

WALT Veterinary Dosage Recommendations Task Force
Stationary Contact Application: Super-Pulsed 904/905 nm

FELINE 10 Ib: Osteoarthritis/Degenerative Joint Disease

PATHOLOGY / ANATOMICAL LOCATION	PROBE TYPE Note 1.	NUMBER OF PROBE APPLICATIONS Points / Sites Note 2.	DURATION PER POINT / SITE (seconds)	TOTAL TREATMENT DURATION (min:sec)	TOTAL AVERAGE POWER (Watts) Note 3.	TOTAL EMITTED ENERGY (Joules) Note 7.	SURFACE IRRADIANCE (W/cm ²) Note 4.	FLUENCE AT TARGET POINT/SITE (Joules/cm ²)
Manus/Pes	Single	1 – 2	30 – 90	1:00 – 1:30	0.01 – 0.06	0.9 – 3.6	0.02 – 0.06	1.8 – 2.0
	Small-Multi	1 – 2	30 – 90	1:00 – 1:30	0.04 – 0.12	3.6 – 14.4	0.02 – 0.06	1.8 – 2.0
	Large-Multi	1 – 2	30 – 90	1:00 – 1:30	0.10 – 0.72	9.0 – 43.2	0.02 – 0.06	1.8 – 2.0
Carpus/Tarsus	Single	1 – 2	30 – 90	1:00 – 1:30	0.01 – 0.06	0.9 – 3.6	0.02 – 0.06	1.8 – 2.0
	Small-Multi	1 – 2	30 – 90	1:00 – 1:30	0.04 – 0.12	3.6 – 14.4	0.02 – 0.06	1.8 – 2.0
	Large-Multi	1 – 2	30 – 90	1:00 – 1:30	0.10 – 0.72	9.0 – 43.2	0.02 – 0.06	1.8 – 2.0
Elbow	Single	3 – 5	30 – 90	2:30 – 4:50	0.01 – 0.06	2.7 – 9.0	0.02 – 0.06	1.8 – 2.0
	Small-Multi	1 – 2	30 – 90	1:00 – 1:30	0.04 – 0.12	3.6 – 18.0	0.02 – 0.06	1.8 – 2.0
	Large-Multi	1 – 2	30 – 90	1:00 – 1:30	0.10 – 0.72	9.0 – 43.2	0.02 – 0.06	1.8 – 2.0
Shoulder	Single	3 – 6	40 – 120	4:00 – 6:00	0.01 – 0.06	3.6 – 14.4	0.02 – 0.06	2.4 – 2.6
	Small-Multi	1 – 2	40 – 120	1:20 – 2:00	0.04 – 0.12	4.8 – 24.0	0.02 – 0.06	2.4 – 2.6
	Large-Multi	1	40 – 120	0:40 – 2:00	0.10 – 0.72	12.0 – 28.8	0.02 – 0.06	2.4 – 2.6
Stifle	Single	4 – 8	40 – 120	5:20 – 8:00	0.01 – 0.06	4.8 – 19.2	0.02 – 0.06	2.4 – 2.6
	Small-Multi	1 – 2	40 – 120	1:20 – 2:00	0.04 – 0.12	4.8 – 24.0	0.02 – 0.06	2.4 – 2.6
	Large-Multi	1 – 2	40 – 120	1:20 – 2:00	0.10 – 0.72	12.0 – 57.6	0.02 – 0.06	2.4 – 2.6
Hip	Single	4 – 8	40 – 120	5:20 – 8:00	0.01 – 0.06	4.8 – 19.2	0.02 – 0.06	2.4 – 2.6
	Small-Multi	1 – 2	40 – 120	1:20 – 2:00	0.04 – 0.12	4.8 – 24.0	0.02 – 0.06	2.4 – 2.6
	Large-Multi	1	40 – 120	0:40 – 2:00	0.10 – 0.72	12.0 – 28.8	0.02 – 0.06	2.4 – 2.6
Back - Lumbar	Single	8 – 12	60 – 120	12:00 – 16:00	0.01 – 0.06	9.6 – 43.2	0.02 – 0.06	2.4 – 3.6
	Small-Multi	2 – 3	60 – 120	3:00 – 4:00	0.04 – 0.12	9.6 – 54.0	0.02 – 0.06	2.4 – 3.6
	Large-Multi	1 – 2	60 – 120	2:00 – 2:00	0.10 – 0.72	12.0 – 86.4	0.02 – 0.06	2.4 – 3.6
Back - Thoracic	Single	8 – 12	60 – 150	12:00 – 20:00	0.01 – 0.06	12.0 – 43.2	0.02 – 0.06	3.0 – 3.6
	Small-Multi	2 – 3	60 – 150	3:00 – 4:00	0.04 – 0.12	12.0 – 54.0	0.02 – 0.06	3.0 – 3.6
	Large-Multi	1 – 2	60 – 150	2:00 – 2:30	0.10 – 0.72	15.0 – 86.4	0.02 – 0.06	3.0 – 3.6
Neck	Single	6 – 10	60 – 180	10:00 – 18:00	0.01 – 0.06	12.0 – 36.0	0.02 – 0.06	3.6 – 3.8
	Small-Multi	2 – 3	60 – 180	3:00 – 6:00	0.04 – 0.12	16.0 – 54.0	0.02 – 0.06	3.6 – 3.8
	Large-Multi	1 – 2	60 – 180	2:00 – 3:00	0.10 – 0.72	20.0 – 86.4	0.02 – 0.06	3.6 – 3.8

