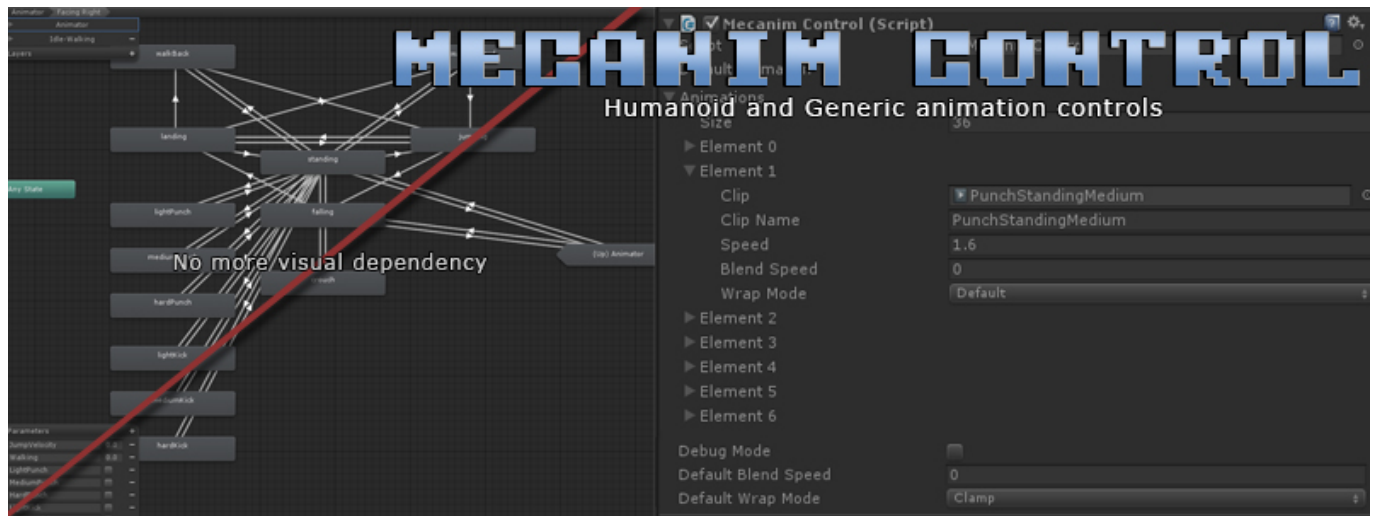


Mecanim Control

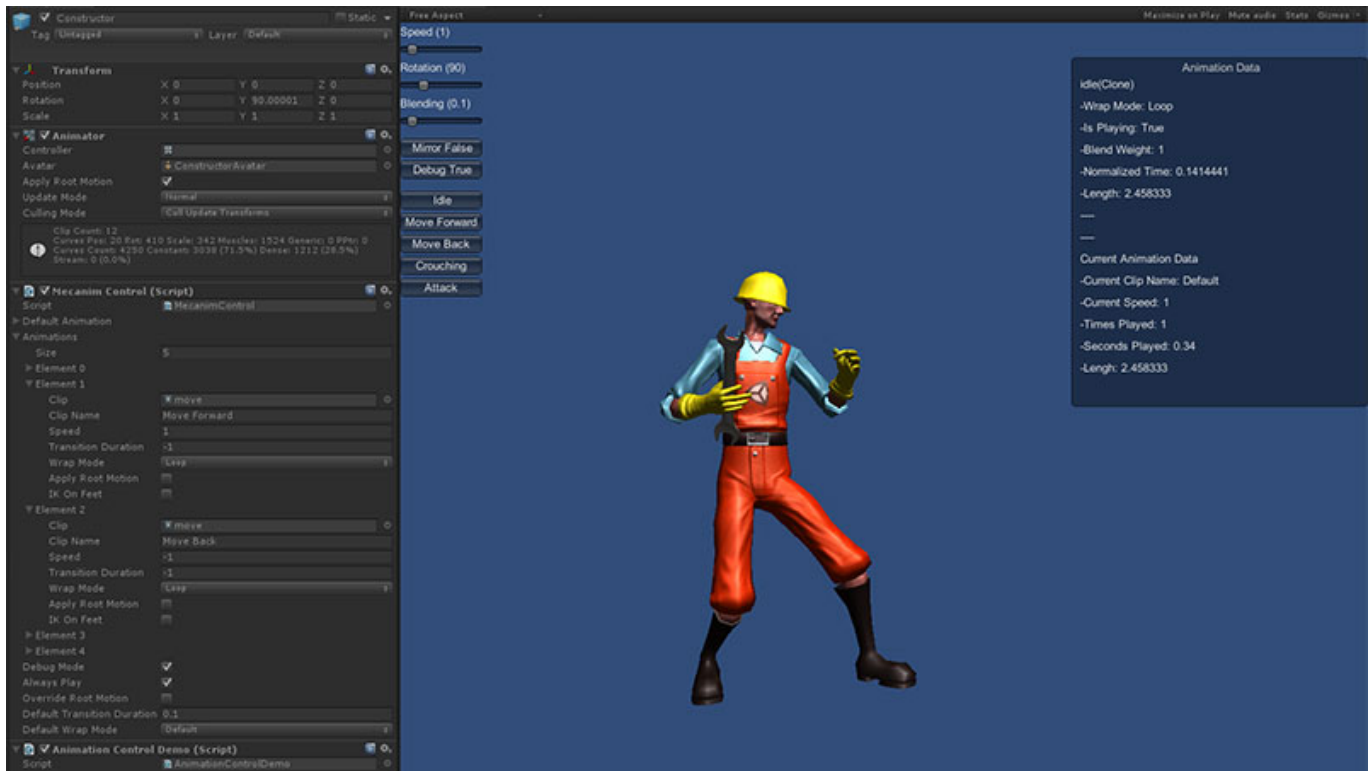
Your ultimate solution for Mecanim based games!



