



Slingshot Manual

By Shoebill Games

Thank you for buying our asset!

In this manual, you will see how the slingshot works and how you can change it for best fit your needs.

We hope you enjoy!

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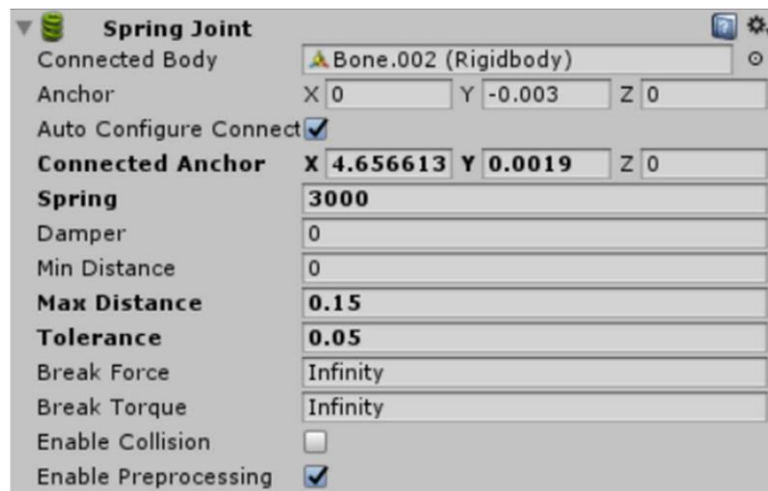
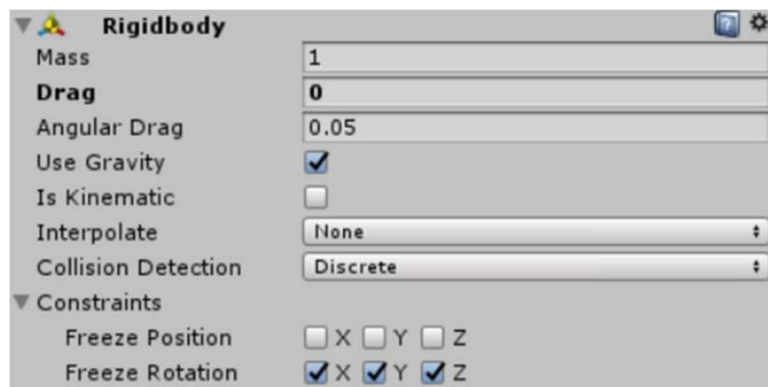
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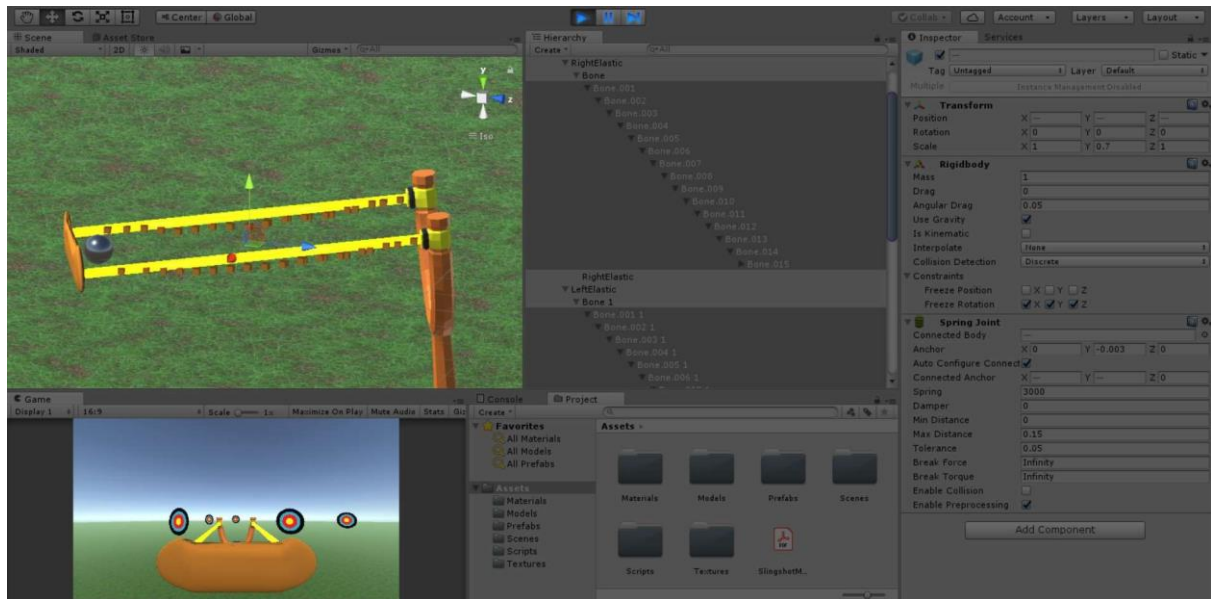
Introduction

The elastic works with bones each bone has a rigidbody and a collider.

