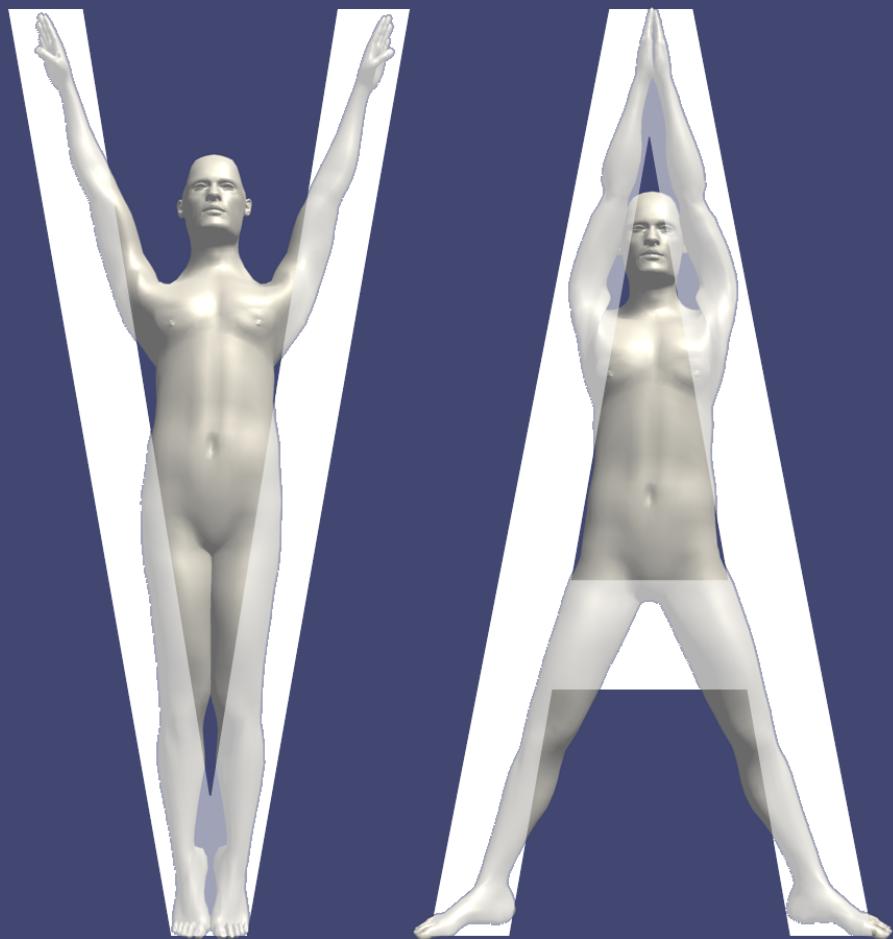


# Very Animation



***Version 1.1.2***

## Introduction

Thank you for purchasing "Very Animation".

This asset is an editor extension for editing animation.

It is characterized by direct editing of animation of Mecanim Humanoid which is usually difficult to edit with Unity.

It corresponds to the operation of GameObject with Animator or Animation component.

That is, it corresponds to 'Union's Animation Type' Humanoid '' Generic 'and' Legacy '.

In order to directly edit animation data, knowledge of Unity's Animation is necessary.

We especially recommend you check the documentation of Unity's Animation Window curve and key frame operation.

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## Quick Start

Import the asset from the asset store.

Open the Main window from Window/Very Animation/Main.

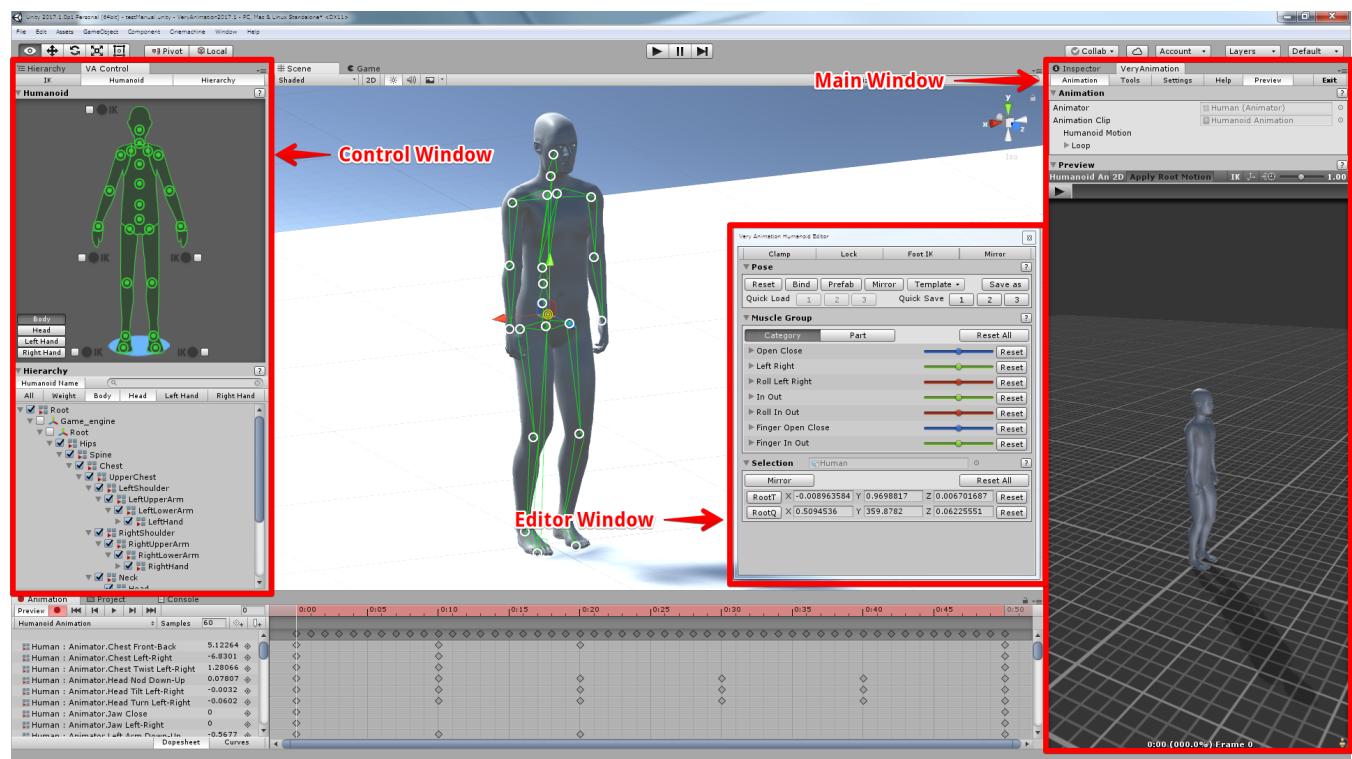
It is necessary to open the Animation Window of Unity.

Select the GameObject that contains the Animator component you want to edit.

Animation currently selected in the Animation Window will be edited.

Select 'Edit Animation' to start edit mode.

When entering edit mode, two windows of Control window and Editor window are added in addition to the first Main window.



Edit animation by operating three windows and Unity's Animation Window.

## Video

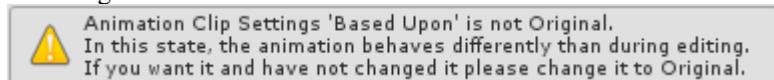
### Quick Start

## Create a new animation

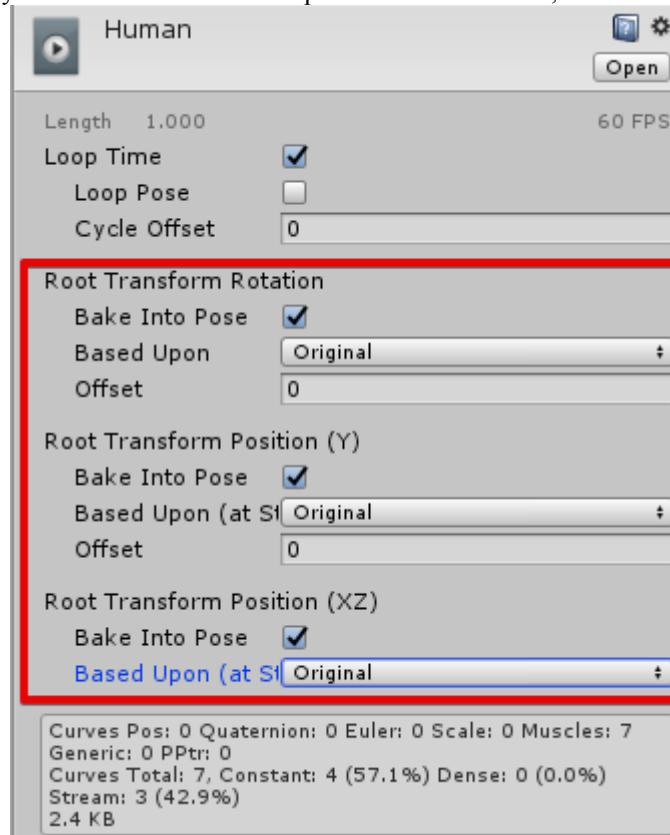
Create Animation and register it in Animation Controller.  
Select the added Animation in the Animation Window and start editing.

# Caution

Please pay attention to this warning.



If you actually use the created AnimationClip and the position and rotation are different, please check the following settings. Because the default Base Upon setting is not Original, it may be the cause. Also, if you do not use RootMotion, enable Bake Into Pose. As an example, this setting is the same as when editing the image below. Since this setting is not displayed unless the AnimationClip has Root information, it will be set after animation editing.



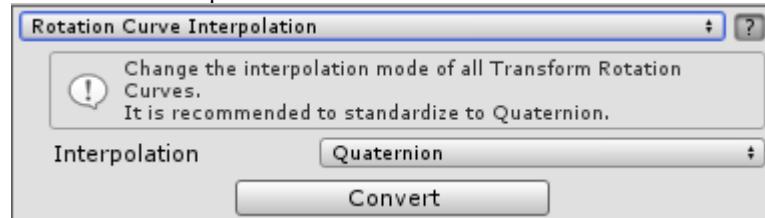
## Video

[Quick Start](#)

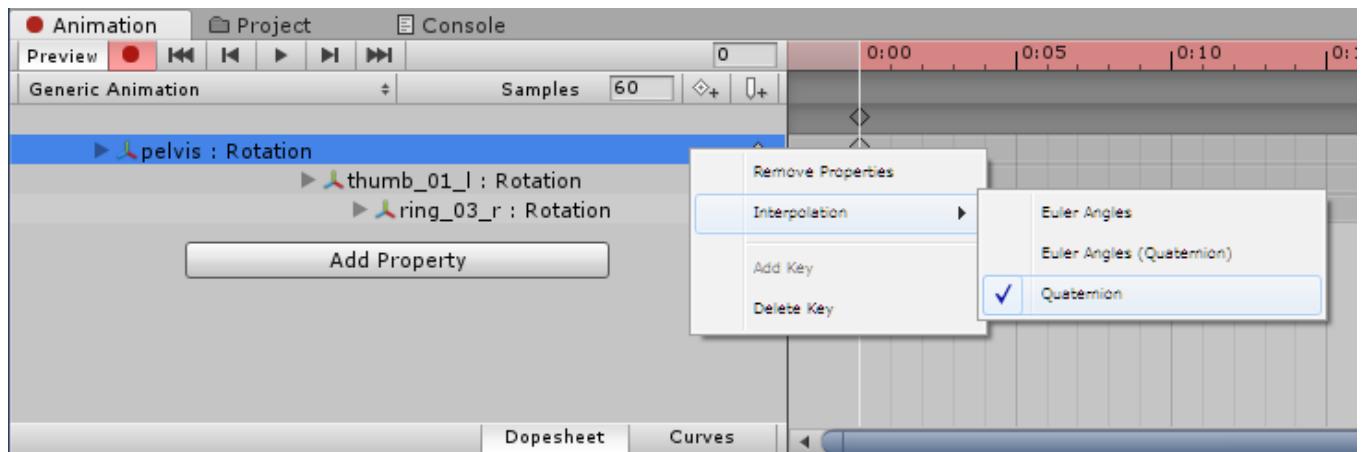
[Animation Clip Settings](#)

## Editing animations created with Unity or other assets

We recommend that you unify the rotation interpolation first only once before starting editing.  
This is done from Tools/Rotation Curve Interpolation.



