One of the most accessible and time-tested methods of physical treatment is thermal therapy. Heat or cold may be administered to horses using many modalities and can range from simply applying water from a garden hose to deep-heating ultrasound technologies.

The major physiologic benefits of cold therapy are decreased circulation, pain, and reduced tissue swelling. These benefits are most effective early in the period following injury or surgery. The primary effect of cold application is to constrict blood vessels. The reduced blood flow to tissues reduces edema, hemorrhage, and extravasation of inflammatory cells. Reduced tissue metabolism inhibits the effect of inflammatory mediators and slows enzyme systems. Analgesia follows cold therapy. The viscoelasticity of soft tissues are reduced with cold therapy.

Cold therapy is indicated in acute musculoskeletal injuries and following surgical procedures to reduce edema, slow inflammation and reduce pain. Cold is particularly effective during the first 24 to 48 hours after injury. Cold immersion of the distal limbs is effective in reducing the severity of laminitis by decreasing the activity of laminar MMP and causing laminar vasoconstriction.

Cold may be applied by ice water immersion, application of ice packs, cold packs and ice water-charged circulating boots. The most beneficial therapeutic effects of cold occur at tissue temperatures between 15° and 19° C. Tissue temperatures of 10° C and less may cause thermal damage. Average time of cold application is 15 to 20 minutes. Treatments are best repeated every 2 to 4 hours during the first 24 to 48 hours of injury or surgery.

The major physiologic benefits of heat therapy are increased local circulation, muscle relaxation, and increased tissue extensibility. Increased local blood flow mobilizes tissue metabolites, increases tissue oxygenation and increases metabolic rate of cells and enzyme systems. Metabolic rate increases 2 to 3 times for a tissue temperature increase of 10° C. Increased blood flow and vascular permeability promotes resorption of edema. Heat application also decreases pain via the mechanisms cited earlier for cold therapy. Soft tissues may be stretched more effectively when they after warming.

Heat is applied after acute inflammation has subsided. It is useful for reducing muscle spasms and pain because of musculoskeletal injuries. Heat therapy can be used to increase joint and tendon mobility. Heat may benefit recovery of localized soft tissue injuries by accelerating the healing response.

Superficial heat is most commonly applied using hot packs and hydrotherapy. Deep heat may be applied using therapeutic ultrasound. The most profound physiologic effects of heat occur when tissue temperatures are raised to 40° to 45° C. However, tissue temperatures above 45° C may result in pain and irreversible tissue damage. Heating for 15 to 30 minutes is required to elevate deep tissue temperature to the therapeutic range.