

Cornell Guided Notes

Human Anatomy & Physiology (Human Body Systems) | 2026-09-24

Name

Period

Date

Lesson

Lesson focus

Sensor and range-of-motion lab

Key words and questions

Prepared details and student notes

Essential question
What is today's target?

Collect EMG or range-of-motion data and record results in a data table. Big idea: Collecting accurate physiological data requires correct sensor setup, consistent trial protocol, and careful unit recording before analysis can begin.

My notes, examples, and questions

Key words
What vocabulary unlocks the lesson?

- fatigue
- EMG
- range of motion
- flexion
- extension
- biomechanics
- kinesiology

My notes, examples, and questions

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Must-know ideas

What should I understand by the end?

- A goniometer measures joint angle in degrees; EMG sensors measure muscle electrical activity in millivolts. Both require zeroing before data collection.
- A data table must include: trial number, measured value (with units), and any qualitative observation (pain, tremor, noticeable fatigue).
- Identifying the fatigue-onset trial requires looking for a consistent downward trend in force or angle, not a single low value.

My notes, examples, and questions

Process notes

What happens during class?

- 0-10: Safety and sensor setup; zero baseline and practice trial
- 10-20: Protocol review: number of trials, rest intervals, recording format
- 20-50: Run trials; record force or angle and time in data table
- 50-62: Mark fatigue-onset trial; add qualitative observations column
- 62-75: Peer-check: does each row have units? Is fatigue-onset trial marked?
- 75-80: Submit raw data table; clean up sensors

My notes, examples, and questions

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Steps and evidence
What do I do and turn in?

- Set up the EMG sensor or goniometer and zero the baseline.
- Run repeated trials of a grip or joint movement until fatigue appears.
- Record force or angle and time for each trial in your data table.
- Note the trial where performance clearly dropped.
- Submit your raw data table with units and the fatigue-onset trial marked.

Evidence: Data table - Raw data table with trial number, measured value (mV or degrees, with units), time, and fatigue-onset trial clearly marked.

My notes, examples, and questions

Checks for understanding
How do I know I got it?

- You can collect clean motion or EMG data with units.
- You can identify the trial where fatigue begins.

My notes, examples, and questions

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Lab or safety notes
What must I handle carefully?

Safety:

- Confirm no skin allergies to electrode gel or adhesive before applying EMG electrodes.
- Do not apply electrodes over broken skin, rashes, or open wounds.
- Stop the trial immediately if a participant reports sharp pain rather than muscle fatigue.
- Dispose of single-use electrode pads in regular trash; do not reuse.

Supplies:

- EMG sensor or hand dynamometer (grip-force device), OR goniometer (joint-angle measurement)
- Data collection software or printed data table template
- Timer or stopwatch
- Lab notebook
- Electrode gel and disposable electrode pads (if using EMG sensor)

My notes, examples, and questions

Summary

Today's lesson focused on Sensor and range-of-motion lab. The main target was: Collect EMG or range-of-motion data and record results in a data table. The evidence of learning is Data table: Raw data table with trial number, measured value (mV or degrees, with units), time, and fatigue-onset trial clearly marked.. In my own words, the most important idea from today is:

My summary

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My final question or connection