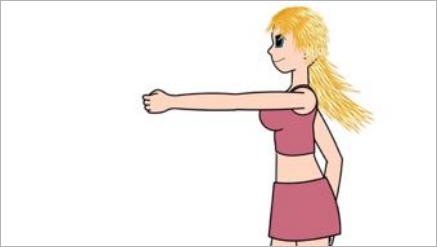
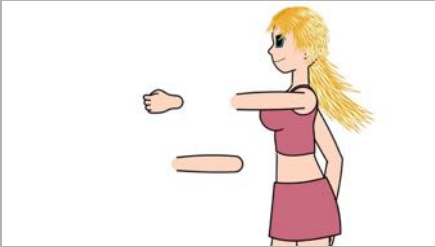
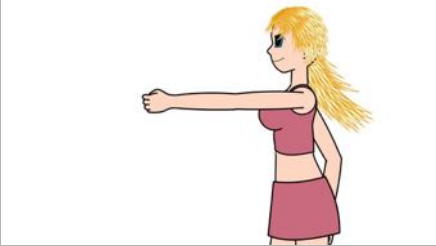
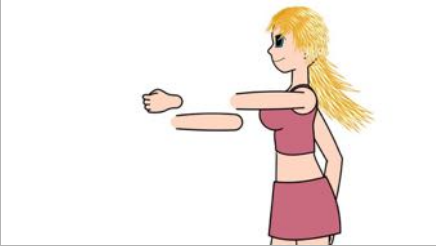
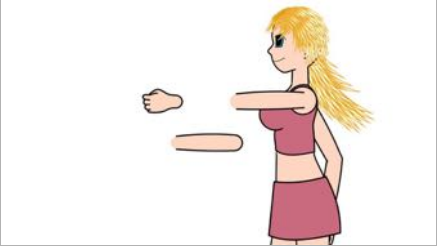
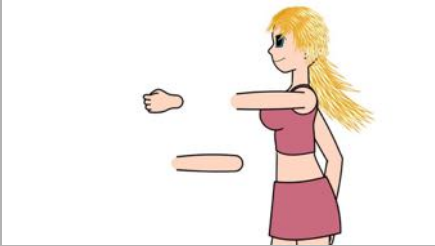
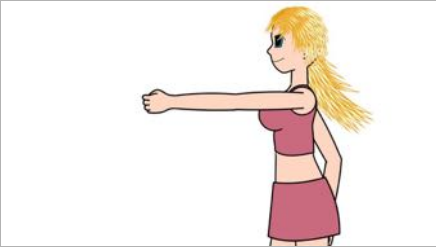
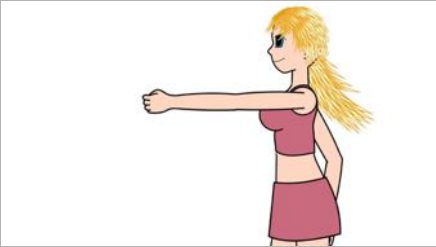
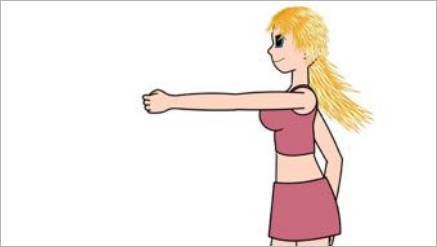
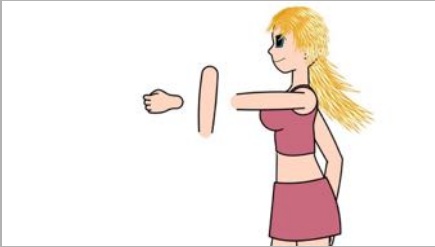
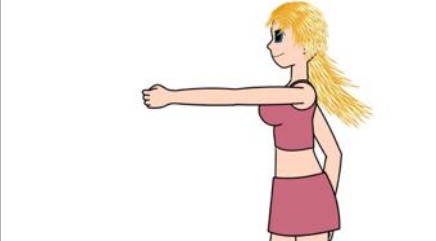
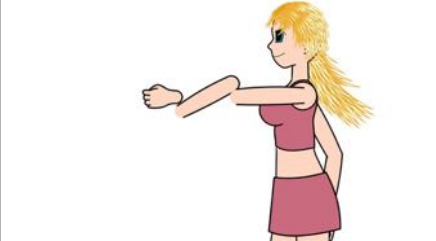
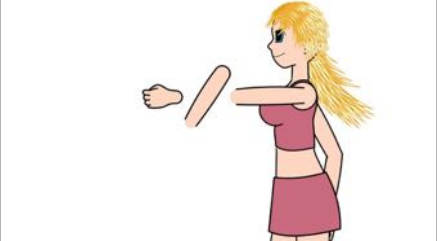
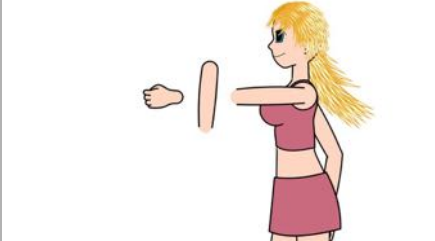
Generally speaking, Animation Pro's tween settings will apply to any tweens inserted between the currently selected frame and the next frame in your project. Often, however, item adjustments need to be made to address alignment etc. issues caused by item substitutions. In these cases, it is often necessary to turn off tweening both before and after the current frame to prevent unexpected transitions, as shown below:



The tween settings (at the bottom-right corner of the Item Adjustment screen) thus allow you to specify which tween settings you wish to adjust i.e. 'Tween: Last -> This' (the previous to the current frame) and/or 'Tween: This -> Next' (the current frame to the next frame).

**Furthermore, Animation Pro will automatically detect whether item adjustments are being made following a substitution and will display a prompt, asking if you would like the tween settings to be adjusted automatically.**

The following table shows the effects of turning the various 'Item Adjustment' switches off and on, for a figure's arm, in frame one of an animation with two 'tweens':

	Frame 1	TWEENS		Frame 2
Tween Offset OFF				
Tween Offset ON				
Tween Rotation OFF				
Tween Rotation ON				

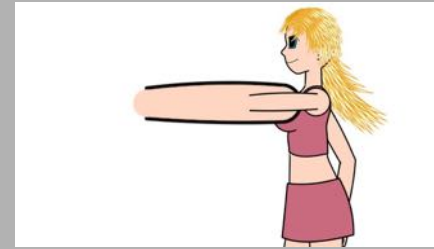
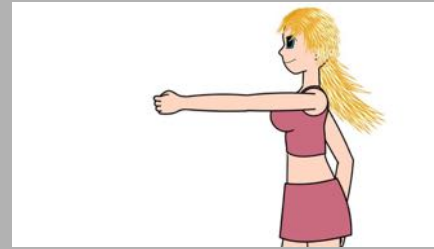
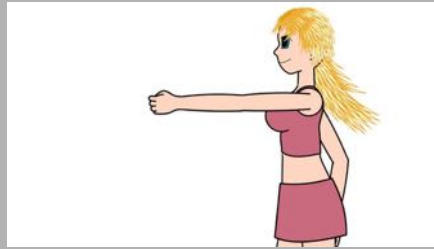
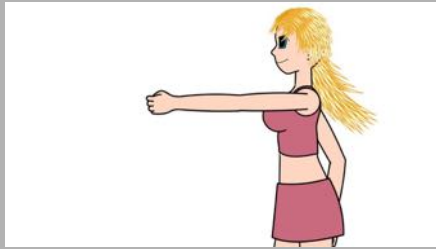


Frame 1

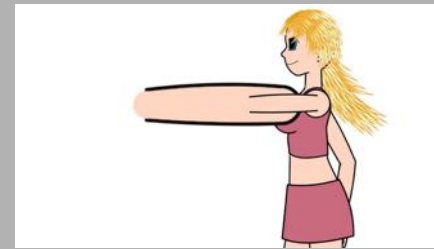
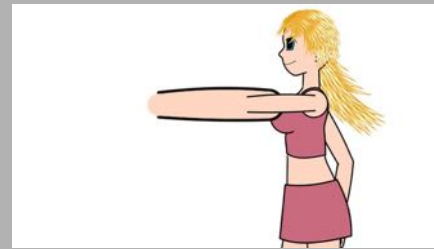
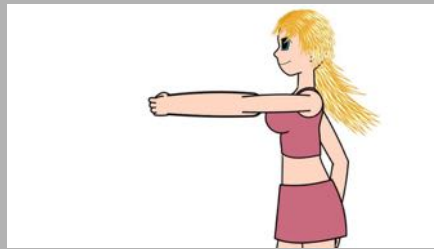
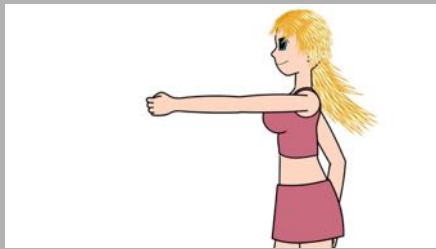
TWEENS

