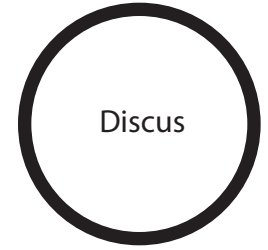# Discus Throw

The Discus Throw competition has been a part of the Olympics since the Ancient Olympic Games.   It is a competition to see who can throw a disc shaped object the furthest. Its almost like throwing a frisbee, except the discuss is smaller and heavier and takes more skill to throw it far.

Discus

Engineering a Robotic Discus Throwing Arm

Engineering an arm that will throw a discus might sound easy, however the hard part is seeing if you can get the discus to go far! Here is some science and physics to help your design.

Design 1 - Spring & Lever Powered Arm

The past couple of weeks, you have learned about springs and the energy that they have. You also learned how to use the springs in a lever to shoot baskets. In a similar way, you can also use those designs to throw a discus.

Advantages of this design:
    -Easy to throw straight
    -Easy to adjust the throwing angle by
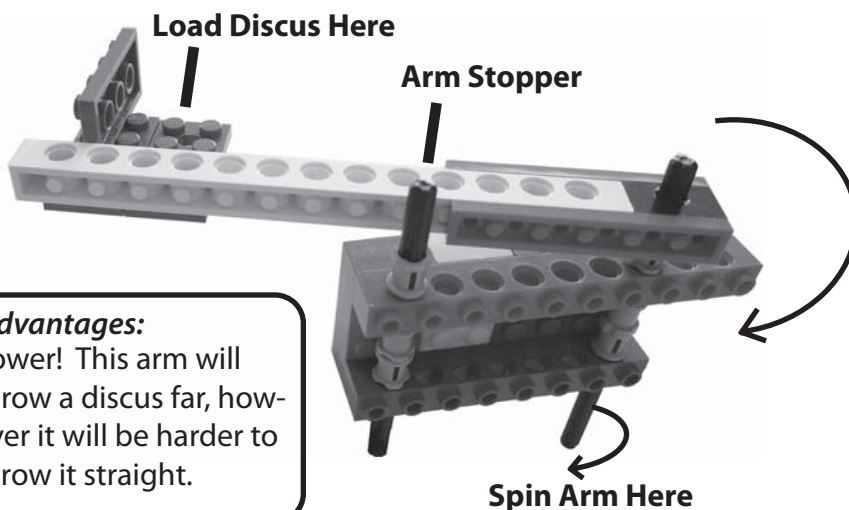   building a base.

Load Discus Here   **Fulcrum Point**
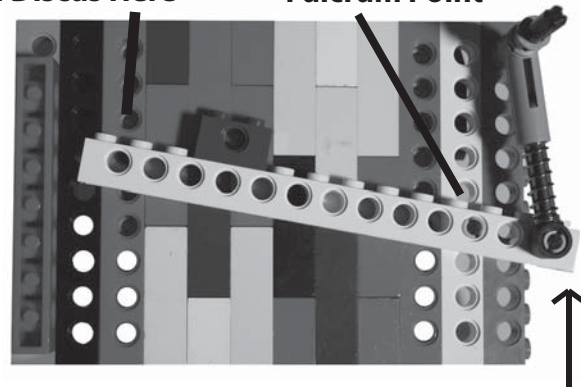
Push up and then release to throw

Design 2 - Rotating Arm

Load Discus Here

Arm Stopper

Advantages:
Power! This arm will throw a discus far, however it will be harder to throw it straight.

Spin Arm Here

If you have watched the Discus Throw, you will notice that many of the athletes spin before they throw the Discuss. This helps the athlete increase speed (or acceleration) within a small amount of space. Then when they have reached peak acceleration, they release the discus with the maximum amount of force.

According to Newton's 2nd Law of Motion:
Force = Mass X Acceleration

So in simple terms, the more acceleration your arm has, the more force is applied to throwing the discus, and the further it will go!

Try engineering a design like the ones above or use your own design.

Tips:
-Start with a simple build and then add more to it, instead of building a complex design first.
-Experiment with the launch angle as it will either make your discus throw shorter or further.
-Adjust the length of the arm and fulcrum point and see what it does.