# **Swimming Pack for Opsive Character Controllers**

# **Table of Contents**

wimming Pack	2
etting Started	3
/ater Setup	3
limb from Water	
ive	
rown	
wim	
ater Effects	

# **Swimming Pack**

# **Getting Started**

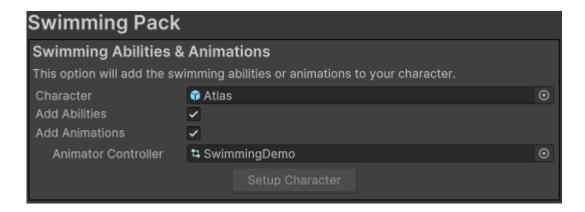
### **Import Errors**

If you receive any import errors after importing the Swimming Pack it is likely for one of the two reasons:

- You don't first have one of the Opsive <u>Character Controllers</u> imported. The Swimming Pack requires any of the controllers to first be imported in order for it to work.
- The Opsive/UltimateCharacterController/Demo folder is not imported. This directory is required from the character controllers in order for the Swimming Pack demo scene to work correctly.

## **Swimming Animations**

An editor tool has been created that allows you to easily add the swimming animation states to your existing animator controller. You can create the states for all of the abilities used within the Swimming Pack by opening the Add-Ons Manager (Tools -> Opsive -> Ultimate Character Controller -> Add-Ons Manager) and specifying the character that you want to add the animations to:



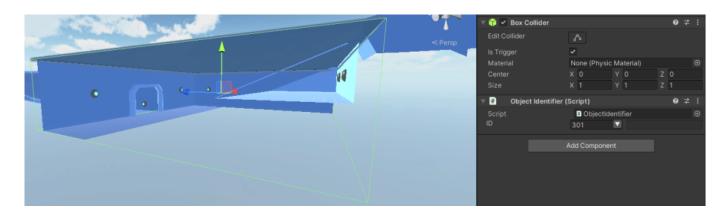
After selecting "Add Animations" all of the agility states will be added to the specified animator controller.

# Water Setup

The swim ability activates when it comes into contact with a water trigger. This trigger should be setup by performing the following:

- 1. Create the GameObject that will contain the trigger collider.
- 2. Set the GameObject layer to water
- 3. Add a Box Collider to the GameObject, ensuring *Is Trigger* is set to true.

In the demo scene the water mesh is a child of the water trigger but this is not a requirement.



### **Custom Water Assets**

The Swim ability is designed to be able to work with other water assets than what is included in the demo folder. By default the Swim ability will determine the height of the water by the top of the trigger's bounding box, but this can also be set to a custom value. In order to set a custom value the *SetWaterSurfacePosition* method can be called on the Swim ability. This method takes a float which specifies the upper vertical position of the water plane. In the example below the position will be set to a value of 5.

```
using UnityEngine;
using Opsive.UltimateCharacterController.Character;
using Opsive.UltimateCharacterController.Character.Abilities;
using Opsive.UltimateCharacterController.AddOns.Swimming;
public class MyObject : MonoBehaviour
{
    [Tooltip("The character that contains the swim ability.")]
    [SerializeField] protected GameObject m Character;
    /// <summary>
    /// Sets the water surface position.
    /// </summary>
    private void Start()
    {
        var characterLocomotion =
m Character.GetComponent<UltimateCharacterLocomotion>();
        var swimAbility = characterLocomotion.GetAbility<Swim>();
        swimAbility.SetWaterSurfacePosition(5f);
    }
}
```

# **Climb from Water**

The Climb From Water ability allows the character to climb out of the water onto a horizontal platform. The ability will detect the climbing object set by the inherited <u>Detect Object Ability Base</u> ability.

### Setup

- 1. Select the + button in the ability list under the "Abilities" foldout of the Ultimate Character Locomotion component.
- 2. Add the "Swimming Pack/Climb From Water" ability. This ability should be positioned above the Swim ability.

### **Inspected Fields**

#### **Max Water Depth**

The maximum water depth that the character can climb from.

#### **Climb Offset**

The offset that the character should start climbing from.

### **Move To Position Speed**

The speed that the character should move towards the target when getting into position.

# **Dive**

The Dive ability will allow the character to dive head first from an elevated area. The Dive ability inherits from the <u>Detect Ground Ability Base</u> ability to determine that the character is on an object that they can dive from.