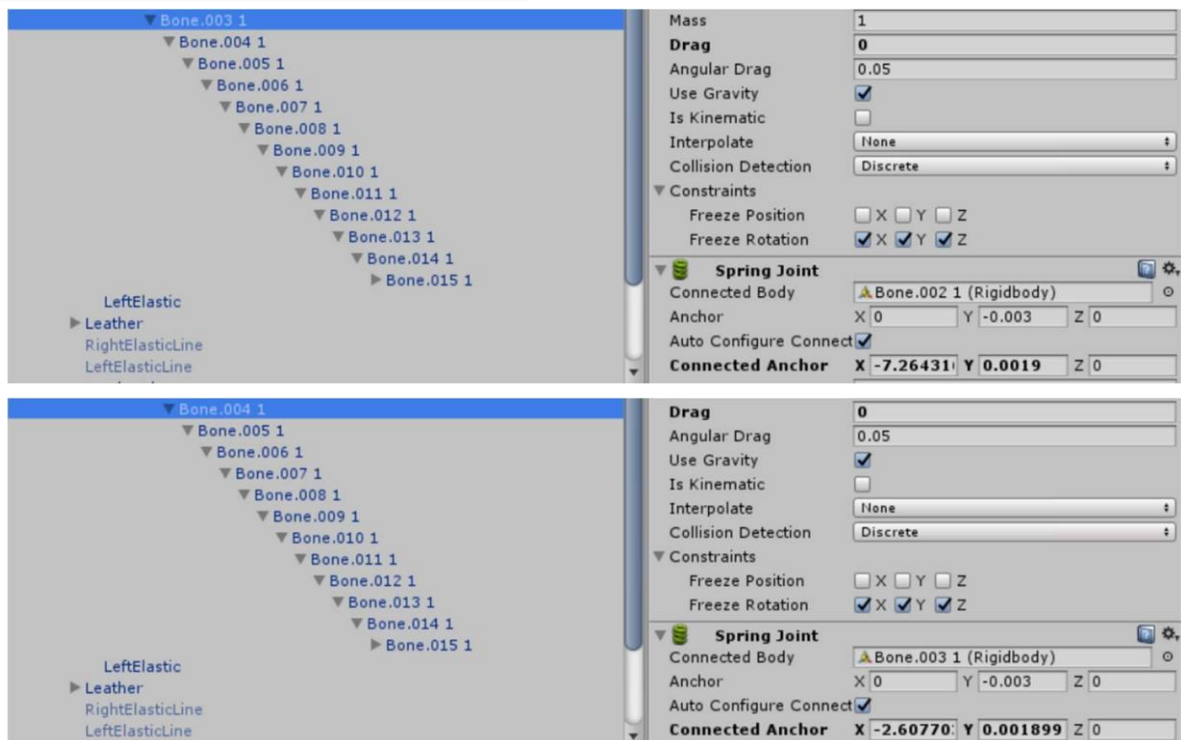


The rigidbody of each bone has "freeze rotation" enabled. This is extremely important and should not be changed, because the elastic would break.

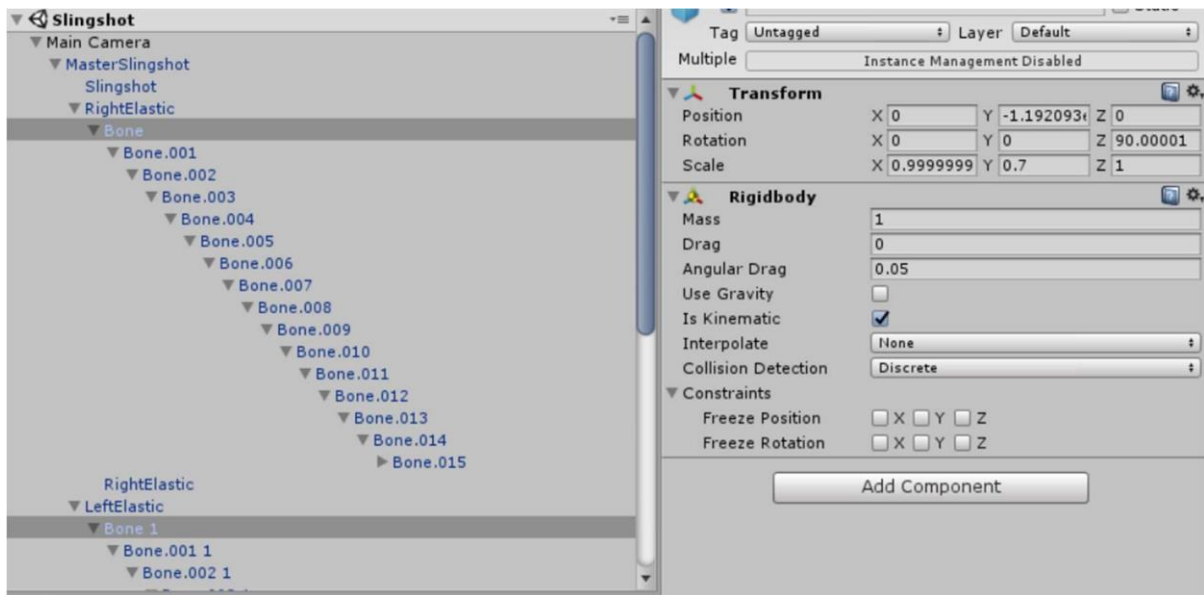




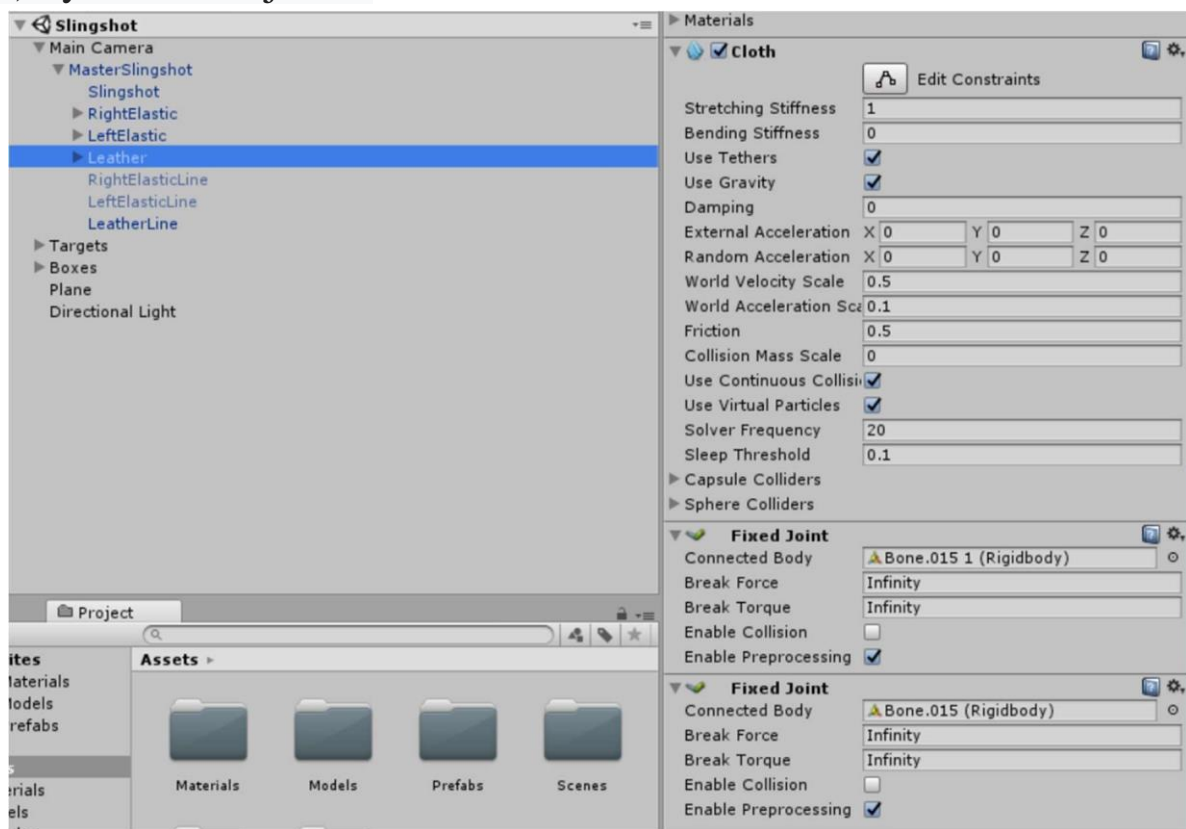
The SpringJoint component of each bone is connected with the Rigidbody of the previous bone, just like in the example, bone 3 (Bone.003 1) is connected to bone 2 (Bone.002 1), the bone 4 (Bone.004 1) is connected to bone 3 (Bone.003 1) and so on. It makes the movement fluid and elastic.



