



Nerve Conduction Studies – NCS
and
Electromyography – EMG

Your doctor wants you to go to Phoenix Children's for NCS and EMG. These two tests measure how your nerves and muscles are working. Usually they are done if a kid feels pain, weakness, or numbness/tingling in their hands, arms, feet, or legs.

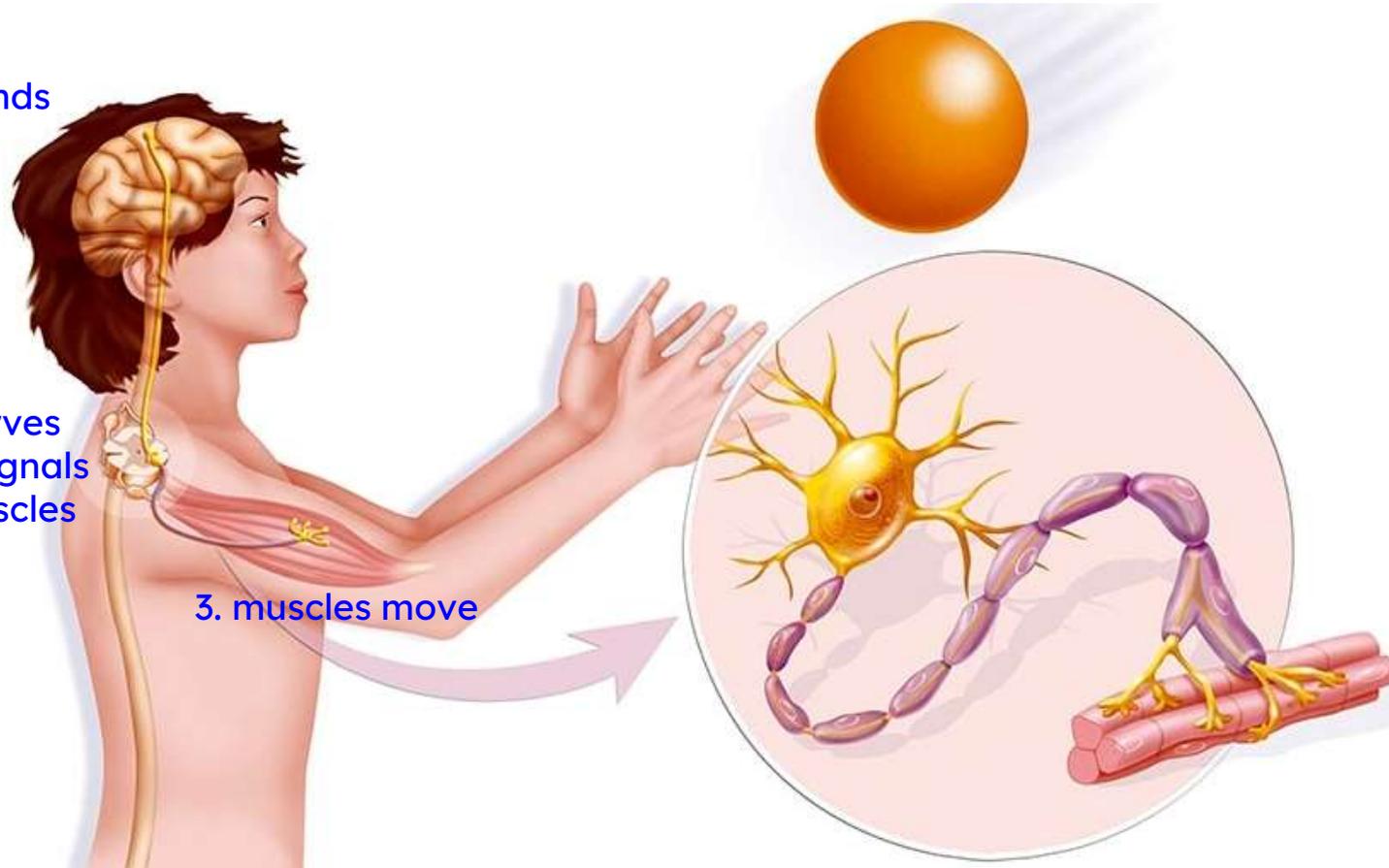


The muscles in your body move when nerve signals from your brain and then spinal cord tell them to do something. The first part of the test, NCS, measures how quickly and strongly your nerves pass signals. The second part of the test, EMG, measures how well your muscles respond to those signals and act.

1. brain sends signals

2. nerves pass signals to muscles

3. muscles move



It's important to wear the right clothes for your test. The doctor will need to be able to see and touch your wrists, elbows, shoulders, feet, thighs, and back of your knees for the test. If there is another spot on your body that is bothering you or causing you pain, they will need to see it, too.



