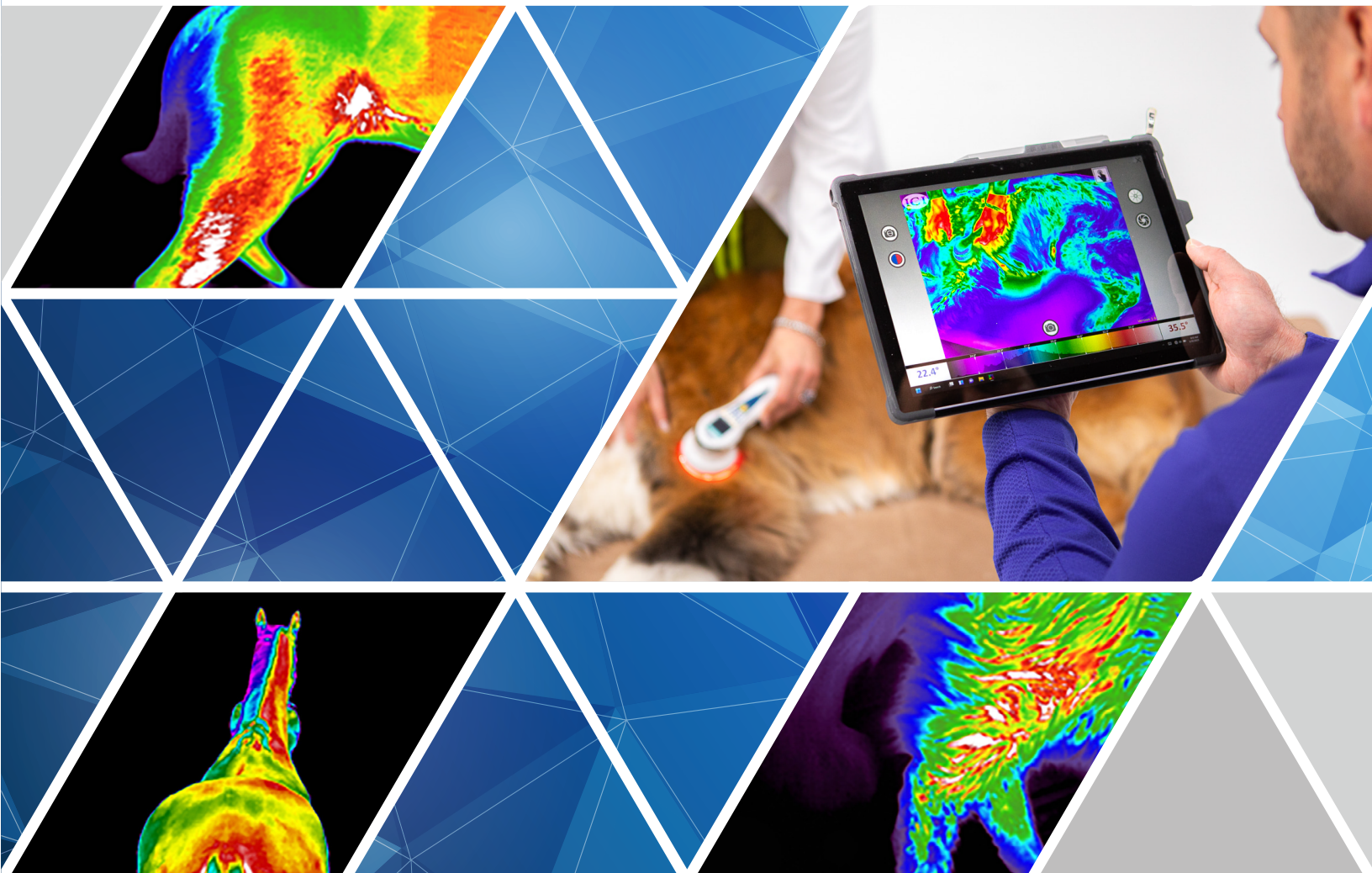


# Case Stories: WellVu

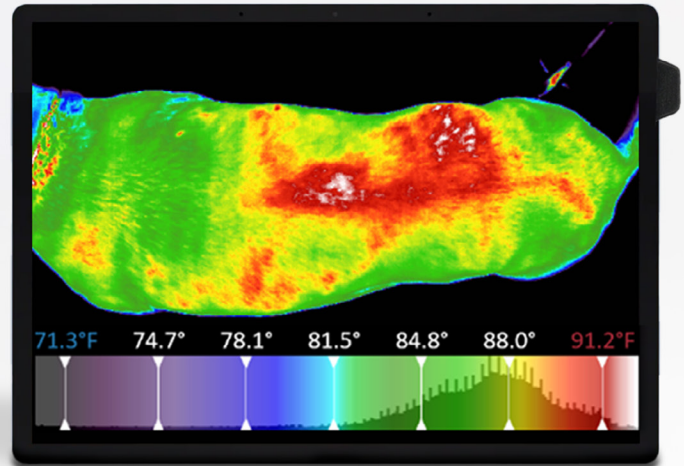
## See Real-time Physiology: Easy as Snapping a Picture

The more you can see about the real-time condition of your patient, the better care you can provide. The more obvious you can make your findings to your pet-owners, the better compliance you'll get with your services and the more you'll be able to save them in the long run.



## About Multi Radiance

Multi Radiance is a global leader in light-based technology, including medical imaging and a 20+ year focus on laser therapy. With 64+ peer reviewed articles, our commitment to research and education allows us to optimize our technology, validate our methodology, and create predictable and reproducible patient outcomes, both in-clinic and at-home.



## Practice Benefits

- Provide a road map for targeted diagnostics & treatments with laser therapy and other modalities
- Focus on client-centered care, and allow the pet-owner to be actively involved in the decision-making process with easy-to-interpret images and videos.
- Increase pet-owner compliance with easy-to-interpret follow-up exams to track progress & therapeutic results and strengthen the trust & confidence in your client relationships.

## Patient Benefits

- Visualize & identify sites of inflammation, vasoconstriction, neurological deficiencies, as well as secondary and compensatory problems
- Quantitatively compare anatomy throughout your patient's body with objective measurement
- Qualitatively track the progress of therapeutic interventions against your patient's natural baseline symmetry

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# Canine: Early Detection of a Spinal Disorder

Yellow Labrador (MC)  
13 years old

WellVu  
Thermal Imaging



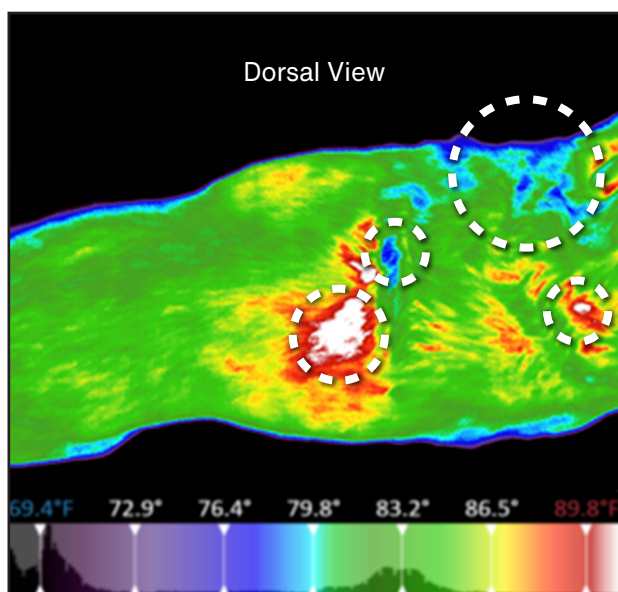
## Presentation

**Pet Owner:** Annual Wellness Exam

**Veterinarian:** Alert, active, normal physical exam.



## WellVu Thermal Imaging



| Hyperthermia (Hot) |                                                                                                                                                               |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Finding</b>     | Diffuse asymmetrical hyperthermia from T2 - T4-5 sagittal within the paravertebral musculature, extending caudally and distally bilaterally over the ribcage. |
| <b>Impression</b>  | Possible correlation to inflammation arising from the thoracic vertebrae and compensatory use of the surrounding musculature.                                 |
| <b>Finding</b>     | A small focal area presents over the proximal cranial surface of the right scapula.                                                                           |
| <b>Impression</b>  | Increased vascular perfusion of the muscles.                                                                                                                  |
| Hypothermia (Cold) |                                                                                                                                                               |
| <b>Finding</b>     | A small focal area is present at T4, directly over and slightly to the left of the midline.                                                                   |
| <b>Impression</b>  | Vasoconstriction due to nerve irritation from the spinal nerve innervating these structures.                                                                  |
| <b>Finding</b>     | Several diffuse areas descending distally over the left scapula and extending into the cervical musculature.                                                  |
| <b>Impression</b>  | Vasoconstriction due to sympathetic nerve irritation.                                                                                                         |



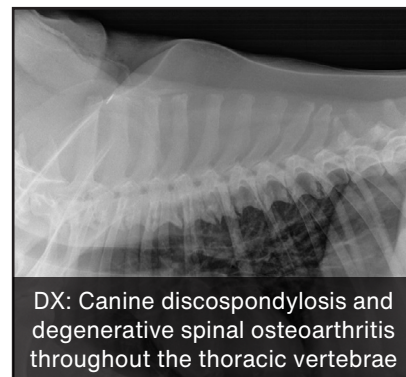
## Intervention Based on Findings

### Recommendation

- When this image was shown to the owner, she remarked: "You know, I touched that exact spot a few weeks ago, and it seemed painful to him." Nothing was palpable upon the physical exam. The veterinarian recommended a radiographic study and the client readily complied.

### Treatment Plan

- Pharmaceutical pain management
- PBMT
- Nutraceuticals.





# Better Care for Pets: Empowering Owners, Optimizing Outcomes



## Patient Benefits



- The client visualized and understood the extent of the inflammation and neurological deficits, allowing immediate compliance to further diagnostics.
- Physiological evidence supporting the radiographic study.
- Baseline information to objectively monitor the patient's progress.
- The client understands that this condition will require constant therapy to maintain a higher quality of life.



## Practice Benefits

- Early detection of a disorder that wasn't mentioned in the history or palpated upon physical examination.
- Client understanding to allow for compliance to further diagnostics.
- Baseline information for monitoring this patient's response to the treatment plan.
- Information the client could easily understand, which eased their concerns about complying with the radiographic recommendation.
- The IRTI recheck convinced the client to rent an MPL.

| Service                                   | Revenue |
|-------------------------------------------|---------|
| IRTI exam                                 | \$30    |
| Client compliance to a radiographic study | \$95    |
| PBMT treatments                           | \$225   |
| Nutraceuticals                            | \$22    |
| Pharmaceuticals                           | \$74    |
| IRTI recheck                              | \$25    |
| MPL rental                                | \$150   |
| Total                                     | \$616   |



## Take-Aways

The client was unaware of the condition, which didn't manifest upon digital palpation during the physical examination.

A single \$25.00 screening exam led to.....

- Proactive care of the patient and increased revenue for the practice.

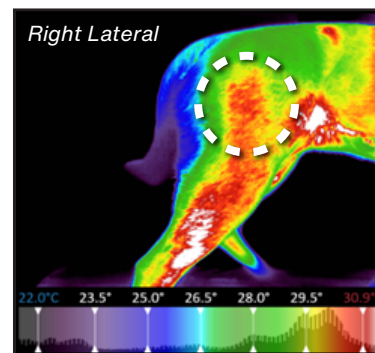
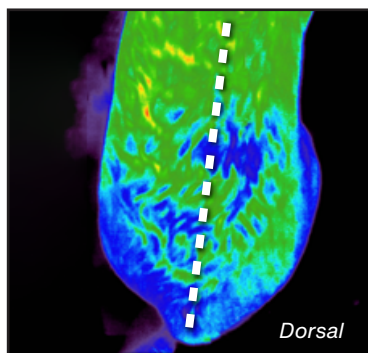
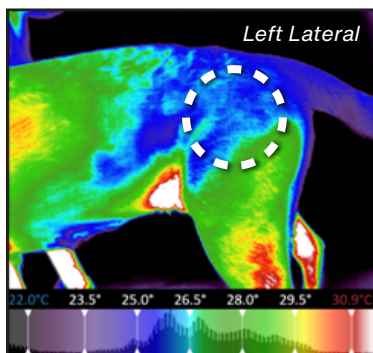


## Presentation

- Pet Owner** Reported intermittent rear limb lameness.
- Veterinarian** Palpation and manipulation elicited pain in the right coxofemoral joint and both coxofemoral joints revealed a decreased range of motion.



## WellVu Thermal Imaging



|                   |  Hypothermia (Cold) |  Hyperthermia (Hot)                                                                                                                                         |
|-------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Finding</b>    | Areas of hypothermia noted in the left lateral and dorsal images                                       | Areas of diffuse hyperthermia originating around the coxofemoral joint and descending distally within the musculature and becoming more focal towards the stifle and continuing to just cranial to the tarsus where it becomes the most intense. |
| <b>Impression</b> | Consistent with irritation of the sympathetic nerve supply                                             | Possible correlation to compensatory strain within these muscles.                                                                                                                                                                                |



## Intervention Based on Findings

### Further Imaging

- Radiograph: confirms bilateral flattening and remodeling of the femoral heads, more pronounced on the right side, along with right coxofemoral subluxation.

### Treatment Plan

- Pharmaceutical and photochemical approach (PBMT) to pain management
- Nutraceuticals
- Physical therapy to improve muscle strength and joint stability
- Lifestyle modifications, including weight control and restricted exercise on hard surfaces
- Possible regenerative medicine techniques



## Question

Who benefited more: the Patient or the Practice?

