317.043 Introduction to Biomechanics

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(WS2013- first exam (of 2))

EXAM QUESTIONS:

1. What types of energy do you know? How are those connected with the conservation of energy?

Conservative energy as Ekin+Epot; E1=E2=E=const.;
disserpative energy like heat energy, friction, ...

2. Speed of sound waves are proportional to pressure, density and volume. Do a dimensional analysis.

3. Muscles: Describe their function.

4. Name for other parts of the musculoskeletal system and their function.

Name: Bones (structure), Ligaments (stabilisation), Tendons (force transduction), Cartilage (articulation)

5. What is the force in the quadrizeps for given values? Sketch a diagramm for T as a function of theta.

As seen for problem 8.12 in the book: "Introductory Biomechanics- From Cells to Organisms" (p.375)

6. Two Lumb muscle models parallel. In the first one the active element starts at t=0, for the second one it starts at t=0,5*C. The second one is unaffected by the first one. What`s the overall tension T?

As seen for problem 8.6 in the book: "Introductory Biomechanics- From Cells to Organisms" (p.375)