You can wear your own t-shirt or tank top and shorts for the test. Loose fitting clothing is best. If you prefer, staff can give you a hospital gown to wear. It is also important not to put any lotion on your arms or legs the day of your test.

When you arrive at Phoenix Children's you will go to the main lobby to check in. A friendly staff member will ask you and your grownup questions about how you are feeling and what kind of appointment you have. They will tell you which way to walk to get to the test waiting area.



When you get to the waiting area, your grownup will check in with a staff member at the desk. You can find a comfy spot to sit and wait for your turn.

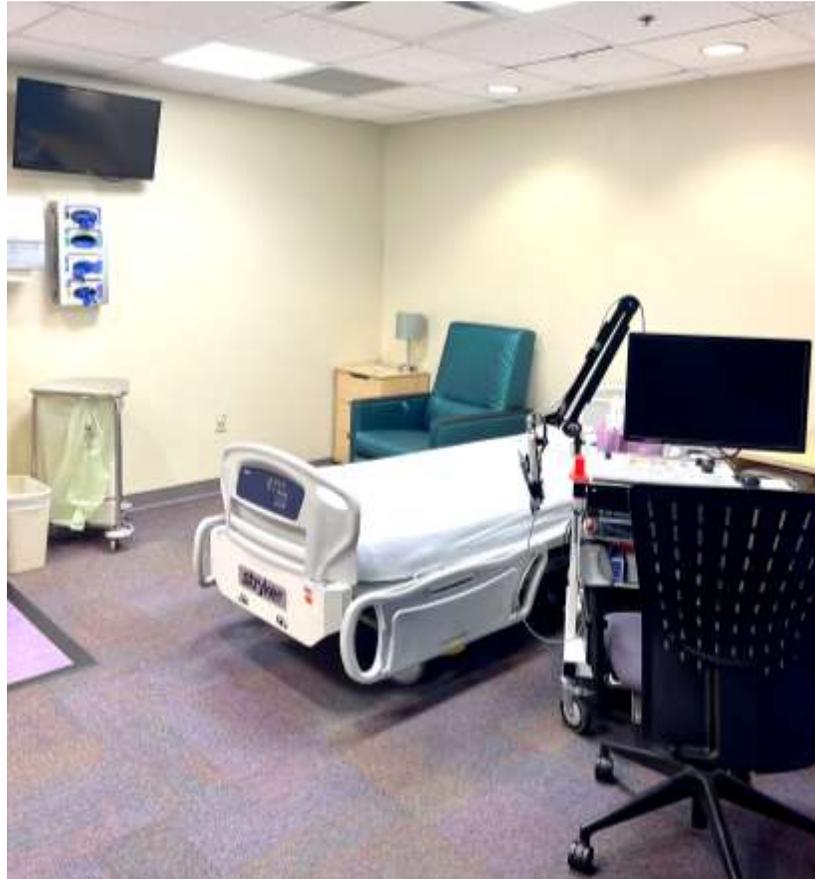


Some kids like to bring something from home to do while they wait.
What will you bring?

When it is your turn, an EMG tech will call your name and bring you and your grownup to the part of the building where we do these tests. This space is a 'quiet zone', so it is important to speak in a soft voice while you are in the EMG area.



In the test room, there is a bed for you to lay on. There is also a chair for your grownup to sit in and a computer for the doctor. The first test you will do is the NCS, which measures how quickly and strongly your nerves pass signals.



You will lay on your back on the bed, and the EMG tech will cover you up with warm blankets. Sometimes if a person is cold, their nerves pass signals more slowly, so it is important for your body to be warm and cozy for the test. To keep you warm, the tech may also put a small warm pack on your hand or foot.



Once your body is nice and warm, the tech will put gel on a silver button, place it on the back of your hand or leg, and put a piece of tape over it. The gel and button might feel cold on your skin. The silver button will stay on your hand or leg for the whole NCS test.



Next the tech will put two stickers on your hand or foot. Then they will clip a black wire to one sticker and a red wire to the other.



The wires connect to the computer, so your doctor can see how fast your nerves pass signals right away.

Now the tech will take measurements with a paper tape measure. The tech may use a marker to make a small mark on your arm or leg. The mark is where they will put the wand for the test.



This small wand can send energy signals to your nerves. The doctor will send a little pulse of energy from the computer to the wand on your skin. Different kids describe the feeling differently. Some say it feels like a buzz, a tingle, or a flick of a rubber band. The feeling can change as the doctor sends stronger pulses of energy, too.



Kids say it feels strange or weird, and some think it is uncomfortable. If you want to take a break, tell your doctor.



Your job is to keep your body still so the information from the stickers can get to the computer. Sometimes being distracted can help. You could talk to your grownup or the staff, listen to music, or watch something on your tablet or grownup's phone. Some kids also like to squeeze a stress ball or their grownup's hand.