# Better Care for Pets: Empowering Owners, Optimizing Outcomes



## Patient Benefits

- Revealed potential causal issue on left hip (forcing compensatory issues on right)
- Confirmed reason for pain within right hip
- Identified nerve involvement across entire lower back/hips relative to normal upper back
- Overall early detection of acute issues before devolving to chronic stage, avoiding potential risk of surgery or long-term pharmaceutical dependency

*If untreated, probable long-term implications:*

| Service                       | Savings |
|-------------------------------|---------|
| Surgery                       | \$4,000 |
| Pain Pharmaceuticals (NSAIDs) | \$800   |
| Rehab                         | \$340   |
| Total                         | \$5,140 |



## Practice Benefits

- Information the client could easily understand, which eased their concerns about complying with the radiographic recommendation.
- Client understanding of the long-term consequences of this condition.
- Identifies precise targets (previously known and unknown) for physical and modality-based therapy.
- Baseline images and temperature analysis are used to monitor response to therapy with subsequent thermal images.
- Helps to identify the full chain-of-care events to recovery

| Service                               | Revenue |
|---------------------------------------|---------|
| WellVu Thermal Imaging Exam           | \$30    |
| 3-View Radiographic Study             | \$125   |
| Pharmaceuticals                       | \$80    |
| Laser Therapy (6 in-clinic visits)    | \$340   |
| At-Home Laser Therapy (1 week rental) | \$150   |
| Total                                 | \$725   |



## Take-Aways

Early detection: a single \$30 screening exam, led to...

1. Enhanced service utilization (\$725 for the practice)
2. Compliance with proactive care to avoid expensive (up to \$5,000), long-term chronic issues for the patient

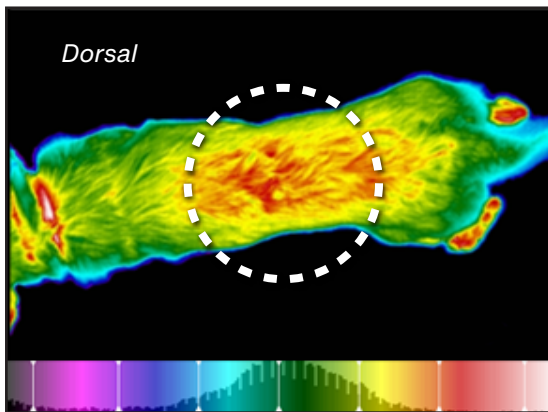


## Presentation

- Pet Owner** Observed reoccurring back pain for three weeks.
- Veterinarian** The patient was assessed as a 1.75 on the Colorado State Acute Pain Scale. Pain was elicited upon digital palpation bilaterally from T8 to L4-5. Observed compensatory gait & movement.



## WellVu Thermal Imaging



| Hyperthermia (Hot) |                                                                                                                        |
|--------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>Finding</b>     | Areas of bilateral asymmetrical hyperthermia from T10 – L5 with focal areas of hyperthermic intensity over T12 – L2-3. |
| <b>Impression</b>  | Correlation to compensatory strain due to pain originating from the spinal areas.                                      |



## Intervention Based on Findings

### Further Imaging

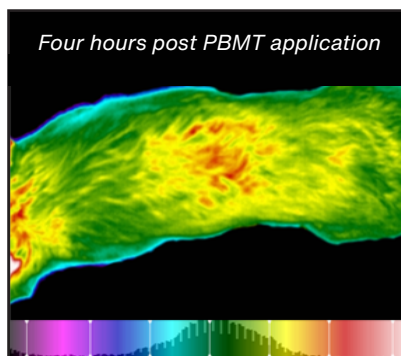
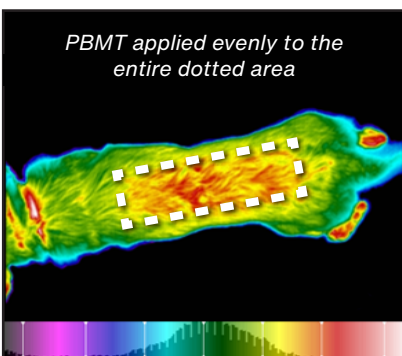
- Radiograph: Slight narrowing of disc spaces T12 – L2

### Treatment Plan

- PBMT treatments:
  - The initial therapy sessions were prescribed to relieve pain followed by weekly in clinic treatments supplemented by at home laser therapy prescription
- NSAID's
- Nutraceuticals
- IRTI recheck in one week



## WellVu Thermal Imaging Recheck



When rechecked in 24 hours, there was a reduction in the hyperthermic areas. This correlates to a reduction in inflammation. The patient was more relaxed and moved more fluidly.

### Revised treatment plan

- PBMT treatments:
  - In-clinic PBMT once/week.
  - At-home laser rental plan.
  - Recheck IRTI in one week.



# Better Care for Pets: Empowering Owners, Optimizing Outcomes



## Patient Benefits



- Visualization facilitated client's understanding and compliance with the recommended radiographic study.
- Identified compensatory involvement of musculature, which broadened target treatment area.
- Defined more precise boundary for the application of PBMT initially and as a guide for the at home PBMT.
- Confirmed progress in recovery with notable decrease in hyperthermia and the casual inflammation.
- Provided objective baseline data for comparison on future evaluations.



## Practice Benefits

- Information the client could easily understand, which eased their concerns about complying with the radiographic recommendation.
- IRTI provided identification of the total area that would benefit from PBMT therapy, not just the area over the radiographic lesion.
- Baseline images provided the opportunity to objectively monitor the patient's response to therapy. Quantifying the progress of this treatment enabled DVM to gain compliance on subsequent in clinic and at home PBMT.

| Service              | Revenue  |
|----------------------|----------|
| IRTI exam            | \$40     |
| Radiographic study   | \$165    |
| Pharmaceuticals      | \$38     |
| Nutraceuticals       | \$24.50  |
| PBMT sessions        | \$380    |
| IRTI rechecks        | \$125    |
| At-home rental laser | \$150    |
| Total                | \$922.50 |



## Take-Aways

Infrared thermal imaging during the initial visit led to...

1. Compliant utilization of diagnostic and treatment services, (\$922.50 income for the practice).
2. Which led to resolution of initial case through utilizing a non-pharmaceutical approach, increased trust in DVM-Client relationship, resulting in positive client testimonial.



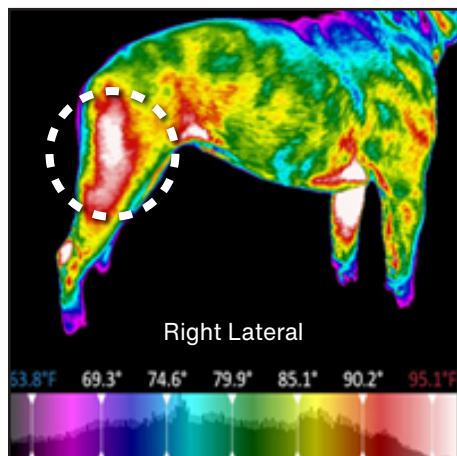
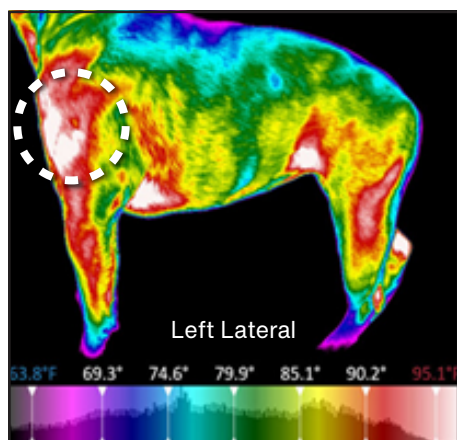
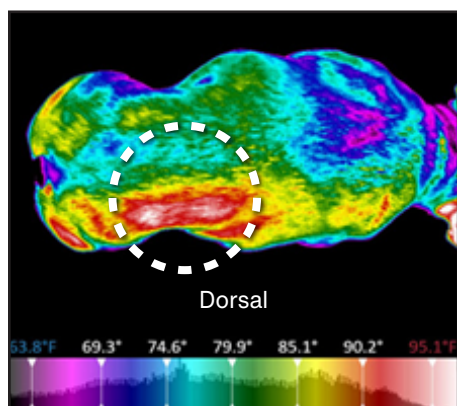
## Presentation

**Owner/Trainer:** Lethargic; unwilling to move.

**Veterinarian** A physical exam revealed painful areas throughout the right paravertebral musculature and the left scapulohumeral joint corresponding to the areas of hyperthermia. There was generalized resistance to any manipulation of the spine.



## WellVu Thermal Imaging



### Hyperthermia (Hot)

|                   |                                                                                                                                                                                                                                                                                                            |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Finding</b>    | Areas involving the left shoulder extending from the mid-scapular region distally and laterally to the carpus. A large area directly over the left scapulohumeral joint radiating proximally to include the anterior border of the scapula and distally to just proximal of the elbow. (Left Lateral View) |
| <b>Impression</b> | Consistent with compensatory weight-bearing on front left limb due to off-loading of weight from those areas lacking innervation and blood supply.                                                                                                                                                         |
| <b>Finding</b>    | Diffuse hyperthermia noted on right thoracic paravertebral musculature from T10-11 – L6-7 and involving the right gluteal with focal region around L5-6. (Dorsal View)                                                                                                                                     |
| <b>Impression</b> | Increased blood flow to these muscles consistent with compensatory weight-bearing due to off-loading from the left hind limb.                                                                                                                                                                              |
| <b>Finding</b>    | Generalized hyperthermia within the biceps femoris, semimembranosus, and semitendinosus muscles on the right. (Right Lateral View)                                                                                                                                                                         |
| <b>Impression</b> | Similarly consistent with compensatory weight-bearing on right hind limb due to lack of innervation and blood flow throughout the dermatomes supplied by the spinal nerves innervating the left hind limb                                                                                                  |

### Hypothermia (Cold)

|                   |                                                                                                                                                                                      |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Finding</b>    | Hypothermia bilaterally throughout the cervical region and the left lateral areas of the thoracic, lumbar, and sacral spine with notable focal regions at T3-5 and L7. (Dorsal View) |
| <b>Impression</b> | Consistent with nerve irritation of the spinal nerves throughout the spine regions.                                                                                                  |
| <b>Finding</b>    | Bilateral localized hypothermia dorsally along the thoracic spine (Both Lateral Views).                                                                                              |
| <b>Impression</b> | Consistent with nerve irritation upon the spinal nerves innervating this region.                                                                                                     |



## Intervention Based on Findings

### Further Imaging

- Radiograph: Confirmed scoliosis, numerous lesions throughout the thoracic and lumbar spinal column, fourteen pairs of ribs.

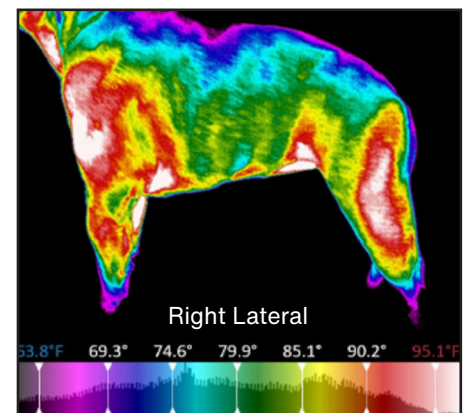
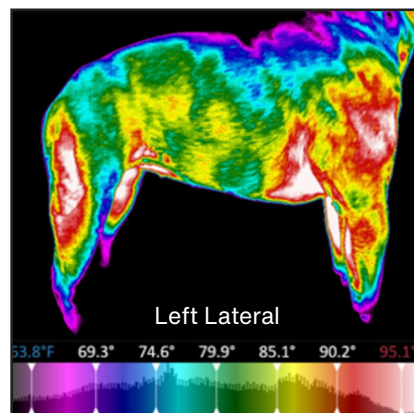
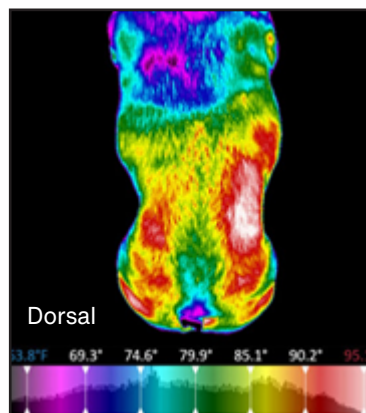


### Treatment Plan

- PBMT treatments three times per week
- Acupuncture weekly
- Therapeutic exercise three times per week
- Proprioception work
- Various Core strength exercises



## WellVu Thermal Imaging Recheck



### Re-establishing Thermal Symmetries

- Re-establishment of circulation in the left and right paravertebral musculature throughout the lumbar and sacral areas (Dorsal View)
- Improved function/circulation in the right shoulder and throughout the extensor muscles of the left hind limb (Both Lateral Views)

### Room for continued veterinary services

- The patient exhibits bilateral hypothermia, both dorsally and laterally, indicating that veterinary care may be required throughout their entire life.



## Question

Who benefited more: the Patient or the Practice?

# Better Care for Pets: Empowering Owners, Optimizing Outcomes



## Patient Benefits

- Visualization confirmed areas of primary discomfort.
- Identified further musculo-skeletal issues stemming from suspected neurological root cause.
- Shed light on the reason and areas of compensation, and their resultant sites of inflammation.
- Enabled non-surgical treatment of symptoms that led to increase in activity and partial normalization of physiology.
- Objectively monitored the patient's progress and assessed the need for long-term care.