Frame 2

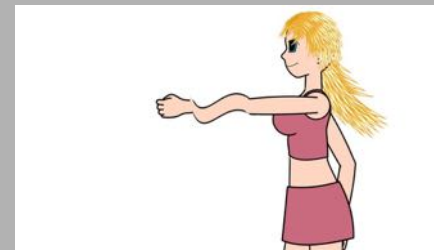
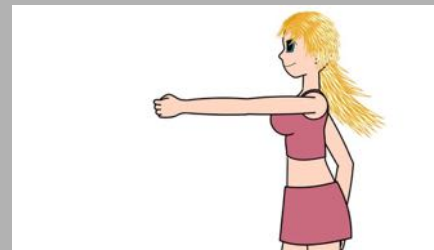
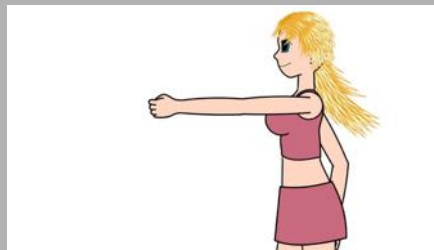
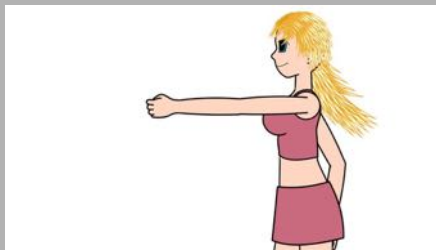
Tween Scaling OFF



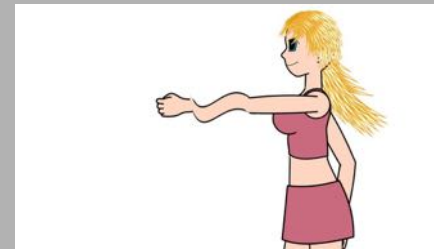
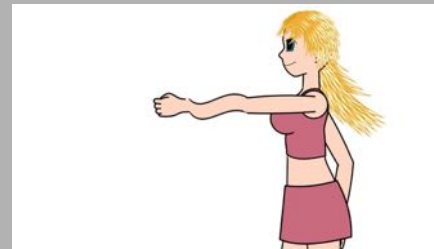
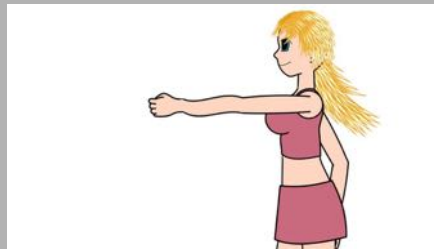
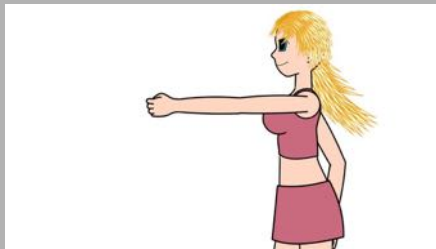
Tween Scaling ON



Tween Bending OFF



Tween Bending ON

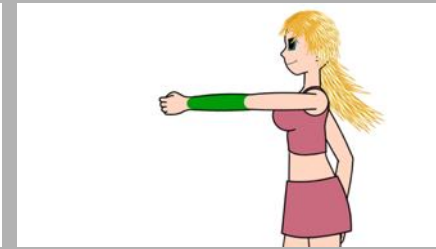
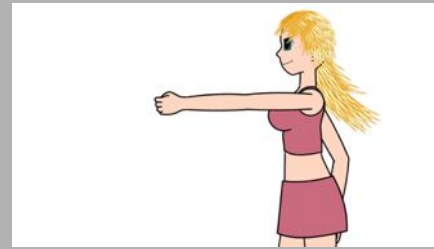
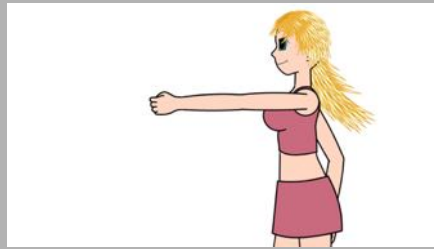
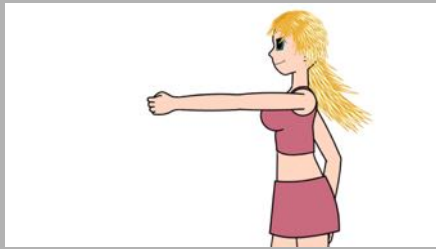