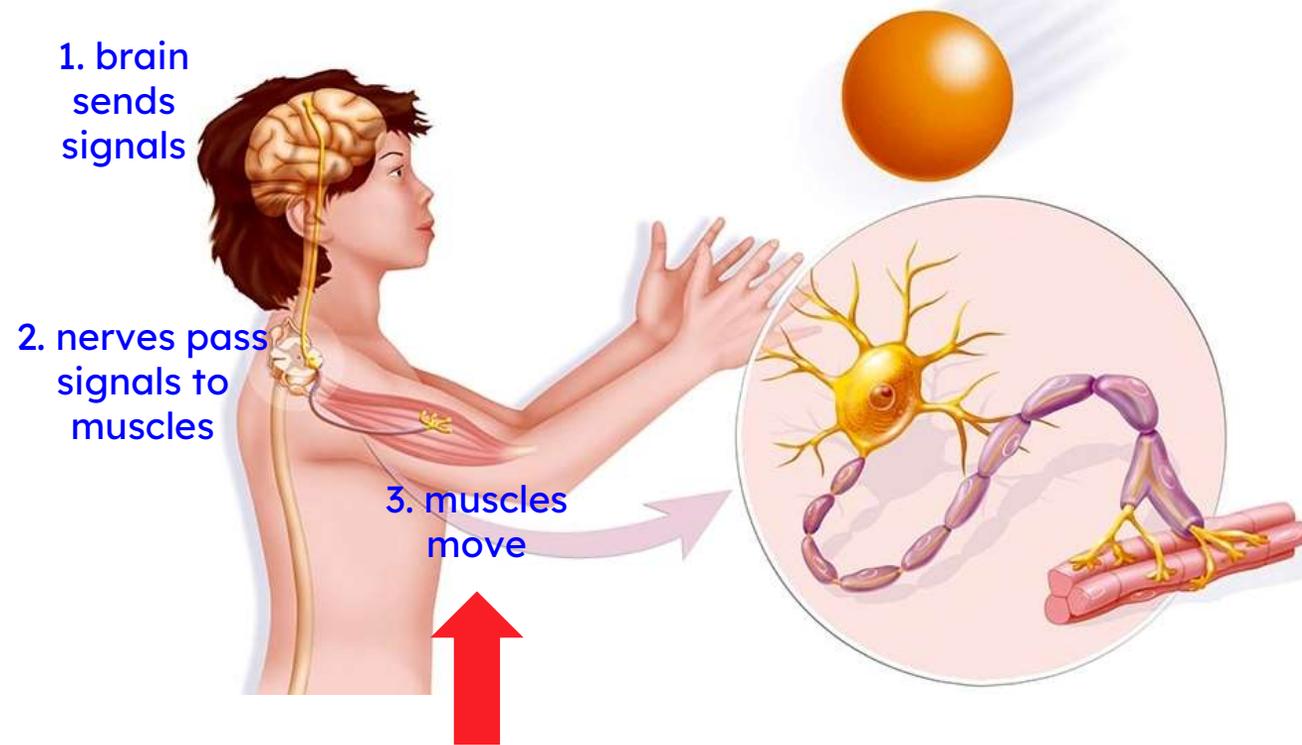
What will you do during this part of your test?

When the computer has all the information from that spot on your hand or foot, the tech will move the two stickers to another place on your body to do the same thing.



This test will be finished when the tech and doctor have done the stickers and wand on each place they need to test based on what is going on with your body.

Now that the doctor knows how well your nerves pass signals, it is time for the second part of the test – the EMG – to see how well your muscles react to the signals being sent.



Kids describe this part of the test as uncomfortable. If something is hurting and you need to take a break, make sure to tell your doctor right away.

For this part of the test, your doctor will use a super skinny electrode to measure the activity in your muscles. The electrode is smaller than a vaccine needle and instead of being connected to a syringe of medicine, it is connected to a wire that shows your muscle activity on the computer.



You can listen to music or watch something during this part of the test, but you will need to be able to talk to the doctor, follow their directions, and answer their questions. So make sure you can still hear them!



The doctor will gently slide the skinny electrode into your muscle. At first, you will just relax your body. Then, the doctor will ask you to do something – like lift your arm or bend your leg.



The electrode will send information to the computer about how your muscles are working right away.

Your doctor will test different spots on your arm or leg depending on what is going on with your body. After they get information about how each of the muscles are working, you will be done.



The test creates lots of numbers and pictures of your nerves and muscles. After you leave, the doctor will analyze the results and send a report to your doctor who ordered the test so they can follow-up with you.

If you wore a hospital gown for the test, now you can change back into your own clothes. If not, just put on your shoes and get ready to go. Remember, these tests are done in a hospital 'quiet zone', so please talk softly as you leave.



You did it!