# Setup

- 1. Select the + button in the ability list under the "Abilities" foldout of the Ultimate Character Locomotion component.
- 2. Add the "Swimming Pack/Dive" ability. This ability should be positioned above the Swim ability.

# **Inspected Fields**

#### Min High Dive Height

The minimum distance from the dive platform to the water for the dive to be considered a high dive.

#### **Dive Force**

The amount of force to apply when the dive ability starts.

#### **Frames**

The number of frames that the Start Force is applied in.

#### **Will Enter Water Distance**

The distance at which the character should play an animation which prepares the character for entering the water.

#### **Entrance Splash**

Water Effect that should play when the character enters the water.

#### **Retained Gravity Amount**

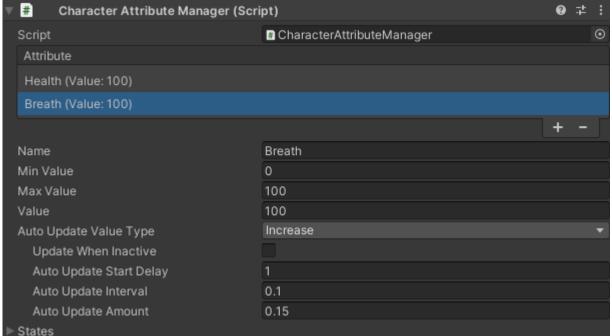
The percentage that the gravity force is retained each frame after the character enters the water.

# **Drown**

The Drown ability plays a drowning animation when the character is out of breath. This ability works with the <u>Attribute System</u> and the <u>Swim</u> ability in order to determine that the character is out of breath.

### Setup

- 1. Select the + button in the ability list under the "Abilities" foldout of the Ultimate Character Locomotion component.
- 2. Add the "Swimming Pack/Drown" ability. This ability should be positioned above the Swim ability.
- 3. Ensure the Breath attribute has been added to the <u>Attribute Manager</u>. The *Breath Attribute Name* should be set to the same name as the attribute created within the Attribute Manager.



# **Inspected Fields**

#### **Breath Attribute Name**

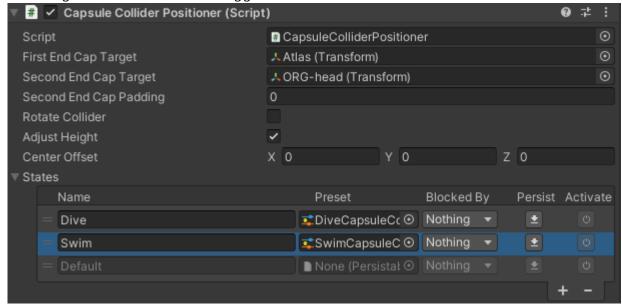
The name of the breath attribute.

# **Swim**

The Swim ability will allow the character to traverse through water and is activated on collision with water layer triggers. The swim ability inherits the <u>Detect Object Ability Base</u> ability allowing for a broad range of water detection modes. It is recommended that the water uses a <u>trigger setup</u>.

### **Setup**

- 1. Select the + button in the ability list under the "Abilities" foldout of the Ultimate Character Locomotion component.
- 2. Add the "Swimming Pack/Swim" ability. This ability should be positioned above the Fall ability but below the <u>Dive</u> and <u>Climb from Water</u> abilities.
- 3. Perform the <u>water setup</u>.
- 4. Set the Detect Object Ability Base parameters. In the demo scene *Detect Layers* is set to the Water layer.
- 5. Set the Start Swim Depth, Surface Swim Depth, and the Surface Height Adjustment.
- 6. Add the Swim Capsule Collider Positioner preset to the character's Capsule Collider Positioner component. This component is located on the Character/Colliders/Capsule Collider GameObject. Ensure the Capsule Collider Positioner's *Rotation Bone* and *Position Bone* fields are set to a Transform on the character. This can be set by enabling the *Rotate Collider* toggle.