*If untreated, probable long-term implications:*

| Service                       | Savings |
|-------------------------------|---------|
| Surgery                       | \$4,000 |
| Pain Pharmaceuticals (NSAIDs) | \$800   |
| Rehab                         | \$340   |
| Total                         | \$5,140 |



## Practice Benefits

- Information the client could easily understand, which eased their concerns about complying with the radiographic recommendation.
- Client understanding of the long-term consequences of this condition.
- Identifies precise targets (previously known and unknown) for physical and modality-based therapy.
- Baseline images and temperature analysis are used to monitor response to therapy with subsequent thermal images.
- Helps to identify the full chain-of-care events to recovery.

| Service                                      | Revenue |
|----------------------------------------------|---------|
| IRTI exam                                    | \$30    |
| Client compliance to a radiographic study    | \$125   |
| PBMT treatments: (20 Multiple site sessions) | \$680   |
| Acupuncture sessions: (8)                    | \$280   |
| Therapeutic exercise                         | \$825   |
| IRTI recheck                                 | \$30    |
| MPL rental: (30 days)                        | \$480   |
| Total                                        | \$2,450 |



## Take-Aways

Early detection: a single \$30 screening exam, led to...

1. Enhanced service utilization (\$2,450 for the practice).
2. To prevent more serious, expensive (up to \$5,000), long-term chronic issues for the patient.



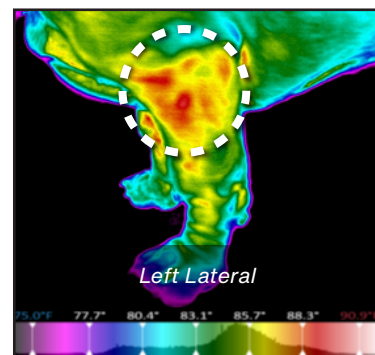
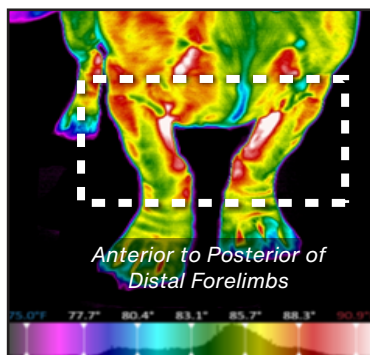
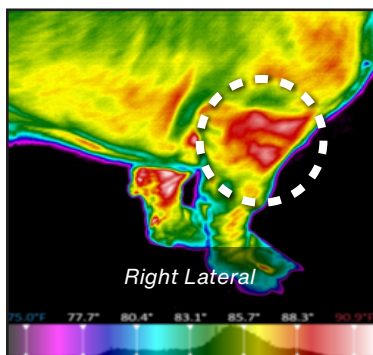
## Presentation

**Pet Owner** Owners brought their pet in for routine neuter.

**Veterinarian** The patient was observed to have a slight intermittent limp during the pre-neutering surgical exam. Palpation revealed a small, localized, painful response in the right elbow.



## WellVu Thermal Imaging



Hyperthermia (Hot)

| Finding    | Areas of hyperthermia on the right humerus extending to include the first third of the radius and ulna. | Asymmetrical hyperthermia within the musculature from the humerus through the chest and neck |
|------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Impression | Increased circulation involving the elbow joint and its surrounding structures.                         | Compensatory strain within these structures due to possible injury to the elbow.             |



## Intervention Based on Findings

### Further Imaging

- Radiograph:
  - Right forelimb: Ununited anconeal process.
  - Left forelimb: NSL

### Treatment Plan

- PBMT treatments:
  - Ulnar ostectomy
  - Neuter
  - Pharmaceutical and photochemical approach (PBMT) to pain management.
  - Physical therapy to improve muscle strength and joint stability.
  - At-home laser therapy administered by the client.



**Question** What are the implications for DVM and Client of an unobserved pathology?



# Better Care for Pets: Empowering Owners, Optimizing Outcomes



## Patient Benefits



- IRTI led to early identification and treatment of a disorder that the owner was unaware of.
- Avoided potential long term chronic pain/lameness in front limb.
- Utilized non pharmaceutical treatment to increase mobility and quality of life.



## Practice Benefits

- Early detection of chronic issue unrelated to initial reason for visit.
- Information the client could easily understand, which eased their concerns about complying with the radiographic recommendation.
- Client understanding of the involvement of the entire right forelimb and the consequences of this condition.
- IRTI created a chain of care events which increased utilization of existing services.

| Service                                       | Revenue |
|-----------------------------------------------|---------|
| IRTI exam                                     | \$20    |
| Radiographic study                            | \$180   |
| Ulnar ostectomy                               | \$625   |
| Neuter                                        | \$80    |
| Pharmaceuticals                               | \$60    |
| Physical therapy (PBMT, strength exercises)   | \$340   |
| At-home rental laser: (one week till recheck) | \$150   |
| Total                                         | \$1,455 |



## Take-Aways

A single \$30 screening exam led to...

1. Discovery of an overlooked musculoskeletal condition which allowed
2. Diagnostics and utilization of numerous services offered by the practice to take place in resolution (\$1,455.00 for the practice)

# Canine: Idiopathic Facial Nerve Paralysis

Irish Setter (MN)  
10 years old

WellVu  
Thermal Imaging



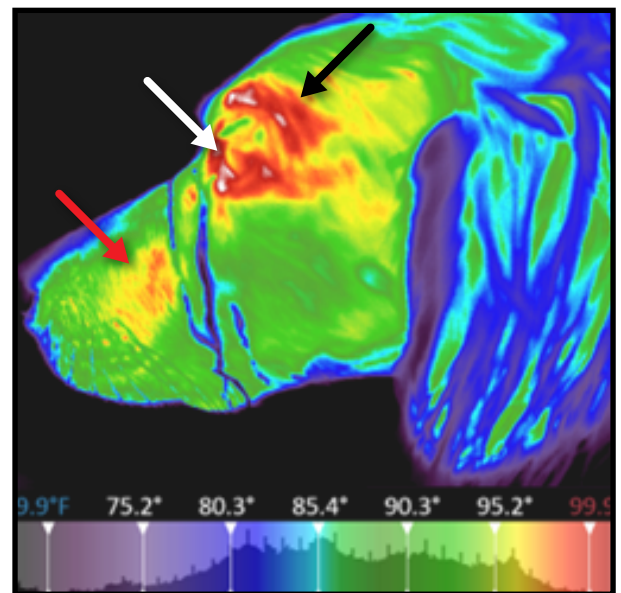
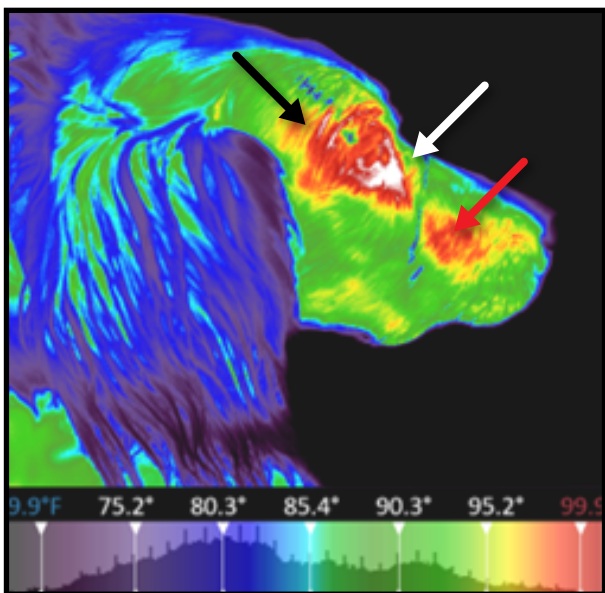
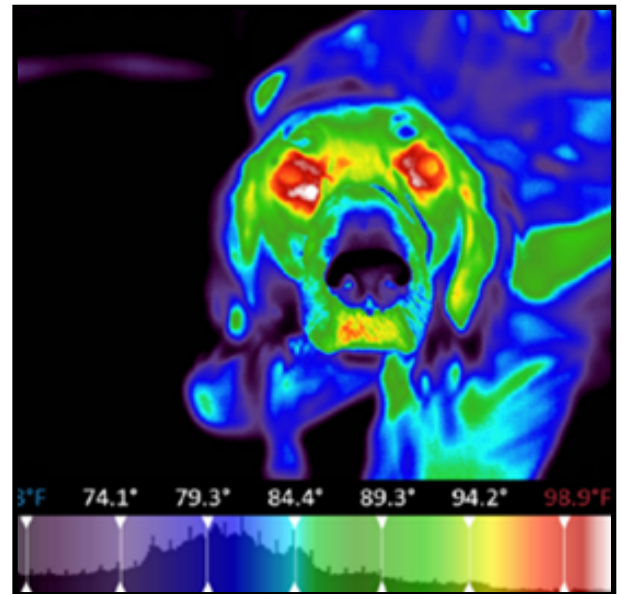
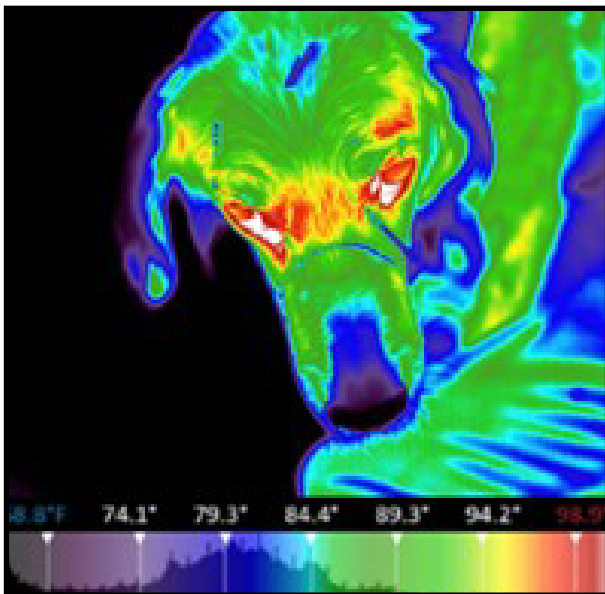
## Presentation

### Pet Owner

The patient has trouble eating; food falling from the mouth. The client reports dryness and discharge from the right eye that began suddenly about a week ago.



## WellVu Thermal Imaging





## Intervention Based on Findings

### Dorsal and Anterior to Posterior Views:

- Areas of asymmetrical hyperthermia and hypothermia were present on the affected side of the nose and in the frontal and periorbital regions. This abnormal hypothermia and hyperthermia pattern results from the complex anatomy of the region innervated by the facial nerve.

### Lateral Views:

- Generally, irritation to the sympathetic nerve supply to an anatomical area result in asymmetrical hypothermia. In the case of facial nerve paralysis, the tissues covering the nose and muzzle become flaccid and do not move as the patient opens the mouth or pants, and facial folds flatten resulting in an increase in the thermal gradients.
- The red arrows point to areas of asymmetrical hyperthermia. The temperature of these areas increased because of the flattening of the right facial folds and persistent contact of these areas with underlying structures.
- The white arrows identify areas of asymmetrical periorbital thermal gradients. The higher temperatures on the right side suggest inflammation resulting from the reduced tear production accompanying this disorder.
- The black arrows point to thermal asymmetry resulting from the loss of right-side facial innervation in the area above the right eye and over the right frontal bone resulting in a significantly lower thermal gradient.

### Physical Exam

- There were no changes in either cornea. There was an incomplete blink response, a laxity and lack of tone in the lower lid, reduced production of tears, and lagophthalmos in the right eye. A lack of motor function on the right side of the face.



## Take-Aways

1. Visualization of the complex pattern of the changes in circulation accompanying this condition.
2. Supporting evidence that no other pathological problems are present that are altering the circulatory pattern.
3. Client education about the large anatomical area affected by facial nerve paralysis and understanding the reasoning behind the treatment recommendations and the difficulty involved in a final resolution.

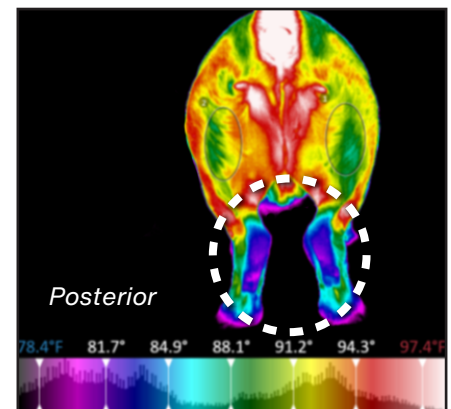
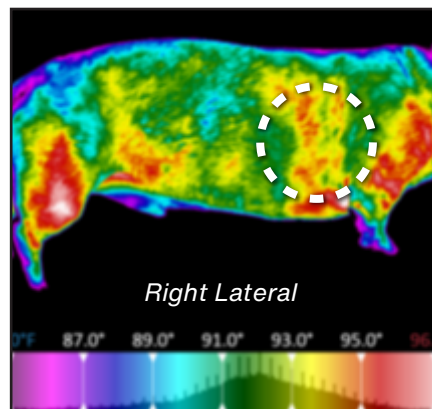
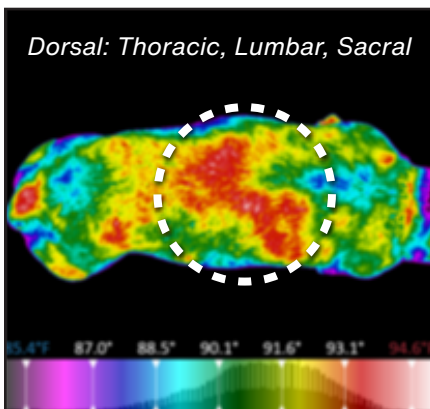
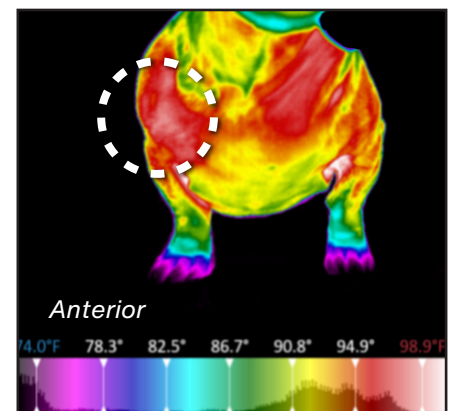
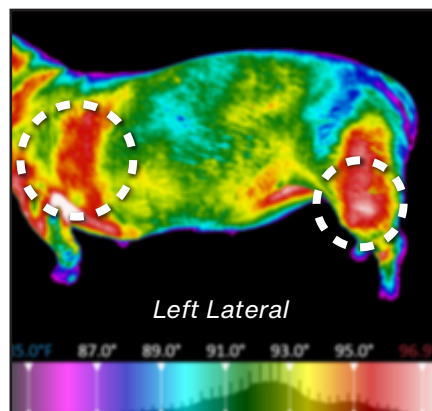
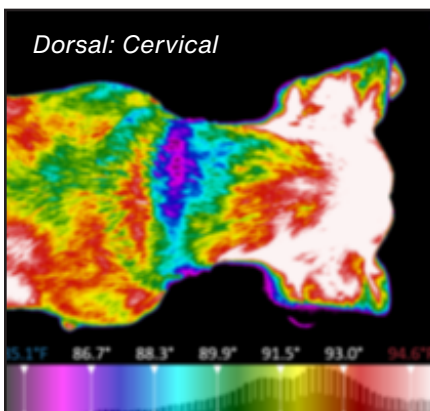


