

Fracture analysis lab

Your goal: Analyze fracture types and joint movement using imaging or model data.

One product: Fracture classification table: each image labeled with fracture type, nearest joint type, and predicted healing speed with justification.

Question: What can a fracture pattern tell you, and what must stay unknown?

Start the work

Bone structure and living cells support repair; a drawing alone cannot predict healing time.

1. Read the fracture definitions and choose the teacher-supplied image route or the complete fictional case descriptions on this page. Create the table headers.
2. Inspect your chosen cases. Record observed features and classify each fracture as greenstick, transverse, comminuted or spiral when the evidence supports it.
3. Read the joint definitions and M1. Complete joint names, types and movements in the same table.
4. Read the healing rule. Finish the prediction column and comparison row, explaining limits rather than assigning an unsupported recovery time.
5. Compare with a partner or reread alone. Apply the decision check to the table, save the file and check Schoology after uploading.

If the correct assignment or upload is unavailable, save the table locally if possible and tell the teacher what is blocked. After uploading, check that Schoology shows Submitted. No extra simulation or second table is required.

Words you will use

fracture

A crack or break in a bone.

pattern

The shape and arrangement of a break.

greenstick

An incomplete break: one side cracks while the other stays connected, often with bending.

transverse

A break that runs across the bone at a right angle to its long axis.

comminuted

A break with several fragments, including pieces between the main bone segments.

spiral

A break line that winds around a bone. Twisting can produce this pattern, but the pattern alone does not prove the event.

long axis

An imaginary line along the length of a bone.

fragment

A piece separated from the rest of the bone.

joint or articulation

A place where bones meet. Use the exact joint name supplied, since one region can contain several joints.

hinge

A joint type that mainly bends and straightens, such as the humerus-ulna joint at the elbow.

ball-and-socket

A joint type that permits movement in several directions, including rotation. The shoulder and hip are examples.

pivot

A joint type that permits rotation around an axis. The proximal radioulnar joint lets the radius rotate beside the ulna.

condyloid

A joint type that permits bending and straightening plus side-to-side movement. The radiocarpal joint at the wrist is an example.

flexion and extension

Bending and straightening at a joint.

rotation

Turning around an axis.

humerus

The upper arm bone, between shoulder and elbow.

radius and ulna

The two forearm bones. In anatomical position, the radius is on the thumb side and the ulna is on the little-finger side.

femur

The thigh bone, between hip and knee.

proximal and distal

Nearer to and farther from the trunk along a limb.

stability

How well the broken pieces remain in a steady position. A drawing does not measure it.

blood supply

Blood reaching a tissue. It delivers oxygen and other materials needed for repair.

conditional prediction

A statement about what may happen if named conditions are true.

unknown

Information the supplied record does not give.

schematic

A simplified model showing selected features. It has no clinical scale unless one is supplied.

anatomical position

A reference pose: upright, facing forward, arms at the sides and palms forward. Describe the pose; standing in it is optional.

0-8 minutes: Choose one route and open the table

Use the actual route if the teacher supplies the assigned image or model set, its directions and criteria. Those cases replace E1-E4 and the fictional decision. If those inputs are missing, use this original paper route. Do not run the two-block fracture simulation or a bench experiment for this table.

Paper and a pencil or a local document are enough for preparation. Physical models need the actual teacher-approved setup and safety instructions first. If those are missing, stay with this paper route.

Carry from February 11: Keep the CER and its source IDs. Save any posting or submission issue for teacher resolution.

Read the fracture-pattern definitions now. Start one table with the fields in T1. In the opening slot, record your route and date only. No completed classification is expected yet.

8-20 minutes: Read a pattern without inventing a story

The text schematics below supply the whole original case set. They describe selected shapes rather than display radiographs. No hidden image or scale is needed. Record the words that support each pattern label.

A transverse line runs across a bone. A spiral line winds around it. This distinction describes shape. A real injury event needs more evidence than the pattern alone.

Each map lists two candidate joints and states which end is nearer the break. Choose the nearer joint within that pair. The maps omit other joints; they do not claim a single joint is always nearest in a real image.

Inspect E1-E4 now and draft the pattern columns. The definitions remain open. Actual-route learners inspect their supplied set instead. Missing details stay unknown.

20-45 minutes: Connect the named joint to movement

Joint reference: the humerus-ulna joint at the elbow is a hinge; it bends and straightens the forearm. The shoulder and hip are ball-and-socket joints. They move in several directions and allow rotation.

The proximal radioulnar joint is a pivot near the elbow. The radius rotates beside the ulna as the forearm turns. The radiocarpal joint at the wrist is condyloid. It allows bending and straightening plus side-to-side movement.

Read M1 before finishing the joint columns. Then use each case map and this reference to add a full joint name, type and movement. Movement is described; do not test movement on anyone.

This exercise shows how a named structure helps explain movement. It does not test whether an injured joint can move or whether it is safe to use.

45-60 minutes: Make the healing limit part of the table

Healing needs adequate blood supply and stability. A visible line alone does not tell us whether those needs are met. Age and other case conditions can also matter.

For each original case, check whether the card supplies blood supply, stability or an observed healing outcome. Then write your healing-speed answer and justify it with those case factors. Do not fill unknown fields with typical values.

In the comparison row, answer the fastest-healing question. Check whether each card supplies blood supply, stability or an observed outcome, then answer and justify your choice.

Then add one conditional statement. For example: If all other relevant conditions matched, adequate blood supply would favor healing over poor blood supply. That is a condition-based prediction, not a measured outcome.

Actual route: use the same reasoning on supplied case facts. A justified conditional comparison is allowed when the facts support it. If they do not, state what is missing. No timetable or treatment plan is required.

60-80 minutes: Review the same product and identify your next action

With a partner, compare one row at a time against its supplied case. Working alone, reread each case with your label covered, then check it. Revise the same table; no second worksheet is due.

Use the decision as a brief check of your comparison row. Original route: choose the statement supported by E1-E4. Actual route: check your own comparison against actual supplied facts instead.

Confirm your section and current assignment directions before submitting. Save a photo or typed document only when you can actually create it. After uploading, check that Schoology shows Submitted.

Ask the teacher for the actual materials, setup and practical-assessment directions. Use evidence from the official work you actually do. The class schedule names Project 1.1.6 Break a Leg; ask the teacher for its exact stopping point. Ask the teacher to resolve that missing input.

E1-E4 original text schematics, followed by M1

E1, Bent upper arm. Original fictional text schematic. Bone: humerus. Text map, from near the trunk outward: SHOULDER / long upper-arm shaft / BREAK / ELBOW. The break lies close to the elbow end. At BREAK, the bone bends; one outer side has a crack, while the opposite side stays connected. The two labeled candidate joints are the shoulder and the humerus-ulna joint at the elbow. No other joint is being compared. Case factors: age unknown; blood supply unknown; stability unknown; observed healing outcome unknown. No injury event, measurements or healing duration is supplied.

E2, Straight line across upper arm. Original fictional text schematic. Bone: humerus. Text map: SHOULDER / BREAK / long upper-arm shaft / ELBOW. The break lies close to the shoulder end. At BREAK, a single line crosses the full bone width at a right angle to the long axis. The two labeled candidate joints are the shoulder and the humerus-ulna joint at the elbow. Case factors: age unknown; blood supply unknown; stability unknown; observed healing outcome unknown. No injury event, measurements or healing duration is supplied.

E3, Pieces near the hip. Original fictional text schematic. Bone: femur. Text map: HIP / BREAK / long thigh shaft / KNEE. The break lies close to the hip end. At BREAK, several small separate pieces lie between the two main bone segments. The two labeled candidate joints are the hip and the knee. Case factors: age unknown; blood supply unknown; stability unknown; observed healing outcome unknown. No injury event, measurements or healing duration is supplied.

E4, Line around the forearm bone. Original fictional text schematic. Bone: radius. Text map: ELBOW END / BREAK / long forearm shaft / WRIST END. The break lies close to the elbow end. At BREAK, the line winds around the shaft like a stripe wrapped around a tube. The marked candidate joints are the proximal radioulnar joint at the elbow end and the radiocarpal joint at the wrist end. Other elbow

articulations are outside this two-joint comparison. Case factors: age unknown; blood supply unknown; stability unknown; observed healing outcome unknown. No injury event, measurements or healing duration is supplied.

M1 is a fictional example, not an extra student row. Bone: radius. Text map: ELBOW END / long forearm shaft / BREAK / WRIST END. A single line crosses the shaft at a slant, neither straight across nor wrapped around it. The marked joints are the proximal radioulnar joint at the elbow end and the radiocarpal joint at the wrist end. BREAK is nearer the wrist end.

M1 reference: the radiocarpal joint at the wrist is condyloid; it allows bending and straightening plus side-to-side movement. M1 supplies a stable, well-aligned fracture with good blood supply; no age or observed healing outcome.

Worked row: M1 | line crosses the shaft at a slant | oblique, a pattern outside the four labels used today | radiocarpal joint | condyloid | bending and straightening plus side-to-side movement. Healing: good blood supply and stability favor healing, but no healing time can be assigned from these factors alone.

Worked limit: this text supports a pattern label and a joint movement. It does not show an actual X-ray or establish an injury cause.

Worked conditional statement: if other relevant conditions matched, adequate stability would favor healing over inadequate stability. This predicts a condition effect; it does not assign a healing time to M1. Actual route: use the teacher-supplied cases and criteria instead. Do not also answer the fictional cases.

Try the decision

Original route: before writing the comparison row, check what E1-E4 supply about healing conditions. Which statement belongs in the comparison row? Actual route: use the teacher-supplied cases and criteria instead. Do not also answer the fictional cases.

- Check which healing conditions E1-E4 supply before ranking, and name any missing conditions.
- The incomplete break must heal fastest regardless of the missing conditions.
- Spiral fracture shape proves both the exact injury event and the healing duration.

Explain your choice using the reading. Discuss it or say it to yourself. This practice does not add another submission.

Your 80-minute flow

0–8 minutes	Choose a route, read opening directions and fracture definitions, and create T1 headers. Actual route: use the teacher-supplied cases and criteria instead. Do not also answer the fictional cases.
8–20 minutes	Inspect the chosen cases. Draft observed features and fracture types. Actual route: use the teacher-supplied cases and criteria instead. Do not also answer the fictional cases.
20–45 minutes	Read joint definitions and M1. Complete joint names, types and movements in the same table. Actual route: use the teacher-supplied cases and criteria instead. Do not also answer the fictional cases.
45–60 minutes	Read the healing rule. Finish the prediction column and comparison row. Actual route: use the teacher-supplied cases and criteria instead. Do not also answer the fictional cases.
60–75 minutes	Compare with a partner or reread alone. Apply the short decision check to the same table. Actual route: use the teacher-supplied cases and criteria instead. Do not also answer the fictional cases.
75–80 minutes	Check the product and save the file and check Schoology after uploading. Confirm the next lesson. Actual route: use the teacher-supplied cases and criteria instead. Do not also answer the fictional cases.

Your response record

Use these labels on paper or in your document. The space below also works when this page is printed.

T1: One classification table

Record the date and route. Make columns: Case ID; observed pattern feature; fracture type; nearest named joint; joint type; movement; healing prediction and evidence limit.

Original route: leave four rows for E1-E4 and one comparison row. Read M1 as a model; do not copy it as a fifth case. Actual route: use the teacher-supplied cases and criteria instead. Do not also answer the fictional cases.

Use this space or the same labeled section in your existing document. Add paper when your table, graph or drawing needs more room.

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T2: Complete the case rows

Original route: complete the four E1-E4 rows. Support each fracture label with an observed feature. Use the map and joint reference for the joint columns.

Short phrases are enough. Choose the nearer of the two labeled joints. Do not infer a hidden location from a picture you have not been given. Actual route: use the teacher-supplied cases and criteria instead. Do not also answer the fictional cases.

Use this space or the same labeled section in your existing document. Add paper when your table, graph or drawing needs more room.

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T3: Complete the prediction column and comparison row

Original route: state the healing-speed limit for each case. In the comparison row, answer which case would heal fastest and justify your answer. Add one conditional prediction.

Before selecting a fastest case, check whether E1-E4 supply blood supply, stability or observed healing data. Name any missing evidence and keep conditions explicit. Actual route: use the teacher-supplied cases and criteria instead. Do not also answer the fictional cases.

Use this space or the same labeled section in your existing document. Add paper when your table, graph or drawing needs more room.

T4: Check and finish the same table

Check the table against the chosen case set. Correct one weak claim if needed. Save the table. Beside it, note any access problem and check that Schoology shows Submitted after uploading.

Save your file, ask for help if the upload is blocked, and check that Schoology shows Submitted after uploading. Do not invent completion. Actual route: use the teacher-supplied cases and criteria instead. Do not also answer the fictional cases.

Use this space or the same labeled section in your existing document. Add paper when your table, graph or drawing needs more room.

Check your product

- My one table identifies the chosen case set and records each required row.
- Each pattern label has an observed feature, not an invented injury event.
- Each row names a joint, its type and a supported movement.
- Healing claims identify missing evidence or state explicit supported conditions.
- My comparison does not claim that a pattern alone proves the fastest healing.
- Save the file, keep evidence from the assigned official work and check Schoology after uploading.
Actual route: use the teacher-supplied cases and criteria instead. Do not also answer the fictional cases.

Keep the limit: These are original fictional text models, not X-rays or patient records. Classify the described pattern and explain a joint movement. A pattern alone cannot prove an injury cause, healing time or treatment choice. Preparation does not complete official work, practical signoff or submission.

Turn in your work

Use your own section: 1292 assignment 8544564882; 6792 assignment 8544564902. Both are titled Wk5 Data table: Fracture analysis lab. Confirm current directions and deadline. Submit the one table as a photo or typed document. Actual route: use the teacher-supplied cases and criteria instead. Do not also answer the fictional cases.

If the correct assignment or upload is unavailable, save the table locally if possible and tell the teacher what is blocked. After uploading, check that Schoology shows Submitted. No extra simulation or second table is required.

[Section 1292: Wk5 Data table: Fracture analysis lab](#)

[Section 6792: Wk5 Data table: Fracture analysis lab](#)

Carry forward

Describe the fracture pattern and named joint; keep healing predictions within the case facts.

On February 18, connect these evidence limits to bone repair stages and repair technology. Keep the same honest distinction between a model and a clinical choice. Which repair-stage cell jobs explain what changes in the healing tissue?

Sources and resources

[Open today's page](#)

OS-FRACTURES · Fractures: Bone Repair

OpenStax, Anatomy and Physiology 2e, section 6.5

<https://openstax.org/books/anatomy-and-physiology-2e/pages/6-5-fractures-bone-repair>

OS-JOINTS · Synovial Joints

OpenStax, Anatomy and Physiology 2e, section 9.4

<https://openstax.org/books/anatomy-and-physiology-2e/pages/9-4-synovial-joints>

AAOS-HEALING · Nonunions: Bone Healing

American Academy of Orthopaedic Surgeons, OrthoInfo

<https://www.orthoinfo.org/diseases--conditions/nonunions>

OS-ARM · Bones of the Upper Limb

OpenStax, Anatomy and Physiology 2e, section 8.2

<https://openstax.org/books/anatomy-and-physiology-2e/pages/8-2-bones-of-the-upper-limb>