The elastic is attached to the body of the slingshot by the first bone (Bone and Bone 1), which has a kinematic rigidbody, for the elastics to be locked in the body of the slingshot.

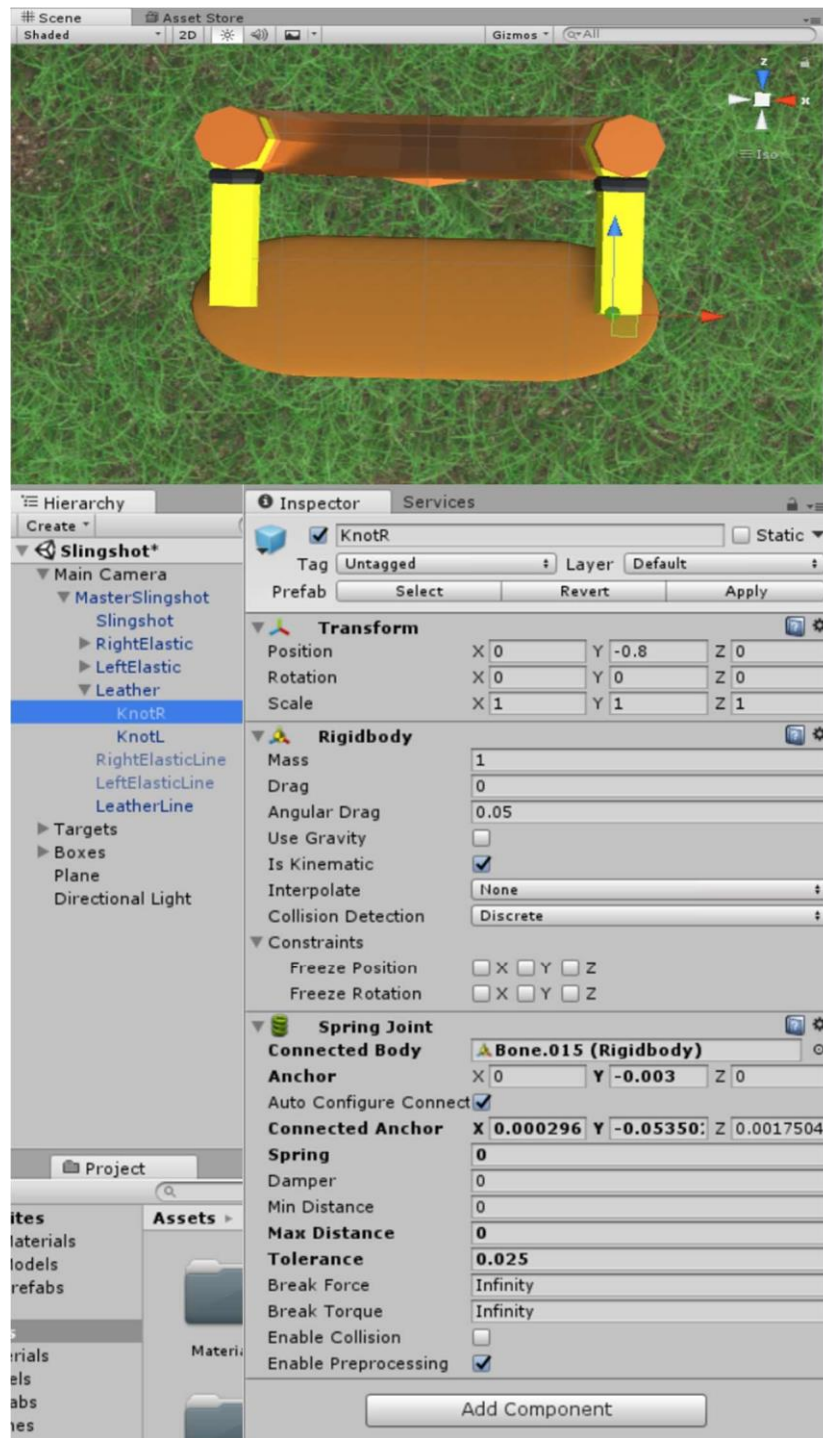


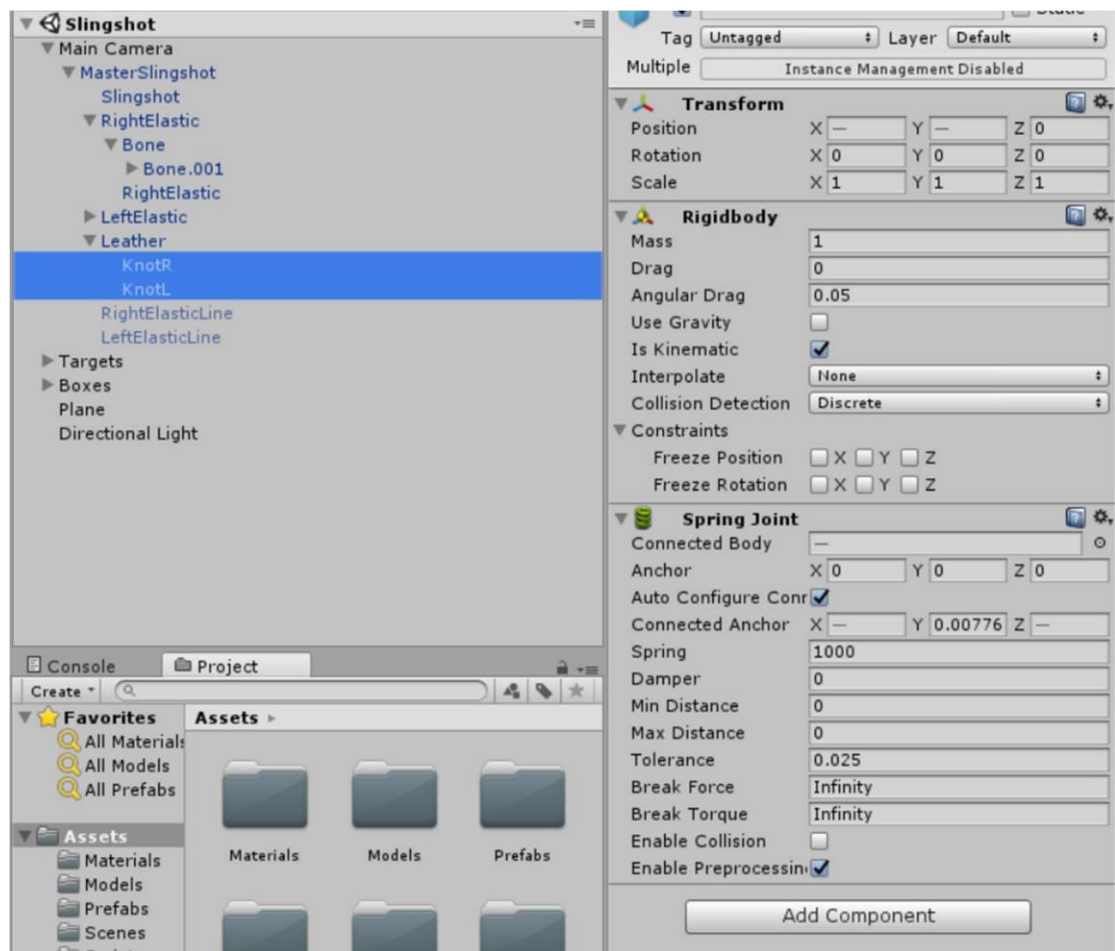
The leather is attached to the last bones (Bone.015 and Bone.015 1) by two fixed joints.