Frame 1

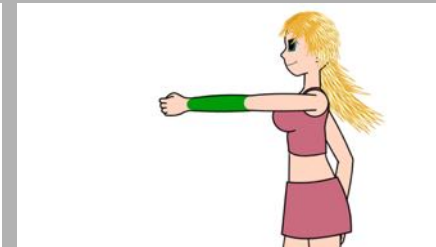
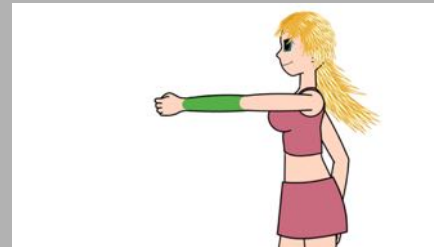
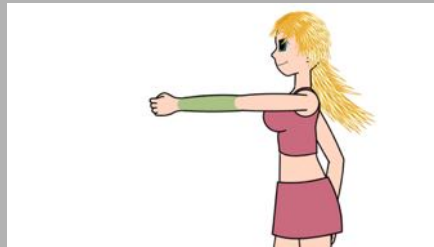
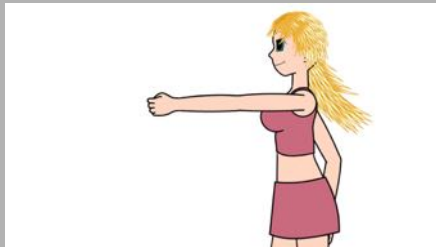
TWEENS

Frame 2

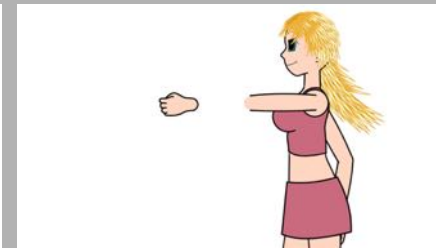
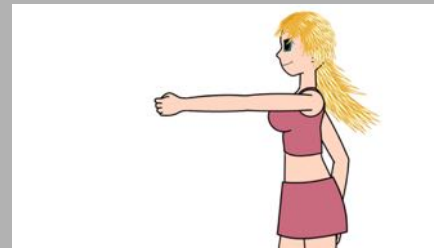
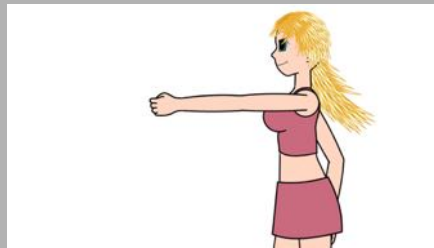
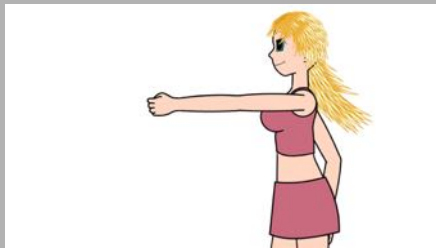
Tween Tint OFF



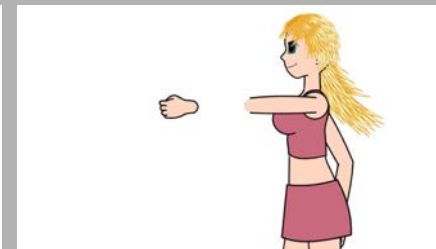
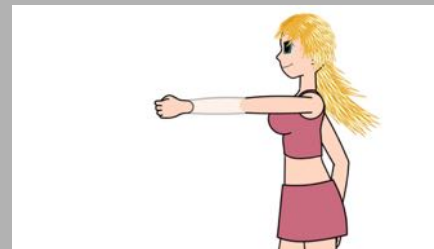
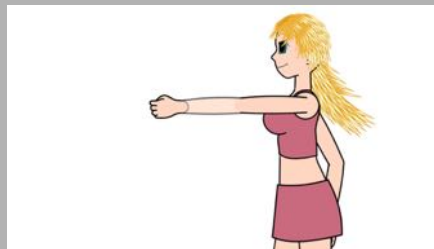
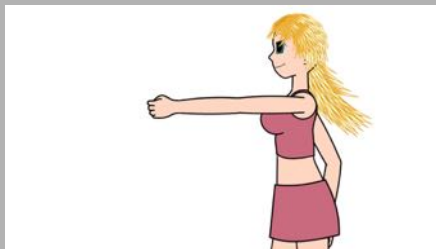
Tween Tint ON\*