## Presentation

|                     |                                                                                                                      |
|---------------------|----------------------------------------------------------------------------------------------------------------------|
| <b>Pet Owner</b>    | Reported the patient was sensitive to petting on the back.                                                           |
| <b>Veterinarian</b> | Painful resistance to PROM within the cervical region and palpable pain within the lumbar paravertebral musculature. |



## WellVu Thermal Imaging



|                   |  Hypothermia (Cold)                                                                           |  Hyperthermia (Hot)                                                                                                                         |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Finding</b>    | Areas of asymmetrical, bilateral hypothermia from C2-6 , T2-5&6, L3-L5. (Both dorsal views)                                                                                    | Areas of asymmetrical hyperthermia surrounding both shoulder joints and the surrounding musculature extending into the chest. (Right, Left Lateral, and AP view of chest)                                                      |
| <b>Impression</b> | Consistent with irritation of the spinal nerves originating from C2-6. And T2-5&6., L3 – S1&2.                                                                                 | Possible correlation to compensatory weight-bearing and strain due to pain originating from the cervical and lumbar areas.                                                                                                     |
| <b>Finding</b>    | Asymmetrical, bilateral hypothermia areas are present within the gluteal musculature, distal forelimbs, and distal hind limbs. (Left and Right Lateral views; AP and PA views) | Areas of hyperthermia within musculature from ~T8-L1&2. Extending distally to the ribcage on the right and another extension distally just behind the ribcage on the left. (Dorsal View: Thoracic, Lumbar, and Sacral Regions) |
| <b>Impression</b> | Consistent with possible irritation of the spinal nerves originating from L3 – S1&2, C6&7, L6&7 – S1&2.                                                                        | Increased blood flow to this musculature consistent with compensatory strain and possible inconsistent innervation.                                                                                                            |
| <b>Finding</b>    |                                                                                                                                                                                | Areas of asymmetrical bilateral hyperthermia involving the stifle joint and the surrounding soft tissue structures. (Left and Right Lateral views)                                                                             |
| <b>Impression</b> |                                                                                                                                                                                | Possible correlation to compensatory weight-bearing and strain due to pain originating from the lumbar spine.                                                                                                                  |



## Intervention Based on Findings

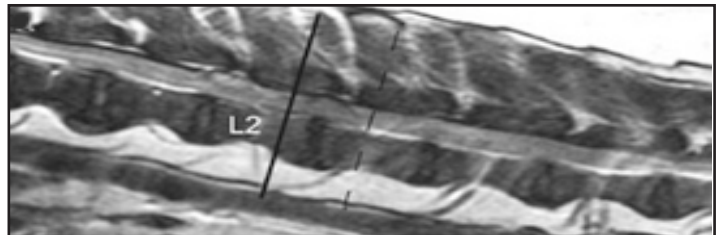
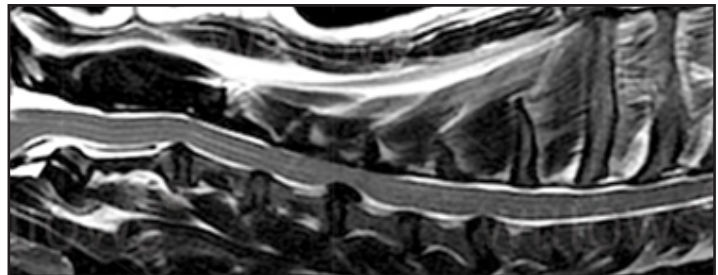
### Further Imaging

- MRI: Significant cord compression at C2&3, C3&4, and L4-5

### Treatment Plan

Goal: Avoid Surgery

- Pharmaceutical and photoceutical approach (PBMT) to pain management
- Nutraceuticals
- Physical therapy to improve core strength and joint stability
- Proprioception training
- Acupuncture



## Question

Who benefited more: the Patient or the Practice?



# Better Care for Pets: Empowering Owners, Optimizing Outcomes



## Patient Benefits

- IRTI provided a clear understanding of the need for the MRI study.
- Baseline information for monitoring the patient's response to the treatment plan.
- The IRT images provided a roadmap for applying PBMT in the clinic and home.
- Through compliance and the adoption of a proactive treatment path, the client was able to avoid costly surgical procedures.

*If untreated, probable long-term implications:*

| Service                       | Savings  |
|-------------------------------|----------|
| Surgery                       | \$8,000  |
| Pain Pharmaceuticals (NSAIDs) | \$800    |
| Rehab                         | \$2,500  |
| Total                         | \$11,300 |



## Practice Benefits

- Information the client could easily understand, which eased their concerns about complying with the MRI recommendation.
- Client understanding of the long-term consequences of this condition.
- Identification of precise targets (previously known and unknown) for physical and modality-based therapy.
- Baseline images and temperature analysis are used to monitor response to therapy with subsequent thermal images.
- Helps to identify and inform the client of the full chain-of-care events to recovery.

| Service                 | Revenue |
|-------------------------|---------|
| IRTI exam               | \$25    |
| MRI study               | \$3,200 |
| Rehabilitation sessions | \$740   |
| PBMT sessions           | \$780   |
| Acupuncture sessions    | \$260   |
| Pharmaceuticals         | \$86    |
| IRTI rechecks           | \$125   |
| At-home rental laser    | \$450   |
| Total                   | \$5,666 |



## Take-Aways

Early detection: a single \$25 screening exam led to...

1. Understanding the need for a proactive treatment plan (\$5,666.00 for the practice)
2. To prevent expensive surgical outcomes (up to ~\$12,000.00) and long-term chronic issues for the patient



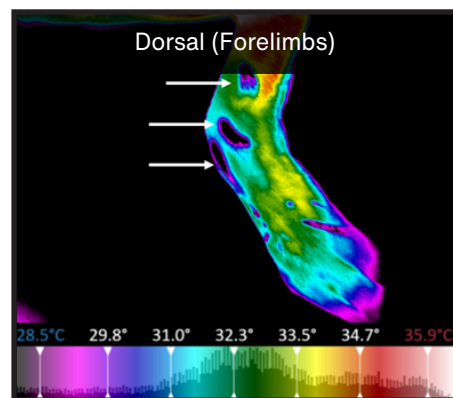
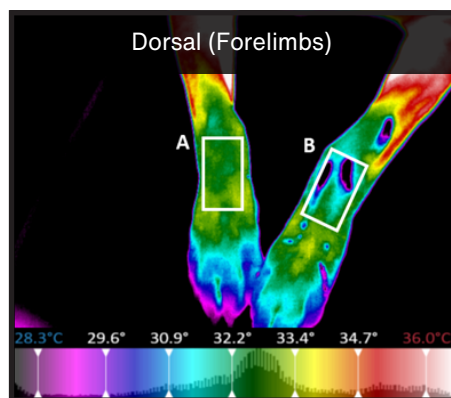
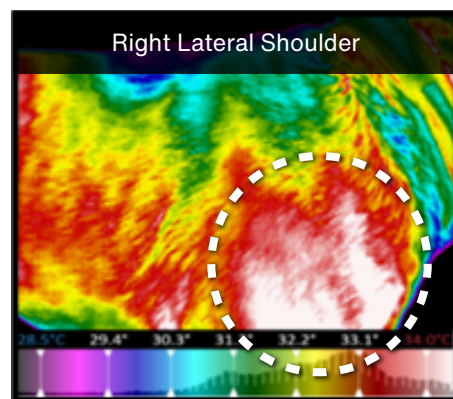
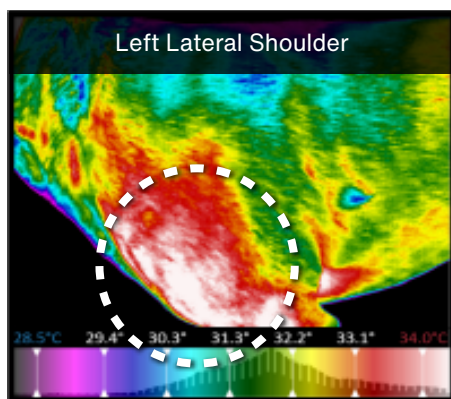
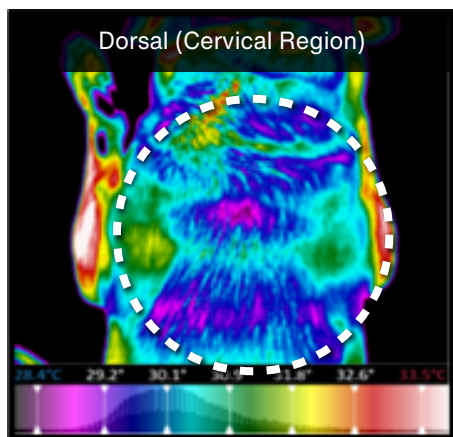
## Presentation

**Pet Owner:** Reported reduced activity and reluctance to get up.

**Veterinarian:** Mild pain upon palpation and lack of passive range of motion throughout the cervical spine. No other neurological deficits.



## WellVu Thermal Imaging



|  <b>Hyperthermia (Hot)</b> |                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Finding</b>                                                                                              | Asymmetrical hyperthermia throughout both shoulders, greater area on the right lateral, throughout the musculature along the cranial border of both scapulae                                     |
| <b>Impression</b>                                                                                           | Possible correlation to compensatory use of these muscles resulting from neurological deficits originating in the cervical region.                                                               |
|  <b>Hypothermia (Cold)</b> |                                                                                                                                                                                                  |
| <b>Finding</b>                                                                                              | Multiple areas of bilateral asymmetrical hypothermia are noted in the dorsal view                                                                                                                |
| <b>Impression</b>                                                                                           | Consistent with irritation of the sympathetic nerve supply associated with dermatomes C4 – C6                                                                                                    |
| <b>Finding</b>                                                                                              | Multiple areas of bilateral asymmetrical hypothermia throughout the paravertebral musculature from ~C4 – T12 on both lateral views                                                               |
| <b>Impression</b>                                                                                           | Irritation of the spinal nerves within the cervical region and possibly involving the thoracic region.                                                                                           |
| <b>Finding</b>                                                                                              | Asymmetrical bilateral hypothermia, involving the ventral dermatomes of C6 – T1, present in both distal forelimbs.                                                                               |
| <b>Impression</b>                                                                                           | Deficits in the innervation supplied by the radial nerve to the distal portions of the extensor carpi radialis, the lateral and common digital extensor, and the extensor carpi ulnaris muscles. |



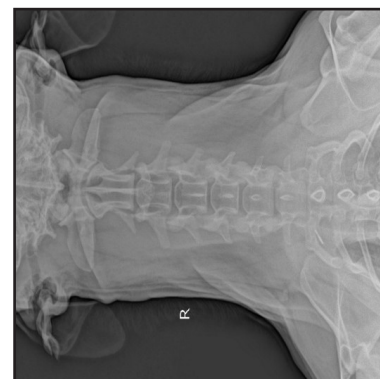
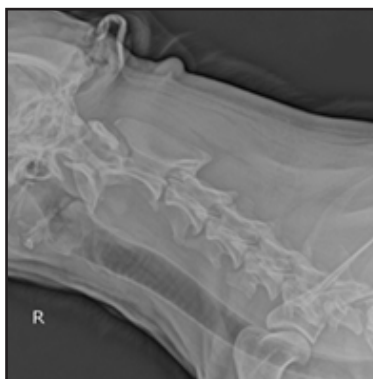
## Intervention Based on Findings

### Further Imaging

- Radiograph: Narrowing of disc spaces C6 – T1 and disk protrusion or extrusion at several sites.

### Treatment Plan

- Chiropractic adjustment
- PBMT
- Nutraceuticals
- Oxygen therapy
- Physical therapy to improve muscle strength and joint stability



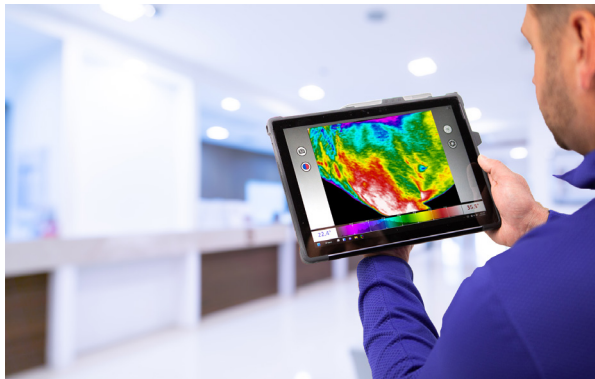
## Question

**Who benefited more: the Patient or the Practice?**

# Better Care for Pets: Empowering Owners, Optimizing Outcomes



## Patient Benefits



- The client visualized and understood the extent of the neurological deficits, allowing immediate compliance to further diagnostics.
- Physiological evidence to accompany the history, radiograph, and physical examination findings.
- Baseline information for monitoring this patient's response to the treatment plan.
- The client understood that this would take time and maintenance treatments to establish a higher quality of life.