FELINE 10 Ib: IVDD; Wounds

IVDD	Single	16 – 32	60 – 180	32:00 – 48:00	0.01 – 0.06	32.0 – 115.2	0.02 – 0.06	3.6 – 3.8
	Small-Multi	4 – 8	60 – 180	8:00 – 12:00	0.04 – 0.12	32.0 – 144.0	0.02 – 0.06	3.6 – 3.8
	Large-Multi	2 – 3	60 – 180	3:00 – 6:00	0.10 – 0.72	40.0 – 129.6	0.02 – 0.06	3.6 – 3.8
Superficial/Acute Wound Note 5.	Single	Treat intact skin around entire wound periphery.	20 – 80	As applicable.	0.01 – 0.06	As applicable.	0.02 – 0.06	1.2 – 1.6
	Small-Multi		20 – 80		0.04 – 0.12		0.02 – 0.06	1.2 – 1.6
	Large-Multi		20 – 80		0.10 – 0.72		0.02 – 0.06	1.2 – 1.6
Difficult Wounds Notes 5 & 6.	Single	Treat intact skin around entire wound periphery.	30 – 120	As applicable.	0.01 – 0.06	As applicable.	0.02 – 0.06	1.8 – 2.4
	Small-Multi		30 – 120		0.04 – 0.12		0.02 – 0.06	1.8 – 2.4
	Large-Multi		30 – 120		0.10 – 0.72		0.02 – 0.06	1.8 – 2.4

WALT Veterinary Dosage Recommendations Task Force
Stationary Contact Application: Super-Pulsed 904/905 nm