Mecanim Control is a coding tool made that allow for a wider variety of common methods used by the [Animation component](#) with Mecanim (Humanoid/Generic) animations. It allows you to not only dynamically load any animation clip during runtime, but also tap into several methods currently missing in this magnificent system.

[Mecanim Control](#) is a sub-tool of [Universal Fighting Engine](#). It's source code is available entirely free in the **Source** version of UFE.

Overview



You can use MecanimControl much like you would use the animation component.

To play a simple animation use *MecanimControl.Play*

To cross-fade between animations use *MecanimControl.CrossFade* -or- one of the *MecanimControl.Play* alternatives.

To change how animations wrap (Loop, Once, PingPong) change the WrapMode of the respective *AnimationClip* in their import settings, or use *MecanimControl.SetWrapMode* to change it at runtime. *AnimationData* can be used to modify the clip, playback speed, and direct control over blending.

MecanimControl also supports enumerators so you can loop through all AnimationData like this:

```
using UnityEngine;
using System.Collections;

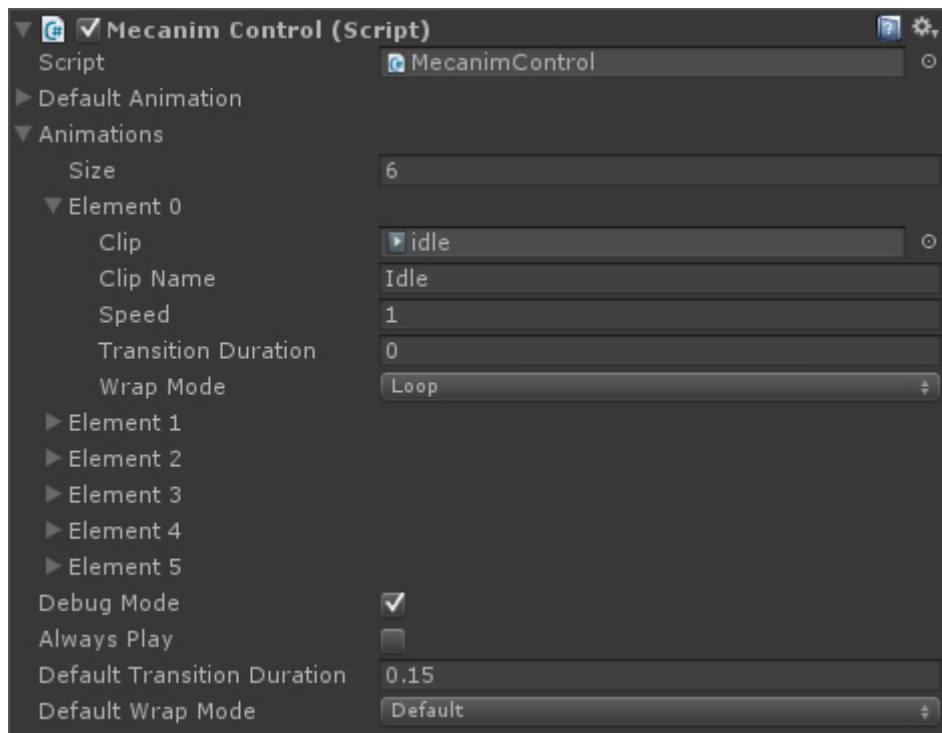
public class AnimationControlDemo : MonoBehaviour {

    private MecanimControl mecanimControl;

    void Start () {
        mecanimControl = gameObject.GetComponent<MecanimControl>();
    }

    void OnGUI(){
        foreach(AnimationData animationData in mecanimControl.animations){
            if (GUILayout.Button(animationData.clipName)){
                mecanimControl.Play(animationData, mirror);
            }
        }
    }
}
```