Change the interpolation method of Transform Rotation Curve all at once.



This is the setting above.

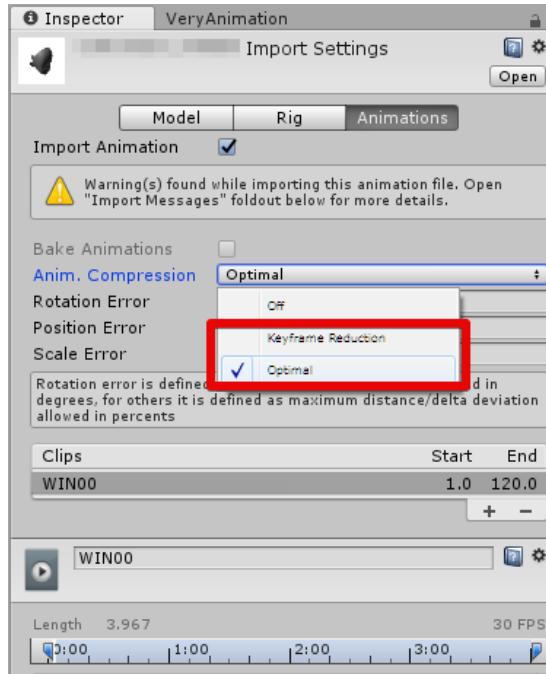
Since animation created with other assets or Unity may be other than Quaternion, we recommend that you run once and unify it to Quaternion.

## Video

[Edit created animation](#)

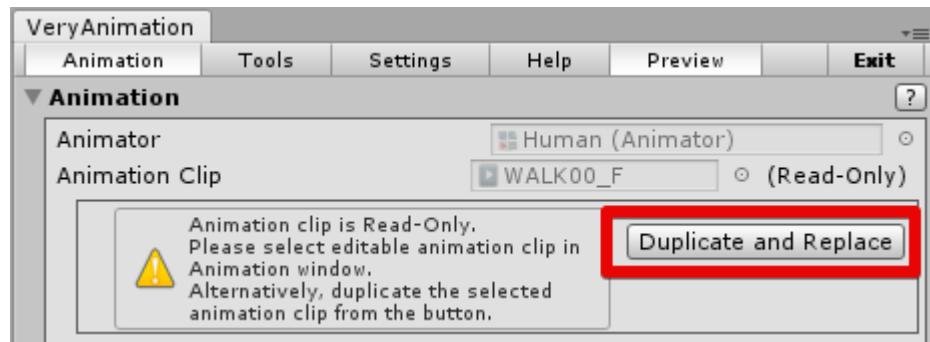
## Edit external source animation

Since animation included in FBX etc. is read only, duplicate it and edit it as another animation.



It is recommended to reduce keyframes with the above settings before duplicating.

This is because fewer keyframes are faster and easier to edit.



A warning will appear when you start editing. Replace duplicates and references from buttons.

This process also unnecessary deletion of curves and unification of rotation interpolation are performed.

## Video

[Edit external source animation](#)

[Root Correction](#)

## Save data



When you finish editing, the VeryAnimationSaveSettings component is added to the GameObject with Animator. This is the saved data of the setting being edited.

If you do not need it you can disable it from Settings. However, the setting is reset each time.

You can also delete all VeryAnimationSaveSettings in the project in the Tools Window.

Information does not almost remain in the build.

## Window

### Main Window

Switch the displayed content with the above tool bar.



### Animation

Information currently being edited is displayed.

### Tools

Run the editing tool. Details are described below.

### Settings

It is operation setting.

### Help

Help for shortcut keys and so on.

### Preview

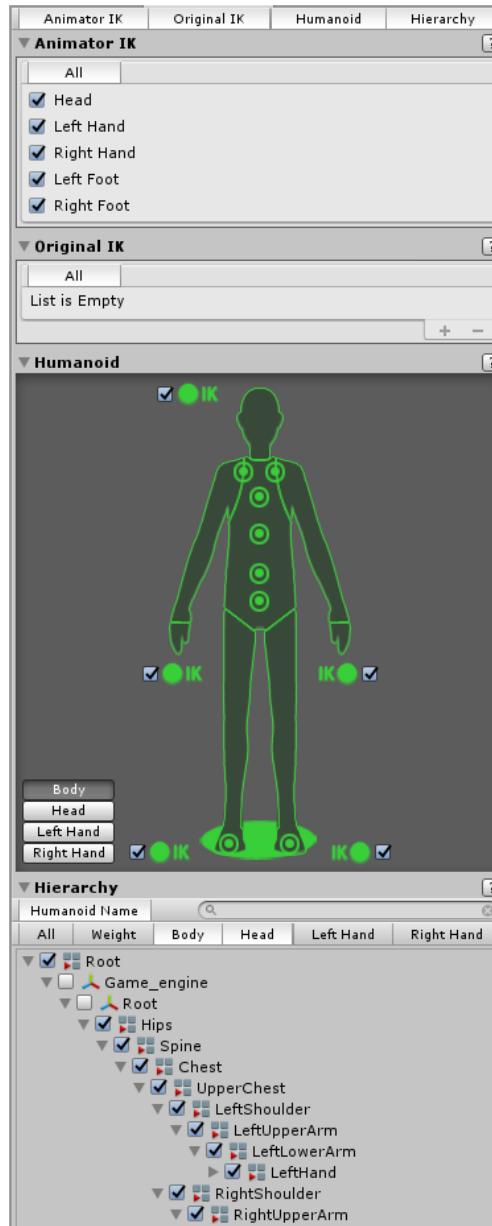
A preview of the current animation will be displayed.

### Exit

Exit editing.

## Control Window

Switch the displayed content with the above tool bar.



### ***Animator IK (Only Humanoid)***

Animator IK switching and setting.

### ***Original IK***

Original IK switching and setting.

### ***Humanoid (Only Humanoid)***

Select Bone or switch IK.

## ***Selection***

You can save the selected state of the bone with a name.

Change lists such as addition and deletion Switch Popup according to the purpose only to use and list.

## ***Hierarchy***

Display hierarchical structure.

You can switch the display of each bone.

## Editor Window



## Options

Clamp (Only Humanoid)	We limit the value of Muscle to the range set by Avatar. This prevents the joint from turning to an incompetent angle as the human body.
Foot IK (Only Humanoid)	Updates the Foot IK information at the same time when the key frame is changed. It is mainly used for editing in Timeline.
Mirror	When changing, update the information on the opposite side at the same time.

## Root Collection (Only Humanoid)

Disable	No correction is made.
Single	It corrects only the changed frame.
Full	Corrects all frames that are affected before and after the change.

## Video

[Root Correction](#)

## Pose

Reset (Only when it is not Humanoid or Prefab)	(Humanoid) Change the Humanoid element to the default, otherwise change to the pose when you started editing. (Generic) Change to the pose at the time you started editing.
Bind (Only SkinnedMesh)	Change to Mesh's bind pose.
Prefab (Only Prefab)	Change to the pose of Prefab.
Mirror	Changes the current pose to the left and right reversed state.
Template	Change to the saved pose.
Save as	Save the current pose to a file.
Quick Load / Save	It is used to save and load temporary poses. This information will be deleted when you finish editing.

## Blend Pose

Blend and apply the saved two poses.

By applying only a part, it is possible to reuse only the shape of the face and fingers.

[Blend Pose](#)

## Muscle Group (Only Humanoid)

We will change Muscle collectively.

## Blend Shape (Only when there is Blend Shape information)

Operate Blend Shape.

Mirror will work with Settings settings.



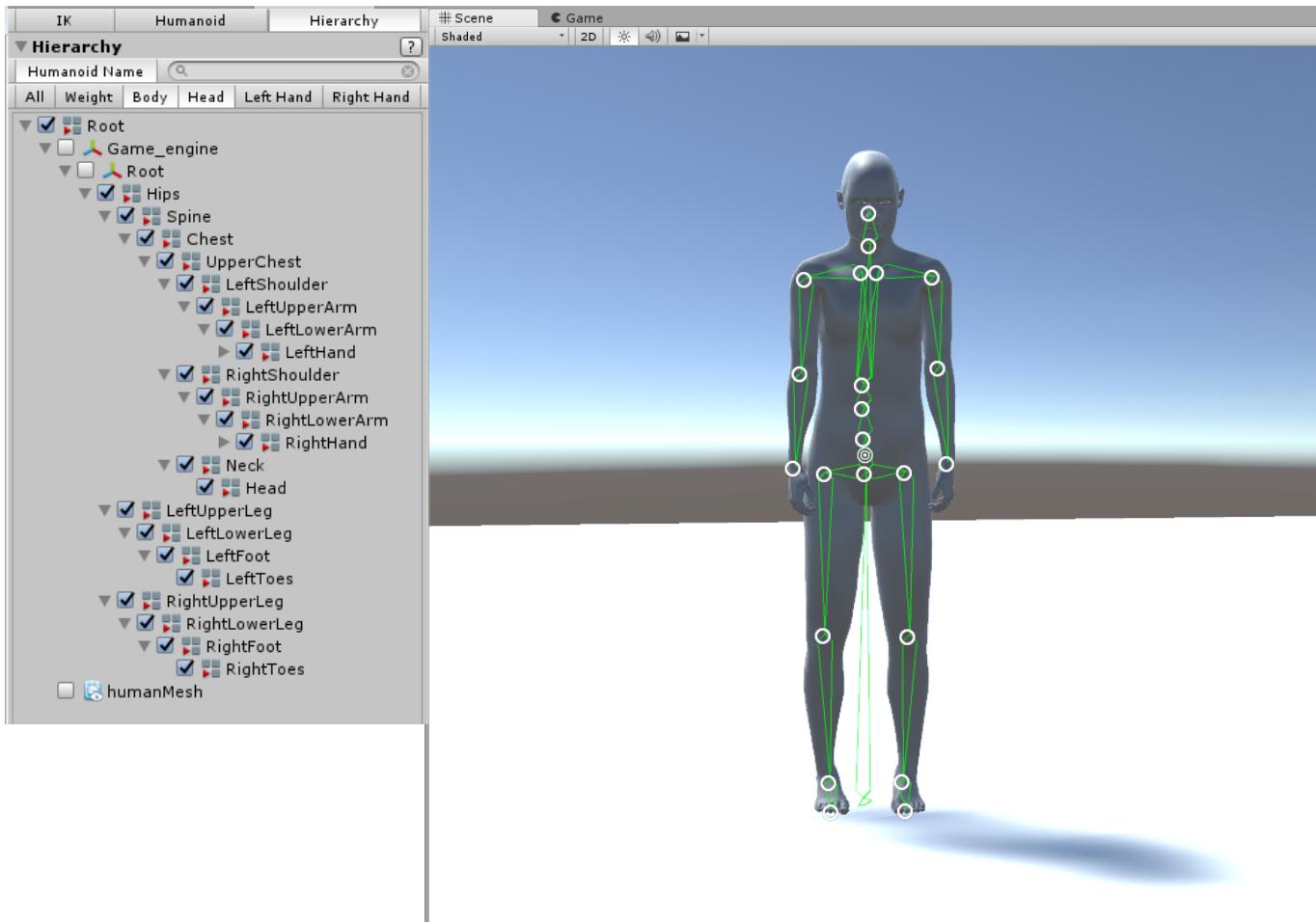
[Blend Shape](#)

## Selection

The selected information is displayed.

## Basic operation

### Scene



Scene shows only bones that are checked by Hierarchy.

You can select by pressing each button.

By clicking the mesh, a suitable bone is selected from the weight and distance of the clicked polygon.

