[DuckType] Jiggle 1.1 User Reference

Thank you for choosing Jiggle! Jiggle is a powerful secondary-animation script for Unity that lets you jiggle, shake, wobble and bend things to your heart's content.

Jiggle tries to be as intuitive to use as possible through its UI and hopefully you'll find that you can just jump in and play around with it. We also highly recommend experimenting with the values while the game is running for new (and sometimes hilarious) results.

Please check out the provided example scene for cool things that Jiggle can do. You'll find that it can do a lot more than just make flowing hair and bouncy tails!

For everything else there is to know there is this documentation. If you find anything unclear or missing, or if you have suggestions for more features please get in touch at ducktypesoftware@gmail.com or via ducktypesoftware.wordpress.com.

What is Jiggle?

Jiggle provides secondary animation, which means "Animation caused by other animation". Think flowing hair, floppy ears, bouncy tails and trees swaying in the wind. To do this, Jiggle has a few different concepts you can either use individually, or combine for more complex effects.

Jiggle is a "physics-like" simulation that works outside of Unity's physics system. As such it is more flexible and it's easier to get great-looking results, but please keep in mind that Jiggle objects do not automatically interact with physics objects.
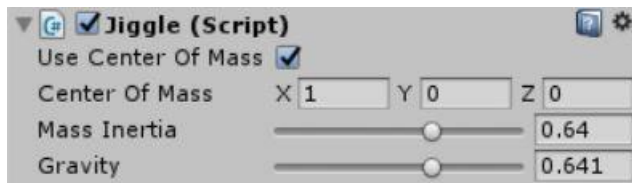
Jiggle's UI

Center Of Mass

This is Jiggle's main feature. Center Of Mass means that your object has a center point somewhere, and that center point affects how it trails after other objects. If you want something to jiggle, its Center Of Mass should be away from its pivot. As an example, think of an antenna. Its pivot is where it's attached to a car or a roof, but its Center Of Mass is in the middle of the antenna. As the car moves, that point gets pulled back and the antenna starts to jiggle.
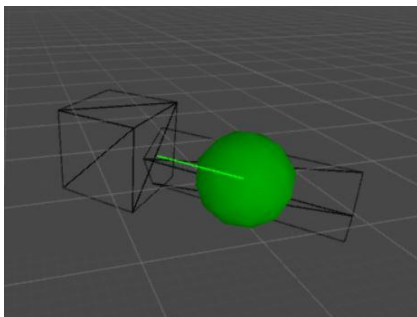
In Jiggle you'll see the Center Of Mass as a green sphere, connected to the object's pivot by a green line. The further away the center is from the pivot the more the object will jiggle.

In the Jiggle UI you'll notice that Center Of Mass has a few options:

You can disable Center Of Mass with the checkbox, but it is highly recommended that you leave it on. It's Jiggle's coolest feature!

Center Of Mass: The position of the Center Of Mass relative to the object's pivot

Mass Inertia: The amount the Center Of Mass will trail the object, and therefore the amount the object will jiggle.

Gravity: Gravity pulls down your object's Center Of Mass to create the effect that it is heavy.

Wind

As part of the Center Of Mass feature you'll also see an "Add Wind" option. Wind is a constant force that pushes your object's Center Of Mass in a specific direction.

If you enable "Add Wind" you'll see inputs for wind direction and strength. Keep in mind that wind direction works in world space so that it affects your object the same way whichever it is turned.

Noise

Noise affects the object's Center Of Mass in a similar way to wind, but as the name suggests it pushes the object in random directions all the time.

If you enable "Add Noise you'll see three options:

Scale: Scale determines how busy the generated noise is. The lower you set this the more quickly the noise direction will change, and the more your object will move randomly. The higher the scale is the more the noise "evens out" and you'll see more gentle changes of direction.

Strength: Strength simply sets how much the noise will affect your object. Set this to a low value for subtle noise, or crank it right up for a crazy effect.

Speed: Speed determines how quickly the noise changes over time, and it is similar to scale in this regard. Using high speed will change the noise more quickly and will make your object's motion more random.

Rotation Inertia

Rotation Inertia is similar to Center Of Mass, but it affects the object's rotation as if it was only loosely connected to its pivot.

Rotation Inertia ———————————○ 1   Higher values will make your object's
rotation lag behind more, creating the
effect of a heavier object that is only loosely connected to its parent.

Blend With Original Rotation

Blending Jiggle with the object's original rotation allows you to mix Jiggle with, for example, keyframed animation. Imagine a character walking along and you can make their arms jiggle just a little bit, without losing the animation! It also works great for hair, tails and other jiggly bits.

