SP.718 Developing World Prosthetics

Spring 2010

Assignment 1

Problem 1: Human Biomechanics

Download and read Winter's paper "Biomechanical Motor Patterns in Normal Walking", and answer the following questions.

1. List major muscles for walking and describe each function.
2. What is angle of maximum flexion during the stance phase for three different walking speeds? (Hint: see Fig.5)
3. Why does human flex the knee joint after the heel strike? (Fig. 13 might be useful)
4. What's EMG?

Problem 2: SolidWorks® (optional)

Follow this instruction and get used to SolidWorks®. If you have already known how to use SolidWorks®, try only optional question.

1. Install SolidWorks® on your computer.

2. Follow the tutorial (you can find the tutorial in 'Help'), and model/assemble these parts.

3. Using COSMOSXpress, analyze the hook. (The design analysis tutorial shows everything to do).

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