The leather has two knots as its children. Each of this knots has a rigidbody and is located between each elastics and the leather, as if they were real knots from the elastics.

The elastic is attached to these two knots by the last bone (Bone.015 and Bone.015 1) with spring joints.





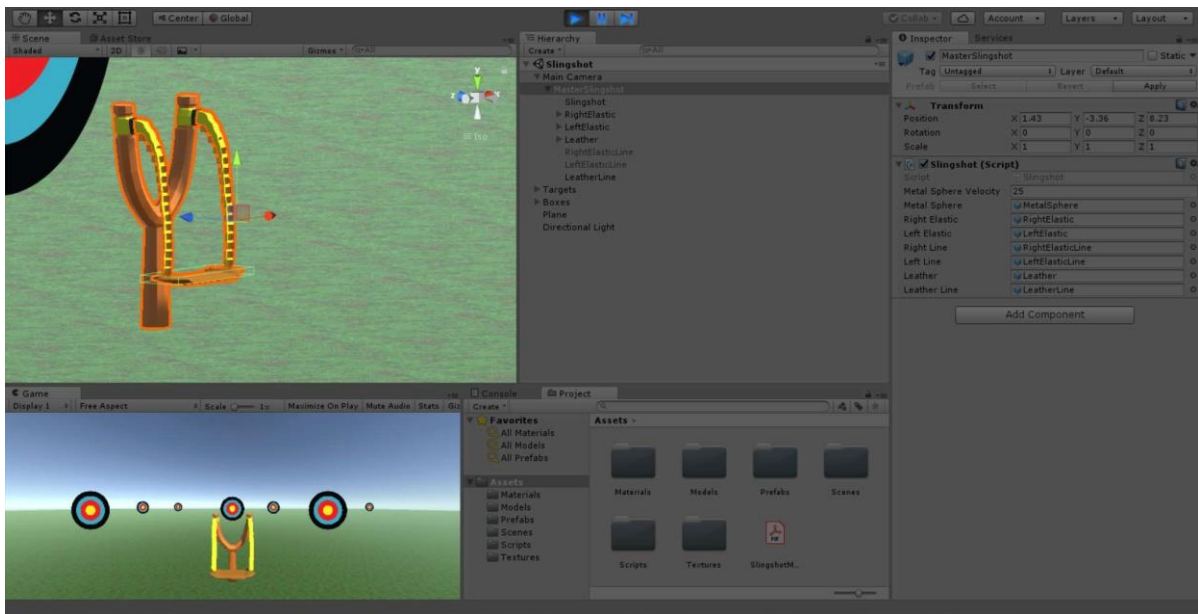
To make the elastics more rigid or flexible, it is necessary to change the spring joint values of each bone, increasing and decreasing the spring, max distance and tolerance parameters.

Spring	3000
Damper	0
Min Distance	0
Max Distance	0.15
Tolerance	0.05

Slingshot Script

The Master Slingshot has two scripts, the Slingshot script and the Elastic Manager script.

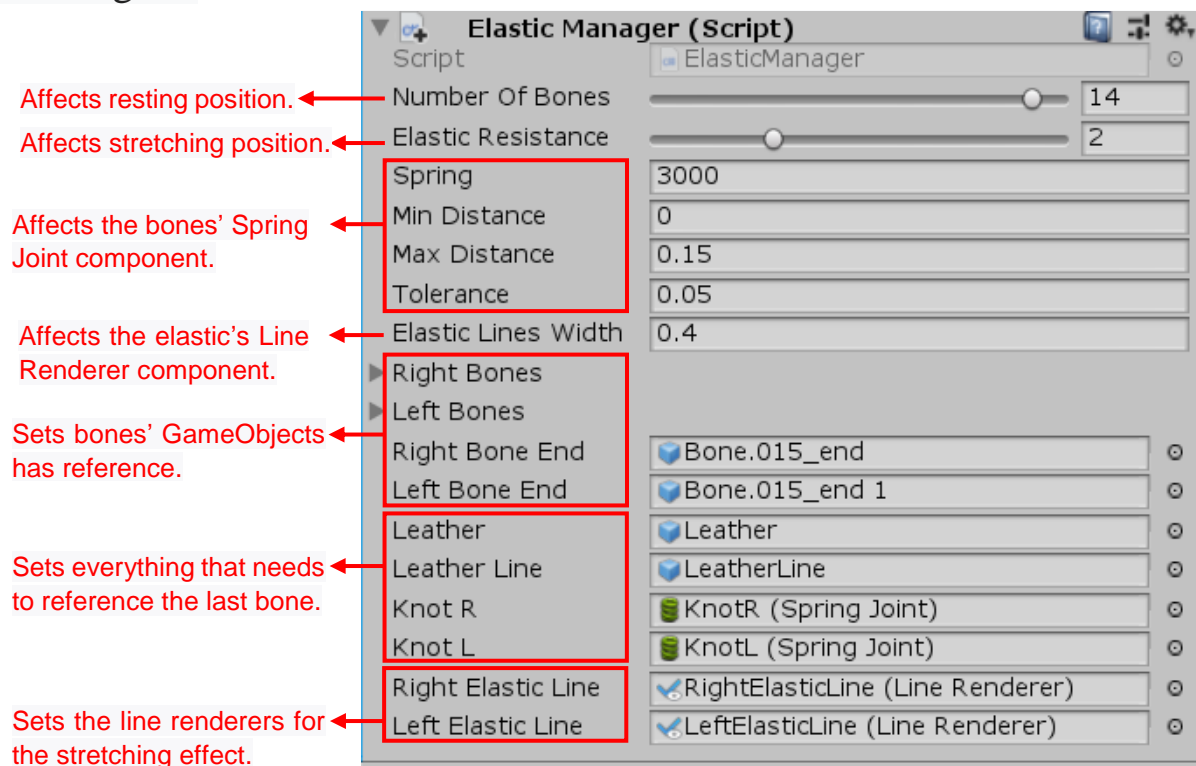
The Slingshot script is the main script. It controls the stretch of the elastic bands and it's also responsible for the shooting, creating a metal ball whenever the player clicks to shoot. The ball velocity is also set in this component.