Public Variables



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[defaultanimation](#) **Default Animation**

AnimationData *defaultAnimation*;

By default, if no order is given, the animator will play the animation stored in this AnimationData.

Note

If you don't assign a default animation Mecanim Control will assign the first animation from [animations](#).

```
void Start () {  
    mecanimControl = gameObject.GetComponent<MecanimControl>();  
    mecanimControl.defaultAnimationData.speed = .5f;  
}
```

animations Animations

AnimationData[] *animations*;

Properties

AnimationClip clip - The AnimationClip file.

string clipName - Animation name.

float speed - Animation speed.

float transitionDuration - Blending Duration.

WrapMode wrapMode - The animation's default [WrapMode](#). bool applyRootMotion - If this and *Override Root Motion* is toggled this animation will toggle the Animator's [Root Motion](#)

Description

This array contain all the AnimationData stored by either the UI or by using AddClip. Its then used to emulate a state machine under the *Animator Controller*.

```

void Start () {
    mecanimControl = gameObject.GetComponent<MecanimControl>();
    foreach(AnimationData animationData in mecanimControl.animations) {
        animationData.speed = .5f;
    }
}

```

debugmode Debug Mode

bool *debugMode*;

Toggles a GUI box containing all the information about the current clip playing as well as its blending weight.

```

void Start () {
    mecanimControl = gameObject.GetComponent<MecanimControl>();
    mecanimControl.debugMode = true;
}

```

alwaysplay Always Play

bool *alwaysPlay*;

If an animation is set to *WrapMode.Once* and *alwaysPlay* is toggled on, after the clip ends it will immediately play the *default animation*.

```

void Start () {
    mecanimControl = gameObject.GetComponent<MecanimControl>();
    mecanimControl.alwaysPlay = true;
}

```

overriderootion Override Root Motion

`bool overrideRootMotion;`

If both `applyRootMotion` (under the animation element) and this variable is *true*, this animation will toggle the Animator's **Root Motion**.

```
void Start () {
    mecanimControl = gameObject.GetComponent<MecanimControl>();
    mecanimControl.overrideRootMotion = true;
    mecanimControl.animationData[0].applyRootMotion = true;
}
```

`defaultTransitionDuration` **Default Transition Duration**

`float defaultTransitionDuration;`

If an animation has its blending speed set to 0, it will use this value instead.

```
void Start () {
    mecanimControl = gameObject.GetComponent<MecanimControl>();
    mecanimControl.defaultTransitionDuration = .2f;
}
```

`defaultWrapmode` **Default Wrap Mode**

`float defaultWrapMode;`

If an animation has its *wrapmode* set to *default*, it will use this value instead.

```
void Start () {
    mecanimControl = gameObject.GetComponent<MecanimControl>();
    mecanimControl.defaultWrapMode = WrapMode.Once;
}
```

Public Functions

```
void OnGUI() {
    if (GUILayout.Button("Invert Speed")) mecanimControl.SetSpeed(-mecanimControl.GetSpeed());
    if (GUILayout.Button("Mirror " + mirror)) {
        mirror = !mirror;
        mecanimControl.SetMirror(mirror);
    }

    GUILayout.Space(10);

    foreach(AnimationData animationData in mecanimControl.animations){
        if (GUILayout.Button(animationData.clipName)) {
            mecanimControl.Play(animationData, mirror);
        }
    }
}
```

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[addclip](#) **AddClip**

`void AddClip(AnimationClip clip, string name);`

`void AddClip(AnimationClip clip, string name, float speed, WrapMode wrapMode);`

Parameters

clip - The AnimationClip file.

name - Animation name.

speed - Animation speed.

wrapMode - The animation's default [WrapMode](#).