## Practice Benefits

- Information the client could easily understand, which eased their concerns about complying with the radiographic recommendation.
- Client understanding of the long-term consequences of this condition.
- Identifies precise targets (previously known and unknown) for physical and modality-based therapy.
- Baseline images and temperature analysis are used to monitor response to therapy with subsequent thermal images.
- Constant therapy modification to address the patient's changes during treatment.

| Service                           | Revenue |
|-----------------------------------|---------|
| IRTI exam                         | \$30    |
| Radiographic study                | \$175   |
| Chiropractic adjustment           | \$159   |
| Nutraceuticals                    | \$124   |
| PBMT                              | \$475   |
| Oxygen therapy                    | \$325   |
| Strength/proprioception exercises | \$250   |
| Total                             | \$1,529 |



## Take-Aways

The client was unaware of the seriousness of the condition of their pet. They thought: "old age."

A single \$30 screening exam led to...

- Diagnostics and utilization of numerous services offered by the practice (\$1,529.00 for the practice)



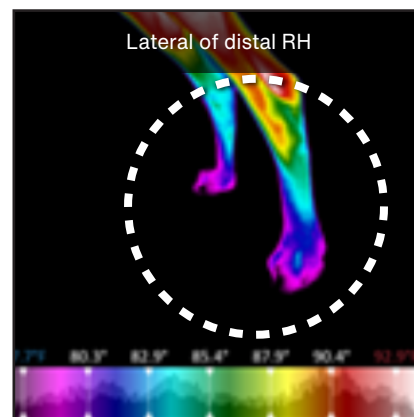
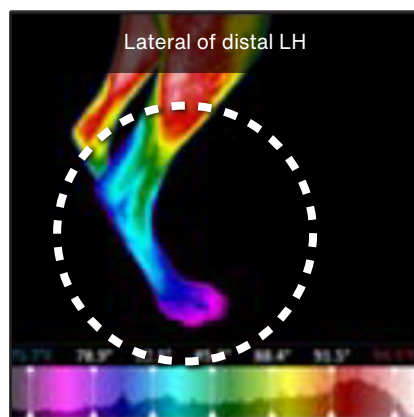
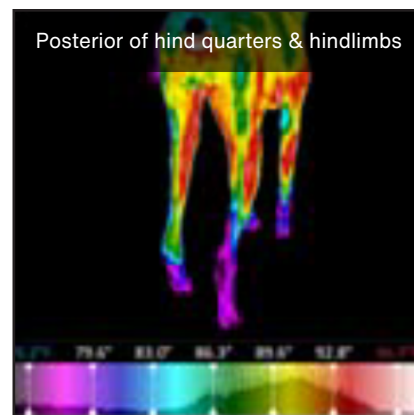
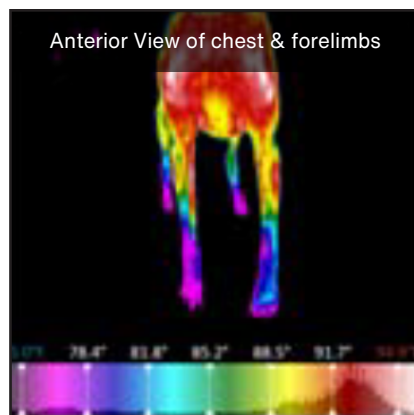
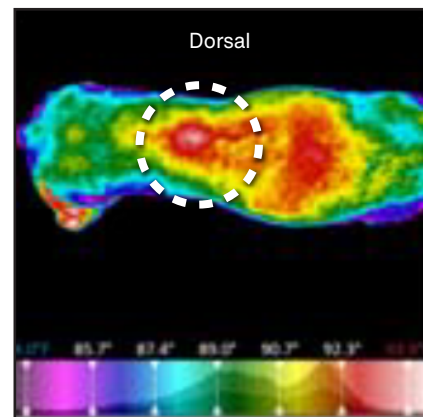
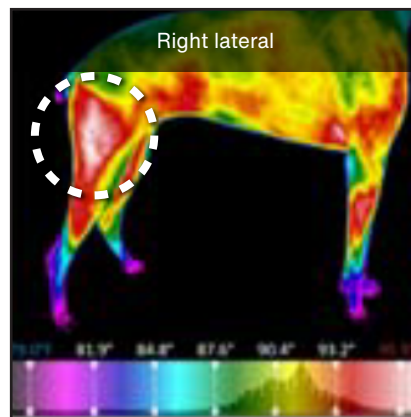
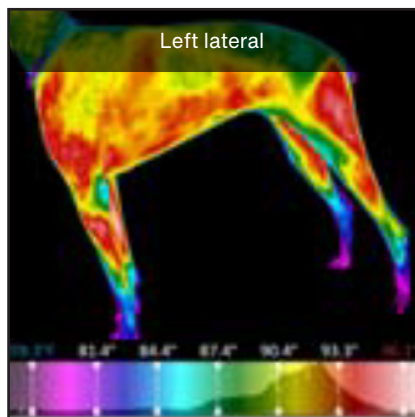
## Presentation

**Pet Owner:** Patient referred for rehabilitation of bilateral common calcaneal tendon strains

**Veterinarian:** Alert, active, normal T/P/RR/CRT. BCS 4/9. Normal forelimb gait. Off-loading left rear. Swelling and tenderness along left Achilles' tendon. Reduced ROM in both hips and hocks. Pain on palpation of both hocks. Palpable tenderness in thoracic epaxial muscles.



## WellVu Thermal Imaging (Aug. 5, 2019)





|  <b>Hyperthermia (Hot)</b>   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Finding</b>                                                                                                | Asymmetrical hyperthermia throughout both shoulders, greater area on the right lateral, throughout the musculature along the cranial border of both scapulae.                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Impression</b>                                                                                             | Possible correlation to compensatory use of these muscles.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Finding</b>                                                                                                | Focal and diffuse areas of bilateral asymmetrical hyperthermia visible on anterior to posterior of the chest. Bilaterally, this increased perfusion arises proximally from the cervical portion of the Trapezius, Omotraversarius, and Cleidocephalic muscles and descends distally involving the Cleidobrachial, Deltoid, and the lateral head of the Triceps brachii muscles. Focal areas with increased temperature emission involve the Cleidocephalic, Omotraversarius, and Cleidobrachialis muscles with a greater area on the left. |
| <b>Impression</b>                                                                                             | The strain on these muscles could be caused by the patient offloading the weight of the hind end to the forelimbs.                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Finding</b>                                                                                                | Areas of bilateral asymmetrical hyperthermia surrounding both stifles, including the soft tissue structures. The right lateral image illustrates a much larger and more intense area than the corresponding area over the left stifle.                                                                                                                                                                                                                                                                                                     |
| <b>Impression</b>                                                                                             | Compensatory strain of these structures due to other MSK and/or neurological system disorders.                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Finding</b>                                                                                                | Bilateral asymmetrical areas of hyperthermia originating along the spine from approximately T2 – T6 and descending bilaterally throughout epaxial musculature and over each lateral portion of the thoracic cavity.                                                                                                                                                                                                                                                                                                                        |
| <b>Impression</b>                                                                                             | Compensatory use of these muscles resulting from other MSK and possibly neurological disorders.                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Finding</b>                                                                                                | A focal area of hyperthermia directly over the spinous processes of the last one or two thoracic and the first one or two lumbar vertebrae. This is surrounded by a diffuse area of hyperthermia involving the epaxial muscles bilaterally and the areas surrounding the spinous processes of T11 and L3.                                                                                                                                                                                                                                  |
| <b>Impression</b>                                                                                             | There are several possibilities involved: compensatory strain or a secondary or primary MSK disorder.                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Finding</b>                                                                                                | A focal area of hyperthermia involving the insertion of the Achilles tendon on the calcaneus on the right hind limb.                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Impression</b>                                                                                             | Increased perfusion due to an injury or strain to this structure.                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|  <b>Hypothermia (Cold)</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Finding</b>                                                                                                | Multiple areas of bilateral asymmetrical hypothermia are noted in the dorsal view of the cervical region.                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Impression</b>                                                                                             | Consistent with irritation of the sympathetic nerve supply to these areas.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Finding</b>                                                                                                | Multiple areas of bilateral asymmetrical hypothermia throughout the paravertebral musculature from ~L3-4 – the first few coccygeal vertebrae and descending distally throughout the gluteal musculature.                                                                                                                                                                                                                                                                                                                                   |
| <b>Impression</b>                                                                                             | Irritation of the spinal nerves innervating these structures.                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Finding</b>                                                                                                | Asymmetrical bilateral hypothermia involving the distal forelimbs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Impression</b>                                                                                             | Deficits in the innervation to these structures supplied by spinal nerves C6 – 7.                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Finding</b>                                                                                                | Asymmetrical bilateral hypothermia of both distal hindlimbs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Impression</b>                                                                                             | There is a possibility of irritation along the spinal nerves L6 – 7.                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |



## Intervention Based on Findings

### Treatment Plan

- Rehabilitation sessions twice a week to include:
  - PBMT
  - Massage
  - PROM
  - Therapeutic Exercise
  - UWTM
- Homeopathic oils
- CBD
- tPEMF pad to take home



## Patient Benefits

- The client visualized and understood it wasn't just a hind-end lameness issue.
- Physiological evidence to accompany the history, and physical examination findings.
- Baseline information for monitoring this patient's response to the treatment plan.
- The client understood that this would take time and that more diagnostics may be needed.

*If untreated, probable long-term implications:*

| Service                             | Savings         |
|-------------------------------------|-----------------|
| Office Exam                         | \$40            |
| Nutraceuticals                      | \$28.50         |
| PBMT: (Achilles' Tendon 2 sessions) | \$60            |
| Pharmaceuticals                     | \$48            |
| <b>Total</b>                        | <b>\$176.50</b> |



## Practice Benefits

- IRTI provided information the client could easily understand, which eased their concerns about complying with the rehabilitation recommendations.
- Client understands that further diagnostic testing may be of benefit.
- Identifies precise targets for physical and modality-based therapy.
- Baseline images and temperature analysis serve to monitor the patient's response to therapy with subsequent thermal images.
- The IRTI exam allowed compliance with a workup of the case.

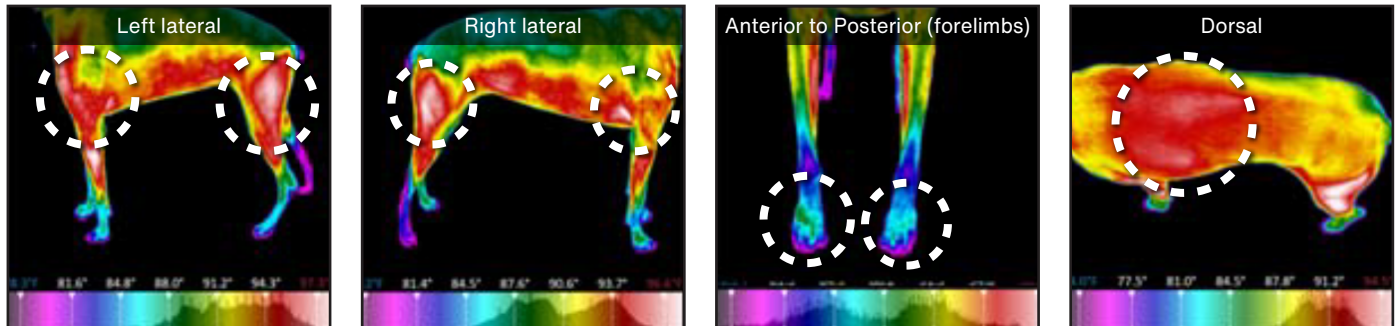
| Service                                   | Revenue           |
|-------------------------------------------|-------------------|
| IRTI exam                                 | \$40              |
| Client compliance to a radiographic study | \$30              |
| PBMT treatments                           | \$1,440           |
| Nutraceuticals                            | \$68.75           |
| Pharmaceuticals                           | \$280             |
| <b>Total</b>                              | <b>\$1,858.75</b> |



## WellVu Thermal Imaging Recheck (Sept. 7, 2019)

**Pet Owner:** Patient is walking almost pain-free and wants to play ball

**Veterinarian :** Regaining function of left rear. Reduced swelling and pain in both left Achilles' tendon and hock. Increased ROM left hock. Reduced tenderness upon palpation of the thoracic epaxial muscles.



| Hyperthermia (Hot) |                                                                                                                                                                                                                                                                                      |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Finding            | The asymmetrical bilateral hyperthermia surrounding both stifles has become more symmetrical.                                                                                                                                                                                        |
| Impression         | There is less compensatory strain on these structures.                                                                                                                                                                                                                               |
| Finding            | Asymmetrical hyperthermia throughout both shoulders.                                                                                                                                                                                                                                 |
| Impression         | Compared to the previous study, there are only minor changes of temperature emission within these areas.<br>The possible compensatory strain placed on these muscles is similar.                                                                                                     |
| Finding            | The bilateral asymmetrical areas of hyperthermia originating along the spine now extend throughout the entire thoracic and the upper portion of the lumbar vertebrae                                                                                                                 |
| Impression         | The patient is compensating entirely differently than the original images.                                                                                                                                                                                                           |
| Hypothermia (Cold) |                                                                                                                                                                                                                                                                                      |
| Finding            | The multiple areas of bilateral asymmetrical hypothermia throughout the paravertebral musculature from ~L3-4 – the first few coccygeal vertebrae and descending distally throughout the gluteal musculature have changed very little when compared to the images of the first study. |
| Impression         | Irritation of the spinal nerves innervating these structures.                                                                                                                                                                                                                        |
| Finding            | Asymmetrical bilateral hypothermia involving the distal forelimbs.                                                                                                                                                                                                                   |
| Impression         | Deficits in the innervation to these structures supplied by spinal nerves C6 – 7.                                                                                                                                                                                                    |



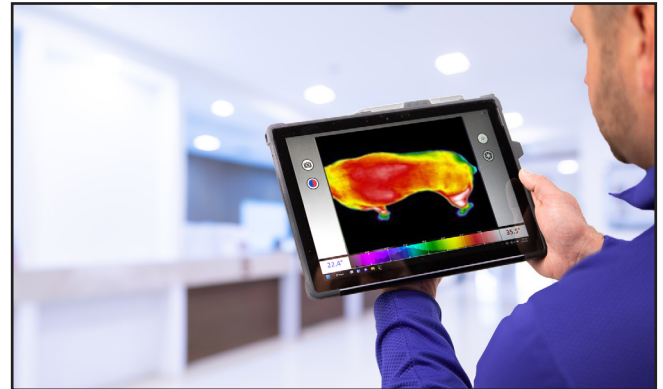
## Intervention Based on Findings

- The client was advised that a radiographic or MRI study of the cervical area would be of benefit. The client declined and opted to continue the rehabilitation protocol since the patient was improving.
- Radiographs of the tarsal area of the LH were negative.
- **Treatment Plan**
  - Rehabilitation sessions twice a week to include:
    - PBMT
    - Massage
    - PROM
    - Therapeutic exercise, including core strength and isometric exercises.
    - UWTM
  - Homeopathic oils
  - CBD
  - Prescribed tPEMF pad for home use



## Patient Benefits

- The client visualized and understood the possibility of a disorder within the cervical spine.
- Baseline information for monitoring this patient's response to the treatment plan.
- The client understood why the patient required more rehabilitation therapy sessions and that the progress thus far was less than expected.