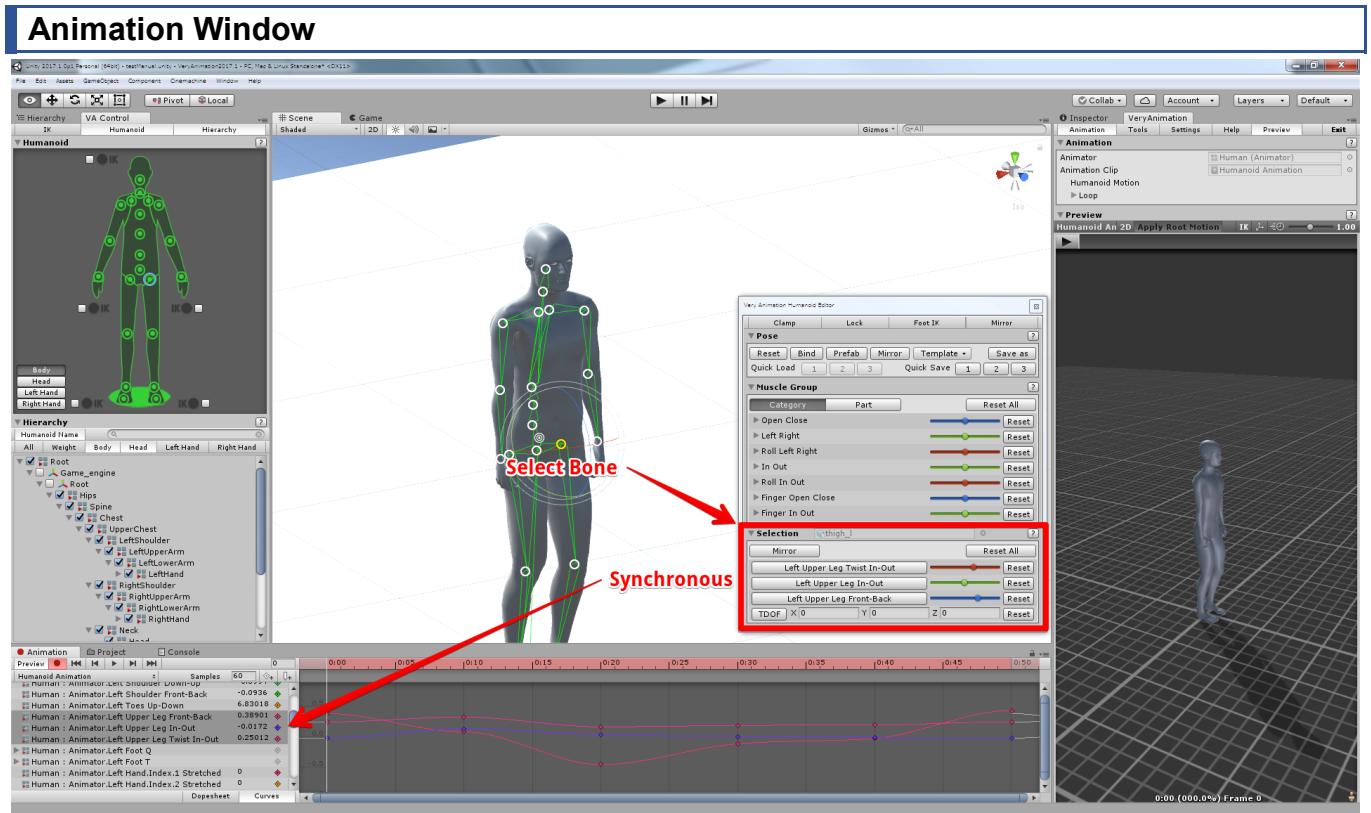
As a common action in Very Animation, select all descendants by holding down the Alt key and selecting.

## Video

[Basic Operation 1](#)

[Basic Operation 2](#)

[Basic Operation 3](#)



Animation Curve according to the selected bone and the current tool is selected in the Animation Window.  
By pressing each button in Editor's Selection, you can change to display only that Animation Curve.

## Humanoid

### Animation Curve

Humanoid manipulates Animation Curve of Animator's data.

The following explanation is personal guess, there is a possibility of error.

Animation Curve	Description
RootT, RootQ	Mass center position, rotation Root motion position, rotation
Muscle	It corresponds to the rotation of each Bone
TDOF	It exists only in part Bone. Equivalent position It is used only when 'Translation DoF' is enabled in Configure Avatar
Hand IK, Foot IK	Hand IK is unclear where to use, Foot IK is used to counter shake of the foot when AnimationState.iKOnFeet is enabled
MotionT, MotionQ	Position of root motion, rotation specification If it exists, it takes precedence over RootT, RootQ information
<i>A free name that does not conflict with the above</i>	Used in Parameter related curve

A Bone (such as a hair) not set as Avatar as a humanoid manipulates the Transform in the same way as Generic.

## Mecanim

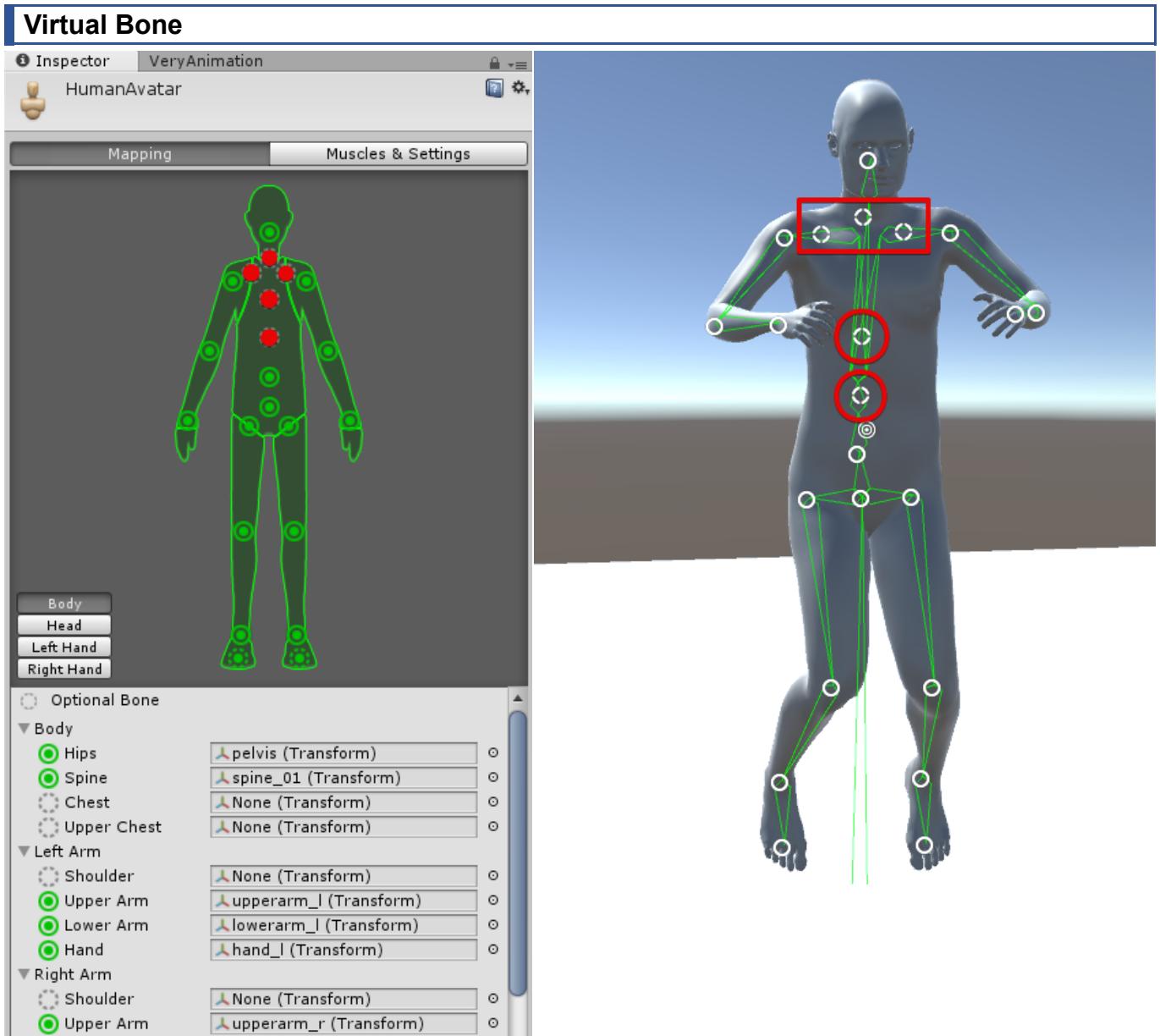
In Humanoid, animation of Animator parameters of Root and Muscle is mainly created, and Animator updates Transform with that parameter.

In Very Animation, it is possible to operate like ordinary animation FK, but when animation editing, it is necessary to be conscious that each part of Humanoid has mass.

For example, moving only arms and legs means that the center position of the mass changes.

## Reference data

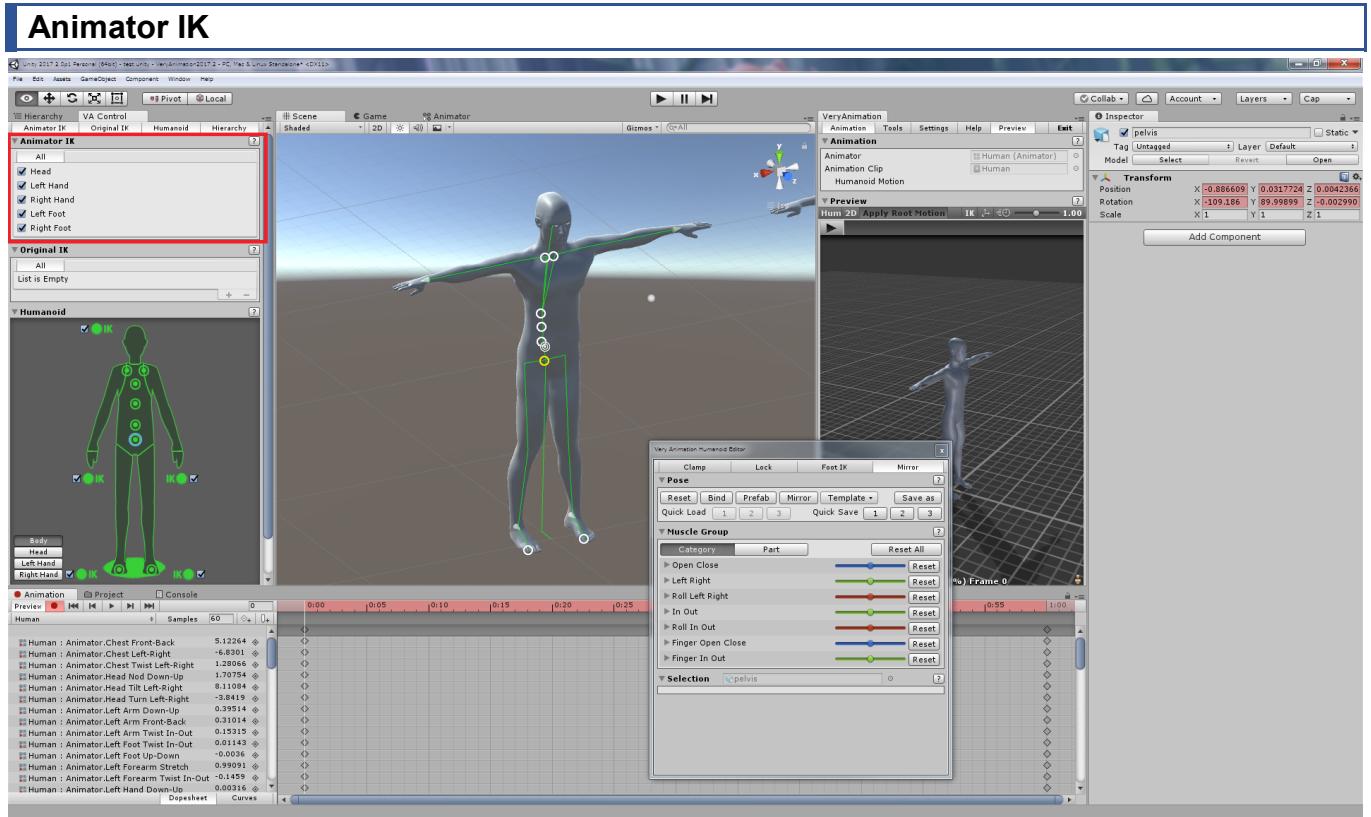
[Unity Blog 'Mecanim Humanoids'](#)



Some Optional Bones not set in Avatar are displayed as Virtual Bones.

