

# (( BIONIC KIDS ))

## WEEK 3: REFLEXES

EVER WONDER . . . IF YOU HAVE LIGHTNING FAST REFLEXES?

### What we learned this week:

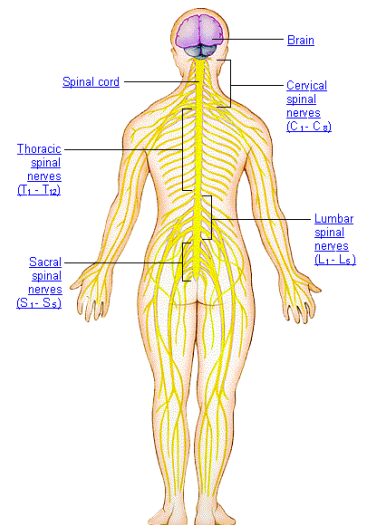
- ◆ Your nervous system is made up of your brain, spinal cord and nerves.
- ◆ Reflexes are your nervous system's response to your environment (e.g., blinking at a bright light, sneezing in dust).
- ◆ Reaction time is how long it takes your nervous system to react.

### Today's Experiments

1. Check your Blinking Reflex.
2. Check your Patellar Reflex.
3. Play Dollar Bill Catch.
4. Play with Crazy Balloons.
5. Play with Bouncy Balls.
6. Group Dance.

### Did You Know?

- ◆ The nervous system is made up of the brain, the spinal cord and nerves. The spinal cord is a thick bundle of nerves that runs from the brain stem all the way down your back. It is protected by the back bone. Nerves run out from the spinal cord to the rest of your body. Nerves are made up of special cells called neurons that help send and receive messages in the form of electrical impulses. Nerves are what help the brain send and receive messages to and from the rest of the body.
- ◆ A reflex is a rapid, involuntary (automatic) response to something in our environment (a stimulus). These are very important responses because they protect us from danger and help us adjust to our surroundings. Some reflexes are obvious and dramatic, such as your hand snapping back when you touch something hot or your leg pulling up when you step on something sharp. Blinking and sneezing are also reflexes -- blinking protects and moistens the eye, while sneezing clears our nose of anything irritating, like dust. There are other reflexes that occur all day long without us giving them much thought – such as breathing and digestion.



- ◆ Reflexes are controlled in different ways. Simple reflexes, such as blinking in response to something being thrown at you, or pulling back your hand when you touch something hot, are caused by something called a reflex arc. In the reflex arc, your brain is not involved in creating a response – just your spinal cord. When you touch something hot, receptors in your hand receive the information that this pot is hot. This sends information through neurons to the spinal cord. The spinal cord immediately sends information through another neuron to the muscles to contract, which moves the hand off the hot pot right away. By bypassing the brain, the body is able to respond much faster and rapidly move the body away from danger. Other reflexes in your body, such as yawning, breathing, and digestion, are controlled by your brain.

- ◆ Reaction time is the time it takes for your body to react to stimuli. Examples of reaction time include how long it takes you to react to someone throwing something at you, or how long it takes you to jump out of the way if something is falling. Reaction time is also important in playing sports, driving a car or playing video games. Our reaction time can be affected by many things, such as how much sleep we get, how intense the stimulus is and whether or not we are distracted by other things.

### Science in Your World



There is a lot of science behind hitting a ball in baseball or softball. For example, some professional pitchers can throw a baseball up to 95 miles an hour! That means the batter has less than half a second to decide whether to swing before the ball has already crossed the plate! If the batter swings too soon or too late, he or she may hit a foul ball or miss the ball entirely. It takes a lot of practice for a batter to be able to know when exactly to swing the bat and to know what cues to look for when the pitcher is about to throw the ball. Of course, it would be very hard for any person to hit a ball traveling at 95 miles an hour!

### Curiosity @ Home

See if your friends and family can catch your C-Zone Buck. Do they have quick reaction times? Also, play some sports to check out your reaction time. Want to sharpen your reflexes? Practice playing fast-paced sports like soccer, hockey, basketball and karate -- your body will adapt to the constant stimulation and start to react to things faster. Remember what we learned about the brain in week 1, and how by practicing, neurons build pathways that make things easier to do? With lots of practice, you could have the fastest reaction time on the block!

### Reflexes Word Scramble

ENUORNS \_\_\_\_\_

NKIBL \_\_\_\_\_

LAPINS DROC \_\_\_\_\_

EZENSE \_\_\_\_\_

ANIRB \_\_\_\_\_

SNEVRE \_\_\_\_\_

NIRETACO \_\_\_\_\_

FEXLER \_\_\_\_\_