Description: Adds a clip to *animations* with the name *newName*.

```
using UnityEngine;
using System.Collections;

public class Example : MonoBehaviour {
    public AnimationClip walkClip;
    void Start () {
        mecanimControl = gameObject.GetComponent<MecanimControl>();
        mecanimControl.AddClip(walkClip, "walk");
    }
}
```

[crossfade](#) **CrossFade**

```
void CrossFade(string clipName, float blendingTime);
void CrossFade(string clipName, float blendingTime, float normalizedTime, bool mirror);
void CrossFade(AnimationData animationData, float blendingTime, float normalizedTime, bool mirror);
```

Parameters

clipName - Animation name.

animationData - The correspondent animation data.

blendingTime - The blending duration between the 2 animations.

normalizedTime - The timeline's position of the animation to be played (0-1)

mirror - Should the animation be mirrored?

Description: Fades the animation with name *clipName* in over a period of *blendingTime* seconds as it fades other animations out.

You can also set *normalizedTime* to set where, in its timeline, you want the animation to start (0-1) as well as toggle [mirror](#).

```
using UnityEngine;
using System.Collections;

public class Example : MonoBehaviour {
    public AnimationClip walkClip;
    void Start () {
        mecanimControl = gameObject.GetComponent<MecanimControl>();
        mecanimControl.CrossFade("walk", .2f);
    }
}
```

[getanimationdata](#) GetAnimationData

```
AnimationData GetAnimationData(AnimationClip clip);
```

```
AnimationData GetAnimationData(string clipName);
```

Parameters

clip - Animation clip.

clipName - Clip name.

Description: Returns the AnimationData related to that animation name or clip.

```
using UnityEngine;
using System.Collections;

public class Example : MonoBehaviour {
    public AnimationClip walkClip;
    void Start () {
        mecanimControl = gameObject.GetComponent<MecanimControl>();
        mecanimControl.AddClip(walkClip, "walk");
        Debug("Animation Name:" +
mecanimControl.GetAnimationData(walkClip).clipName);
    }
}
```

[getcurrentanimationdata](#) **GetCurrentAnimationData**

AnimationData *GetCurrentAnimationData()*;

Description: Get the AnimationData currently running.

```
using UnityEngine;
using System.Collections;

public class Example : MonoBehaviour {
    public AnimationClip walkClip;
    void Start () {
        mecanimControl = gameObject.GetComponent<MecanimControl>();
        Debug("Animation Name:" +
mecanimControl.GetCurrentAnimationData().clipName);
    }
}
```

[getcurrentclipname](#) **GetCurrentClipName**

string *GetCurrentClipName()*;

Description: Get the name of the current running clip.

```
using UnityEngine;
using System.Collections;

public class Example : MonoBehaviour {
    void Start () {
        mecanimControl = gameObject.GetComponent<MecanimControl>();
        Debug("Animation Name:" + mecanimControl.GetCurrentClipName());
    }
}
```

[getcurrentclipposition](#) **GetCurrentClipPosition**

float *GetCurrentClipPosition()*;

Description: Get the *normalized time* of the current running clip. (0-1)

```
void CheckProgress() {
    mecanimControl = gameObject.GetComponent<MecanimControl>();
    Debug("Animation Progress (%):" + mecanimControl.GetCurrentClipPosition()
* 100);
}
```

getcurrentclipplaycount GetCurrentClipPlayCount

```
int GetCurrentClipPlayCount();
```

Description: Get the number of times the current clip has played. Only works if the animation's WrapMode is set to either *WrapMode.Loop* or *WrapMode.PingPong*

```
void CheckProgress() {
    mecanimControl = gameObject.GetComponent<MecanimControl>();
    Debug("Times Played:" + mecanimControl.GetCurrentClipPlayCount());
}
```

getmirror GetMirror

```
bool GetMirror();
```

Description: Get the current **mirror** state of the *emulated runtime animator*.

```
void FaceLeft () {
    mecanimControl = gameObject.GetComponent<MecanimControl>();
    if (!mecanimControl.GetMirror()) mecanimControl.setMirror(true);
}
```

getspeed GetSpeed

```
float GetSpeed();
```

```
float GetSpeed(AnimationClip clip);
```

```
float GetSpeed(string clipName);
```

Parameters

clip - Animation clip.

clipName - Clip name.