## Practice Benefits

- IRTI provided information the client could easily understand, which eased their concerns about complying with the rehabilitation recommendations.
- Client understands that further diagnostic testing may be of benefit.
- Identifies precise targets for physical and modality-based therapy.
- Baseline images and temperature analysis serve to monitor the patient's response to therapy with subsequent thermal images.
- The IRTI exam allowed compliance with a workup of the case.

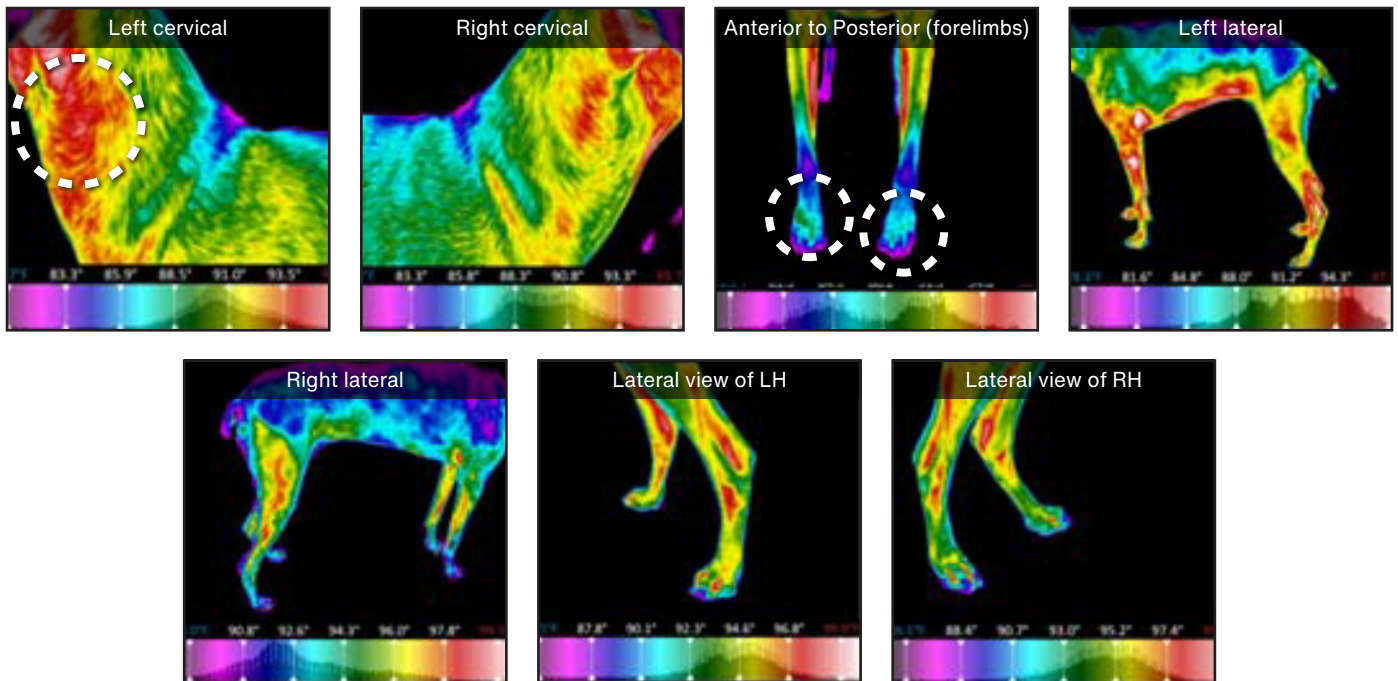
| Service                     | Revenue    |
|-----------------------------|------------|
| Office                      | \$40       |
| IRTI exam                   | \$30       |
| Rehabilitation sessions (8) | \$1,920    |
| Homeopathic oils/CBD        | \$68.75    |
| tPEMF Pad: (rental)         | \$280      |
| Total                       | \$2,298.75 |



## WellVu Thermal Imaging Recheck (Oct. 11, 2019)

**Owner:** Patient walks pain-free but isn't as active as before the first exam.

**Veterinarian:** Gait is significantly improved, and pain in the left Achilles tendon and hock is reduced considerably. The tenderness in the epaxial muscles is no longer present. There is some stiffness but no pain in the neck during POM exercises.



| <div><div></div>Hyperthermia (Hot)</div> |                                                                                                               |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Finding                                  | The asymmetrical bilateral hyperthermia predominantly on the left cervical spine.                             |
| Impression                               | Possibility of compensatory strain in these muscles or inflammation within the deeper structures.             |
| Finding                                  | Asymmetrical hyperthermia throughout both shoulders has normalized                                            |
| Impression                               | The patient is moving freely and not straining these muscles.                                                 |
| <div><div></div>Hypothermia (Cold)</div> |                                                                                                               |
| Finding                                  | The multiple areas of bilateral asymmetrical hypothermia throughout the paravertebral musculature from ~C3-7. |
| Impression                               | Irritation of the spinal nerves innervating these structures.                                                 |
| Finding                                  | Asymmetrical bilateral hypothermia involving the distal forelimbs.                                            |
| Impression                               | Deficits in the innervation to these structures supplied by spinal nerves C6 – 7.                             |





## Intervention Based on Findings

- The client was advised and complied with a gait analysis. (Gait4Dogs)
- Patient if offloading weight from the LH.
- **Treatment Plan**
  - Rehabilitation sessions once a week to include:
    - PBMT
    - Massage
    - PROM
    - Therapeutic exercise, including core strength and isometric exercises.
    - UWTM increased time
  - CBD
  - Prescribed tPEMF pad for home use

|     |     |
|-----|-----|
| 100 | 103 |
| 88  | 107 |



## Patient Benefits

- The client understood the possibility of a disorder within the cervical spine.
- Baseline information for monitoring this patient's response to the treatment plan.
- The client understood why the patient still would benefit from additional rehabilitation therapy sessions.



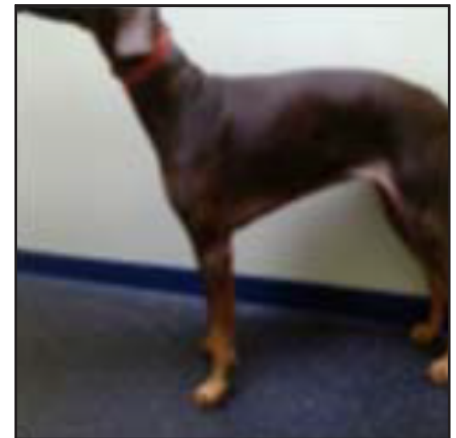
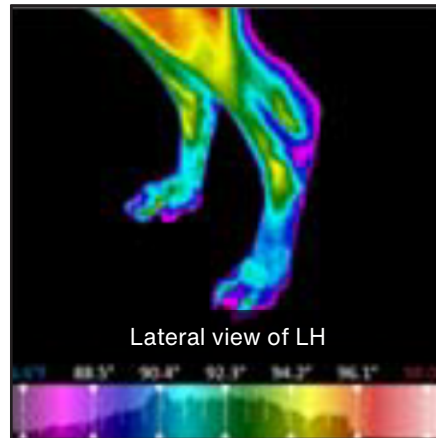
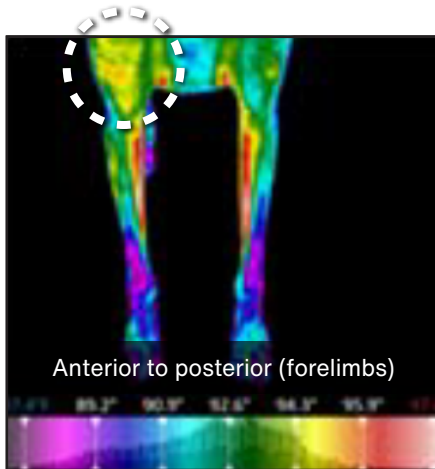
## Practice Benefits

- IRTI provided information that supported the possibility of a disorder within the cervical spine.
- Identifies new areas that would benefit from therapy.
- Baseline images and temperature analysis serve to monitor the patient's response to therapy with subsequent thermal images.
- The IRTI exam allowed compliance with a workup of the case.

| Service                     | Revenue        |
|-----------------------------|----------------|
| Office exam                 | \$40           |
| IRTI exam                   | \$30           |
| Rehabilitation sessions (4) | \$900          |
| Gait analysis               | \$125          |
| CBD                         | \$42           |
| tPEMF Pad: (rental)         | \$280          |
| <b>Total</b>                | <b>\$1,417</b> |



## WellVu Thermal Imaging Recheck (Oct. 27, 2019)



| <div style="display: flex; align-items: center; justify-content: center;"> <div style="width: 20px; height: 10px; background: linear-gradient(to right, red, orange, yellow, green, blue, purple); border: 1px solid black; margin-right: 5px;"></div> <b>Hyperthermia (Hot)</b> </div>               |                                                                                                                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Finding</b>                                                                                                                                                                                                                                                                                        | Diffuse asymmetrical hyperthermia over the right shoulder                                                                                              |
| <b>Impression</b>                                                                                                                                                                                                                                                                                     | Possibility of compensatory strain due to offloading of weight from left hind.                                                                         |
| <b>Finding</b>                                                                                                                                                                                                                                                                                        | Bilateral symmetrical areas of hyperthermia present medially on both forelimbs                                                                         |
| <b>Impression</b>                                                                                                                                                                                                                                                                                     | These symmetrical increases in the temperature data are due to the lack of hair in these regions                                                       |
| <div style="display: flex; align-items: center; justify-content: center;"> <div style="width: 20px; height: 10px; background: linear-gradient(to right, blue, purple, red, orange, yellow, green, blue, purple); border: 1px solid black; margin-right: 5px;"></div> <b>Hypothermia (Cold)</b> </div> |                                                                                                                                                        |
| <b>Finding</b>                                                                                                                                                                                                                                                                                        | Asymmetrical bilateral hypothermia involving the distal forelimbs.                                                                                     |
| <b>Impression</b>                                                                                                                                                                                                                                                                                     | Throughout each set of images, there has been consistent evidence of deficits in the innervation of these structures supplied by spinal nerves C6 – 7. |
| <b>Finding</b>                                                                                                                                                                                                                                                                                        | Areas of expected thermal gradients throughout the distal LH                                                                                           |
| <b>Impression</b>                                                                                                                                                                                                                                                                                     | The lateral image of the LH illustrates that the areas of increased circulation within the Achilles' tendon have been resolved.                        |



## Intervention Based on Findings

- The client was advised and complied with a gait analysis. (Gait4Dogs)
- Patient if offloading weight from the LH.
- **Treatment Plan**
  - Rehabilitation sessions once a week to include:
    - PBMT
    - Massage
    - PROM
    - Therapeutic exercise, including core and isometric exercises.
    - UWTM increased time
  - CBD
  - Prescribed tPEMF pad for home use

|            |            |
|------------|------------|
| <b>100</b> | <b>103</b> |
| <b>93</b>  | <b>107</b> |



## Patient Benefits

- Using the gait analysis and IRTI, the client understood that to maintain this level of improvement in the patient the therapy sessions should continue.
- Baseline information for monitoring this patient's response to the treatment plan.



## Practice Benefits

- IRTI provided information that supported the possibility that there was still the possibility of an undiagnosed disorder within the cervical spine.
- Provided evidence that a maintenance program should be followed
- Baseline images and temperature analysis serve to monitor the patient's response to therapy with subsequent thermal images.
- The IRTI exam allowed compliance with a workup of the case.

| Service                     | Revenue      |
|-----------------------------|--------------|
| Office exam                 | \$40         |
| IRTI exam                   | \$30         |
| Rehabilitation sessions (2) | \$450        |
| Gait analysis               | \$125        |
| CBD                         | \$35         |
| tPEMF Pad: (rental)         | \$280        |
| <b>Total</b>                | <b>\$960</b> |



## Re-evaluation (Jan. 25, 2020)

**Owner:** The patient fell off the bed and, 5 hours later, walked straight into a door.

**Veterinarian:** PE: Significant imbalance, vestibular impairment. Short steps and unstable on front limbs.

Within 24 hours developed tetraparesis.

