mystery science

Grades K-5
Mini-Lesson: “How do broken bones heal?”

VIDEO TRANSCRIPT

Hi, it's Doug! So, if you've been watching the last few episodes of Mystery Doug, you probably noticed me wearing this sling on my arm. That's because a few weeks ago, I broke my arm bone. I was sledding with my daughters, and I tripped and I landed right on my shoulder. And it broke the top of my arm bone.

Well, I'm very excited to say, the doctor says my bone has healed enough that I finally don't have to wear that sling anymore—and it's been so great! So many of you have written questions—concerns about me—I've even gotten the nicest get-well cards. Look at that.

Someone named Manjari has a question about broken bones. Let's give her a call now.

[Video Call]
- Hi, Doug!
- Hi, Manjari!
- I have a question for you. How do broken bones heal?
- That's a great question.

Have you ever gotten a broken bone? It really hurts to break a bone. When someone breaks a bone, you probably can't tell from the outside. It's only once you look at the bone in an X-ray that you can tell something is broken.

Like, here's an X-ray of an arm before it got broken. See how the bone is smooth and straight? Now, here's what it looks like after getting broken. Can you tell where the bone broke? It's right here. Here's another example—this is an X-ray of someone's lower leg and foot. Can you tell where it's broken? It's right here.

Notice how whenever there's a break in a bone, there are jagged edges with a little gap in between—it's truly broken. So, how does something broken like that heal?

It's tempting to think, "Well maybe doctors do surgery and stick the pieces back together or something." But actually, your bones can do something incredibly strange. Those broken, jagged edges of bone glue themselves back together, all on their own.

It takes them a while, but slowly, over about one or two months, the pieces of bone will grow back together, from either side of the broken spot. Once the two ends meet, they'll stick together.

If that doesn't strike you as strange, think about it. It would kind of be like if you were to drop a plate, and it broke. Now imagine all you have to do to fix the plate, is lay out the broken pieces in the right way, leave it for a couple of months, and ta-da! When you come back, the pieces will have glued themselves together. Our bones are amazing!

But now, those of you out there who have a broken bone, or know somebody who has a broken bone, have probably seen that person wear a cast. Why would people need to get a cast after they break a bone? What do you think? How does a cast help heal a broken bone?

Now would be a good time to pause the video and discuss.

Okay. You ready?

You probably know that a cast is really hard and stiff. Whatever part of your body is inside the cast, you can't move it. Like if you have a cast on your arm, you won't be able to move that part of your arm. You can't even wiggle it around.

What a cast does is it keeps your bones lined up just right. That way, when the broken pieces are growing back together again, they'll grow exactly the right way.

If you didn't have a cast to keep the bones lined up, they might grow back together, but not be straight. Here's an example of what I mean. The man on the right has a perfectly healthy leg. It's never been broken, and the bone is straight. But the man on the left broke his leg, and the pieces of bone weren't lined up exactly right afterward. Maybe he didn't get a cast. So as the pieces healed back together, notice that the leg didn't heal straight.

Now, this man is okay. He can still walk, but he struggles to walk as easily as he did before his leg was broken. That's why a cast is so important.

Now, if casts are important, you might wonder, "Well Doug, why didn't you have a cast?" It turns out not every broken bone requires a cast.

I got a sling instead of a cast. It's not as stiff as a cast. That's because I broke my arm up at the top of my arm bone, near my shoulder. It's really difficult to put a cast there. It's not like a broken bone near the lower arm, or wrist, where you can get a cast that goes all the way around your arm and hand and holds the bone very still.

So with a broken arm bone near my shoulder, the best I could do was wear a sling and try to hold my arm as still as I could for about six weeks while it healed.

And there are other bones you can break that are hard to put casts on, too. Bones like your ribs, your skull, and your tailbone. All of these are in places where having a cast just wouldn't make sense.

But the point is, as long as the broken bones are lined up, they'll heal just fine on their own.

So in summary, broken bones need to be lined up and kept in place. If they are, they'll grow back together on their own, correctly. A cast can really help with that.

That's all for this week's question. Thanks, Manjari, for asking it. There are mysteries all around us!