**LASER THERAPY SIMPLIFIED
Treatment Techniques
David S Bradley, DVM, FASLMS**

**Summus Medical Laser-Veterinary Medical Director**

*Veterinary Laser Consultant,*

Franklin, TN, USA

**TREATMENT TECHNIQUES**

**Direct Contact**

This is the technique used when treating most patients. It can be done on light-coated, short-haired, or shaved patients. It also serves to help separate hairs on long coated animals. All lasers have a contact head and there is no evidence that any particular head delivers the energy to the tissue better than any other head. Use your other hand to help separate the hair and/or monitor for superficial warmth. Mild pressure allows for deeper penetration in some areas. Treat in a scanning pattern for most cases and especially when using higher power and Continuous Wave (CW). Scan in a slow methodical pattern at a rate of approximately 3 cm/second. Another treatment technique is to administer the therapy using a grid pattern or point-to-point. This is done only with lowered power lasers and/or when the laser power is reduced and/or pulsing or modulating. Treat in a grid pattern at 1-3 seconds per point or the recommended time-frame to deliver the prescribed dose. Always treat the area of interest as well as including a border of surrounding healthy tissue and any other parts of the kinetic chain that are involved in; compensating for; or affected by the injured body part. You can perform laser therapy in conjunction with (simultaneously) stretching or ROM in cooperative patients. **Monitor for superficial thermal effects especially with darker skin/coat colors.**

Keep in mind your “Line of Drive”. (Make sure the laser beam is being directed towards the target tissue.)

Direct the beam perpendicular to muscle tissue.

Direct the beam parallel to joint surfaces.

Treat connecting muscles, tendons, bursas.

**Non-Contact**

Non-contact treatments are almost always done in a scanning mode. Scan 1-2 cm from the surface with slow passage (about 3 cm/second) over the affected area and 1-2 inches of surrounding healthy tissue. Used for open wounds or any area with discharge or exudates. Also used on very painful/sensitive areas.

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Current Dosage Guidelines**

**Wounds/Superficial Lesions**

Acute 1-4 J/cm2

Chronic 4-30 J/cm2

**Musculoskeletal**

Acute Superficial Pain 2-4 J/cm2

Acute Deep Pain 3-6 J/cm2

Pain/Chronic/Deep-Seated 6-20 J/cm2

**Power Guidelines**

**Area**  **Power (W)**

Skin and Mucosa 1-3

Carpus/Tarsus 3-6

Shoulder 4-7

Stifle 3-6

Hip T/L Spine 6-15

Neck 5-12

**Optimum Beam Frequency**

**Pain/Neuralgia 2-20 Hz or CW Bone <500 Hz**

**Edema/Swelling 1,000 Hz Connective Tissue 500-2000 Hz**

**General Stimulation 2,500 Hz Muscle 2000-10,000 Hz**

**Inflammation 5,000 Hz Dermis >10,000 Hz**

***For post-op or acute injuries use shorter times and/or lower power***

***(Lower Total Dosage/Joules).***

Some injuries may respond to a graduated treatment from lower to higher frequencies. Example: Start with CW then go to 20 Hertz followed by 500 Hertz followed by 2500-5000 Hertz.

**The protocols programmed into some lasers will do this for you automatically.**

If noticing any discomfort, aversion reactions, or other hypersensitivity reactions, decrease power, increase hand speed, increase distance to tissue, or switch to a Pulse or Modulating (hertz) delivery mode.

**AGAIN-Most treatments are performed with the hand-piece in direct contact** or approximately 1cm from the skin. A slow, constant, scanning or rocking motion over the target area is optimal while separating the hair coat. Always include a border of healthy tissue surrounding the area of concern. Laser any other structures in the kinetic chain that may be contributing to the mechanical support and therefore may be injured or adding stress to the injured area. It is always recommended when treating large areas to treat from **proximal to distal** (musculoskeletal) or **central to peripheral** (neurologic). When treating for edema/swelling always start with the major draining lymph nodes and associated lymphatics proximally then work down the affected area.

**Laser therapy effects are cumulative**-Response should improve with each treatment and duration of response should increase with each treatment until a plateau is reached. Plan on a minimum package of 6-10 treatments (similar to 10-14 days of antibiotics) in most cases.

Acute injuries can be treated 2-3 days in a row then every other day or twice weekly.

Chronic injuries should be treated 2-3 times a week initially until a response is observed. Then continue treatments twice weekly (or weekly if better for client compliance) until the condition is resolved or plateaus. Again- this is often achieved in 6-10 treatments on average.

For those conditions which we will not establish a ‘cure’, once a maximum response is reached, you can then lengthen the time between treatments gradually until acceptable patient comfort and or function is maintained. Treatments every 3-4 weeks may be adequate for maintenance in many patients. At this point you can also start to wean them off any other medications that may have a high potential for side effects and/or are costly.

**Most patients will show at least a mild positive response in 1-2 treatments.**

If positive response is not noticed in 3-4 treatments, re-evaluate condition/treatment or protocol/diagnosis. If diagnosis is correct, you may need to increase dosage (Time and/or Power). Increase dosage by 25%-50% per treatment episode until a positive response is observed. You can also expand your treatment area to include more of the potentially involved tissue/structures.

Some patients may experience a ‘flare’ after laser treatment due to the stimulation of the healing response. This may be manifested in increased soreness/lameness or extreme fatigue. If this is noted, consider decreasing the dosage by 25%.

**Thermal effects vary with hair coat color and skin pigmentation** – darker absorbs more. If you get a withdrawal response, increase distance and/or move the beam more rapidly and/or reduce power. You may need to increase power or time (dosage) with darker skin but be cautious of superficial thermal effects.

**Laser therapy is extremely safe.** However, there are still some contra-indications listed in the literature.

Some of these may be removed or modified as we gain a better understanding of all the physiologic mechanisms behind laser therapy. At this point the following are still on the list:

Direct exposure to the eye

Direct exposure to any cancer/malignancy
Direct exposure to a gravid uterus

Direct exposure to a joint within 7 days of an intra-articular injection of a steroid or non-steroidal

Direct exposure to an area of active bleeding

*(References available upon request.)*