Tween Opacity OFF



Tween Opacity ON



\* Turning 'Tween Item Tints' **OFF** at a figure level (see 'Figure Settings, above) will override this setting.



# Virtual Camera Settings

The virtual camera movement, rotation, zoom and depth of field can be animated. The 'tweening' of these properties may thus be controlled as shown below.

When 'tweening' is turned off for a given virtual camera property on a given frame, no 'tweening' of that property will occur until the 'tweening' is turned back on again in a subsequent frame, regardless of the number of 'tweens' specified when exporting your animation.

It's also important to note that these settings are copied from one frame to the next whenever you add a new frame to your animation.

## Controlling the 'Tweening' of the Virtual Camera

### 1. Tap on the button

The 'Camera Adjustment' screen will be displayed (see below)



















2. Tap the switches (bottom-right) to turn the various 'tween' settings on or off.



3. Press the  button to accept your changes.



The following table shows the effects of turning the various 'Camera Adjustment' switches off and on in frame one of an animation with two 'tweens':

	Frame 1	TWEENS		Frame 2
Tween Movement OFF				
Tween Movement ON				
Tween Rotation OFF				
Tween Rotation ON				

Frame 1

TWEENS

Frame 2

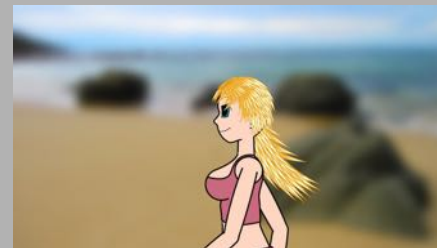
Tween Zoom OFF



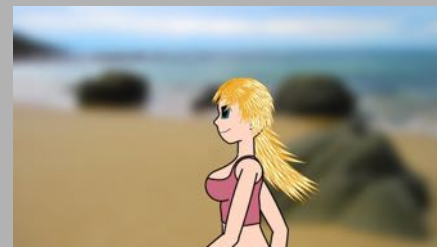
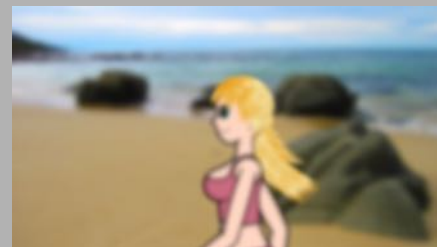
Tween Zoom ON



Tween Depth of Field OFF



Tween Depth of Field ON





# User Tweens

Consider what would happen if Animation Pro automatically 'tweened' from Figure A to (substituted) Figure B below:

Figure A



Tween



Tween



Figure B



In most cases, as shown above, the results would be less than desirable. So Animation Pro does not attempt to 'tween' across figure substitutions. The down side of this is that your figures may appear to 'pause' briefly across the substitutions when 'tweening' is turned on:

Figure A



Tween



Tween



Figure B






In this situation (see last page, above) it may be desirable to take control and create your own 'tweens', known as 'user tweens'. With 'user tweens' you can create your own intermediate frames. This allows you to specify exactly what should occur between any two frames in your animation.

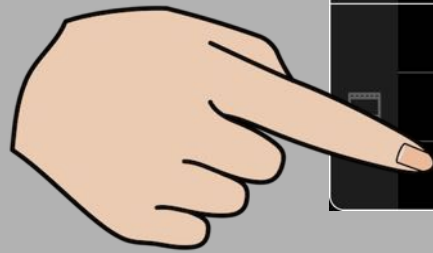
## Creating User Tweens

To create 'user tweens' between the currently selected animation frame and the next:

1. Tap the  button at the top of the screen

The 'Add' popover will be displayed (as shown, right)

