W6.07d

Energy

Simple Machines-Mechanical Advantage

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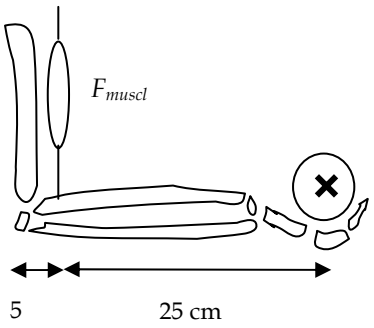

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   b. Assuming that the arm is 100% efficient, with how much force must the bicep muscle pull so that the hand can lift a 5.0-kilogram object?
   c. Why is the human arm designed with a mechanical advantage less than 1?

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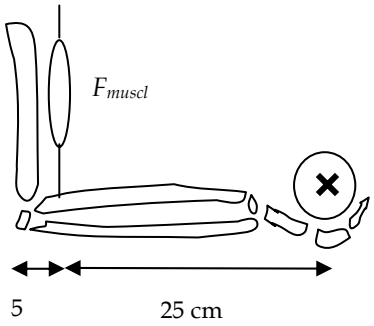

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   a. IMA = .1666 : 1 [5cm / 30 cm]

   b. F_{bicep} = 300 newtons [100% eff.---IMA = AMA = 1 : 0.1666]

   c. $\Delta s_{out} > \Delta s_{in}$ so large movement of hand verses small movement of muscle.