# Precautions and Contraindications of Electrical Modalities

## Edited Video Transcript

Today, we are talking about electrical modalities. Just like last week, we talked about using heat and the physics of heat to change the physiological properties. Today, we're talking about electricity. Our nerves and muscles run on electricity, so when you send that signal down from your brain to your arm to move, there is electricity traveling in your nerve or an electric charge traveling in your nerve, and when that muscle fires, that's actually your muscle depolarizing and effectively letting out an electric charge to signal that contraction. We're going to be manipulating that. So by adding electricity into the body, we'll be stimulating the nerves. We'll be stimulating the muscles, okay.

Precautions and Contraindications

Now as always, we start with our precautions and contraindications. Precautions are yellow flags. Contraindications are red flags.

**Precautions** With the precautions, you're going to want to be very cautious using electrical stimulation on people with epilepsy because, as you'll see, the electrical stimulation often involves a rapid alternating on-off, and that may trigger a seizure. Not all the time, but for some people, for some stimuli, so be cautious. Then, we want to think about healing tissue. Think about tendon repair. We want to be very cautious with causing a muscle contraction. Think of someone who is non-weightbearing. You don't want to have a muscle contraction on that muscle because that's going to mean they're not non-weightbearing—they're now weightbearing. We're not doing iontophoresis today. As you learned in the text, iontophoresis is electrical stimulation to deliver medication directly through the skin. Generally, that's more advanced practice and more specialized in that if you're doing [iontophoresis] be aware of allergies because you are delivering a medication. Be very cautious when sensation is reduced because someone's not going to be able to tell you if they are affected or being burned by the electrodes. Be very cautious with pregnancy. We don't want to send an electrical signal through the fetus.

**Contraindications** We move on to the contraindications. These are the red flags. Do not…so, think about a cardiac pacemaker, all right. If somebody has a cardiac pacemaker, absolutely DO NOT apply electrical stimulation because that electrical stimulation may interfere with the pacemaker—the costs far outweigh the benefits. Somebody with active cancer or tumor, we are not providing electrical stimulation because that may cause that tumor to spread. Think about transcerebral, transcranial, transthoracic—don't send electricity through the skull, through the brain, or through the heart. As you're going to see as we do electricity today, there's no reason to do that—just don't. Then finally, think about over-damaged skin—don't send electricity through a wound, through open skin, that's going to be a problem. So those are precautions and contraindications.

Electrical Stimulation Rules-of-Thumb

Now, moving on to some rules-of-thumb. These are rules-of-thumb for practice with electrical stimulation. First, always assess pain before, during, and after. As you're going to see, we're going to do interventions for pain but also interventions that may be uncomfortable, too painful. We want to be assessing pain to see if [electrical stimulation] is an effective intervention, but also to get an idea of tolerance. Some of you will not tolerate neuromuscular electrostimulation. You just won't, and that is what it is. Assess skin conditions before and after; you will see some redness. That redness is normal. Because you are sending electricity through the skin, that's going to stimulate some blood-flow blisters, open wounds. Burns are not normal—these are a sign of an electrical burn; that person needs to seek medical attention immediately. Electrical burns don't heal the same way that normal burns do, so they need to go to the emergency room for special treatment.

Then, always document those above observations: their pain, their skin integrity; but also document the specific settings and protocol you used. Simply saying “TENS” is not adequate, right? But saying TENS at what setting at what sites at what protocols, that's helpful because that's going to help you the next time deliver a more effective treatment. And then finally, as we've talked about before [with] physical agent modalities, we only use them to promote occupational functioning. Doing [electrical stimulation] on somebody as an occupational therapy, it's not skilled; it should not be done. Let's say you do TENS on somebody to decrease their pain so they can do occupation—let's say you do an intensive intervention. You do [TENS] to decrease their pain so [that] they can do go throughout their day and continue to work, continue to drive, continue to care for their kiddo—that is skilled, that is a valuable intervention. But we just don't do it to do it to do it, okay? Questions about our precautions and contraindications?