Elastic Manager Script

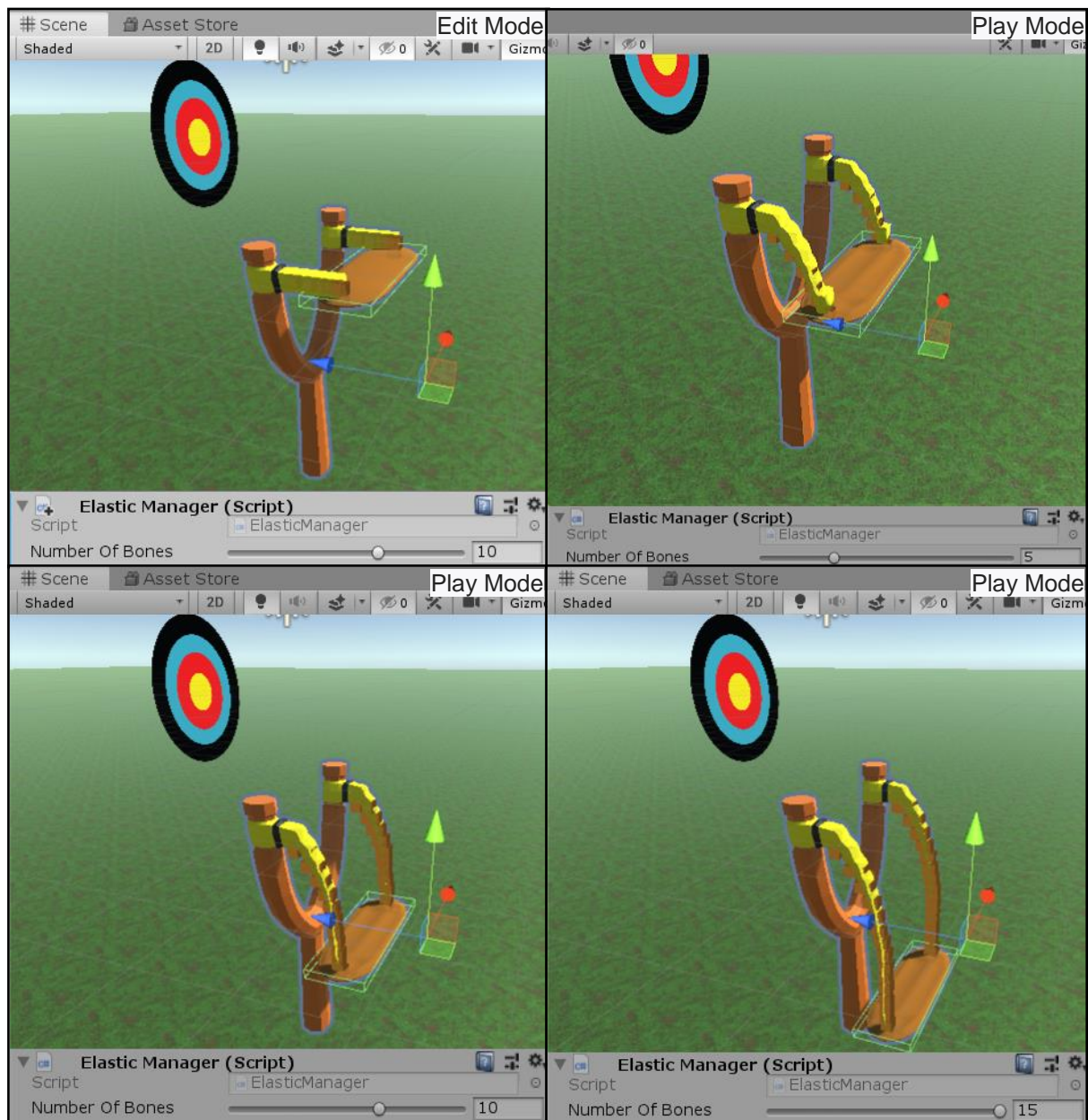
The Elastic Manager script is an optional script. It was implemented to facilitate the configuration of the elastics when necessary, mainly when changing the scale of the Master Slingshot.

The script will apply the modifications when entering play mode. However it will not apply any modifications during play mode, being necessary to return to edit mode, modify the attributes and enter play mode again.



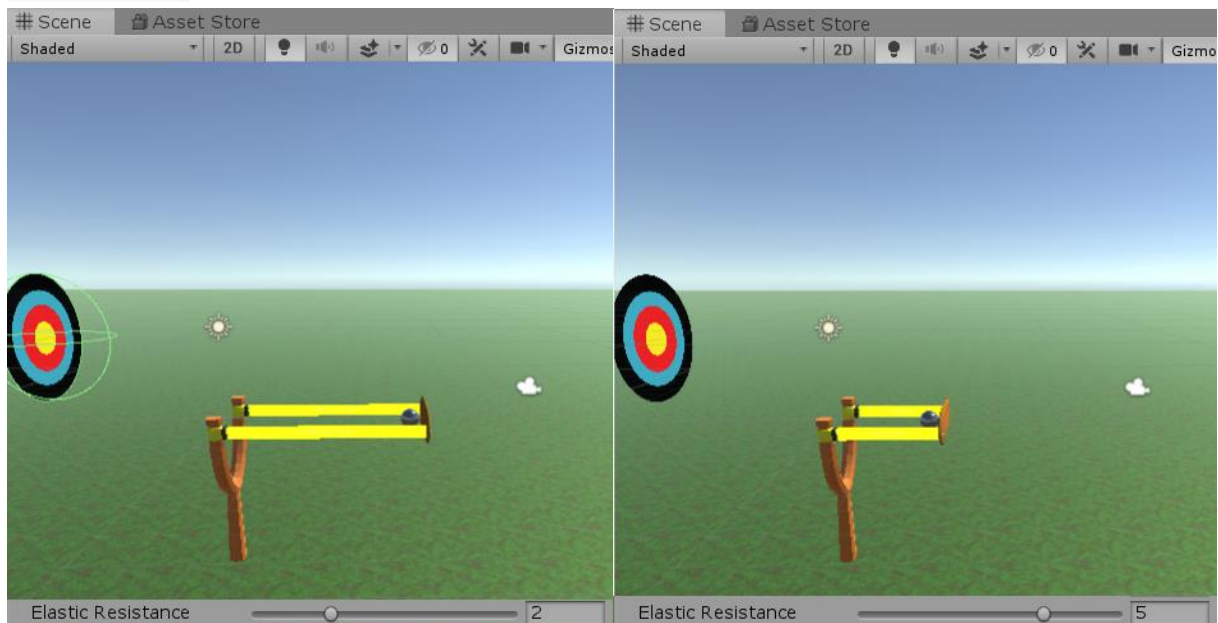
Once the values are set in the manager, it is not necessary to adjust the joint and line renderer components individually, except in very specific cases.