You can operate in the same way as normal bone, but there are some restrictions, such as local rotation operation only.

# Very Animation

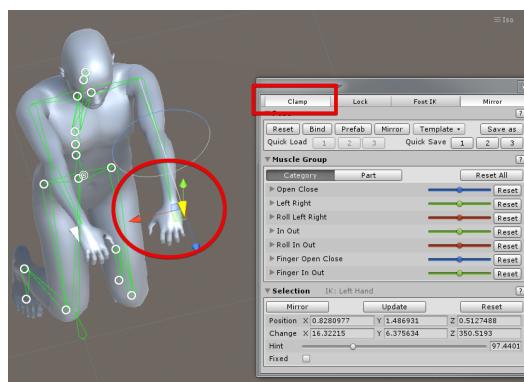


In Humanoid you can use IK using the function of Animator.

Select Control Window or Bone and switch with I key.

IK in VeryAnimation is a function to assist editing.

The information to be saved is the same information as FK, and IK key frame information etc. are not saved.



When Clamp is enabled, depending on the model, it may not be possible to extend the hand straight. In that case, cancel Clamp and set it.

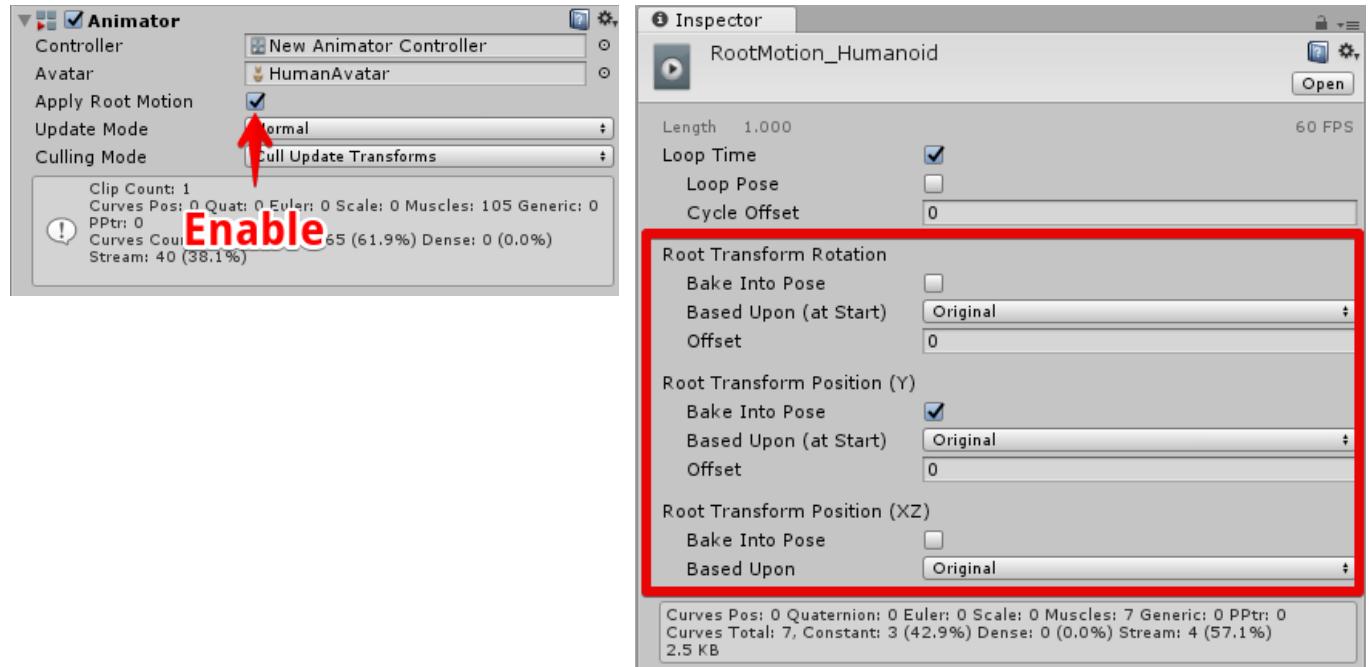
## Video

[Animator IK](#)

## Original IK

Very Animation We will set up our own IK.  
For details, refer to the 'Original IK' chapter.

## Root Motion



The root motion of Humanoid works with the setting of the above Animator and each Animation Clip.  
Please check the Unity documentation for details.

## Demo

VeryAnimation\Demo\RootMotion

### Translation DoF

The screenshot shows the 'Very Animation' component in the Unity Inspector. The 'Muscles & Settings' tab is selected. In the 'Additional Settings' section, there is a checkbox labeled 'Translation DoF' with a red arrow pointing to it. Below the checkbox is a red box containing the text 'Enable'. The right side of the screen shows a 3D preview of a humanoid figure with orange circular markers on various body parts, indicating which muscles are active or being controlled.

**Only Unity 2017.3 or later**

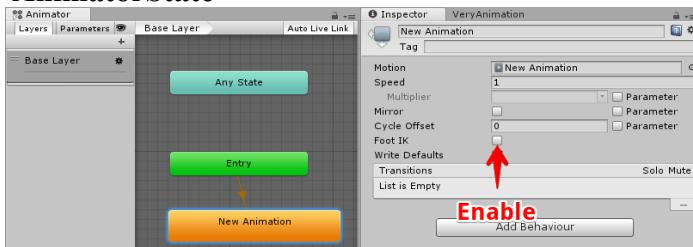
The bottom half of the image shows the 'Very Animation Humanoid Editor'. On the left is a 3D view of a humanoid skeleton with green lines connecting its joints. On the right is a detailed control panel with sections for 'Pose', 'Muscle Group', and 'Selection'. The 'Selection' section is highlighted with a red box around the 'TDOF' button and its parameters (X: 1.250775e-07, Y: 1.219838e-07, Z: 0.449241). The 'TDOF' button has a red border.

Only when you enable 'Translation DoF' in Configure Avatar, position change will be effective with some bones.

## Foot IK

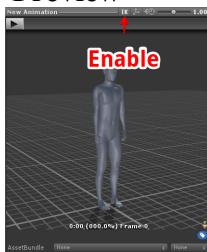
Humanoid animation is the same animation in models with different proportions, but there are problems such as shaking feet. It is information to correct this problem correctly and correct it to the original position correctly. For reasons such as not using Root Motion, this information is unnecessary unless you use this function. It is used in the following places.

### AnimatorState

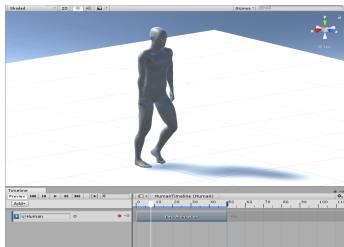


AnimationState.iKOnFeet

### Preview



### Timeline



It is enabled by default in Timeline.

Very Animation usually edits the animation with Foot IK invalid state, and finishes editing and finally creates an animation curve with Tools / Humanoid IK. Then activate Foot IK and check the operation. Since it is always used in Timeline, EditorWindow / Foot IK is enabled and constantly updated.

## Demo

VeryAnimation\Demo\FootIK

## Video

[Foot IK](#)

## Reference data

[Unity Blog 'Mecanim Humanoids'](#)

## Generic and Legacy

### Animation Curve

Generic and Legacy mainly manipulates Transform's Animation Curve.

Animation Curve	Description
Position	Position
Rotation	Rotation
Scale	Scale

We will also manipulate some Animator's Animation Curve.

The following explanation is personal guess, there is a possibility of error.

Animation Curve	Description
RootT,RootQ	Root motion position, rotation
MotionT,MotionQ	Position of root motion, rotation specification If it exists, it takes precedence over RootT, RootQ information
<i>A free name that does not conflict with the above</i>	Used in Parameter related curve

## Original IK

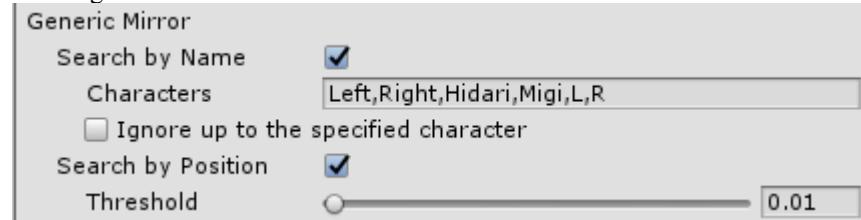
Very Animation We will set up our own IK.

For details, refer to the 'Original IK' chapter.

## Mirror

Generic mirrors work by guessing the target from the name / position etc.

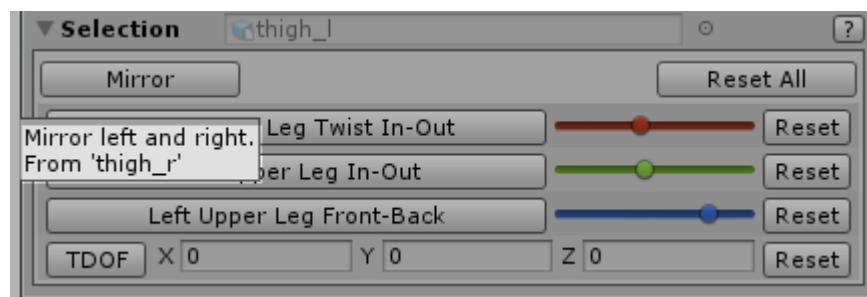
This can be changed in Settings.



By default the name is valid only if the full path from Root is only the difference between 'Left', 'Right', 'Hidari', 'Migi', 'L', 'R'.

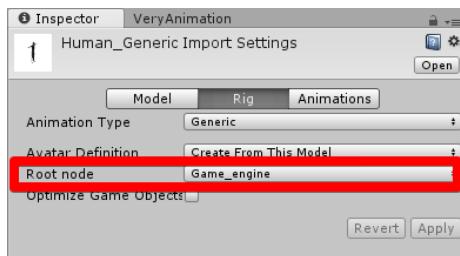
To add a condition, please add it to the beginning.

If it can not be guessed correctly, Mirror's function will not work properly.



You can check mirror targets with Selection / Mirror Tooltip.

## Root Motion (When there is Root Node designation in Avatar such as Model)



It is necessary to set Root Node in Model Importer.

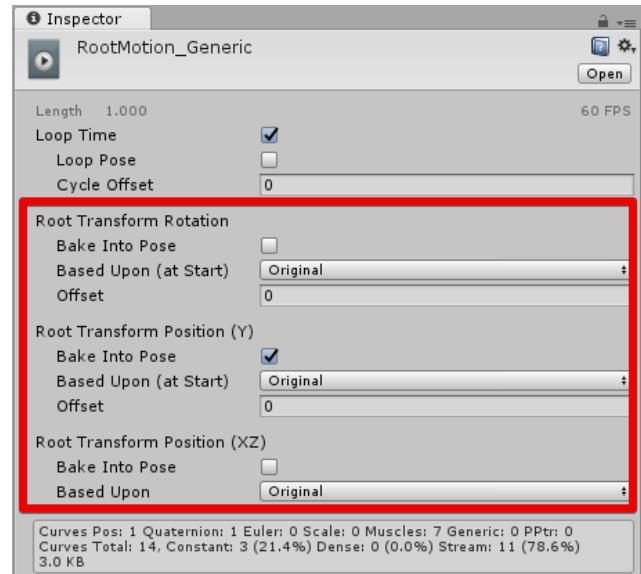
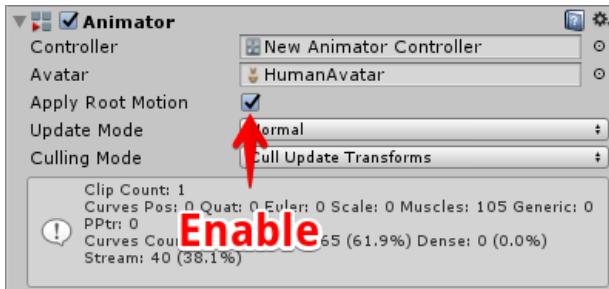
Normally you select the root object of children and branching.



