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A PRACTICAL
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LOW-LEVEL LASER THERAPY

SHOULD YOU OFFER THIS MANAGEMENT TECHNIQUE IN YOUR PRACTICE?

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Photos By Dr. Angela Dodd (Animal Wellness Center of Athens, GA)

Laser therapy is an increasingly popular tool used to help manage a variety of veterinary patient concerns, including postoperative pain, arthritis and slow wound healing. Laser therapy is performed on companion animals, horses and even exotic species, and is widely accessible to general practitioners.

How Laser Therapy Works

Low-level laser therapy (LLLT), also known as photobiomodulation therapy, uses light emitted at a specific wavelength to stimulate cellular processes. Another term for LLLT is “cold laser therapy”, as the laser produces only a minimal amount of heat and energy compared to surgical lasers. The depth of light penetration is determined by the light’s wavelength, with superficial tissues absorbing light at lower wavelengths compared to deep tissues. Use of different wavelengths, light doses and intensities can greatly influence how LLLT interacts with target tissues.

All lasers are classified by the amount of power they deliver, and therapeutic lasers in veterinary medicine belong to either class 3B (LLLT) or class 4 (high-power laser), with

the latter having a higher risk of side effects including thermal tissue damage. The rest of this article will focus on LLLT (class 3B).

The many benefits of LLLT are not yet fully understood. At a cellular level, molecules known as “photoacceptors” use photon energy emitted by the laser light to enter an excited state. Certain cellular activities, including increased mitochondrial ATP and cell membrane permeability, as well as reduced cellular apoptosis and proinflammatory cytokine release are stimulated. These cellular activities promote formation of granulation tissue, collagen, bone and blood vessels, leading to increased delivery of oxygen and immune cells to the target tissues.



The use of standardized eye protection is essential for humans and animals in the treatment room to avoid retinal damage from the laser.

Applications in Veterinary Medicine

LLLT has been studied extensively in human medicine; however, there is a relative lack of research-based literature examining LLLT for veterinary use. Currently, there are no standard protocols for laser therapy in veterinary medicine, and the optimal parameters for different animal species are still unknown. Therefore, dosage settings are typically based on manufacturer-specific recommendations, rather than on established guidelines for best practices.

Most experts agree this area needs more research before we can understand laser therapy's full potential in veterinary medicine. However, a safe starting point is to use parameters that have exhibited positive effects in the same species in peer-reviewed literature. Then, adjust doses according to the individual patient's response to treatment. Many newer, veterinary-specific laser units also contain software to alter dosing parameters according to patient species, size, weight and coat color.

LLLT performs best when used as one part of a multimodal treatment program utilizing pharmaceutical and non-pharmaceutical components. Potential applications for LLLT use include adjunct treatment of IVDD, surgical incisions, slow-healing wounds, laminitis, anterior cruciate ligament rupture, edema and other acute and chronic issues.

Safety Considerations

While LLLT is generally considered a safe therapy, its use is contraindicated

over areas of neoplastic tissue, endocrine tissue, active hemorrhage, open epiphyseal plates and gonads. The use of standardized eye protection is essential for humans and animals in the treatment room to avoid retinal damage from the laser.

What to Know Before Buying

A good-quality laser unit is not inexpensive, so it's best to do your homework before purchasing one. Start by researching units that meet international laser safety standards and are made by manufacturers offering training and technical support for veterinary use.

Laser therapy typically offers an excellent return on investment. A trained veterinary technician or nurse can perform treatments, and most patients tolerate the short, painless sessions well with minimal restraint. Sessions typically occur frequently at first and then are gradually spaced out for chronic conditions.

Pricing can be based on treatment site or appointment time length, with pre-paid packages for multiple sessions. As many clients are unfamiliar with laser therapy, they will appreciate educational materials, as well as individualized progress reports via pictures and videos.

In conclusion, laser therapy is a promising modality to incorporate into general practice. While continued research is needed to establish standardized protocols for different species and applications, LLLT has a wide safety



margin, is relatively non-invasive, and offers a variety of potential applications from patient rehabilitation to management of geriatric pain. Purchase of a unit, together with appropriate training of staff and patient selection, can provide a benefit to patient care and also improve your bottom-line. +

Reference:

Riegel RJ, Godbold Jr JC, eds. *Laser Therapy in Veterinary Medicine: Photobiomodulation*. West Sussex, UK: Wiley Blackwell, 2017.



Natalie Stilwell combined her love of animal health and writing to create Seastar Communications and Consulting, a veterinary writing and consulting business based in Athens, Georgia. Through her business, "Dr. Nat" practices aquatic animal medicine and provides veterinary and scientific materials for a variety of clients. She lives with her husband (a fellow fish vet) and their furry, feathered, finned, and shelled "kids".