

UNIT 1

Road to Rehabilitation

Join a rehabilitation team. Use the skeletal and muscular systems to diagnose a patient's injury and design a personalized, empathetic care, rehabilitation, and wellness plan.

CORNELL NOTEBOOK · fillable · John Hay Hornets

Essential questions for this unit

- How do anatomists use directional and regional terms, planes, and cavities to describe the body precisely?
- How does the structure of bone and muscle determine its function in support and movement?
- How do bones, muscles, and joints work together to produce and control motion?
- How does a clinician turn patient data into an empathetic, personalized rehabilitation plan?

Vocabulary bank (define each in your own words as you go)

■ anatomy	■ cavity	■ sarcomere
■ physiology	■ tissue	■ actin
■ homeostasis	■ epithelial	■ myosin
■ anterior	■ connective	■ tendon
■ posterior	■ cartilage	■ origin
■ proximal	■ osteoblast	■ insertion
■ distal	■ osteoclast	■ range of motion
■ superior	■ compact bone	■ flexion
■ inferior	■ spongy bone	■ extension
■ sagittal	■ fracture	■ rehabilitation
■ frontal	■ joint	■ assistive device
■ transverse	■ ligament	■ empathy

How to use this Cornell notebook

1. NOTES (right column): take notes during class, video, reading, or lab.
 2. CUES (left column): afterward, write questions and key terms that the notes answer. Some are seeded for you.
 3. SUMMARY (gold box): in your own words, answer the essential question in 2-3 sentences.
 4. Review by covering the notes and answering the cues from memory.
- Tip: vetted readings, videos, and interactives for every lesson are on the class site under "Resources & readings."

Contents & notebook check

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Number your pages and log each one as you finish. Use the date and self-rating columns for periodic notebook checks (rate 1-4 how complete the page is).

PAGE	LESSON	DATE DONE	1-4
4	Setup Course launch & lab-notebook setup		
5	1.1a Beginning with Bones: anatomical language (lab p. 6)		
7	1.1b Bone structure & fractures (lab p. 8)		
9	1.2a Muscles and Motion: contraction (lab p. 10)		
11	1.2b Motion data: strength & range of motion (lab p. 12)		
13	1.3 Relief Within Reach: the care plan		
14	Unit wrap-up & self-check		

Notebook rubric

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How your notebook is scored. Aim for level 4 on every row. 4 Exemplary · 3 Proficient · 2 Developing · 1 Beginning.

Completeness & organization

MY SCORE

Every assigned page is present, in order, dated, and numbered.

Cue questions

MY SCORE

The left column has thoughtful questions and key terms that the notes answer.

Notes

MY SCORE

Notes are accurate and in your own words, with labeled diagrams where useful.

Summaries

MY SCORE

Each summary answers the essential question in 2-3 clear sentences.

Lab records

MY SCORE

Objective, data, and a claim-evidence-reasoning analysis are complete and dated.

MY GOAL FOR THIS UNIT'S NOTEBOOK

Setup Course launch & lab-notebook setup

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ESSENTIAL QUESTION

How is a scientific lab notebook organized, and how do we work safely?

CUE · QUESTIONS · KEY TERMS

NOTES

- What goes in each notebook section?
- What does a dated entry include?
- What PPE and SDS info do I need before a lab?
- How do we measure and record accurately?

KEY TERMS

- lab notebook
- PPE
- SDS
- objective
- data
- analysis
- reflection

SUMMARY : in your own words, answer the essential question (2-3 sentences)

1.1a Beginning with Bones: anatomical language

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ESSENTIAL QUESTION**How do we describe the location of an injury precisely?****CUE · QUESTIONS · KEY TERMS****NOTES**

- Which directional term pairs are opposites?
- What are the three body planes?
- Where are the major body cavities?
- What are the four tissue types?

KEY TERMS

- anterior
- posterior
- proximal
- distal
- sagittal
- frontal
- transverse
- cavity
- tissue
- epithelial
- connective

SUMMARY : in your own words, answer the essential question (2-3 sentences)

1.1a Lab record: Body organization & patient case mapping

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*Dated lab record. This page is a gradeable artifact: complete every section.***OBJECTIVE** (what question are you answering today?)**MATERIALS / SAFETY** (equipment, PPE, SDS hazards noted)**DATA / OBSERVATIONS** (record measurements; sketch or table as needed)**ANALYSIS** (what does the data show? claim, evidence, reasoning)**REFLECTION** (sources of error, next question, real-world link)

1.1b Bone structure & fractures

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ESSENTIAL QUESTION**How does bone structure support its function, and how does bone heal?****CUE · QUESTIONS · KEY TERMS****NOTES**

- Compact vs. spongy bone: where and why?
- Osteoblast vs. osteoclast?
- What are common fracture types?
- How does remodeling repair a fracture?

KEY TERMS

- osteoblast
- osteoclast
- compact bone
- spongy bone
- fracture
- joint
- ligament

SUMMARY : in your own words, answer the essential question (2-3 sentences)

1.1b Lab record: Skeletal analysis & fracture-repair design

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*Dated lab record. This page is a gradeable artifact: complete every section.***OBJECTIVE** (what question are you answering today?)**MATERIALS / SAFETY** (equipment, PPE, SDS hazards noted)**DATA / OBSERVATIONS** (record measurements; sketch or table as needed)**ANALYSIS** (what does the data show? claim, evidence, reasoning)**REFLECTION** (sources of error, next question, real-world link)

1.2a Muscles and Motion: contraction

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ESSENTIAL QUESTION**How does a muscle generate force and movement?****CUE · QUESTIONS · KEY TERMS****NOTES**

- How does the sliding-filament model work?
- Origin vs. insertion?
- How does muscle orientation set its action?
- How do muscles work in antagonistic pairs?

KEY TERMS

- sarcomere
- actin
- myosin
- contraction
- tendon
- origin
- insertion

SUMMARY : in your own words, answer the essential question (2-3 sentences)

1.2a Lab record: Maniken muscle build

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Dated lab record. This page is a gradeable artifact: complete every section.

OBJECTIVE (what question are you answering today?)

MATERIALS / SAFETY (equipment, PPE, SDS hazards noted)

DATA / OBSERVATIONS (record measurements; sketch or table as needed)

ANALYSIS (what does the data show? claim, evidence, reasoning)

REFLECTION (sources of error, next question, real-world link)

1.2b Motion data: strength & range of motion

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ESSENTIAL QUESTION**How do we measure muscle performance and joint movement?****CUE · QUESTIONS · KEY TERMS****NOTES**

- What does an EMG signal show?
- How is muscle fatigue measured?
- Flexion vs. extension?
- How do we measure range of motion?

KEY TERMS

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

SUMMARY : in your own words, answer the essential question (2-3 sentences)

1.2b Lab record: Sensor-based muscle & range-of-motion lab

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Dated lab record. This page is a gradeable artifact: complete every section.

OBJECTIVE (what question are you answering today?)

MATERIALS / SAFETY (equipment, PPE, SDS hazards noted)

DATA / OBSERVATIONS (record measurements; sketch or table as needed)

ANALYSIS (what does the data show? claim, evidence, reasoning)

REFLECTION (sources of error, next question, real-world link)

1.3 Relief Within Reach: the care plan

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ESSENTIAL QUESTION**How do we turn patient data into an empathetic rehabilitation plan?****CUE · QUESTIONS · KEY TERMS****NOTES**

- What does this patient need to return to?
- Which assistive devices fit the case?
- How do we show empathy and respect in a plan?
- What makes a wellness plan realistic?

KEY TERMS

- rehabilitation
- empathy
- assistive device
- care plan
- patient portal
- wellness

SUMMARY : in your own words, answer the essential question (2-3 sentences)

Unit wrap-up & self-check

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“I can...” :check each skill, then rate your confidence (1-4)

- 1.1 use anatomical language (directional terms, planes, cavities) to locate a structure or injury.
- 1.1 relate the structure of bone tissue to its function and explain how a fracture heals.
- 1.2 explain how a muscle contracts and how its orientation determines the movement it produces.
- 1.2 measure and interpret muscle performance and range-of-motion data.
- 1.3 design an empathetic, evidence-based rehabilitation and wellness plan for a patient.

What was the most important idea in this unit?**What is still confusing, and what is your plan to fix it?****How does this unit connect to a real biomedical career or case?**