RootT and RootQ are created automatically when 'Apply Root Motion' is enabled in Animator or when updating with Timeline.

After this we will operate RootT and RootQ instead of Root node's Transform.

Transform is automatically updated at the same time.



Generic root motion works with the above Animator and each Animation Clip setting.

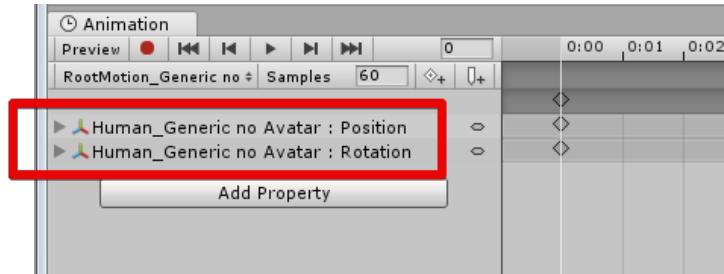
Please check the Unity documentation for details.

We recommend this method rather than the method explained next.

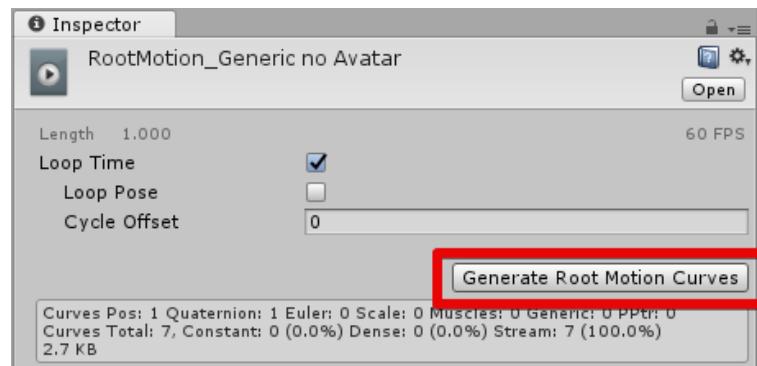
## Demo

VeryAnimation\Demo\RootMotion

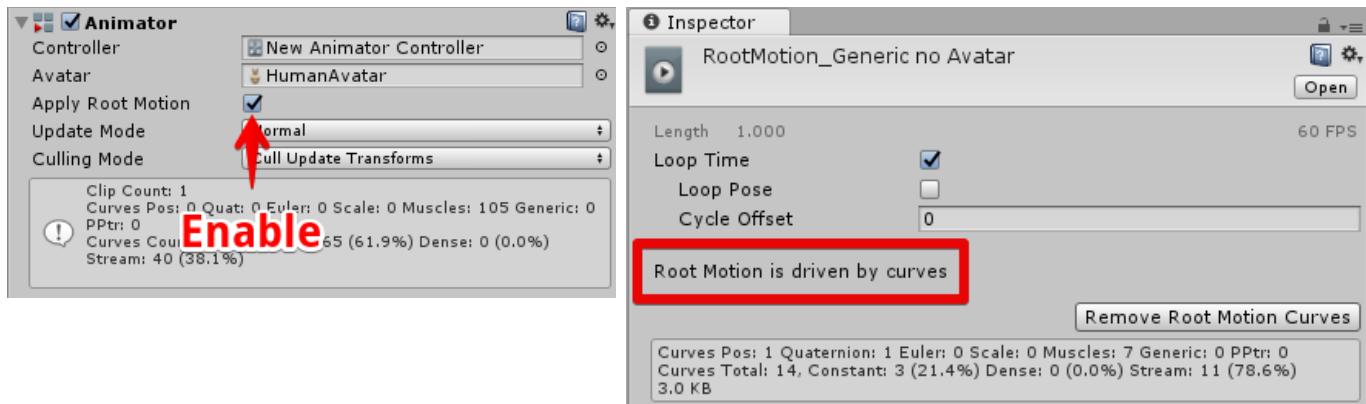
## Root Motion (No avatar or Root Node not specified)



When you create Animation Curve in Root, 'Generate Root Motion Curves' button is displayed in the setting of Animation Clip.



Root Motion will run at run time by pressing this and activating it.



Generic root motion works with the above Animator and each Animation Clip setting.

Please check the Unity documentation for details.

However, in this way, when you start editing at the time of execution, the position returns to its original position.  
In addition, Root Motion information is not output by the exporter.

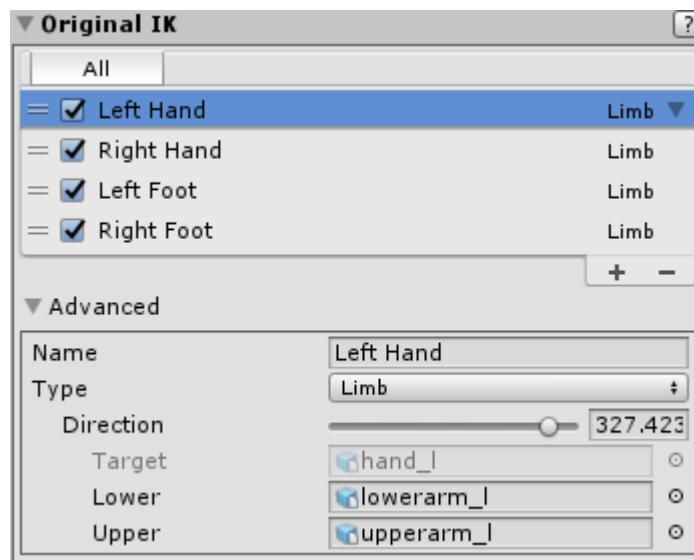
These actions can not be handled, so it will be spec.

Very Animation recommends the method of specifying Root Node in Avatar as mentioned above because of the advantages that the above problems and settings can be made finer.

## Demo

VeryAnimation\Demo\RootMotion

## Original IK



It is original IK of Very Animation.

It is added by selecting the bone which becomes the tip and pressing the add button, or pressing the I key.

If it already exists in the list, the valid state changes with the I key.

Select from multiple operation types.

IK in VeryAnimation is a function to assist editing.

The information to be saved is the same information as FK, and IK key frame information etc. are not saved.

## Basic

It is the most basic CCD-IK.

It can be used for things that rotate freely, such as hair.

You can change the hierarchy with Press Ctrl and + - key during selection.

## Video

[Original IK](#)

## Limb

Use it for limbs.

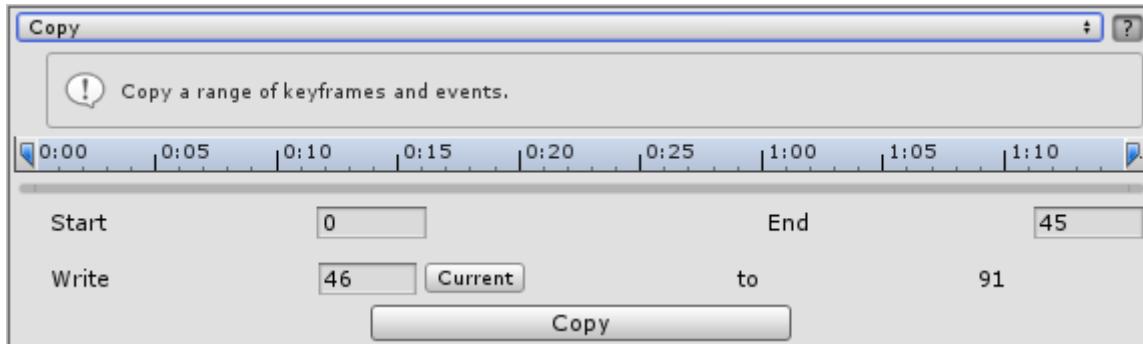
While selecting, you can change the direction of turning with Press Ctrl and + - key.

## Video

[Original IK 2](#)

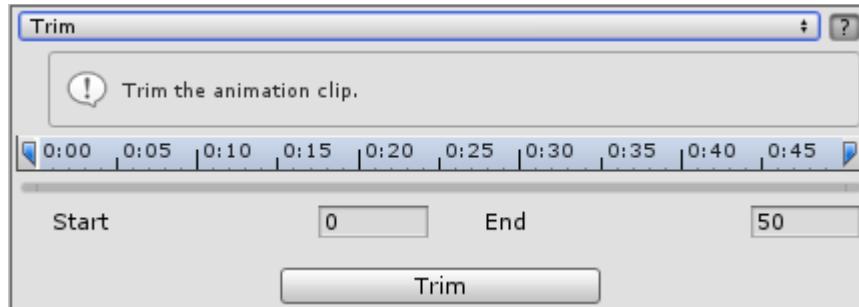
## Tools

### Copy



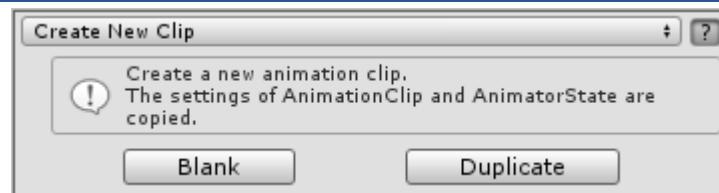
Copy the keyframe.

### Trim



Trim animation clip.

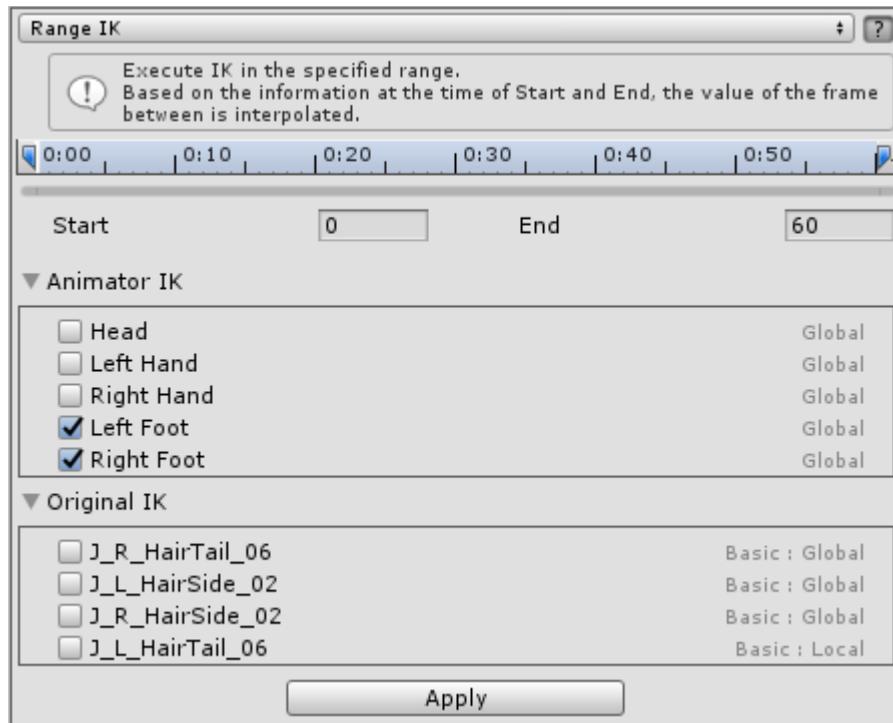
### Create New Clip



Create a new Clip.

It inherits the settings of the AnimationClip being edited and creates it.