The number of bones variable will affect the amount of bones enabled in the elastics. It will shorten or lengthen the elastic while it is at rest. The minimum number of bones is 1 and the maximum is 15 – the total of bones present in the elastic FBX model.



Because this model is rigged, deleting any of the bones will make it lose its movement reference in some sections of the mesh. This script will disable the unused bones, so they will not interfere with the movement and size of the elastic, maintaining the reference that the mesh needs to not break.

The elastic resistance will influence how much the elastic can be stretched. The greater the resistance, the less the elastic is stretched and vice versa.



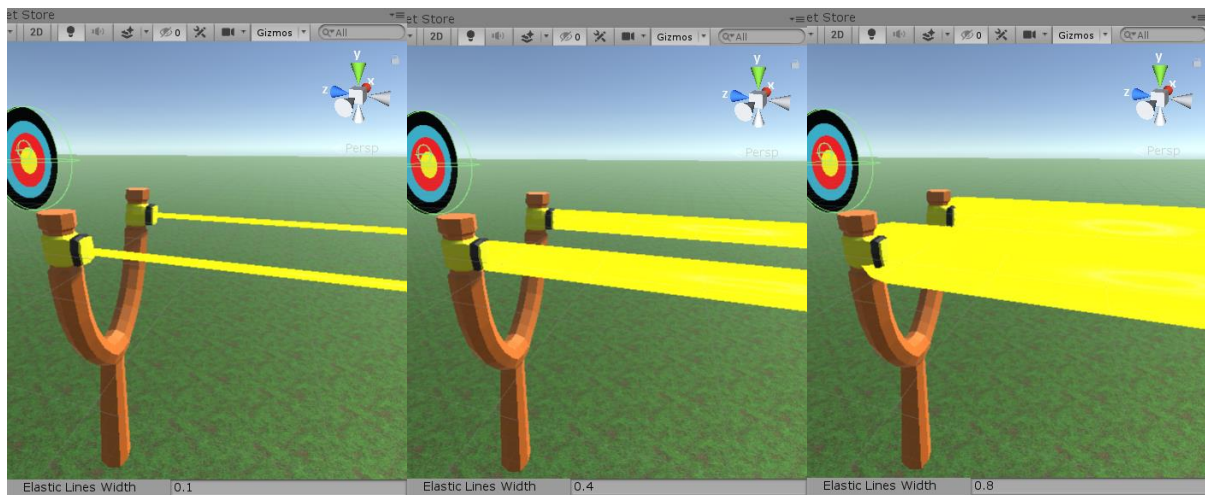
The next four values will be applied to the bones' spring joint component and affects the elastic behavior of the bones.

Spring	3000
Min Distance	0
Max Distance	0.15
Tolerance	0.05

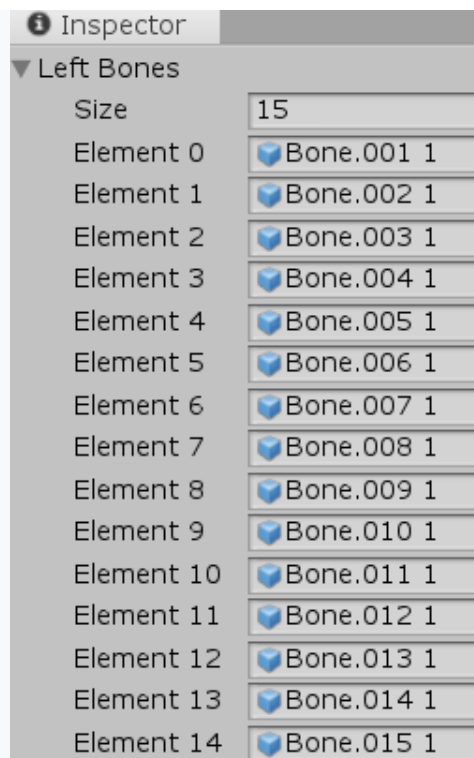
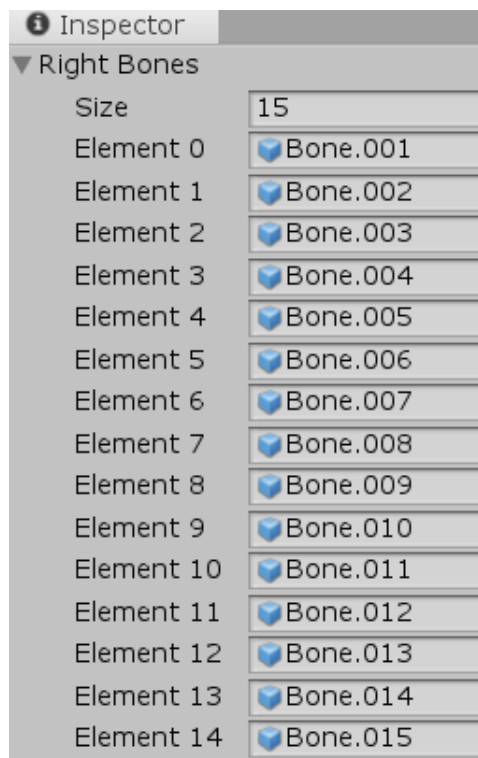
This script will first set the new spring joint component values to the right elastic's bones before repeat the process to the left one.

The maximum distance can influence the size of the elastic too, but it also depends on the number of bones enabled in the elastics. If the intention is to shorten the elastic, it will be necessary to decrease the amount of bones before reducing the max distance so that the effect is visible.

After scaling the slingshot, the elastic could look too thin or too thick when stretched. The Elastic Lines Width will control the width of the line renderer component of both RightElasticLine and LeftElasticLine objects for better adjustment.



Next, the script needs the objects and components that it will modify. The new prefab of the MasterSlingshot will have it already set. If this reference does not appear for the prefabs from the previous version, just set them again, but make sure the bones are following the correct parent and child hierarchy, as the child's SpringJoint uses the parent's Rigidbody as a reference.