Description: Get the speed value set for *animationClip/clipName*.

no parameters - Get the speed the animator is running based on the current running animation.

```
void SlowDown() {
    mecanimControl = gameObject.GetComponent<MecanimControl>();
    if (mecanimControl.GetSpeed() > 1) mecanimControl.SetSpeed(1);
}
```

isplaying IsPlaying

```
bool IsPlaying(string clipName);
```

```
bool IsPlaying(AnimationClip clip);
```

```
bool IsPlaying(AnimationData animationData);
```

Description: Returns true if *clipName*, *clip* or *animationData* is playing.

```
void Example() {
```

```
mecanimControl = gameObject.GetComponent<MecanimControl>();  
if (mecanimControl.IsPlaying("walk")) Debug.Log("Walk is playing");  
}
```

pause **Pause**

void *Pause*();

Description: Pauses the animator component.

```
void Example() {  
    mecanimControl = gameObject.GetComponent<MecanimControl>();  
    mecanimControl.Pause();  
}
```

play **Play**

void *Play*();

void *Play*(string clipName);

void *Play*(AnimationClip clip);

void *Play*(AnimationData animationData);

void *Play*(string clipName, bool mirror);

void *Play*(AnimationClip clip, bool mirror);

void *Play*(AnimationData animationData, bool mirror);

void *Play*(string clipName, float blendingTime, float normalizedTime, bool mirror);

void *Play*(AnimationClip clip, float blendingTime, float normalizedTime, bool mirror);

Parameters

clip - Animation clip.

clipName - Animation name.

animationData - The correspondent animation data.

blendingTime - The blending duration between the 2 animations.

normalizedTime - The timeline's position of the animation to be played (0-1)

mirror - Should the animation be mirrored?

Description: Plays animation. *Play* can be used in several ways, including blending. If no blending is set, *Play* will try using the default blending value. If blending is set to -1, the animation will be played abruptly without any blending.

If the animation is not set to be looping and *alwaysPlay* is toggled off it will be stopped after playing.

If no parameters are used, *Play* can be used as a follow up to *Pause*. It restores the speed of the Animator to the current animation speed value.

Normalized Time lets you start the animation from a predefined position in the animation timeline (0-1).

```
void Example() {  
    mecanimControl = gameObject.GetComponent<MecanimControl>();  
    mecanimControl.Play();  
}
```

```
}

void Example() {
    mecanimControl = gameObject.GetComponent<MecanimControl>();
    mecanimControl.Play("walk", .2f, 0, true);
}
```

removeclip **RemoveClip**

```
void RemoveClip(string clipName);
void RemoveClip(AnimationClip clip);
```

Description: Removes the *AnimationData* from *animations* related to *clipName/clip*.

```
void RemoveAnimation(string animation) {
    mecanimControl = gameObject.GetComponent<MecanimControl>();
    mecanimControl.RemoveClip(animation);
}
```

restorespeed **RestoreSpeed**

```
void RestoreSpeed();
```

Description: Restores the speed of the animator component to the original value from the current animation being played.

```
using UnityEngine;
using System.Collections;

public class Example : MonoBehaviour {

    private MecanimControl mecanimControl;

    void SlowMo(string animation) {
        mecanimControl.SetSpeed(.01f);
        Invoke("Restore", 2);
    }

    void Restore() {
        mecanimControl.RestoreSpeed();
    }
}
```

rewind **Rewind**

```
void Rewind();
```

Description: Inverts the speed of the animator component.

```
void Example() {
    mecanimControl = gameObject.GetComponent<MecanimControl>();
    mecanimControl.Rewind();
}
```

setcurrentclipposition **SetCurrentClipPosition**

void SetCurrentClipPosition(float normalizedTime);

void SetCurrentClipPosition(float normalizedTime, bool pause);

Description: Set the position in the timeline of the current playing clip (0-1). If pause is toggled on, the animation will be paused afterwards.

```
void Example() {
    mecanimControl = gameObject.GetComponent<MecanimControl>();
    mecanimControl.SetCurrentClipPosition(.3f, true);
}
```

setdefaultclip **SetDefaultClip**

void SetDefaultClip(AnimationClip clip, string name, float speed, WrapMode wrapMode);