2. Select 'User Tweens to Frame *n*'



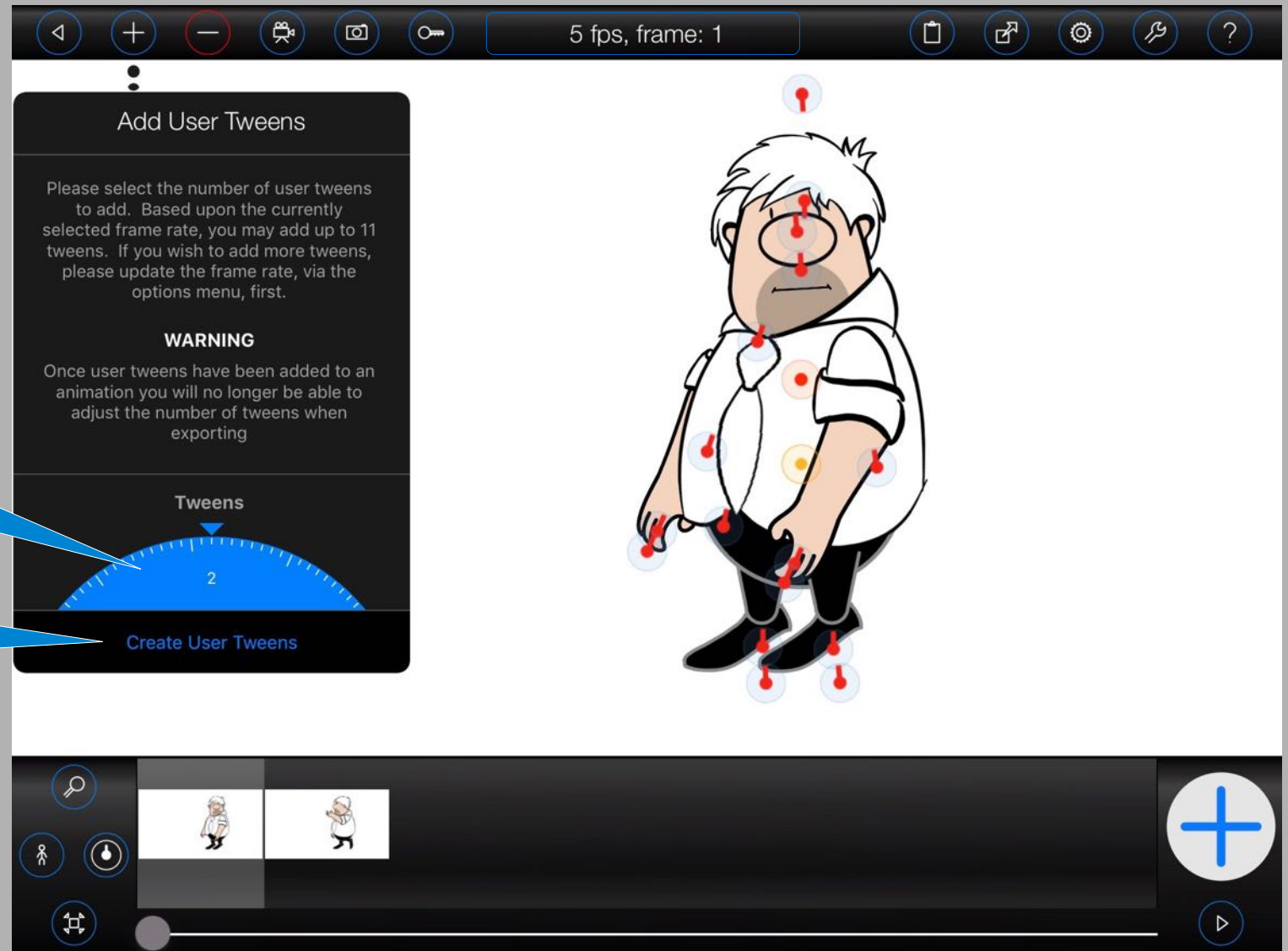
If no 'user tweens' currently exist in your animation, Animation Pro will ask you to specify the number of 'user tweens' that you'd like to add:

### Please note:

Once 'user tweens' have been added to an animation, it will be no longer possible to change the number of 'tweens' when exporting your animation.

