

9. Biomechanics and Locomotion

Marguerite Butler

2025-10-29

Pre-class materials

i Read ahead

Before class, you can prepare by reading the following materials:

1. Tuesday we will finish Muscle Discussion and move on to biomechanics and locomotion
2. Thursday we will continue locomotion.
3. Lab this week is on [\[human EMG\]](#)! Pay attention to refining your prelab.

Announcements/Reminders

- Halloween Extra Credit - come dressed up, stop by lab on Tuesday (or Monday)
- Design 2 Rewrite due Friday by midnight into the “Final” folder. [\[turn in\]](#)
- Do discussion TEAMMATES eval, released each Thursday, due by Monday.
- Getting to the end, folks!

Week 10 Discussion Groups

Group	Partner 1	Partner 2	Partner 3
1	Mohamad	James	Vivian
2	Hao	Abby	Kylee
3	Adam	Ilan	Sean
4	Ashton	Christian	Veronica

Tuesday

- Finish Muscle Discussion [[discussion](#)] [[slide deck 2](#)]

Muscle Design podcast

<https://youtu.be/XPgHg2lmc5M>

- Begin Biomechanics and Locomotion [[discussion](#)] [[slide deck 1](#)]

Thursday

- Biomechanics and Locomotion [[discussion](#)] [[slide deck 1](#)]
 - Support vs. Locomotion
 - Material properties and functional design
 - * stress and strain
 - * posture
 - Muscle architecture
 - Lever arms and gear ratios
- Terrestrial Locomotion [[discussion](#)] [[slide deck 2](#)]
 - Cursorial adaptations
 - Trends in posture
 - Limb cycles and gaits (kinematics)
 - Ground reaction forces and joint forces (biomechanics)
 - Conservation of energy in running, walking jumping

<https://youtu.be/YlyaASmy-1E>

Coming up Next Week

- Homework 5 Muscles & Biomechanics due Thursday 11/07 [[schedule](#)]

i Reminders and materials