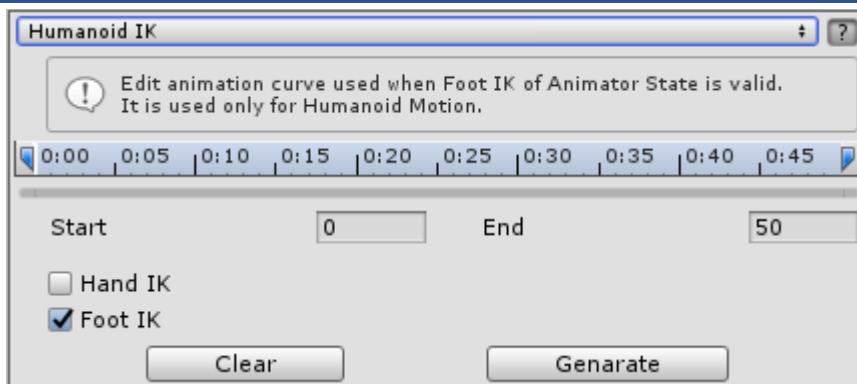
## Range IK



IK is executed within the specified range.

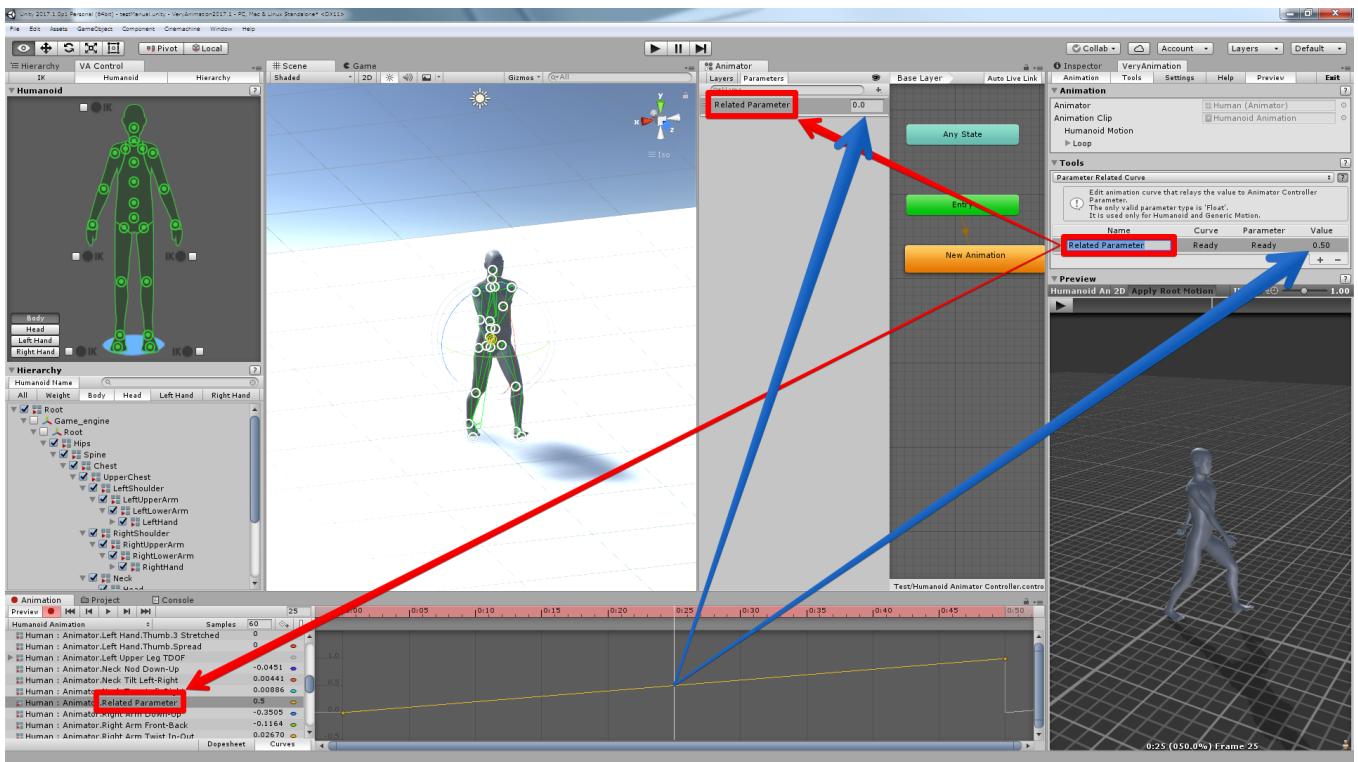
It can be used to correct the ground contact of the foot, and it is used for cooperation with other objects such as a handshake with the Timeline.

## Humanoid IK



See Humanoid / Foot IK.

## Parameter Related Curves



Animator Parameter manages information for using the Animator's mechanism where the value of Animation Curve is set. If you prepare Parameter and Curve with the same name, you can receive the information of Animation Curve as Float's Parameter at runtime.

Normally it corresponds to the information set in 'Animations / Curves' of Unity's Model Importer.

Refer to the following Unity documentation for a detailed explanation.

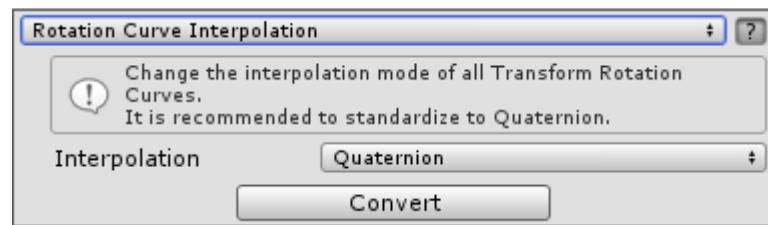
## Reference data

[Animation Curves on Imported Clips](#)

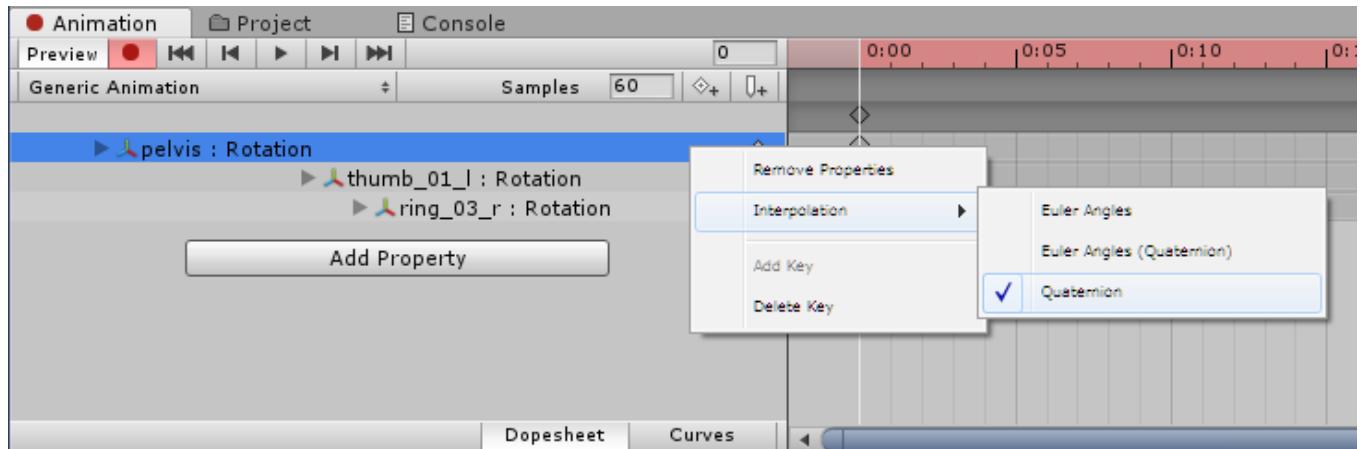
## Demo

VeryAnimation\Demo\ParameterRelatedCurves

### Rotation Curve Interpolation



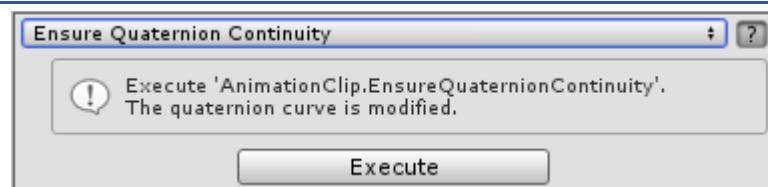
Change the interpolation method of Transform Rotation Curve all at once.



This is the setting above.

Since animation created with other assets or Unity may be other than Quaternion, we recommend that you run once and unify it to Quaternion.

### Ensure Quaternion Continuity



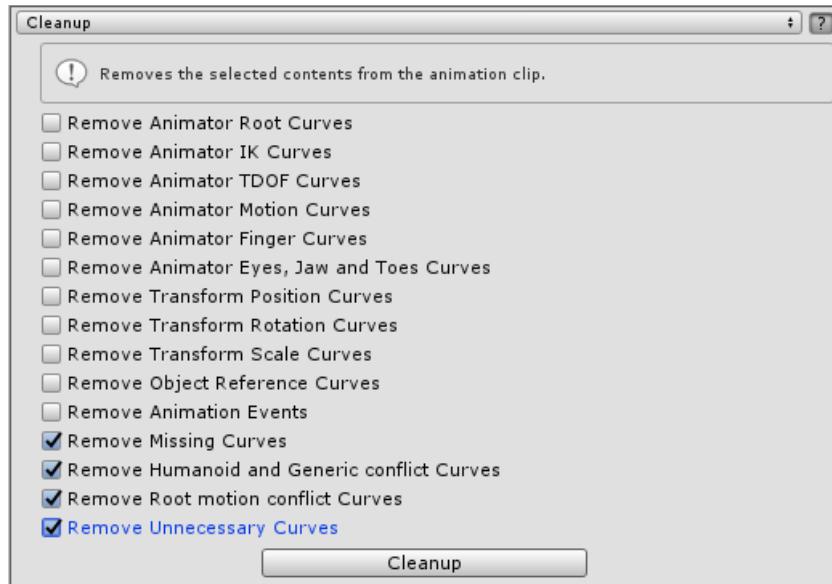
Call [AnimationClip.EnsureQuaternionContinuity](#).

It is recommended that you call it after changing the animation curve.

However, there may be a slight change in the curve, so Very Animation calls it arbitrarily here.

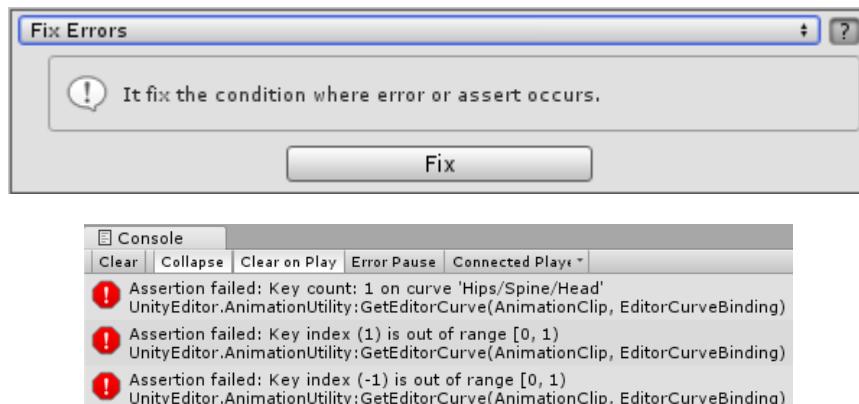
### Cleanup

Delete unnecessary curves and so on.



## Fix Errors

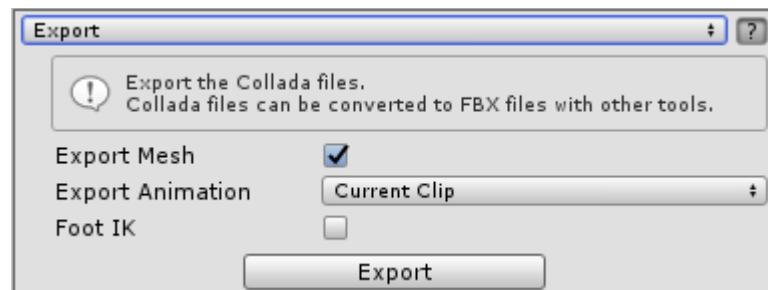
Correct the error or warning status.



Normally you do not need to run it.

When editing, you can modify data that got warning like the above.

