

**THE UNIVERSITY OF WESTERN ONTARIO**

- linear vs. angular motion
- quantifying segment motion
- absolute vs. relative motion

### **Kinetics (forces that cause motion)**

- muscle mechanics revisited
- $F = ma$  approach

#### Dynamic equilibrium

- inverse vs. forward solutions
- free body diagrams and bone-on-bone forces revisited

### **Demonstrations**

- Demonstrations will cooperate and reinforce the lecture material and tie it into the lecture notes

**Background Readings:** Note that all of these resources are available through the library or through WebCT

- Terminology/Overview
  - Rodgers, M.M., Cavanagh, P.R. Glossary of Biomechanical Terms, Concepts, and Units. *Physical Therapy*, 64, 1886-1902, 1984.
- Journal Article Critique:
  - Lunsford, T.R., Mse, C.O., Lunsford, B.R. How to Critically Read a Journal Research Article. *Journal of Prosthetics and Orthotics*, 8, 24-31, 1996.
  - Pieper, B. Basics of critiquing a research article. *Journal of ET nursing: official publication, International Association for Enterostomal Therapy*, 20(6):245-250, 1993.
- Bone, Cartilage and Fracture Mechanics:
  - McGee, A.M., Qureshi, A.A., Porter, K.M.. Review of the biomechanics and patterns of limb fractures. *Trauma*. 6: 29-40, 2004.
- Muscle Mechanics:
  - Knudson, D. Chapter 3: Anatomical Description and Its Limitations. In: *Fundamentals of Biomechanics*. 2<sup>nd</sup> Edition, Boston, MA : Springer Science+Business Media, 2007 (available online through the library).
  - Knudson, D. Chapter 4: Mechanics of the Musculoskeletal System. I In: *Fundamentals of Biomechanics*

Media, 2007 (available online through the library).

- Standing Balance and Gait:
  - Winter, D.A. Human Balance and Postural Control during Standing and Walking. *Gait & Posture*. 3: 193-214, 1995.
  - Whittle, M.W. Clinical gait analysis: A review. *Human Movement Science*, 15, 369-387, 1996.

## EVALUATION

First Midterm Exam in October

Second Midterm Exam in November

Journal Article Critiques November and December

Final Exam

## JOURNAL CRITIQUES:

You will prepare journal critiques, on biomechanics research articles of your choice, during the term. Note that the articles must be focused on some aspect of biomechanics and must be peer reviewed by Dr. Dickey. Each student must pick unique papers; the same paper is not selected by more than one student. The journal critiques will be short papers and include a summary paragraph describing the general approach and findings of the paper. The remainder of the content will comprise a list of pros and cons, which describes the features and includes some insight into why you have identified this as a pro, con, or both. You will also provide a list of background readings providing some background on critical reading of biomechanics and the "journal club" experiences. You will provide additional insights as well. You will submit a hard printout of your journal articles along with the top pages of your journal critique.

## LATE MATERIAL

Non-educational assignments from the internet or the internet will be dealt with on a case-by-case basis and may receive a zero grade, reweighting of other grades, components or re-writing resolution. Late assignments, such as the Journal Critiques, will be subject to a penalty.

Students see incoming accreditation on educational grounds for any missed tests, exam participation components and assignments worth more or less of their final grade. Notify the Academic Counseling Office of their home faculty and provide documentation. Accreditation cannot be granted by the instructor or department.

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## PLAGIARISM

Students must write their assignments in their own words whenever students

and any other passage from another author site, they must acknowledge their debt to the original author by using quotation marks, whereas appropriate for direct quotations and by proper referencing such as footnotes or citations. Plagiarism is a form of academic offence see Scholastic Offence Policy in the Western Academic Calendar. All required papers are subject to submission for textual similarity review to the commercial plagiarism detection software under license to the university for the detection of plagiarism. All papers submitted are included in source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement currently between the University of Western Ontario and Turnitin.com.

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