Key Points

- Physiotherapy interventions that are commonly used in the horse include, but are not limited to, manual therapy, thermal agents, electrotherapeutic techniques, mechanical agents, therapeutic exercise, and acupuncture.
- Limited scientific validation has been performed in the horse, but does exist in the human.

Manual therapies

**Massage:** can promote circulation, decrease muscle spasm, mobilize adhesions and scar tissue, and aid lymphatic drainage.

**Myofascial release:** is the use of the hands and fingers to apply pressure to cause a release of tension in muscle or fascia.

**Stretching:** can provide pain relief from tight muscles and connective tissue that are responsible for pressure or tension on nerve pathways, restore normal muscle length after injury as well as maintain normal muscle length, avoid stiffness related to age or inactivity, and protect from stresses and strains.

**Acupressure:** is the use of the hands and fingers to apply pressure to acupuncture points.

**Mobilization:** passive joint movement for increasing ROM or decreasing pain. These are applied to joints & related soft tissues at varying speeds & amplitudes using physiologic or accessory motions. The applied force is light enough that patient can stop the movement.

**Manipulation:** passive joint movement for increasing joint mobility. It incorporates a sudden, forceful thrust that is beyond the patient’s control.

Thermal Agents

**Heat:** can be applied via dry, moist, or infrared applications. Heat affects circulation and metabolism, and relaxes muscles spasms. Heating decreases the thickness of synovial fluid and allows muscles to relax, become more pliant, and thus more easily stretched.

**Cold:** applied as a cold bath, ice, or ice packs, is used for acute injuries as it constricts the capillaries, thus reducing swelling, inflammation, and pain transmission. The first 48 hours are critical to slow down the inflammatory process.

Electrical therapeutic techniques

**Electrical muscle stimulation (EMS):** works by making the muscle contract through motor nerve stimulation using an interrupted direct current. Electrical muscle stimulation improves venous and lymphatic drainage, prevents muscle atrophy, prevents the
formation of unwanted adhesions, reduces scar tissue formation, builds and re-educates damaged or weakened muscle, and encourages nutrition into the affected area.

Transcutaneous electrical nerve stimulation (TENS): reduces swelling and assists wound healing by stimulating the top layer of the skin, by attracting white blood cells (which fight infection), and stimulating nerve function. Electrical nerve stimulation elevates blood cortisol, releases endorphins, relaxes spasms, and causes muscle contractions to maintain strength on injured or surgical muscles.

Electro-acupuncture and micro-current: are electrotherapeutic agents used to treat pain and aid healing. They are used to block pain transmission and stimulate the body's natural painkillers.

Pulsed electromagnetic: is used for decreasing or minimizing inflammation. Pulsed electromagnetic units have been shown to increase circulation, improve fracture healing, reduce pain, and promote healing.

Low Level Laser: therapy, which uses an intense beam of light, stimulates the body's processes, activates waste removal, increases repair activity, relieves swelling, heals surface wounds, and stimulates blood and lymphatic systems. It also increases serotonin, thereby achieving a calming response. It has been reported that laser stimulation has certain biostimulating effects such as: accelerates cell division; increases leucocytic phagocytosis; stimulates fibroblastic activity, enhances regeneration of lymph and blood vessels. Studies have shown that it also can cause vasodilatation. These effects can assist wound healing and relieve chronic pain when properly applied.

Mechanical Agents

Ultrasound: is a form of acoustic energy used to treat musculoskeletal injuries, including inflammation and wounds. It offers deep heating without excessive heating of the skin. Ultrasound can also be used to decrease pain and muscle spasm, promote wound healing, aid re-absorption of hematoma, reduce swelling, and reduce scar tissue. It increases blood flow in the area treated. It increases cell membrane permeability to ions and other substances. It blocks signal transmission in nerves. It decreases muscle spasms. It has been shown in clinical and scientific trials to increase collagen extensibility, enhance collagen remodeling, enhance collagen production, increase heat in deep tissues, increase blood flow, increase range of motion, reduce pain and muscle spasm, and accelerate wound healing.

Extracorporeal Shockwave Therapy: is another type of acoustic wave that is generated by either piezoelectric or mechanical means. Primary action is thought to be related to analgesia produced by direct effect on sensory nerves. It may also break down calcium deposits and stimulate blood flow to the treated area.
Other

Acupuncture: stimulates specific points on the body to achieve therapeutic effects and to repair abnormally functioning tissues and organs by affecting the neurological and endocrine systems.

Hyperbaric Oxygen Therapy: is a modality to increase oxygen concentration and a corresponding blood flow increase to damaged tissue. The horse is placed in a hyperbaric chamber and oxygen is added. While the percent of oxygen increases within the chamber, the pressure within the chamber also increases. This increases the level of oxygen within the circulating blood and the increased pressure may also aid in driving oxygen into the tissue from the blood. Treatment times and pressures vary depending on the condition being treated. Conditions that are amenable to treatment include anaerobic infections, tendonitis, chronic wounds, osteomyelitis, laminitis and pleuritis.

Therapeutic Exercise: is often used during the rehabilitation program. The amount and intensity is dependent upon the condition being treated, the extent of the damage, the time of healing and facilities available. Types of exercise include hand walking, riding, ponying, mechanical walker, underwater treadmill, swimming pool and turnout to paddock or pasture. Each exercise program is tailored to the individual and may need to be adapted several times during the rehabilitation program. Also, ground obstacles (ground poles, cavaletti’s) may be incorporated to increase coordination and agility. Additionally, change in terrain may be included to target specific areas (i.e. inclines to strengthen rear limbs). The goal of therapeutic exercise to provide a gradual return to function, improve strength and coordination and provide mental stimulation.

Orthotic Devices: are used to provide immobilization or support to an injured limb (fracture, tendon or ligament rupture, etc) or to provide specific forces to a limb in order to correct a conformational problem (angular limb deformity, flexural deformity). Common ones include various casts, bandages, splints or braces. Complexity ranges from a simple standing leg wrap to a custom fit full limb articulating brace. While simple devices (PVC splints, cast) are routinely used they are problematic in that they can cause problems. Ill fitting, poorly constructed or improperly applied devices damage soft tissues and lead to additional problems. Additionally, prolonged immobilization can lead to muscle atrophy and restriction of joint motion. It is a balance between too much and too little.

Therapeutic Shoeing: is used to manage the weight bearing function of the hoof which in turn can affect the stresses placed on a limb.

References