7. Add the Breath attribute and <u>Drown</u> ability (if necessary).



8. Specify any Water Effects.

#### **API**

The Swim ability can be started manually if the water object that you are using does not use a trigger. The *TryStartStopSwim* method can be used to start or stop the swim ability without a trigger. With this setup the water depth can be set with the *SetWaterSurfacePosition* method. The water depth should continuously be updated with the current swim depth.

```
using UnityEngine;
using Opsive.UltimateCharacterController.Character;
using Opsive.UltimateCharacterController.Character.Abilities;
using Opsive.UltimateCharacterController.AddOns.Swimming;
public class MyObject : MonoBehaviour
{
    [Tooltip("The character that contains the swim ability.")]
    [SerializeField] protected GameObject m Character;
    private Swim m SwimAbility;
    /// <summary>
    /// Starts the swim ability.
    /// </summary>
    private void Start()
        var characterLocomotion =
m Character.GetComponent<UltimateCharacterLocomotion>();
        m SwimAbility = characterLocomotion.GetAbility<Swim>();
        m SwimAbility.TryStartStopSwim(true);
    }
    /// <summary>
    /// Starts the swim ability.
    /// </summary>
    private void Start()
    {
        m SwimAbility.SetWaterSurfacePosition(5f);
    }
}
```

# **Inspected Fields**

#### **Start Swim Depth**

The water depth that the character can start to swim at.

### **Surface Swim Depth**

The water depth that the character should swim and the surface at.

#### **Surface Height Adjustment**

Modifies the default height that the character will swim on the surface at.

#### **Can Swim Underwater**

Can the character swim underwater?

#### **Start Underwater Swim Pitch**

Specifies the camera pitch that the character will transition from a surface swim to underwater swim.

#### **Min Underwater Swim Depth**

The minimum surface depth that the character can swim underwater.

#### **Start Underwater Swim Name**

The button mapping to start swimming underwater. An empty value will prevent the mapping from being used.

#### **Surface Buoyancy Amount**

The amount of buoyancy that should be applied to the character while underwater.

#### **Underwater Buoyancy Amount**

The amount of buoyancy that should be applied to the character while underwater.

#### **Water Height Detection Mode**

The percentage that the gravity force is retained each frame after the character enters the water.

#### **Water Height Detection Mode**

Specifies the method for detecting the water height:

- *Collider*: Detect the water height based on the collider above the character.
- *Custom*: A custom water height can be set with the *SetWaterSurfacePosition* method.

#### **Breath Modifier**

The breath <u>attribute</u> that should be modified when the character is underwater.

#### **Entrance Splash**

Effect that should play when the character enters the water from the air.

#### **Surface Swim Splash**

Effect that should play when the character is swimming on the surface.

#### **Underwater Swim Movement**

Effect that should play when the character is swimming underwater.

#### **Underwater Bubbles**

Effect that should play when the character is swimming underwater.

#### **Underwater State Name**

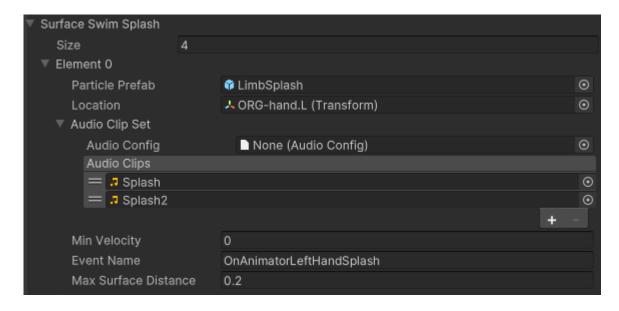
The state that should activate when the character is underwater.

# Water Effects

Water Effects are specified on the <u>Swim</u> and <u>Dive</u> abilities. Water Effects allow for particle and sound effects to be played at certain events. The following effects are supported by the Swim or Dive ability:

- Entrance Splash
- Surface Swim Splash
- Underwater Bubbles

The Entrance Splash will play if the character enters the water from the air at a high velocity. Surface Swim Splash is triggered by an <u>animation event</u> and will play when a limb makes a splash while doing a surface swim. Underwater Bubbles occur when the character is swimming underwater.



The Entrance Splash and Underwater Bubbles are single events while the Surface Swim Splash is an array allowing for multiple events. In the demo scene the character has 4

Surface Swim Splash elements: left hand, right hand, left foot, and right foot. Each element contains the animation event that should trigger the effect. The Water Effects also can specify multiple audio clips allowing for a random sound to be played with each effect.