Choose the number of 'user tweens' that you'd like to add

Press this button to create the 'user tweens'

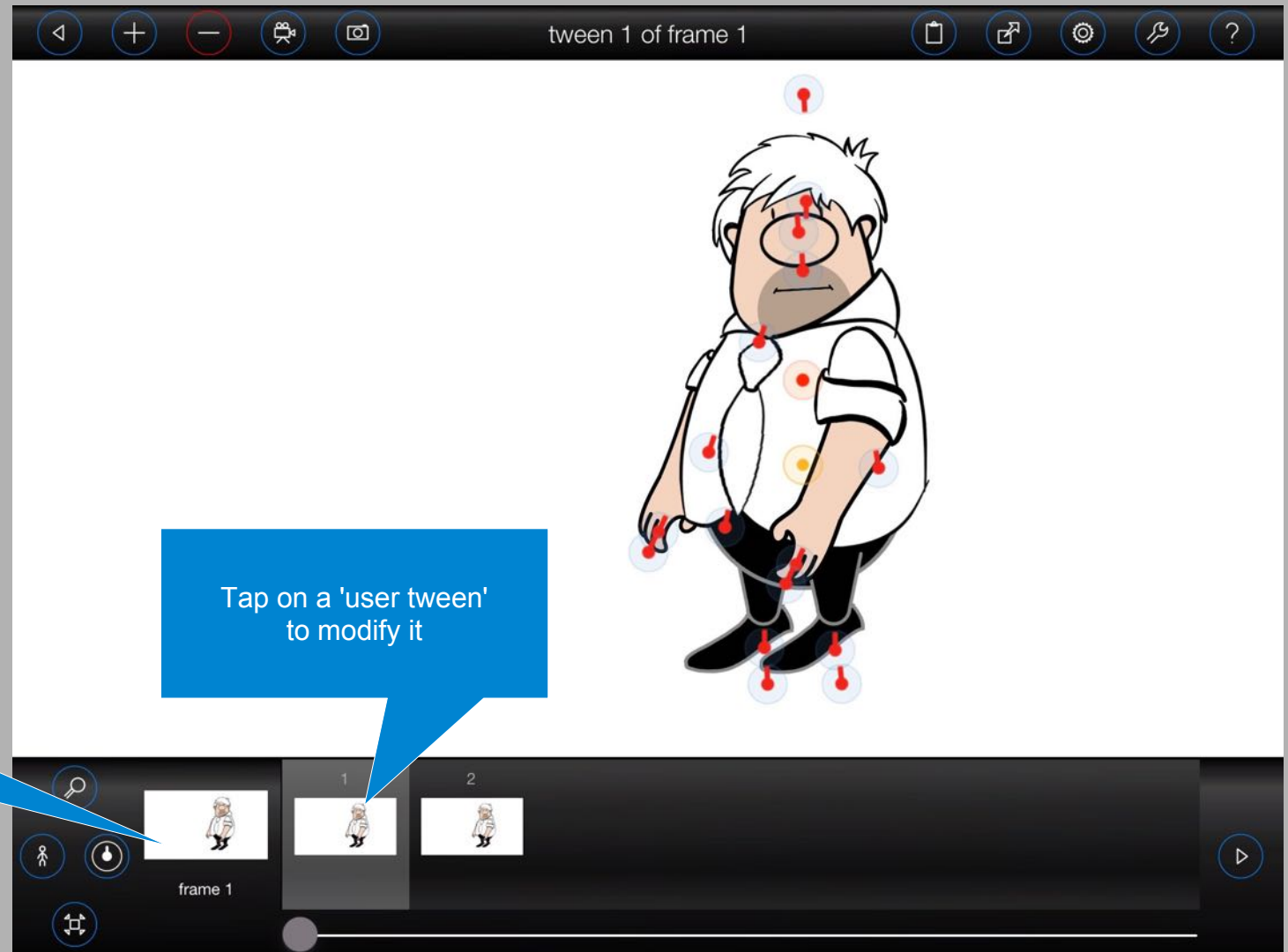





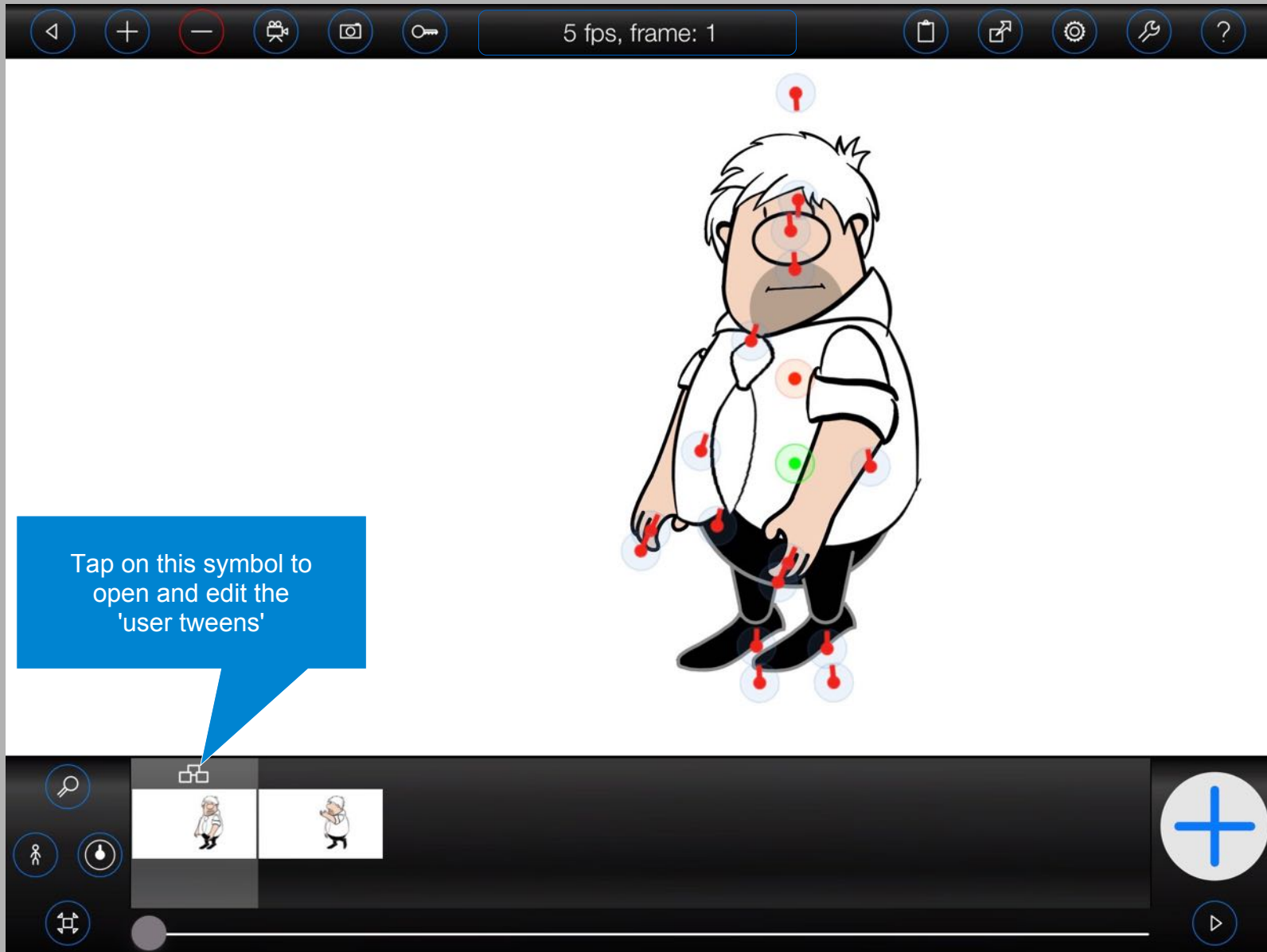
Animation Pro will generate the 'user tweens' for you and display them on the filmstrip at the bottom of the screen. You may edit the 'user tweens' just like any other frames in your animation, with the following limitations:

- **Audio may not be added to 'user tweens'**
- **Additional 'user tweens' may not be added**
- **Individual 'user tweens' may not be deleted**

Once you're done editing the 'user tweens' tap on the image of the parent frame (as shown below) to close the 'user tweens' and resume editing of the main frames.




Once 'user tweens' have been added to a given frame, a  symbol will appear above that frame on the filmstrip. Tap on the symbol to open and edit the 'user tweens':



## Removing User Tweens

To remove 'user tweens' from a given frame:

1. **Select the frame that has the 'user tweens'**
2. **Tap the  button at the top of the screen**

The 'Remove' popover will be displayed (as shown, right)

3. **Select 'User Tweens from Frame  $n$ '**

### Please note:

Once all 'user tweens' have been removed from an animation, the number of 'tweens' will no longer be locked i.e. it will, once again, be possible to change the number of 'tweens' when exporting your animation.

