

Near or Far, Infrared Can Bring Wonderful Benefits to Your Horse!

by Christina Reguli

The days of cold hosing, DMSO and witch hazel as our only treatment options are long gone, now we also have many cutting edge technologies. It can be a bit confusing, which one is the right one for your horse?

We hear a lot about infrared, but the treatments come in very different forms; near infrared, infrared and far infrared. We hear it is heat, then we hear it is light, which is it? You might be surprised to learn it's both and delivered in very different forms with very different technologies and both can be of great benefit to your horse. To understand these treatment options, we must turn to science.

Light and heat are all around us everyday, but what we see as light is actually energy that behaves like a wave and also as a stream of particles called photons. Photons move and bounce and have electrical properties and are called electromagnetic waves. Their waves are measured in wavelengths, the distance between the two peaks of the wave, and relates to the color of visible light. Red, white, blue and green light all have different wavelengths, as does infrared, but infrared is not visible to the human eye. These wavelengths are measured in a unit called nanometers (nm). Different wavelengths produce differing effects on tissues of the body.

Far infrared radiation can be used as powerful therapeutic heating source. Studies have shown that these longer wavelengths of over 1000 nm are more readily absorbed by the water in the tissue.¹ When the far infrared radiation is absorbed by water in tissue, the molecules in the water become more excited and begin to vibrate, this creates a thermal or heating effect. Studies have shown that deep heating of the tissue can bring a temporary increase in circulation, which in turn brings more oxygenated blood to the area. The deep heating supplied by far infrared radiation can also bring very soothing heat to sore muscles and joints. Delivery to the tissues can be achieved by using a bio-ceramic impregnated fabric which absorbs and stores infrared thermal energy and gently delivers it back into the tissues or by an electrical device which contains infrared heating elements. Infrared therapy has proven to be effective because its thermal waves exhibit analgesic, anti-inflammatory and anti-spasmodic capabilities.²

Red and near infrared wavelengths in the 600 -1000 nm range react with the tissues differently than far infrared.³ This technology is referred to by many scientists as photobiomodulation but referred to more commonly as light therapy or photon therapy. These specific wavelengths, when applied to damaged cells using low energy lasers or light-emitting diode (LED) arrays have been shown to promote tissue repair and modulate pain. Studies show that a photoacceptor molecule, cytochrome c oxidase, within the cell, absorbs the photons and accelerates the production of adenosine triphosphate (ATP), the form of energy the cells use.⁴ Cells that are damaged are not efficient at making the energy they need to repair themselves, so this gives them the fuel they need to repair and regenerate cell components, foster mitosis, restore homeostasis, reduce inflammation and provides not only a temporary increase in circulation but also an increase in new capillary formation. The result is tissue and nerves that heal up to 50% faster with less scar tissue and a reduction of pain caused by injury, arthritis or other inflammatory conditions.

The beauty of these technologies is that they are non invasive, have no negative side effects and are affordable. Now we can provide increased healing and pain reduction by using these products individually or by combing the two technologies to work in concert. Whether your equine partner is a competitor or a companion or both, science is paving the way to greater healing and improved performance!

References

1. Byrnes, James (2009). Unexploded Ordnance Detection and Mitigation. Springer.
2. Dr. Sasaki Kyno, MD, The Scientific Basis and Therapeutic Benefits for Far Infrared Ray Therapy
3. Mitochondrial signal transduction in accelerated wound and retinal healing by near-infrared light therapy.
Eells JT, Wong-Riley MT, VerHoeve J, Henry M, Buchman EV, Kane MP, Gould LJ, Das R, Jett M, Hodgson BD, Margolis D, Whelan HT.

Source

Department of Health Sciences, College of Health Sciences, University of Wisconsin-Milwaukee, Milwaukee, WI 53201, USA. jeells@uwm.edu

PubMed

4. Rehab Management, The Interdisciplinary Journal: Therapeutic Light
by Chukuka S. Enwemeka, PT, PhD, FACSM

Additional Sources:

Natural Pain Relief Guide; Chronic Pain Management Dr. Ronald J. Riegel

Encyclopedia of Laser Physics and Technology

Light-induced vasodilation of coronary arteries and its possible clinical implication.

Plass CA, Loew HG, Podesser BK, Prusa AM.

Department of Internal Medicine II, Division of Cardiology, Medical University of Vienna, Vienna, Austria.

PubMed