- Treatment: Prednisolone and gabapentin; responded immediately and was discharged.

# Better Care for Pets: Empowering Owners, Optimizing Outcomes

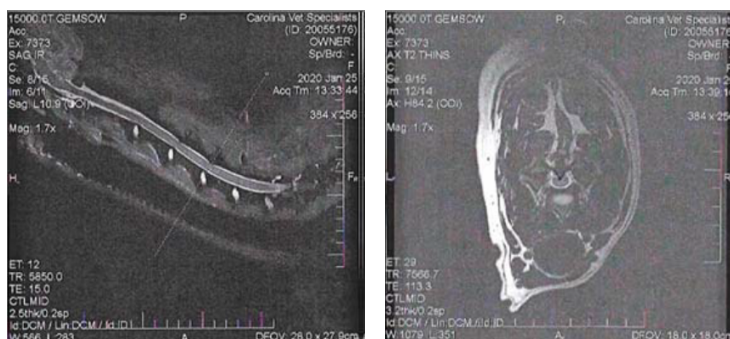


## Neurological Exam (Jan. 28, 2020)

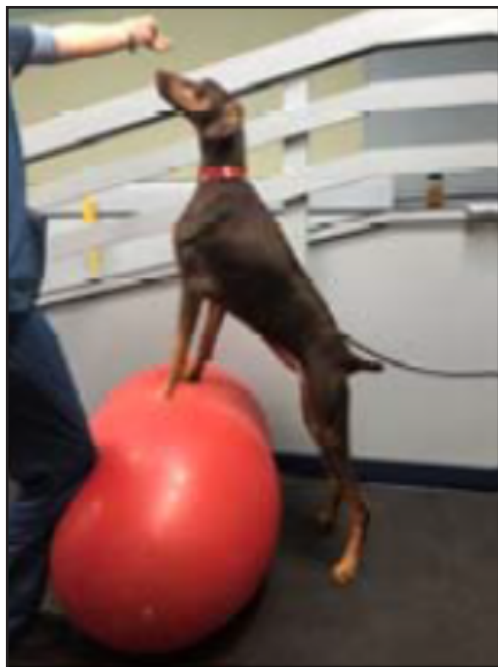
**Neurologist:** Short-stride gait in the front limbs. Long, ataxic (proprioceptive) gait in the hind limbs. Pain on dorso- and ventro-flexion of the neck. Bilateral shoulder muscle atrophy. Normal spinal reflexes. Neuroanatomical location: C6 – T2.

No signal in the disc at C6 – C7 consistent with degeneration but no compression at this level. Mild stenosis of the cervical spine. Mild ventro-dorsal compression of the spinal cord at C3 – C4. Dorsal compression of the spinal cord at C3 – C4 and C4 – C5 with neck extension.

**Treatment Recommendations:** Intermittent administration of anti-inflammatory drugs if needed and if the condition worsens, consider surgery.



## Re-evaluation Exam (Feb. 10, 2020)



**Complete Recovery**



## Take-Aways

- IRTI made the client aware of the seriousness of the multiple disorders afflicting their pet. They presented their pet thinking it was just a lameness of the LH limb.
- The easy-to-understand thermal images reinforced the clinical recommendations and allowed the client to comply with the rehabilitation protocols.
- The thermographic findings from the initial IRT exam and all subsequent exams indicated a possible disorder in the cervical spine, which manifested itself until approximately five months later after an acute trauma.
- Progress was being made on the case, and clients didn't want to spend money on more radiographs until the acute episode in January.

A single \$30 screening exam led to...

- Diagnostics and utilization of numerous services offered by the practice for a total of: **\$6,534.50**



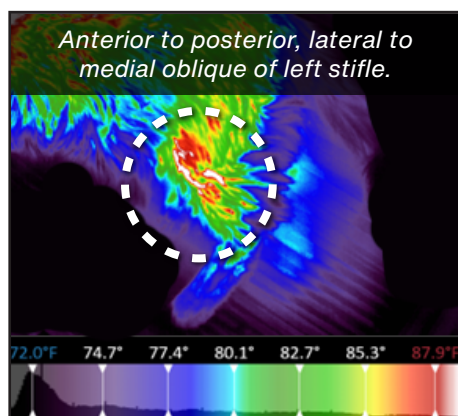
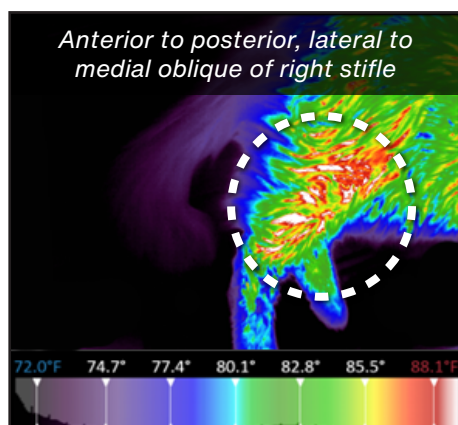
## Presentation

**Pet Owner** Reduction in physical activity and no longer jumping on the furniture.

**Veterinarian** Patient didn't exhibit any signs of discomfort on palpation but was reluctant to allow PROM.



## WellVu Thermal Imaging



Hyperthermia (Hot)

| Finding    | Diffuse hyperthermia within the soft tissue structures surrounding the right stifle joint, including the sartorius and biceps femoris musculature.             |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Impression | Correlation to vascular perfusion due to inflammation within the stifle joint and the compensatory strain to the surrounding soft tissue structures.           |
| Finding    | Areas of both focal and diffuse hyperthermia within the soft tissue structures surrounding the left stifle joint, radiating into the surrounding soft tissues. |
| Impression | Correlation to vascular perfusion due to inflammation within the stifle joint and the compensatory strain to the surrounding soft tissue structures.           |



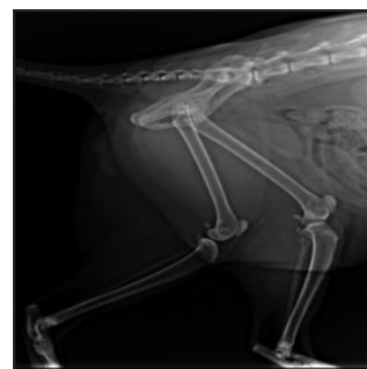
## Intervention Based on Findings

### Further Imaging

- Radiograph: Evidence of osteoarthritis in both stifle joints.

### Treatment Plan

- PBMT treatments: in-clinic and take-home laser rental
- Pharmaceuticals
- Nutraceuticals
- Physical therapy improves muscle strength and joint stability.
- Weight loss program

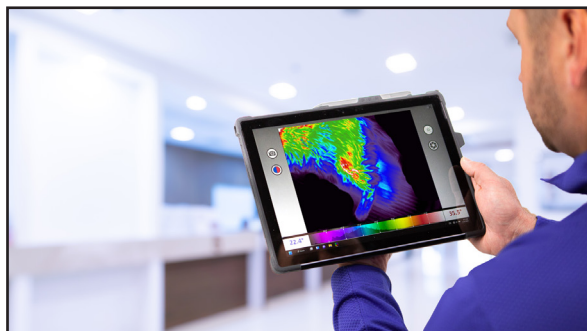




# Better Care for Pets: Empowering Owners, Optimizing Outcomes



## Patient Benefits



- Client visualization allowed understanding and compliance with the recommended radiographic study.
- A roadmap for the initial application of PBMT and as a guide for the administration at home
- Objective baseline data for comparison on future re-evaluations.



## Practice Benefits

- Information the client could easily understand, which eased their concerns about complying with the radiographic recommendation.
- The imaging provided identification of the area that would benefit from the application of PBMT therapy both in the clinic and at home.
- Baseline images and temperature analysis will objectively monitor the patient's response to therapy.
- Subsequent imaging will provide a guide to continued PBM therapy to address the patient's changes during treatment.

| Service              | Revenue  |
|----------------------|----------|
| IRTI exam            | \$40     |
| Radiographic study   | \$85     |
| Pharmaceuticals      | \$28     |
| Nutraceuticals       | \$18.50  |
| PBMT/PT sessions     | \$120    |
| IRTI rechecks        | \$80     |
| At-home rental laser | \$150    |
| Total                | \$521.50 |



## Take-Aways

Infrared thermal imaging during the initial visit led to...

1. Compliant utilization of numerous services generating \$521.50 in practice income.
2. Continued maintenance of PBMT as needed provided the patient with a higher quality of life without the use of pharmaceuticals.

# Equine: Bilateral Hind Limb Lameness

Irish Sport Horse (Mare)  
Eight years, ten months old



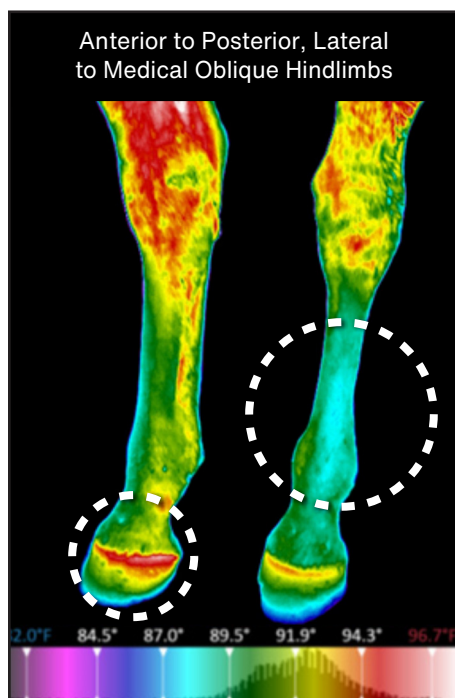
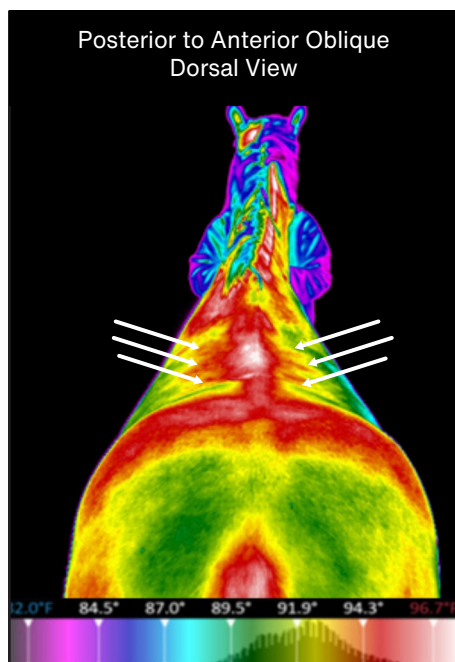
## Presentation

**Owner/Trainer:** Decline in athletic performance.

**Veterinarian** Digital palpation found some tight muscles near the spine but nothing in the lower back. The horse limped more (grade 3/5) when trotting straight, placing both hind legs inward with the right foot landing on the inside first. Lunging showed a milder limp (grade 2/5) on the right hind leg in both directions. Exam also revealed mild swelling in the right ankle joint capsule.



## WellVu Thermal Imaging



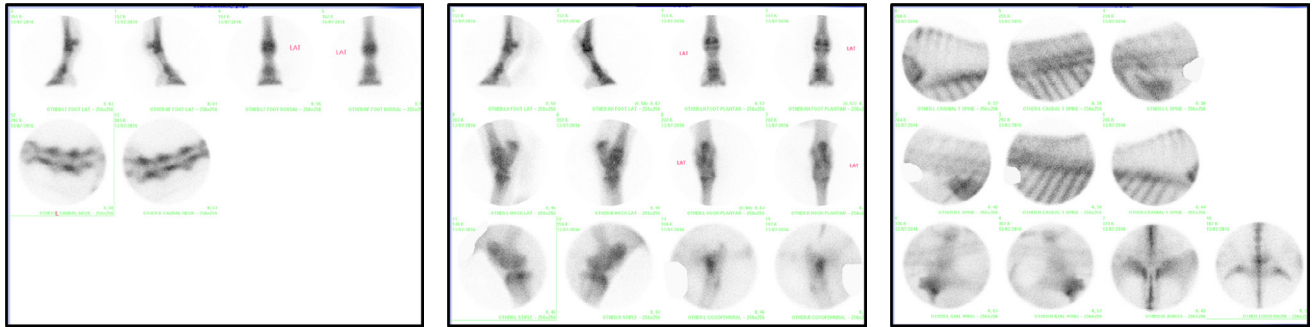
| Hyperthermia (Hot) |                                                                                                                                                                                                                                                           |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Finding            | Asymmetrical bilateral hyperthermia throughout the epaxial musculature. (PAO Dorsal View)                                                                                                                                                                 |
| Impression         | Increased vascularization/perfusion within the musculature, possibly correlated to either primary inflammation and/or compensatory strain from disorders distally.                                                                                        |
| Finding            | Focal areas of hyperthermia, increased temperature emission, on the midline from T10-11 – L1-2. (PAO Dorsal View)                                                                                                                                         |
| Impression         | Anatomical areas of increased vascular perfusion.                                                                                                                                                                                                         |
| Finding            | Asymmetrical diffuse areas of diminishing hyperthermia originating at the points of focal hyperthermia on the midline before losing intensity distally (white arrows on PAO Dorsal View)                                                                  |
| Impression         | This unique pattern could correlate with spinal nerve irritation affecting the circulation within these muscles.                                                                                                                                          |
| Finding            | Bilateral asymmetrical areas of hyperthermia within the paravertebral musculature of the lumbar spine, continuing through the lumbosacral joint and descending distally throughout the gluteal musculature to the dorsal aspect of the coxofemoral joint. |
| Impression         | Anatomical areas of increased perfusion resulting from inflammation within the soft tissues.                                                                                                                                                              |
| Finding            | Asymmetrical irregular areas of hyperthermia over the RH tarsi's medial aspect.                                                                                                                                                                           |
| Impression         | This increased temperature emission correlates to an increase in circulation/vascular perfusion that could possibly be compromised by an innervation irritation to these structures.                                                                      |
| Hypothermia (Cold) |                                                                                                                                                                                                                                                           |
| Finding            | Multiple areas of bilateral asymmetrical hypothermia are noted throughout the distal portions of both hind limbs but are more prevalent in the left hind.                                                                                                 |
| Impression         | Possibly consistent with irritation of the sympathetic nerve supply associated with dermatomes L6 – L7                                                                                                                                                    |