## Export



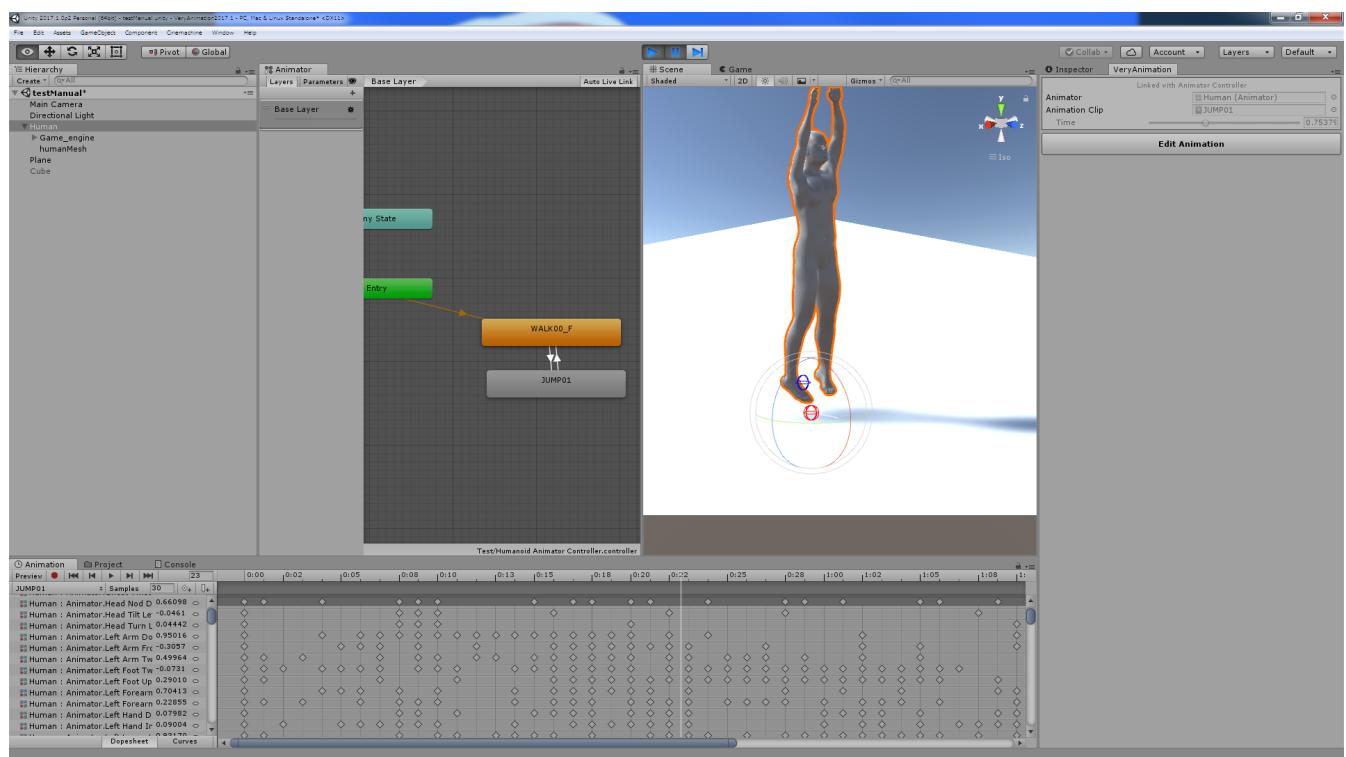
Collada (DAE) file is output.

The output mesh is reference information for animation confirmation.

To be displayed correctly, it will be changed to a hierarchy that can be output to Collada.

Therefore, there is a possibility that it changes from the hierarchy in Unity.

**Edit while paused**



When pausing while editor is running and entering editing of Very Animation, editing starts from animation and time when stopped.

The target is Layer 0 information of Animator.

## Demo

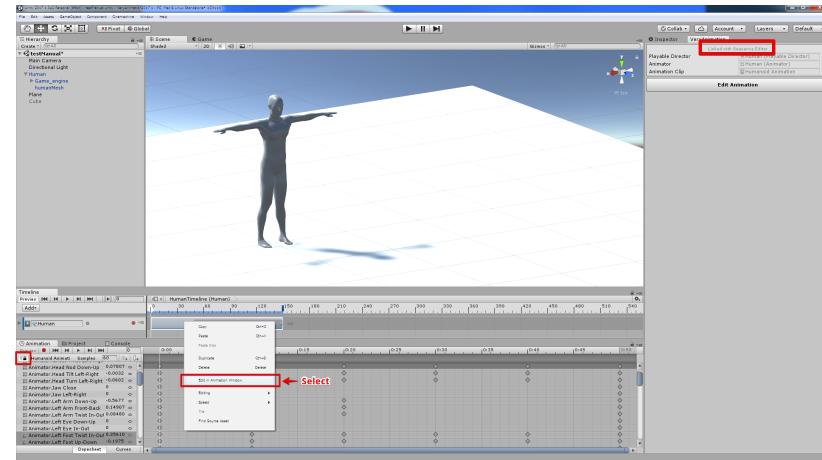
VeryAnimation\Demo>Edit while paused

## Video

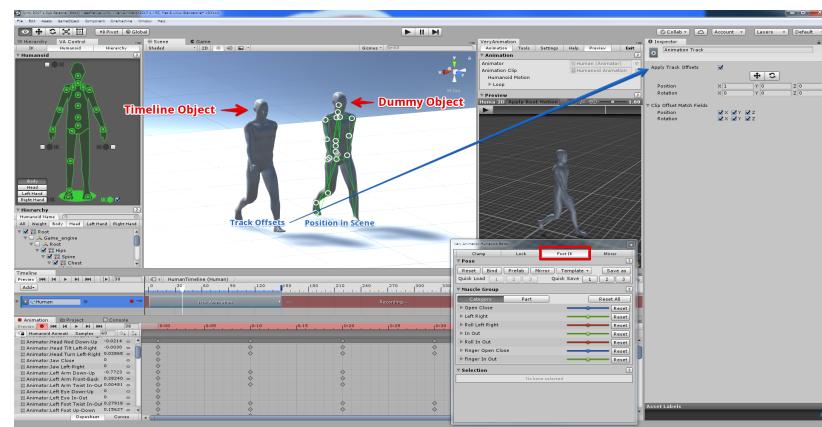
[Edit while paused](#)

## Edit in Timeline

It works with Unity 2017.1 or later, but we recommend using new patches and beta version as much as possible.



Link the Timeline's animation to the Animation Window and start editing.



While editing, Dummy Object will be displayed at the position that was placed in Scene or the position of Timeline. The display position and Offset can be changed by Settings.

The starting position of the object in Timeline is specified by Track Offsets, so that these two items do not overlap. You can also shift the display position further by Settings from there.

Track Offsets does not seem to work unless Root Motion is in a valid state, please be careful.

We edit animation by manipulating Dummy Object, but Foot IK is valid in Timeline, so enable Editor Window / Foot IK and edit it. If you do not enable this, it will behave like the position of the foot will not change.

In Timeline various kinds such as Foot IK and animation blend are displayed in a valid state, and Dummy Object shows the state of the Animation Clip as it is, so pay attention to the difference.

## Video

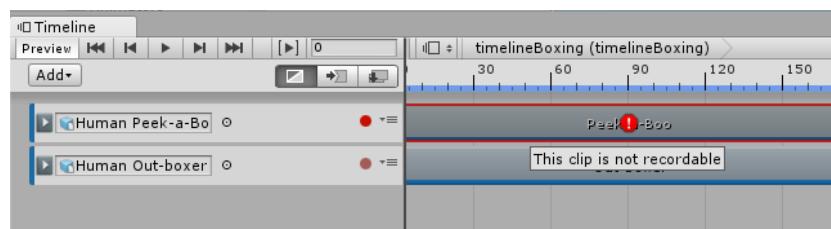
[Edit in Timeline](#)

[Edit in Timeline 2](#)

### Notes on Timeline

- **About warning in Unity 2018.1 or later**

Such a warning is displayed in Unity 2018.1 or later, but it has no effect.



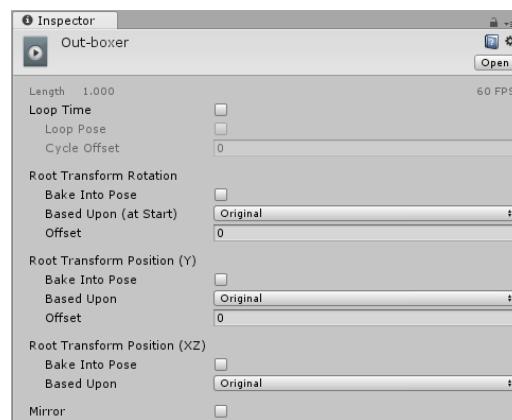
Since AnimationClip is updated with VA, it is possible to edit it like the previous version.

### •Confirmation of Root Motion setting of Animation Clip

If you do not operate as intended by moving Root, check the setting of Animation Clip.

The default when you create a new Animation Clip contains the Based Upon setting and so on.

Please make sure it is plain like the setting below.



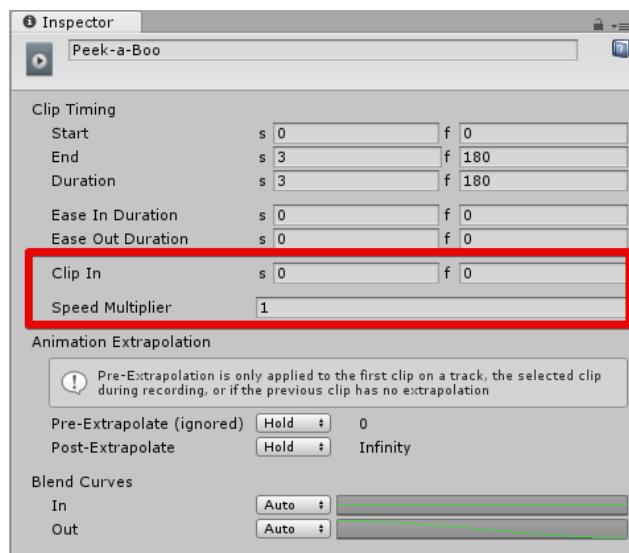
### •Editor Window / Foot IK setting confirmation

If your foot does not work as intended, please make sure it is valid.

### •Do not use some settings

Because there is a bug of [Issue ID 930909](#), please do not change the following setting.

Very Animation will not work properly until the bug is fixed.



### •Animation Clip recorded in the Timeline

According to the response from the QA Team, there seems to be a specification that operates differently from the case of the external Animation Clip when it is an internal Animation Clip with root motion. (Reflecting Based Upon setting etc.)

In order to avoid confusion, it is usually recommended to create and use Animation Clip outside.

Please use the Animation Clip recorded inside the Timeline for limited use, such as changing only the position with Override Track.

### •Using Generic Model

In order to use Generic, it is necessary to use Unity with a bug in Root Motion relation fixed.

I confirmed that this problem was fixed in Unity 2017.1.1p3, Unity 2017.2.0b11.

To use Generic on the Timeline, please use the modified version above.

Please see the video below.

## Video

[Edit in Timeline 2](#)

### •ISSUE TRACKER

Let's grasp the problems that are likely to be affected in the Timeline.

[Issue ID 934650](#) Animator.humanScale is not taken into consideration when moving Humanoid by Root Motion

[Issue ID 933260](#) If the value is set in Animator Controller of Animator, the behavior becomes abnormal at the time of execution

## Tips

Very Animation aims to operate at high speed.

However, there are many situations where the behavior of the editor becomes heavier when editing animation.

Therefore, we will introduce measures to make it operate as fast as possible during editing.

## Use the latest Unity

It is because it can be expected that performance improvement is included as new as new.

## Close the windows that you do not need

It becomes slow with unnecessary processing.

