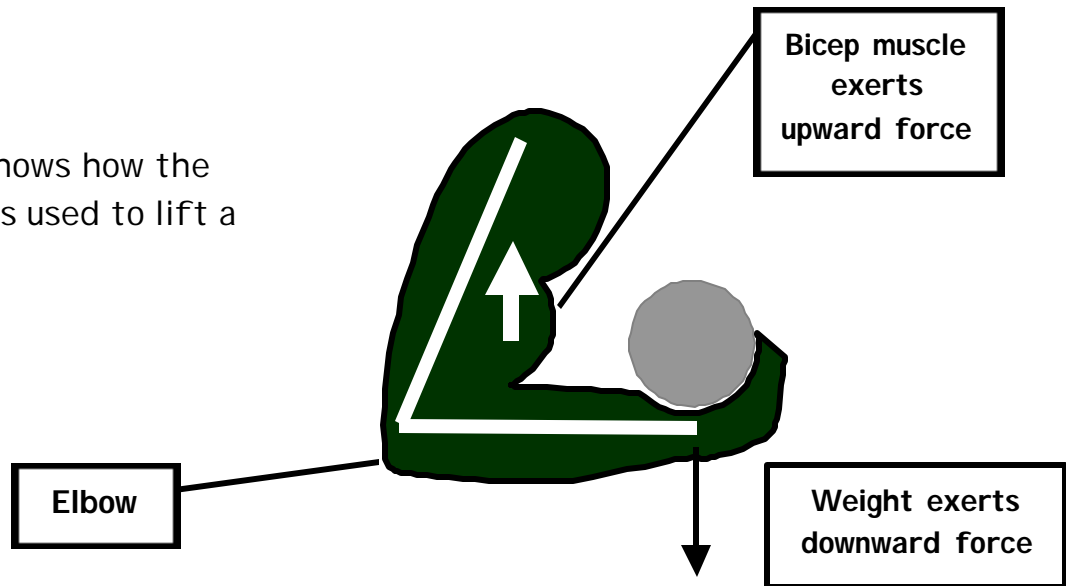




To: Research Dept
From: Head of Physical Therapy

One of the things that I think our clients may not understand very well is the amount of force that a muscle like the biceps has to exert in order to actually lift something. Some research on this would also help us in developing new therapies for handling injuries.

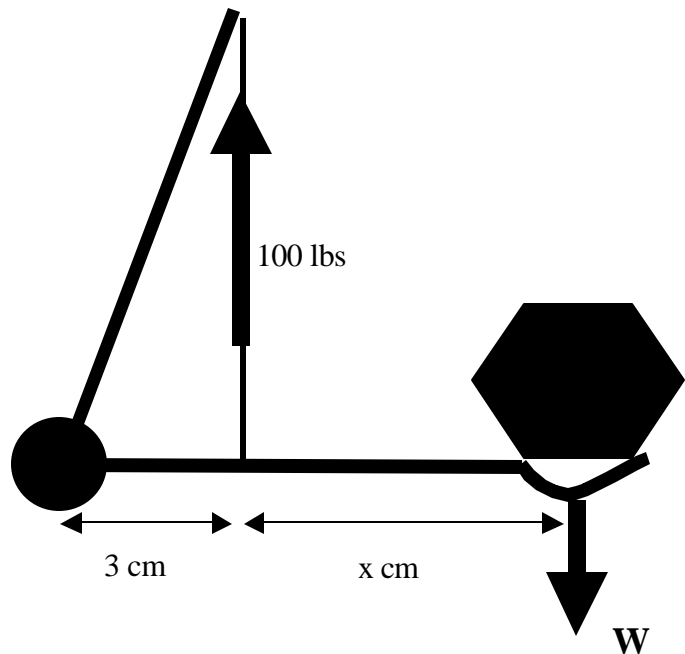
This diagram shows how the biceps muscle is used to lift a weight.



This diagram presents a model of the above situation.

If the supporting "biceps" exerts a force of 100 pounds, and the point of support is 3 centimeters from the "elbow", as shown, then the amount of weight that can be lifted is related to the distance "x" by this equation:

$$W = 300 / (3 + x)$$



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I would like you to use the model make some calculations, as follows:

1. Find "W" for these values of x: 0 cm, 1 cm, 3 cm, 9 cm, 12 cm.
2. Plot this function for the range of $x = 0$ to $x = 20$ centimeters.
 - a. What happens to the amount of force that can be lifted as x gets larger? Why do you think that would be that way?
 - b. Explain the value of W when $x = 0$.

Please give me a report that explains exactly how you answers these questions, and is clear enough for our clients to read and understand.

Thanks,

A.S.