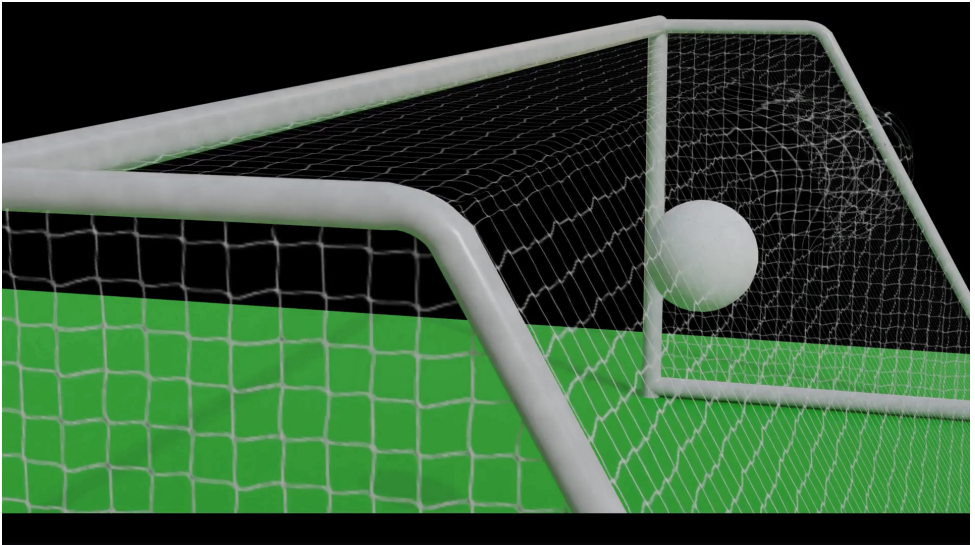


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This is not exactly a tutorial but rather a small insight into the creation of the animation you are currently watching on the screen, in which a soccer ball enters the goal and moves the net, only to return back.

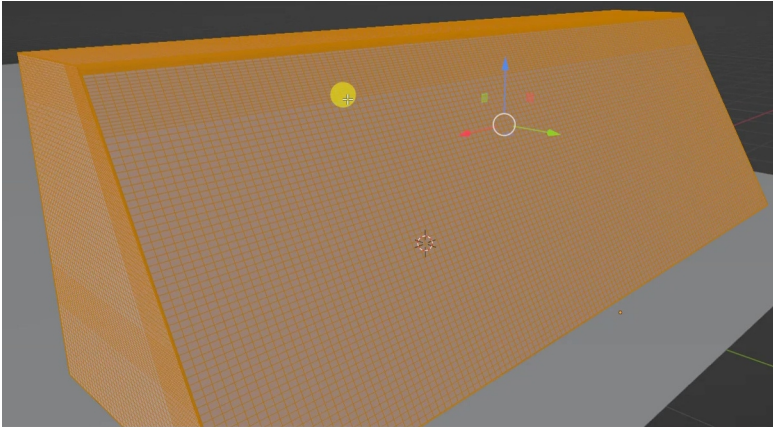
My intention was to achieve this using **Rigid Bodies** and **Cloth** simulation, allowing me to generate different animations based on various shots with different forces and directions.

The shots, in particular, were executed by **colliding a Passive and animated Rigid Body object with the ball**, which, in turn, is an **Active Rigid Body** object.

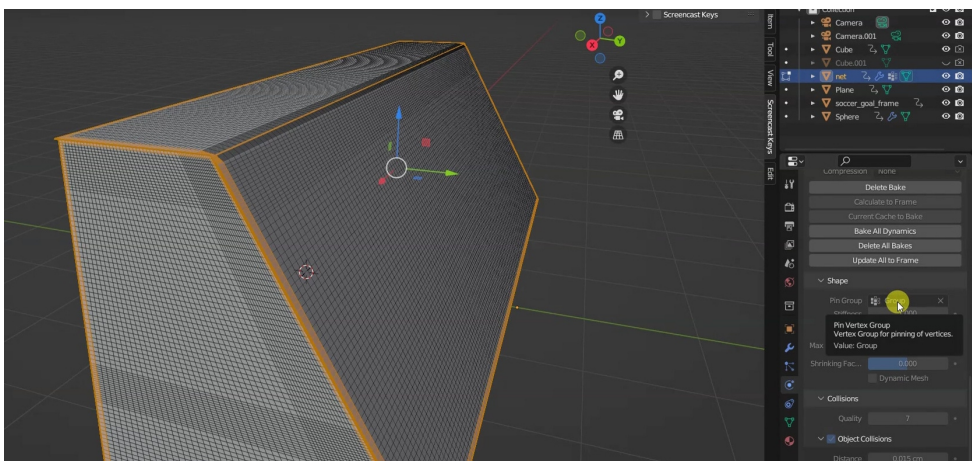
I've explained how to create these animations in a previously published video tutorial, using a practical example of the **opening shot in billiards**.

The **soccer ball** is also equipped with a **Collision** component, allowing it to interact with the **goal net**, which I've set up with the **Cloth** simulator.

