

Overhauled Bicep Lab

Notes from Allic

1. Main suggestion: Cut content and make things inquiry-based
2. Just saying at the beginning something like “This lab will be different. We’re expecting you to think about what steps to take, rather than just follow a recipe” has a big effect on the students’ attitudes. [Jared is not surprised by this, though he hadn’t thought of doing it.]

Warm-up

Meet the apparatus

In this experiment, you’ll attempt to understand torques and rotational equilibrium using a model of the human arm.

Before we get into equations, take a moment to understand the equipment. Fill in the blanks on the diagram below, from among the following choices: upper arm (humerus), elbow, forearm, hand, and biceps muscle.

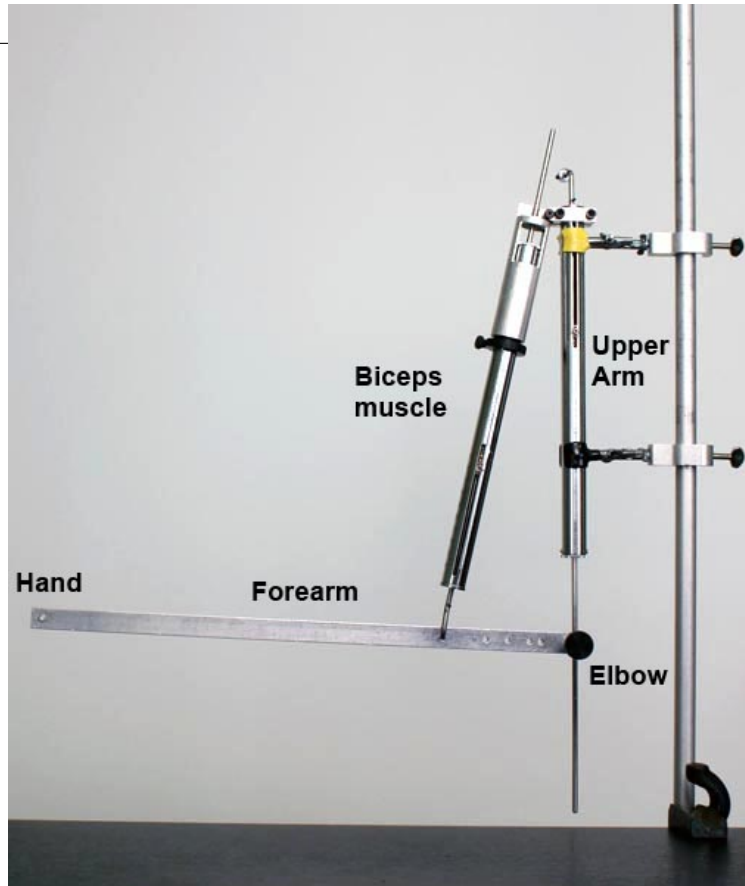
TODO – Block out the labels in the picture of the apparatus, and replace with blanks – similar to a diagram one might fill in for a biology course. Blanks include upper arm (humerus), elbow, forearm, hand, and biceps muscle.

Get your head in the game

Before making use of the apparatus, let’s do a brief warm-up problem concerning *torque*.

TODO – Now include an unrelated warm-up problem dealing with static torque. Possibly take this from UMD open source tutorials, or from tutorial books.

Maybe include a section getting students acquainted with the torque equation we’re attempting to verify (relating bicep force to the force on the hand).



Investigation

Rather than telling you exactly what to do, in this lab we're going to allow you much more freedom to investigate the physics behind this situation on your own.