Blend with original r☑ ————To use this feature, just turn it on. Now Jiggle will try to preserve the existing animation, and you can use the Center Of Mass and Rotation Inertia to add secondary animation over the top.

Hint: Behind the scenes, this blend works by setting Jiggle's "rest rotation" to match the object's existing animation. This means that Jiggle's Spring Strength (see below) affects how strongly Jiggle will try to match the existing animation, and it means that Jiggle's Dampening affects how smooth or jittery this will look. Make sure to experiment with all these parameters if you are using this feature.

Spring Strength

If there is a "most important setting" in Jiggle, this is it. Spring Strength determines how much the
Spring Strength ————————○— 0.817   object will try to regain its original
rotation. It describes your object's solidity
in a single value. Higher values will make the object feel more rigid, lower values will make it feel more floppy.

Dampening

Here's your "second most important setting". Dampening describes how quickly your object loses its inertia

Dampening ——————————○— 0.739   Higher values will create very smooth
motion that fades quickly, lower values will
create more jittery motion that takes a long time to settle.

IMPORTANT: Very low Dampening values may cause the simulation to "go crazy" as the object accumulates inertia faster than it can shed it. It is good practice to always start with a high Dampening value and adjust down.
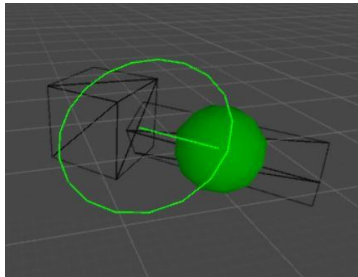
Hinge

By default, Jiggle makes an object flop around freely, at all angles. Think of the way an antenna would flop around as the car moves, or the way hair moves when the character moves. The Hinge option lets you constrain Jiggle to a single axis of rotation, similar to a real-life hinge. Think of the way a door moves, or of the way a wheel moves around its axis.
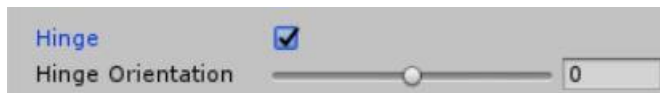
Once you enable Hinge you'll see a parameter for Hinge orientation. This simply lets you choose which way the Hinge is oriented.

When you enable Hinge you'll see the actual hinge represented in the viewport as a green circle. That way you can predict which way your object is going to rotate.

Hint: Your hinge is always perpendicular to the Center Of Mass, because it is the Center Of Mass that will rotate around the Hinge. You may have to move the Center Of Mass to orient the Hinge in the way you want.

Limit Angle

By default, Jiggle lets an object swing around freely, but there are lots of cases where you might want to limit that. For example a robot arm may have hard limits on its joints, or a flap has to be limited so it doesn't hit the wall it's attached to.

Jiggle comes with 2 types of limits: hard and soft.

The "Limit" parameter defines how far, in degrees, the object is allowed to rotate away from its starting rotation. Once it hits that limit, the object is just going to stop rotating, as if it hit a wall.

The "Soft Limit" option means that the object's rotation will be slowed before it can hit its limit, for a smoother and more organic look. To use a Soft Limit you have to first enable the "Limit Angle" option. Soft Limit has two parameters you can use:

Influence: Influence determines how soon the Soft Limit kicks in. The higher the value the quicker the object's rotation will be slowed. A value of 0 means that the Soft Limit will never activate, a value of 1 means it always activates. A value of 0.5 means that it will activate once the object has rotated more than half-way towards the hard limit.
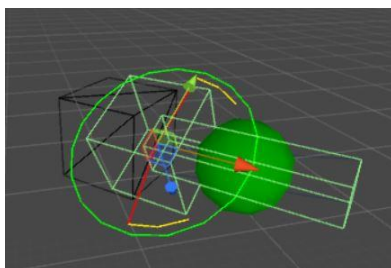
Both hard and Soft Limits are shown in the viewport.

The hard limit is shown as red lines. Once your Center Of Mass, shown as the green line, hits this angle it will stop.

The Soft Limit is shown as yellow arcs to indicate where along the arc the soft limit will start slowing down the object's rotation.

Experimental Settings

By default Jiggle updates during each of Unity's rendered frames. If Jiggle is attached or parented to a physics object however this can create jitters in Jiggle's motion because Unity's physics step is not

always in sync with its rendered frames. If you have attached Jiggle to a physics object such as a Rigidbody or Character Controller, turning on this option will alleviate this problem and should result in a much smoother Jiggle.

Update During Physics Step (Experimental) ☐

Please note that this setting is still experimental.

Gizmos

Jiggle also lets you control how large you want to draw its viewport gizmos, and if you want to draw them at all. This can help speed up the editor and de-clutter complex setups.

Show Viewport Gizm ☑
Scale ──○────── 0.1