



## Curiosity Guide #603

### Muscular Science

Accompanies Curious Crew, Season 6, Episode 3 (#603)

#### Design a Bicep Support Device

STEM Challenge

##### Description

Design a device that can support the bicep in a contracted (bent) position but that can stretch when the triceps are activated. Consider including a shoulder harness and hand/wrist support.

##### Materials

- Rope
- Rubber bands
- Bungee cords
- String
- Springs
- Fabric scraps
- Balloons
- Exercise bands
- Tape
- Wire
- Scissors
- A group of friends

##### Procedure

- 1) Consider the available materials and collaboratively design a prototype for a supportive bicep device.
- 2) Build the prototype.
- 3) Test and redesign as necessary.

## My Results

### Explanation

In this challenge, we are assuming the person has an injured bicep, perhaps a strain as a result of overuse or from an injury. Biomedical engineers design equipment to increase the time for muscles to heal, as well as developing assistive technologies to complete tasks in a different way while the body is healing. Designing a Bicep Support Device would provide support to the muscle so that it requires less effort to contract, but still allows the triceps to have some function.

**Imagine this:** What would happen if you went outside and kept throwing a ball as hard as you could? It's possible you might injure your muscles. Muscles can be strained from overuse or an accident, but engineers have found different methods to help treat injured muscles. One idea is using an ultrasound device, which sends sound waves into the muscle to increase blood flow better and encourage healing. Ultrasounds can help get your muscles feeling better much sooner. Playing ball again? Be sure to take care of your muscles!

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