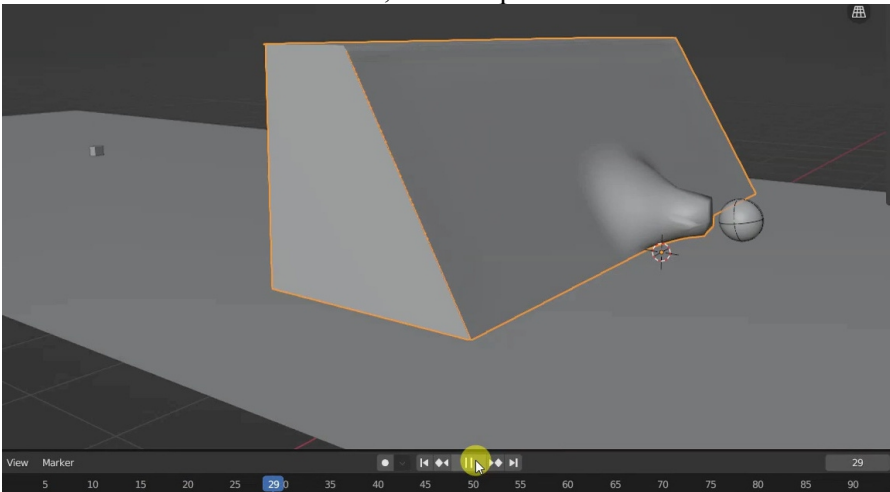
The net, in particular, is **not physically modeled** but is composed of **flat planes** with a semi-transparent texture applied to them. These planes naturally have a **good number of subdivisions** to produce a realistic cloth simulation, but they are much simpler to simulate than a realistically modeled net.



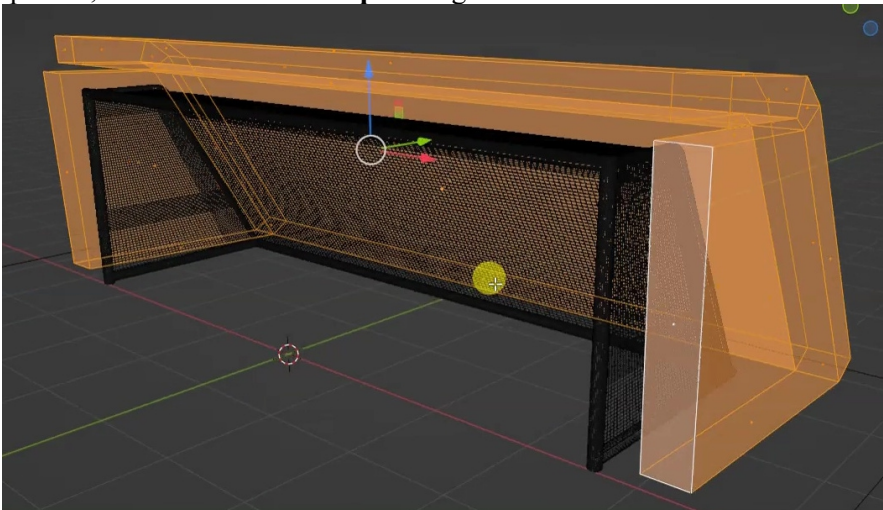
Certain vertices of the planes representing the net are held in place using **Pinning**, which involves assigning them to a **Vertex Group**. This Vertex Group is then used as the **Pinning Group** in the **Cloth** simulation, ensuring that those vertices remain stationary during the simulation.



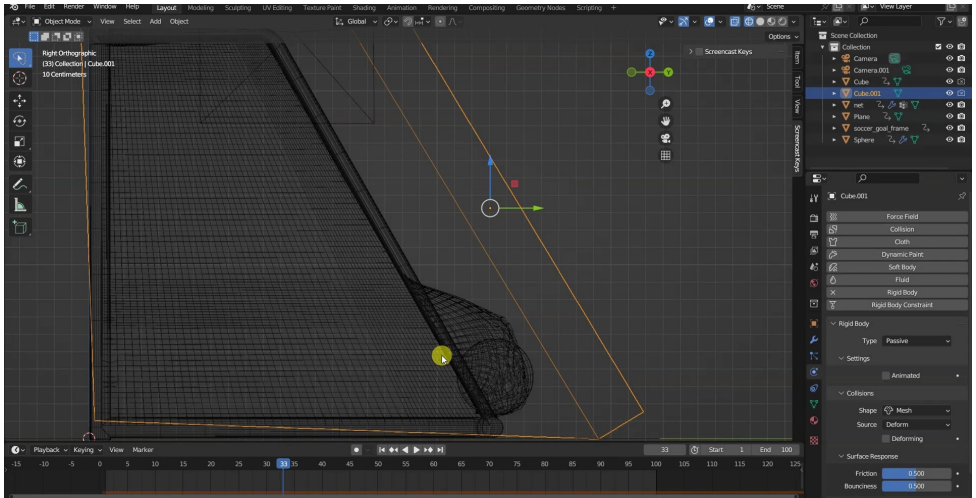
In theory, everything should go smoothly because the ball flies towards the net, and the collision is indeed detected by the Cloth simulator. The issue is that, at least to my knowledge, **the Cloth simulator doesn't bounce an object back**. Therefore, **the ball ends up piercing through the geometry** and continuing its flight indefinitely. Perhaps I could have addressed the problem with Soft Bodies, but since I'm not familiar with them, I came up with a small workaround.



Starting from a simple cube, I created **a mesh to act as an invisible wall** for the outer parts of the net. This new object is equipped with a **Passive Rigid Body** component, with the **collision shape** changed from **Convex Hull** to **Mesh**.



With these settings, **the ball comes to a halt** as soon as it hits the invisible obstacle. **To make it bounce**, I increased the **Bounciness** value for both the ball and the invisible object.



The effect is what I showed you at the beginning of the video.

I'm also displaying other renders where the net appears to split immediately after the impact. This is because in the original object, the net had some thickness, so in reality, there are two planes with the semi-transparent texture, which move apart when the net is deformed.

Resolving this issue is quite simple; you just need to remove one of the two planes.

However, I must be completely honest: the result is not always optimal!

Depending **on the point or angle of impact**, strange behaviors may occur, which can sometimes be amusing but are certainly not accurate!

There is room for improvement, but I think, as an ugly but quick and simple solution, it works!

That's all! I hope it has been helpful! See you soon!