Cornell Guided Notes

Human Anatomy & Physiology (Human Body Systems) | 2027-02-19

Name	Period	Date	Lesson
		2027-02-19	

Lesson focus

Muscle fatigue and EMG basics

Key words and questions	Prepared details and student notes

Essential question
What is today's target?

Explain muscle fatigue and how EMG measures electrical muscle activity. Big idea: EMG records the electrical activity of motor units during contraction; fatigue appears as a change in signal amplitude and frequency over repeated contractions.

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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Cornell Notes - Continued

Key words and questions	Prepared details and student notes
Must-know ideas **What should I understand by the end?**	- Electromyography (EMG) measures the electrical potentials generated by muscle fibers when a motor neuron fires. Signal is measured in millivolts (mV). - Muscle fatigue results from depletion of ATP and phosphocreatine, lactic acid accumulation, and failure of neuromuscular transmission with repeated contractions. - A fatiguing EMG trace typically shows increased amplitude and decreased frequency as the nervous system recruits more motor units to maintain force. **My notes, examples, and questions**
Process notes **What happens during class?**	- 0-8: Intro: what EMG actually measures and its units - 8-25: Notes: muscle fatigue mechanisms and EMG signal interpretation - 25-45: PLTW online task: EMG and fatigue - 45-62: Draw and label predicted EMG trace for a fatiguing muscle - 62-75: Write fatigue-mechanism summary (3-4 sentences) - 75-80: Submit prediction trace and summary; preview Wednesday lab **My notes, examples, and questions**

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Steps and evidence **What do I do and turn in?**	- Read the notes on muscle fatigue and the causes of declining force over time. - Learn what an electromyography (EMG) signal represents and its units. - Complete the PLTW online task on EMG and fatigue. - Predict how an EMG trace should change as a muscle tires. - Submit your fatigue summary and labeled prediction of an EMG trace. Evidence: Pre-lab - Labeled prediction sketch of an EMG trace across repeated trials showing fatigue onset, plus a written fatigue-mechanism summary. **My notes, examples, and questions**
Checks for understanding **How do I know I got it?**	- You can explain what causes muscle fatigue. - You can describe what an EMG signal measures. **My notes, examples, and questions**

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Cornell Notes - Continued

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Lab or safety notes
What must I handle carefully?

Supplies:
- Physiology sensor or EMG probe
- Data collection device or laptop
- Hand dynamometer or grip device
- Goniometer for joint angles
- Kinesiology tape
- Lab notebook

My notes, examples, and questions

Summary

Today's lesson focused on Muscle fatigue and EMG basics. The main target was: Explain muscle fatigue and how EMG measures electrical muscle activity. The evidence of learning is Pre-lab: Labeled prediction sketch of an EMG trace across repeated trials showing fatigue onset, plus a written fatigue-mechanism summary.. In my own words, the most important idea from today is:

My summary

My final question or connection