## Hide Inspector

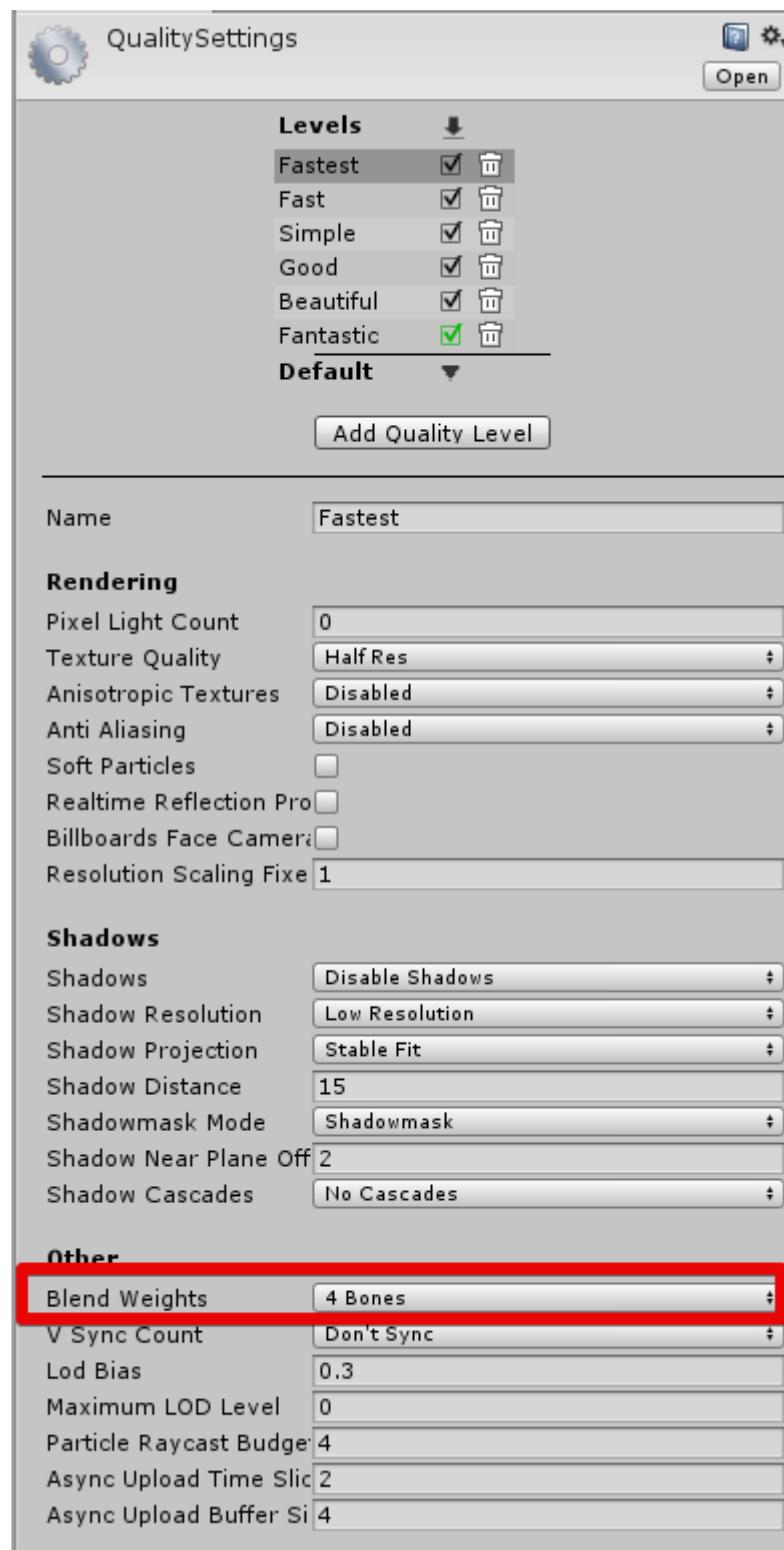


When Inspector is displayed, Repaint is done every time when editing, but it is slightly heavy, so it is suppressed by leaving it undisplayed.

## Confirm QualitySettings

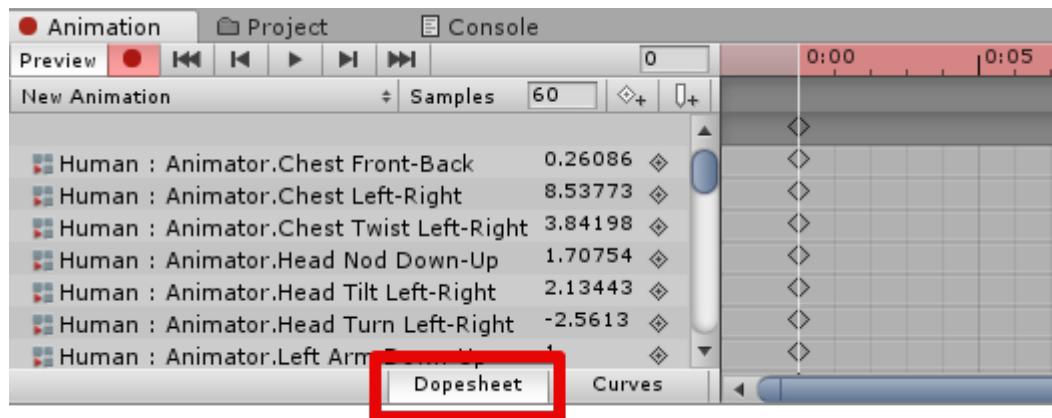
In a poor environment, the editing speed of the editor is greatly affected, so change the setting if it is heavy.

However, in order to edit the animation, we recommend that you change Blend Weights to '4 Bones' even if you make it fast.



### Change Animation Window to Dopesheet display

Updating the Animation Window when changing keyframes is a particularly heavy process.



In the case of updating only the value of the key, in the case of Curves the display of the curve must be updated, but in the case of Dopesheet there is almost no change in the appearance so it is refraining from updating.

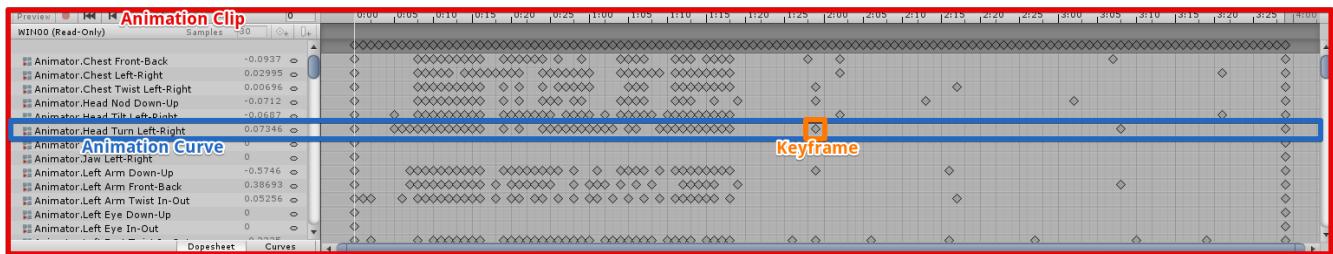
Due to this redrawing difference, there is a difference in speed with complicated animation.

For this reason, Dopesheet display is better whenever there is no need to check the curve.

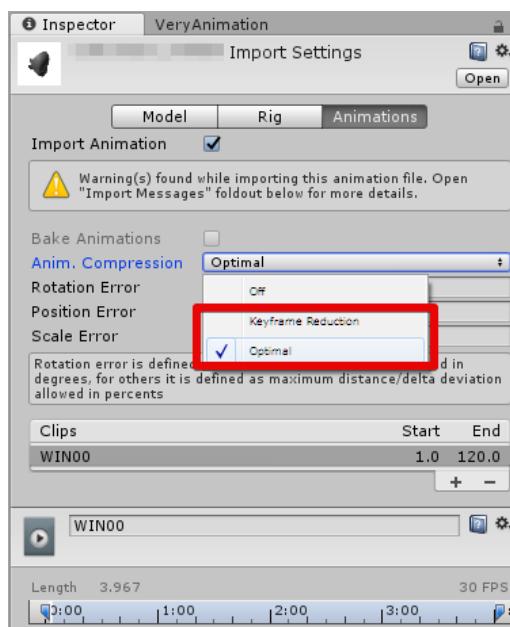
## Reduce keyframes

When changing the key frame value, it is updated in units of Animation Curve.

## Very Animation



Therefore, the update time increases as the number of key frames increases.

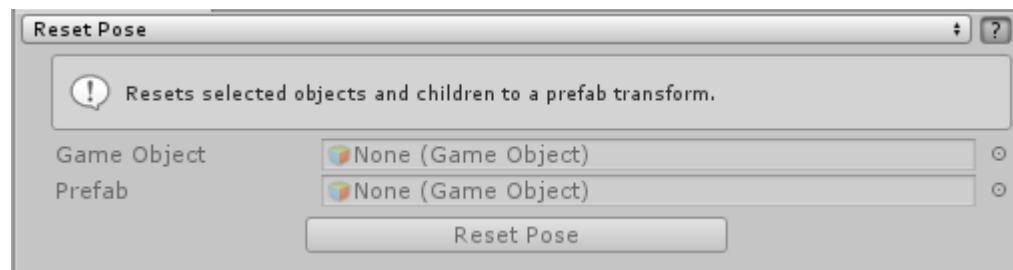


When fewer key frames are used, it is faster, so when editing an existing animation, it is recommended to first edit the model Importer's Anim. Compression other than Off to reduce keyframes before duplicating and editing.

## Tools Window

Very Animation Executes an animation related tool to be executed if it is not being activated.

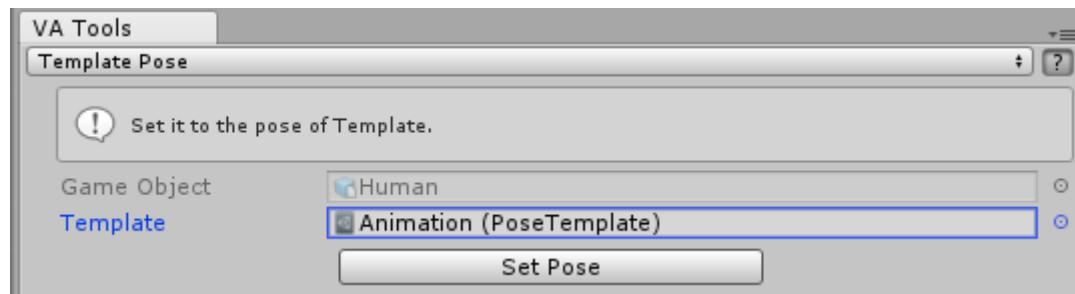
### Reset Pose



Resets the selected object and its descendants to the prefabricated pose.

Transform only changes.

### Template Pose

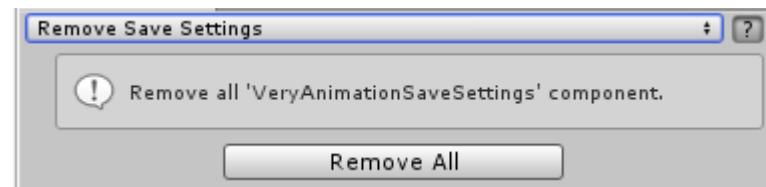


Resets the selected object to the pose of Template.

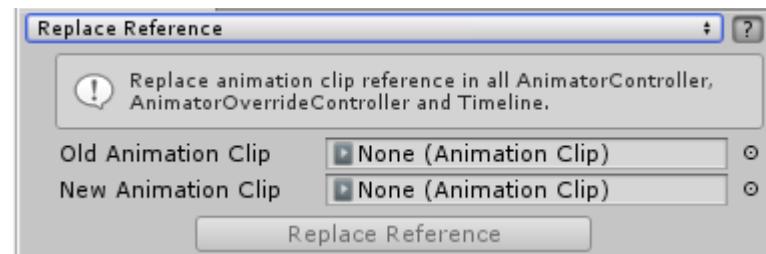
Transform only changes.

### Remove Save Settings

Delete all VeryAnimationSaveSettings from the project.



## Replace Reference



Replace reference of Animation Clip.

## Support

### Twitter

<https://twitter.com/AlSoSupport>

### Mail

Very Animation

[support@alonesoft.sakura.ne.jp](mailto:support@alonesoft.sakura.ne.jp)

## ***FAQ***

<http://alonesoft.sakura.ne.jp/VeryAnimation/support.html>