



# Bone Fractures

What are the different ways that bones can break?

## Description

Most people break at least two bones in their lifetime. What are the different ways bones break? Use celery stalks to model many ways that bones can fracture.

**Average Level: 10 and Up**



What are the different ways that bones can break?

## Materials

- Head of celery.
- Knife.
- Cutting board (optional).
- Small paper bag (optional).



## Note

Separate the celery into stalks and cut the ends off. You will need about one dozen long stalks of celery.

## Time

Preparation: 5 min  
Activity: 20 min  
Cleanup: 5 min

## Step 1

Cut off the rounded bottom and leafy top of a head of celery and separate the stalks. You will need about a dozen celery sticks to model broken bones.



## Step 2

Break the celery stalks in different ways, like snapping with two hands, striking against a hard surface, twisting, or crushing, so that each break pattern that results is unique in some way.



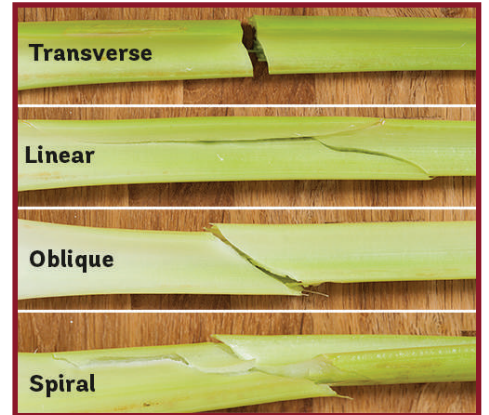
## Step 3

Not all fractures are alike. There are many ways that bones break and many ways to describe the characteristics of a break. The next images show the variety of ways to describe a bone break. See if these match any of the celery stalks you broke. If not, break a stalk to match one of the examples.



## Orientation

In a transverse fracture, the break is at a right angle to the length of the bone. In a linear fracture, the break is in the same direction as the length of the bone. In an oblique fracture, the break is diagonal to the length of the bone. In a spiral fracture, one part of the bone has been twisted.



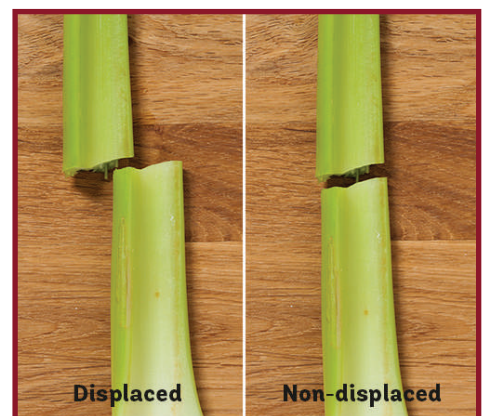
## Number of Pieces

When a bone breaks completely into two separate pieces, this is called a simple fracture. When a bone breaks into three or more pieces, this is called a comminuted fracture.



## Displacement

Sometimes when a bone breaks, it moves from its original location in your body. Bones that move after a fracture are called displaced, and bones that do not move are called non-displaced.



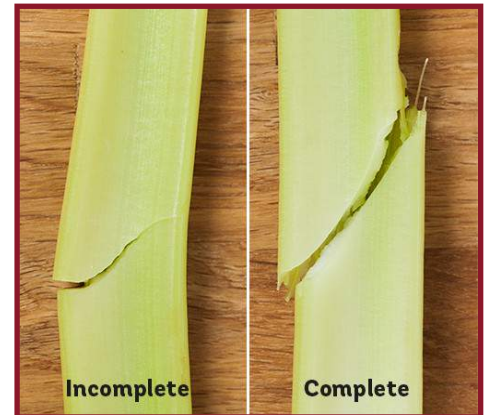
## Closed/Open

If the force that breaks a bone is large enough, part of the bone can pierce the skin. This is called an open or compound fracture. To model this, poke a celery stalk through a hole in a paper bag. Bones that don't pierce the skin are called closed fractures.



## Completeness

Sometimes a bone breaks, but not completely into two pieces. This is called an incomplete fracture. If the bone breaks all the way into separate pieces, this is called a complete fracture.



## Location

A bone can break at different places. Most long bones have three regions. The rounded end, where one bone meets another at a joint, is called the epiphysis. The long middle region is called the diaphysis. The area between the end and the middle, where the bone becomes wider, is called the metaphysis.



## Special Cases

There are many kinds of bone fractures, both the common types and categories you saw, and others. Sometimes, multiple kinds of bone fractures happen together. This image shows a bone fracture that is closed, simple, non-displaced, and transverse all at the same time. Bone is living tissue and can heal itself, but often it needs help. Doctors take an X-ray picture of the fracture, then may need to set the bone by moving broken pieces back where they belong. Casts and splints keep bones in the right position, making it easier for bones to heal correctly.



## Whats Going On?

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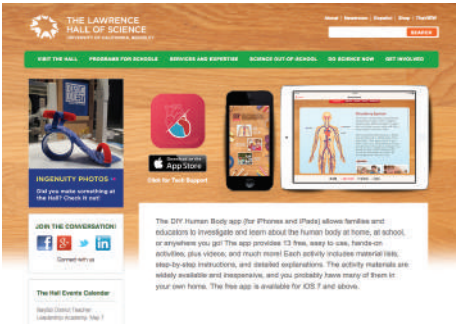


## Healing Bones

Bones heal in several stages. First a blood clot forms around the break. Your immune system cleans the area. Next a soft collagen cover forms over the break in a few days. This cover eventually hardens, as cells that create new bone add minerals like calcium to the bone. Finally, special cells trim the hard cover down to the size of the original bone.



## Learn More



For more info and other activities, visit:

[LawrenceHalofScience.org/do\\_science\\_now/diy\\_human\\_body](http://LawrenceHalofScience.org/do_science_now/diy_human_body)

## Credits



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This activity from the DIY Human Body app allows families to investigate and learn about the human body at home or on the go! The app features thirteen hands-on investigations, as well as images & videos.

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