CANINE 50 lb: Osteoarthritis/Degenerative Joint Disease

PATHOLOGY / ANATOMICAL LOCATION	PROBE TYPE Note 1.	NUMBER OF PROBE APPLICATIONS Points / Sites Note 2.	DURATION PER POINT / SITE (seconds)	TOTAL TREATMENT DURATION (min:sec)	TOTAL AVERAGE POWER (Watts) Note 3.	TOTAL EMITTED ENERGY (Joules) Note 7.	SURFACE IRRADIANCE (W/cm ²) Note 4.	FLUENCE AT TARGET POINT/SITE (Joules/cm ²)
Manus/Pes	Single	3 – 5	30 – 90	2:00 – 6:00	0.01 – 0.06	3.6 – 7.2	0.02 – 0.06	1.8 – 2.0
	Small-Multi	1 – 2	30 – 90	1:00 – 1:30	0.04 – 0.12	3.6 – 18.0	0.02 – 0.06	1.8 – 2.0
	Large-Multi	1 – 2	30 – 90	1:00 – 1:30	0.10 – 0.72	6.0 – 64.8	0.02 – 0.06	1.8 – 2.0
Carpus/Tarsus	Single	3 – 5	40 – 90	2:40 – 6:00	0.01 – 0.06	3.6 – 9.6	0.02 – 0.06	1.8 – 2.4
	Small-Multi	2 – 2	40 – 90	1:20 – 3:00	0.04 – 0.12	7.2 – 24.0	0.02 – 0.06	1.8 – 2.4
	Large-Multi	1 – 2	40 – 90	1:20 – 1:30	0.10 – 0.72	9.0 – 57.6	0.02 – 0.06	1.8 – 2.4
Elbow	Single	10 – 14	40 – 120	9:20 – 20:00	0.01 – 0.06	12.0 – 33.6	0.02 – 0.06	2.4 – 2.6
	Small-Multi	2 – 3	40 – 120	2:00 – 4:00	0.04 – 0.12	9.6 – 36.0	0.02 – 0.06	2.4 – 2.6
	Large-Multi	1 – 2	40 – 120	1:20 – 2:00	0.10 – 0.72	12.0 – 57.6	0.02 – 0.06	2.4 – 2.6
Shoulder	Single	10 – 14	60 – 150	14:00 – 25:00	0.01 – 0.06	15.0 – 50.4	0.02 – 0.06	3.0 – 3.6
	Small-Multi	2 – 3	60 – 150	3:00 – 5:00	0.04 – 0.12	12.0 – 54.0	0.02 – 0.06	3.0 – 3.6
	Large-Multi	1 – 2	60 – 150	2:00 – 2:30	0.10 – 0.72	15.0 – 86.4	0.02 – 0.06	3.0 – 3.6
Stifle	Single	12 – 20	60 – 150	20:00 – 30:00	0.01 – 0.06	18.0 – 57.6	0.02 – 0.06	3.0 – 3.6
	Small-Multi	3 – 5	60 – 150	4:00 – 7:30	0.04 – 0.12	18.0 – 72.0	0.02 – 0.06	3.0 – 3.6
	Large-Multi	1 – 2	60 – 150	2:00 – 2:30	0.10 – 0.72	30.0 – 86.4	0.02 – 0.06	3.0 – 3.6
Hip	Single	16 – 20	60 – 150	20:00 – 40:00	0.01 – 0.06	24.0 – 72.0	0.02 – 0.06	3.0 – 3.6
	Small-Multi	4 – 5	60 – 150	5:00 – 10:00	0.04 – 0.12	24.0 – 90.0	0.02 – 0.06	3.0 – 3.6
	Large-Multi	1 – 2	60 – 150	2:00 – 2:30	0.10 – 0.72	15.0 – 86.4	0.02 – 0.06	3.0 – 3.6
Back - Lumbar	Single	28 – 32	80 – 150	42:40 – 70:00	0.01 – 0.06	42.0 – 153.6	0.02 – 0.06	3.0 – 4.8
	Small-Multi	7 – 8	80 – 150	10:40 – 17:30	0.04 – 0.12	42.0 – 192.0	0.02 – 0.06	3.0 – 4.8
	Large-Multi	2 – 3	80 – 150	4:00 – 5:00	0.10 – 0.72	30.0 – 172.8	0.02 – 0.06	3.0 – 4.8
Back - Thoracic	Single	36 – 40	80 – 180	53:20 – 108:00	0.01 – 0.06	64.8 – 192.0	0.02 – 0.06	3.6 – 4.8
	Small-Multi	8 – 10	80 – 180	13:20 – 24:00	0.04 – 0.12	57.6 – 240.0	0.02 – 0.06	3.6 – 4.8
	Large-Multi	3	80 – 180	5:20 – 9:00	0.10 – 0.72	54.0 – 230.4	0.02 – 0.06	3.6 – 4.8
Neck	Single	18 – 24	80 – 180	32:00 – 54:00	0.01 – 0.06	32.4 – 115.2	0.02 – 0.06	3.6 – 4.8
	Small-Multi	5 – 6	80 – 180	8:00 – 15:00	0.04 – 0.12	36.0 – 144.0	0.02 – 0.06	3.6 – 4.8
	Large-Multi	2 – 3	80 – 180	4:00 – 6:00	0.10 – 0.72	36.0 – 172.8	0.02 – 0.06	3.6 – 4.8

CANINE 50 lb: IVDD; Wounds

IVDD	Single	32 – 64	80 – 180	85:20 – 96:00	0.01 – 0.06	57.6 – 307.2	0.02 – 0.06	3.6 – 4.8
	Small-Multi	8 – 14	80 – 180	18:40 – 24:00	0.04 – 0.12	57.6 – 336.0	0.02 – 0.06	3.6 – 4.8
	Large-Multi	3 – 4	80 – 180	5:20 – 9:00	0.10 – 0.72	54.0 – 230.4	0.02 – 0.06	3.6 – 4.8
Superficial/Acute Wound Note 5.	Single	Treat intact skin around entire wound periphery.	20 – 80	As applicable.	0.01 – 0.06	As applicable.	0.02 – 0.06	1.2 – 1.6
	Small-Multi		20 – 80		0.04 – 0.12		0.02 – 0.06	1.2 – 1.6
	Large-Multi		20 – 80		0.10 – 0.72		0.02 – 0.06	1.2 – 1.6
Difficult Wounds Notes 5 & 6.	Single	Treat intact skin around entire wound periphery.	30 – 120	As applicable.	0.01 – 0.06	As applicable.	0.02 – 0.06	1.8 – 2.4
	Small-Multi		30 – 120		0.04 – 0.12		0.02 – 0.06	1.8 – 2.4
	Large-Multi		30 – 120		0.10 – 0.72		0.02 – 0.06	1.8 – 2.4

WALT Veterinary Dosage Recommendations Task Force

Stationary Contact Application: Super-Pulsed 904/905 nm

Notes:

1. For the purposes of this document, the applicator used to deliver light to the patient is called the 'probe', and probes are typically available in three general styles:
 - a. Single: The probe contains a single GaAs super-pulsed laser emitter and treats one point at a time.
 - b. Small-Multi: The probe contains 4-5 GaAs super-pulsed laser emitters, each of which projects a distinct and separate beam spot upon the skin; from a treatment perspective, such probes can be considered as treating 4-5 distinct points concurrently, thus reducing total treatment time compared to a single-emitter probe.
 - c. Large-Multi: The probe contains 10-12 GaAs super-pulsed laser emitters, each of which projects a distinct and separate beam spot upon the skin; from a treatment perspective, such probes can be considered as treating 10-12 distinct points concurrently, thus reducing total treatment time compared to a single-emitter or small multi-emitter probe.
2. A 'point' is nominally defined as a contact region with the skin or tissue of less than or equal to 1 cm², or the beam spot size upon the skin, whichever is larger. A 'site' refers to a multiple of points within the region of single contact application of a Multi probe. Individual application points or sites may be immediately adjacent or spaced some appropriate distance apart; typically, they do not overlap.
3. In this document, 'total average power' refers to the combined output power of all GaAs emitters in the probe; therefore, the recommended power of each emitter can be calculated by dividing the total average power recommended in these charts by the number of emitters in the probe. The recommended minimum average output power of each GaAs super-pulsed laser emitter in a single-emitter or multi-emitter probe is 5 mW, with >10 mW being preferred.
4. Irradiance is the intensity of the beam of light upon the irradiated surface. The recommended minimum average irradiance of GaAs super-pulsed laser probes is 5 mW/cm², with >20 mW/cm² being preferred.
5. When treating wounds, treat the entire wound periphery but avoid overlapping of placements. If direct treatment of the wound is desired, such as accelerating the development of a granulation bed, the probe should be held directly over but slightly away from the wound surface or covered with disposable clear plastic (i.e. sterile sleeve) to avoid contamination.
6. PBM as an adjunct therapy to sound medical and surgical management management of difficult wounds may involve increasing frequency of treatments and ensuring the fluence falls within the biostimulatory range of 1-4 J/cm².
7. The 'total emitted energy' refers to the total amount of energy emitted from the probe during the 'total treatment duration', given the probe's 'total average power'. The total incident energy – i.e., the energy actually received at the skin – may be proportionally less than the total emitted energy, depending upon the size of the anatomical target in relation to the size of a multi-emitter probe.

User should be familiar with device specifications. Consult device documentation or manufacturer regarding any information that is unclear or absent.

Additional Considerations:

- Above protocols are for an 'ideal' 10-pound feline and 50-pound canine with light coat. Treatment times may need to be adjusted up or down depending on estimated target depth, size and pigmentation of patient.
- Where the average output power of the super-pulsed GaAs laser emitter(s) comprises only a small percentage (<25%) of the total output of a probe that also contains continuous wave (CW) and/or switched (a.k.a. gated or chopped) CW laser and/or LED emitters, please instead refer to the chart entitled 'Stationary Contact Application: CW & Switched/Pulsed CW'.
- For laser PBM the peak power of the laser emitter(s) is of little consequence beyond its contribution to the average power, which is used to determine treatment duration and dose. If the average power is not specified it should be calculated for each available pulse frequency setting, as follows:

$$P_{\text{average}} \text{ (W)} = P_{\text{peak}} \text{ (W)} \times \text{Pulse Width (s)} \times \text{Pulse Frequency (Hz)}$$

WALT Veterinary Dosage Recommendations Task Force

Stationary Contact Application: Super-Pulsed 904/905 nm

- Recommended technique is stationary skin contact with appropriate amount of pressure applied for target depth and moderated according to patient's tolerance.
- Acute conditions may respond better initially to increased frequency of treatment and/or increased treatment time.
- Effort should be made to maximize light delivered to target tissue without interference. This may be achieved by increasing probe pressure on skin surface, using comb-like protruding lens or diode devices, manipulating fur away from target, clipping, cleaning skin and hair with alcohol, and/or wetting the hair coat.
- Laser PBM has both local and distal/systemic effects, all of which contribute toward the desired clinical outcome. Ideally, local irradiation directly over the injured/pathologic tissue is performed, and additional sites, such as trigger points and dorsal roots, can be incorporated to maximize pain management. To maximize systemic effects, incorporate irradiation over proximal/regional lymph nodes and major arteries or veins into any treatment protocol. Irradiation over bone containing active marrow has been shown to increase the number of circulating stem cells which may be recruited by diseased tissue to replace and regenerate injured cells, stimulate angiogenesis and decrease inflammatory and fibrotic factors.