Description: Sets the *defaultclip* through code (instead of the UI).

```
using UnityEngine;
using System.Collections;

public class Example : MonoBehaviour {

    private MecanimControl mecanimControl;
    private AnimationClip idle;

    void Start() {
        mecanimControl.SetDefaultClip(idle, "Idle", 1, WrapMode.Loop);
    }
}
```

setmirror **SetMirror**

void SetMirror(bool mirror);

void SetMirror(bool mirror, float blendingTime);

void SetMirror(bool mirror, float blendingTime, bool forceMirror);

Description: When toggled on, every animation will be played with the **mirror** tag toggled on.

```
void FaceLeft () {
    mecanimControl = gameObject.GetComponent<MecanimControl>();
    if (!mecanimControl.GetMirror()) mecanimControl.setMirror(true);
}
```

```
}
```

setspeed **SetSpeed**

```
void SetSpeed(float speed);  
void SetSpeed(string clipName, float speed);  
void SetSpeed(AnimationClip clip, float speed);
```

Description: Change the speed value of the Animator component or AnimationData based on *clipName/clip*.

If no parameters are used, SetSpeed will change the global speed from the Animator component.

```
void SlowDown() {  
    mecanimControl = gameObject.GetComponent<MecanimControl>();  
    if (mecanimControl.GetSpeed() > 1) mecanimControl.SetSpeed(1);  
}
```

setwrapmode **SetWrapMode**

```
void SetWrapMode(WrapMode wrapMode);  
void SetWrapMode(AnimationData animationData, WrapMode wrapMode);  
void SetWrapMode(AnimationClip clip, WrapMode wrapMode);  
void SetWrapMode(string clipName, WrapMode wrapMode);
```

Description: Sets the Wrap Mode of an AnimationData based on *clipName/clip*.

If no parameters are used, SetWrapMode will change *defaultWrapMode*.

```
void ClampCurrentClip() {  
    mecanimControl = gameObject.GetComponent<MecanimControl>();  
    mecanimControl.SetWrapMode(mecanimControl.GetCurrentAnimationData,  
WrapMode.Clamp);  
}
```

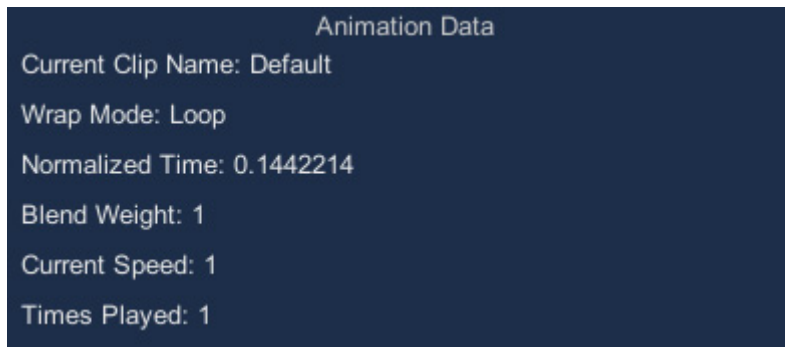
stop **Stop**

```
void Stop();
```

Description: Stops any animation from playing and starts playing the default animation.

```
void PlayDefaultAnimation() {  
    mecanimControl = gameObject.GetComponent<MecanimControl>();  
    mecanimControl.Stop();  
}
```

Public Events



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[onanimationbegin](#) **OnAnimationBegin**

`void AnimEvent(AnimationData animationData);`

Description: Fires when an animation begins.

```
void OnAnimationBegin(AnimationData animData) {  
    if (animData.clipName == "walk") Debug.Log("character is walking");  
}
```

[onanimationend](#) **OnAnimationEnd**

`void AnimEvent(AnimationData animationData);`

Description: Fires when an animation ends.

```
void OnAnimationEnd(AnimationData animData) {  
    if (animData.clipName == "walk") Debug.Log("character has stopped  
walking");  
}
```

[onanimationloop](#) **OnAnimationLoop**

`void AnimEvent(AnimationData animationData);`

Description: Fires when an animation loops. This is only triggered if the animation WrapMode is set to either *WrapMode.Loop* or *WrapMode.PingPong*

```
void OnAnimationLoop(AnimationData animData) {
```

```
if (animData.clipName == "walk")  
    Debug.Log("walking animation has looped "+ animData.timesPlayed + "  
times.");  
}
```

From:

<http://www.ufe3d.com/> - **Universal Fighting Engine**

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<http://www.ufe3d.com/doku.php/mecanimcontrol?rev=1428997886>

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