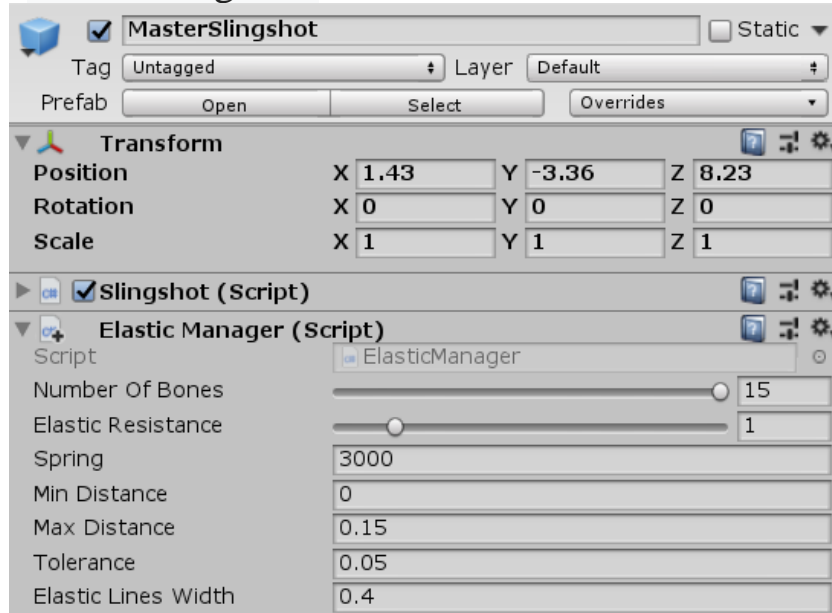


Scaling Example

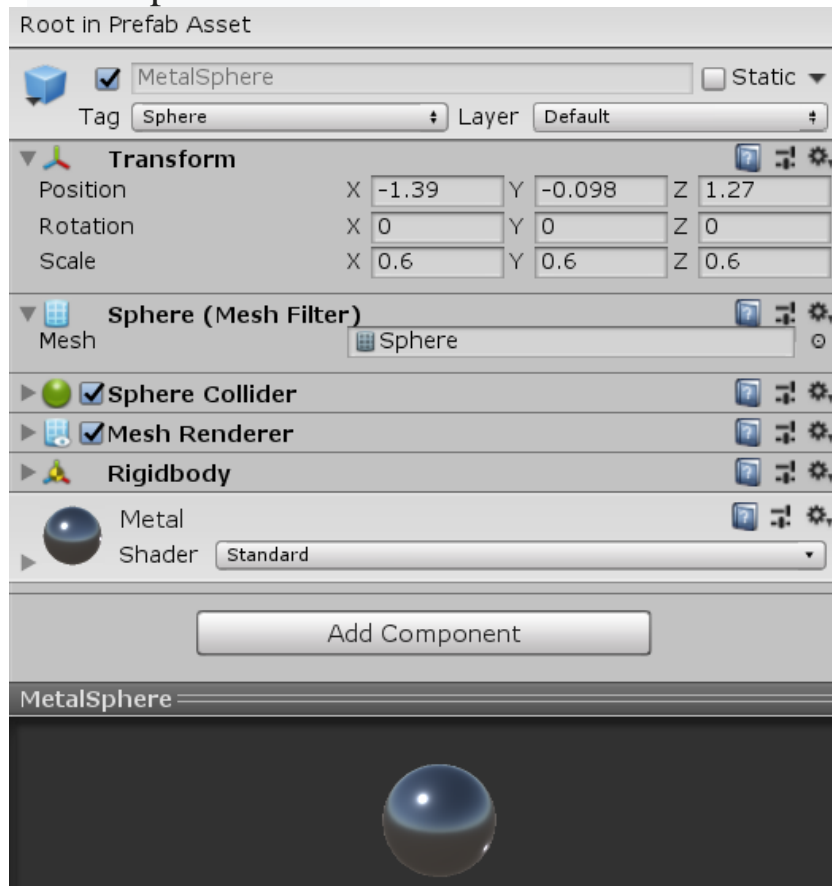
To scale the slingshot, modify the MasterSlingshot object and the MetalSphere prefab.

1) Original Values

a) MasterSlingshot:

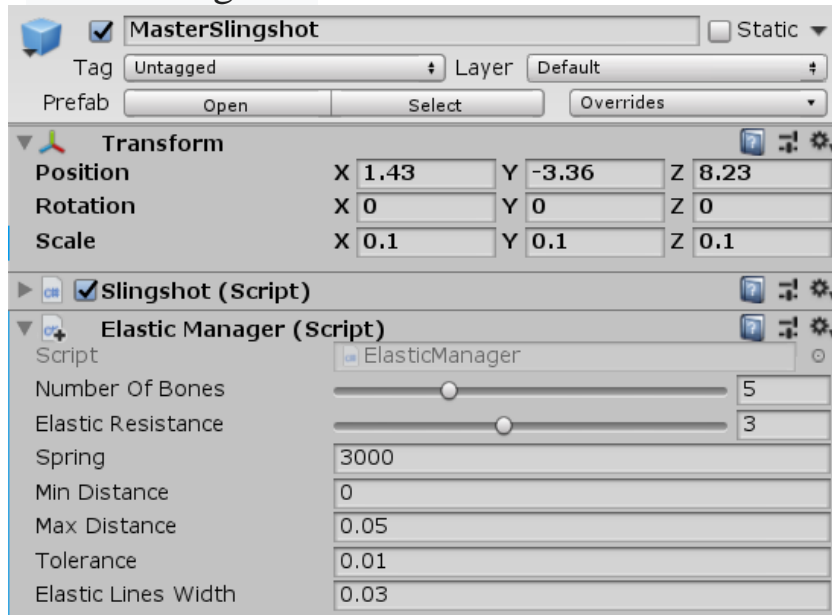


b) MetalSphere Prefab:

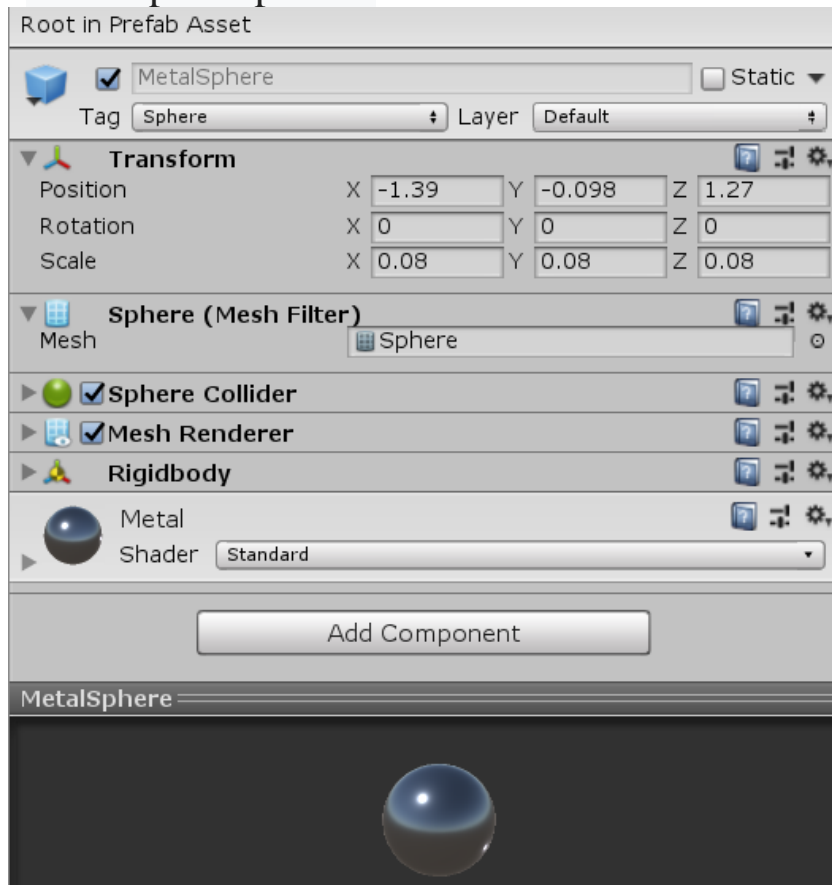


2) Using the scale 10% smaller

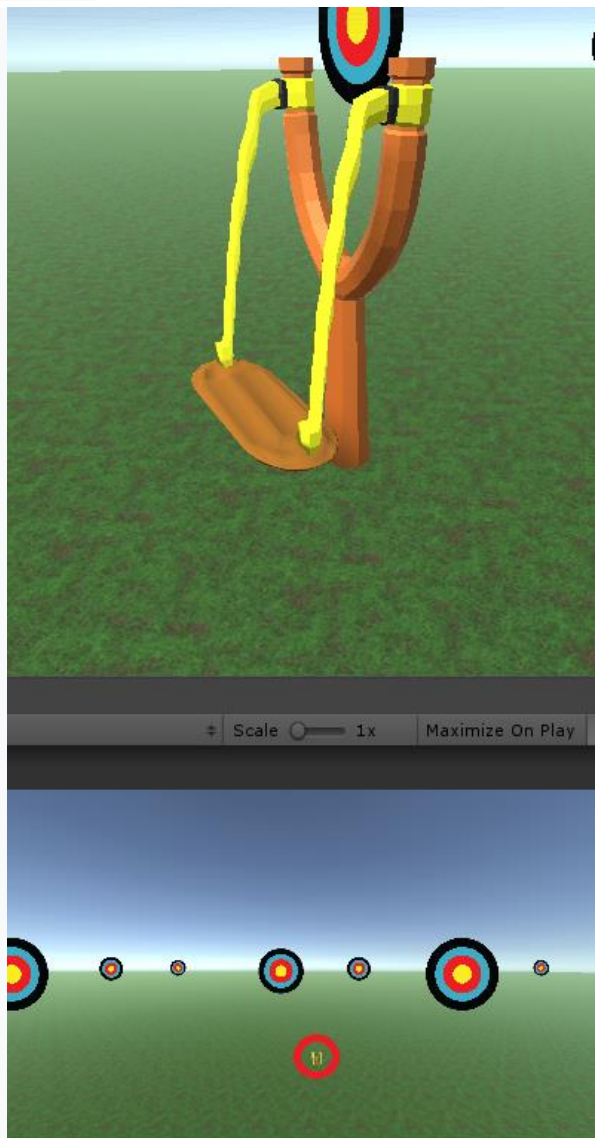
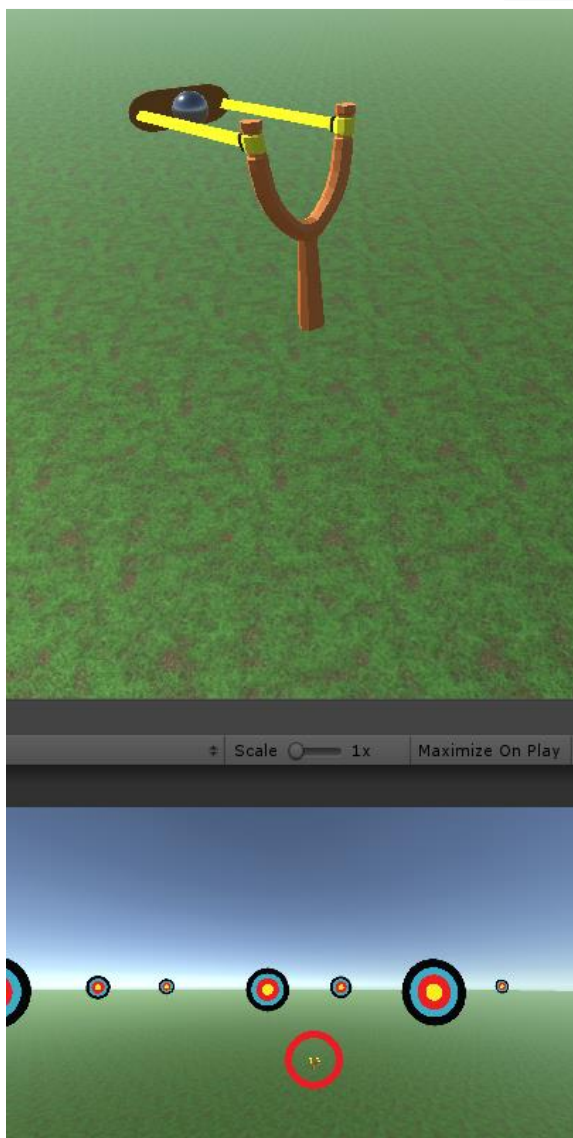
a) MasterSlingshot:



b) MetalSphere prefab:

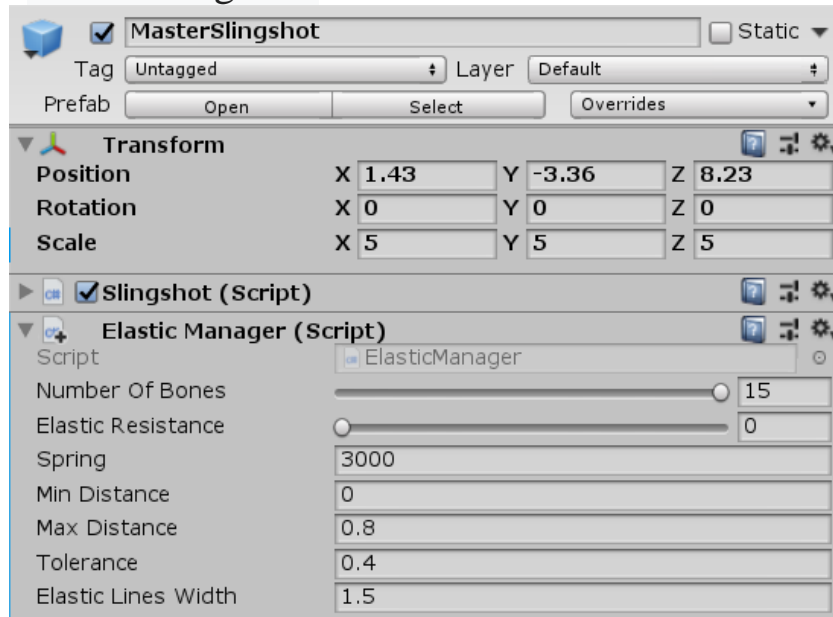


The result:



3) Using the scale 500% bigger

a) MasterSlingshot:



b) MetalSphere prefab:



The result:

