

Bone Repair - A Model Activity

Objective: The objective of this activity is to demonstrate your understanding of the process of bone fracture repair through a hands-on approach using Play-Doh and filming a tutorial of the process.

Instructions (You will have a total of four visual props, one per stage):

Fracture Hematoma Stage Build:

- Using Play Doh, design a bone that's been broken into two pieces.
- Model the fracture hematoma and include a toothpick label

Video Discussion:

- Discuss the importance of macrophages, osteogenic cells, and osteoclasts here

Soft Callus Formation Stage Build:

- Model the soft callus formation and include a toothpick label

Video Discussion:

- Discuss the importance of collagen, and how osteogenic cells form chondroblasts. Discuss the significance of chondroblasts to the soft callus.

Hard Callus Formation Stage Build:

- Model the hard callus formation and include a toothpick label

Video Discussion:

- Discuss the importance of osteogenic cells and how they form osteoblasts to form the hard callus. Discuss how long it takes to form the hard callus.

Remodeling Stage Build:

- Include a transition in your model here where you model the spongy bone turning into compact bone, and the hard callus being dissolved away. Include a toothpick label for spongy & compact bone

Video Discussion:

- Discuss the importance of osteogenic cells forming more osteoblasts. Discuss the role of osteoclasts in dissolving the hard callus. Explain the transition from spongy bone into compact bone.

Grading:

Fracture Hematoma Model:

Model Build:	+2
Toothpick Label:	+1

Video discussion covers all components with effective explanations	+3
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Video discussion lacks one of these components and/or the explanations are not relevant/effective	+1
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Discussion lacks two or all components	+0
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Soft Callus Model:

Model Build:	+2
Toothpick Label:	+1

Video discussion covers all components with effective explanations	+3
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Video discussion lacks one of these components and/or the explanations are not relevant/effective	+1
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Discussion lacks two or all components	+0
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Hard Callus Model:

Model Build:	+2
Toothpick Label:	+1

Video discussion covers all components with effective explanations	+3
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Video discussion lacks one of these components and/or	+1
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the explanations are not relevant/effective

Discussion lacks two or all components +0

Remodeling Stage Build

Model Build: +2

Toothpick Label: +1

Video discussion covers all components with effective explanations +3

Video discussion lacks one of these components and/or the explanations are not relevant/effective +1

Discussion lacks two or all components +0

Total Points: _____/24