



Lameness Treatments

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Electrotherapy Devices for Equine Veterinary Use

Rehabilitation therapy in veterinary medicine often includes the use of electrotherapy devices, which Sheila Schils, PhD, MS, described at the convention.

Electrotherapy technology, available since the 1960s, is useful to manage pain, improve range of motion, decrease edema (fluid swelling), improve motor control and strength, reverse muscle wasting, deliver blood flow, and serve as a vehicle for iontophoresis (the use of electrostimulation to drive a drug through intact skin).

Schils, currently a principal of EquiNew LLC, an equine therapy company, explained that a veterinary electrical stimulation modality must be correctly designed to produce the desired results, because animals will not necessarily accept a system that may be well-tolerated by humans. She reviewed and compared the major categories of devices available to help equine veterinarians better understand the attributes of each system.

The first device Schils described uses transcutaneous electrical nerve stimulation (TENS) for producing sensory stimulation to “gate” the pain signal, while stimulating release of endogenous endorphins. A TENS device is often used for electroacupuncture, its action visible as continuous muscle twitches.

Next she described interferential electrotherapy as an alternative to TENS for suppressing pain. This device combines two higher frequency wave forms to create an interference pattern for sensory stimulation, but without visible twitching.

Schils then mentioned the high-voltage, pulsed-current stimulators that produce unidirectional continuous movement of ions, which can result in skin irritation and discomfort. But the user can reverse polarity with a switch, decreasing ion accumulation to improve discomfort, blood vessel dilation, and pain modulation through a rolling action of the muscles.

Other devices she discussed were neuromuscular electrical stimulators (NMES), which provide a therapy technique that’s also called functional electrical stimulation (FES). A computer-generated signal replicates the normal motor neuron response, so it is tolerated well by the horse. The signal obtains benefits in superficial and deep tissues (up to 3-4 inches) and produces controlled muscle contractions with evident “on” and “off” muscle movements. Schils noted that FES activates both motor and sensory nerves to improve strength, manage spasms, improve range of motion, decrease edema, and increase blood and lymphatic flow.

Finally, she mentioned microcurrents that mimic weak electrical currents produced by the body to stimulate tissue healing. This electrotherapy does not activate nerve or muscle tissue and creates no visible muscle response.

Schils said that for most equine applications, NMES are the most appropriate devices, because of a high compliance level by the horse during treatment.