## Intervention Based on Findings

### Further Imaging

- Nuclear scintigraphy:

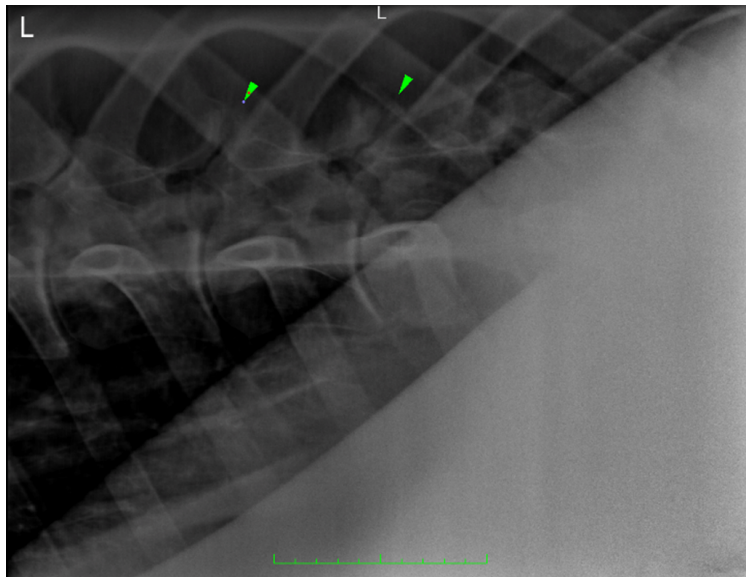


### Nuclear scintigraphy revealed:

- Mild symmetrical IRU (increased radiopharmaceutical uptake) within the sacroiliac joints.
- Mild IRU right hind pastern
- Mild to moderate IRU caudal thoracic articular process joints.
- Mild linear IRU uptake both distal tarsi.

### Radiographic Study

- A left ventral-right dorsal oblique view of the caudal thoracic vertebrae revealed mild remodeling of the articular facet joints: T14/15 and T15/16.
- The lateromedial view of the right hind pastern exhibited a small, well-defined dorsally directed osseous spur at the dorsoproximal aspect of the middle phalanx, consistent with mild OA.
- No significant lesions within the joints of the right tarsi.



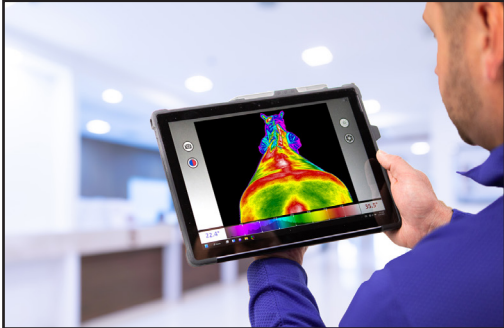
### Question

Who benefited more: the Patient or the Practice?

# Better Care for Equine Athletes



## Patient Benefits



- The client visualized and understood the extent of the neurological deficits, allowing immediate compliance to nuclear scintigraphy and radiographic studies.
- Physiological evidence to accompany the history, radiograph, and physical examination findings.
- Baseline information for objectively monitoring this patient's response to any treatment plans.
- The client understood the gravity, the number of obstacles, and the time to overcome this athlete's return to competition.



## Practice Benefits

- Information the client could easily understand, which eased their concerns about complying with the structural diagnostic recommendations.
- Client visualization supporting the case management recommendations.
- Baseline images and temperature analysis that could be used to objectively monitor response to any treatment plan.

| Service              | Revenue |
|----------------------|---------|
| IRTI exam            | £30     |
| Lameness exam        | £325    |
| Radiographic study   | £650    |
| Nuclear scintigraphy | £2,800  |
| Total                | £3,805  |



## Take-Aways

A single £30 infrared thermal imaging exam led to...

- Diagnostic compliance and an understanding of the challenges this athlete faced to return to competition.



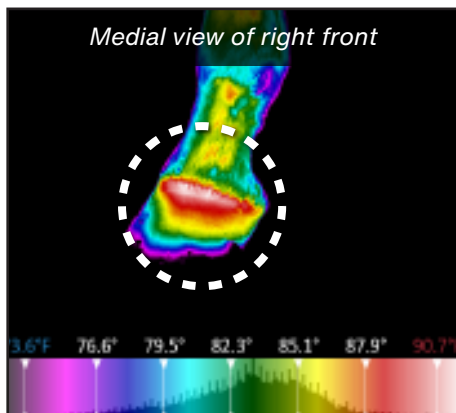
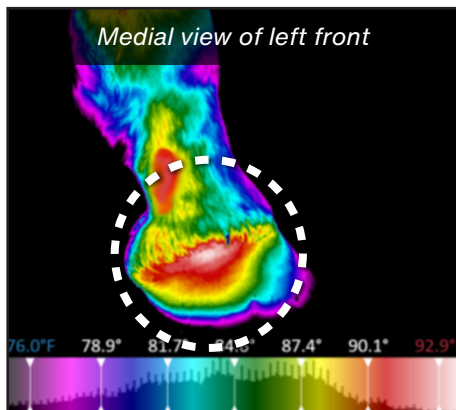
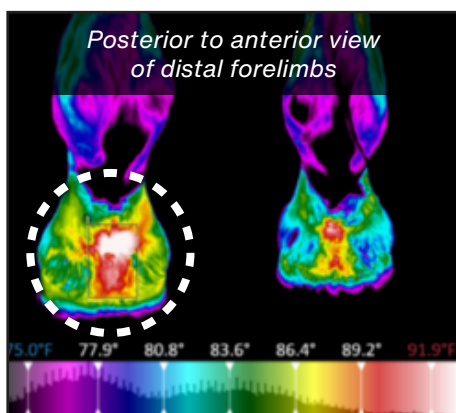


## Presentation

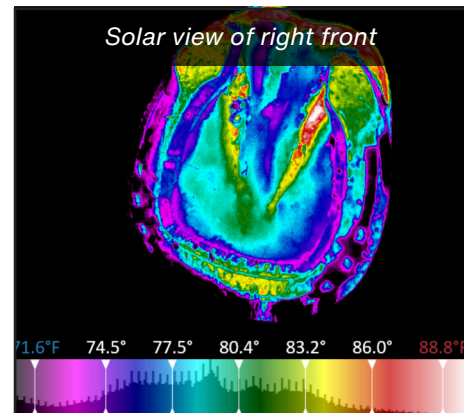
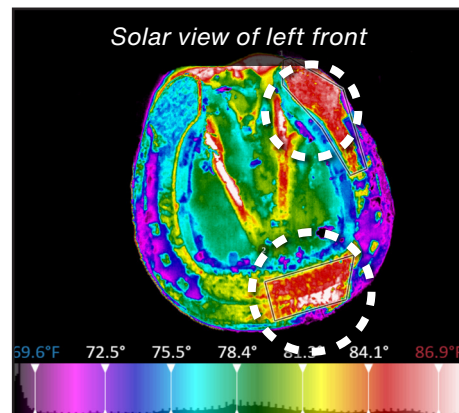
- Owner** Intermittent lameness; LF; two months duration. The patient blocked sound on an abaxial sesamoid block during a previous lameness exam three weeks prior. Radiographs of the fetlock and foot were negative. The patient was rested for two weeks, walked soundly, and then lame again after being ridden for a brief period.
- Lameness exam** Intermittent Grade 1 lameness of right forelimb. Digital palpation, flexion tests of both the carpus and fetlock and hoof testers were all negative.



## WellVu Thermal Imaging



| Hyperthermia (Hot) |                                                                                                                                                                                                                         |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Finding</b>     | The posterior to anterior of the distal front feet and fetlocks presents an area of asymmetrical focal hyperthermia in the medial area of the pastern and proximal to the medial bulb of the heel within the left foot. |
| <b>Impression</b>  | Increased tissue perfusion due to inflammation involving the underlying soft tissue structures.                                                                                                                         |
| <b>Finding</b>     | Asymmetrical area of hyperthermia palmar-medially on the left pastern. This area extends from just distal to the fetlock and extends distally and caudally towards the coronary band.                                   |
| <b>Impression</b>  | Increased perfusion of this area that could be the result of underlying inflammation or a compensatory strain.                                                                                                          |
| <b>Finding</b>     | Asymmetrical hyperthermia along the medial portion of the coronary band of the left foot that extends distally through the laminae                                                                                      |
| <b>Impression</b>  | Increased perfusion of these structures due to the patient landing unevenly while compensating for pain.                                                                                                                |
| <b>Finding</b>     | On the solar views of both front feet there are asymmetrical areas of hyperthermia present on the surface of the shoe on both the medial aspect of the toe and left heel.                                               |
| <b>Impression</b>  | Uneven placement of the foot while compensating for another disorder                                                                                                                                                    |





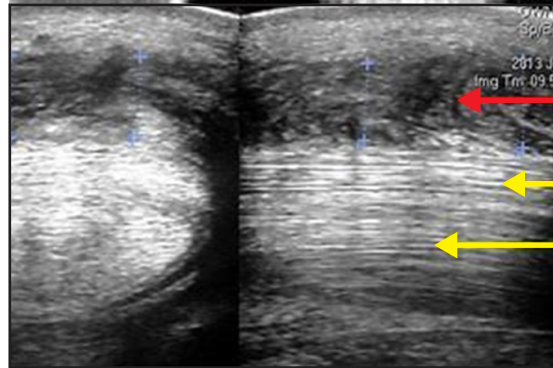
# Better Care for Equine Athletes



## Intervention Based on Findings

### Further Imaging

- Radiographic study: NSF
- Ultrasound study.
- Hypoechoic lesion in deep digital annular ligament



PAL

SDF

DDF



## Patient Benefits

- The client was able to visualize the disorder's involvement and how it caused the horse to compensate and strain the surrounding structures.
- Objective baseline temperature data for comparison on future re-evaluations.



## Practice Benefits

- IRTI provided a precise area for radiograph and ultrasonic study.
- The IRTI exam provided visual baseline temperature data, allowing objective monitoring of the healing process.
- IRTI saved valuable time while performing the lameness exam.



## Take-Aways

1. The IRTIs of this patient identified the area causing the primary lameness issue and allowed visualization of the compensatory stress placed on the medial aspect of the distal left forelimb.
2. Incorporating IRTI into a lameness exam helps identify all structures that would benefit from further examinations and diagnostic procedures.

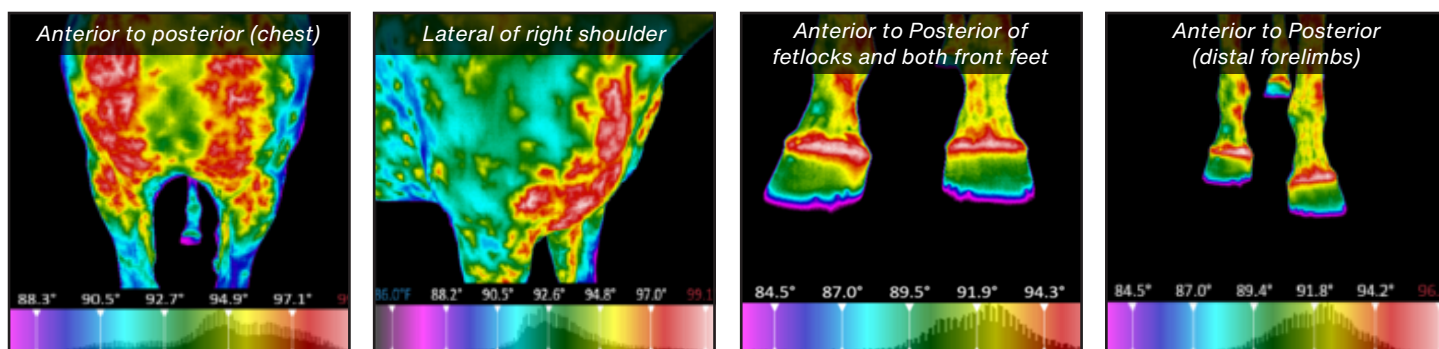


## Presentation

- Owner** Subtle intermittent lameness, decreased performance. Three previous lameness exams, which included two radiographic studies of the knee and fetlock and an MRI of the cervical spine, were performed over the past four weeks with no significant findings or results.
- Lameness exam** Intermittent Grade 1 lameness of right forelimb. Digital palpation, flexion tests of both the carpus and fetlock, and hoof testers were all negative.



## WellVu Thermal Imaging



| <div>  Hyperthermia (Hot) </div> |                                                                                                                                                                                                                                                                  |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Finding</b>                   | The AP, Lat., and APLMO views of the right shoulder depict areas of increased temperature emissions from the craniodorsal muscles of the scapula descending distally to include the scapulohumeral joint distally to the proximal cranial aspect of the humerus. |
| <b>Impression</b>                | Inflammation involving the scapulohumeral joint and/or its surrounding soft tissue structures.                                                                                                                                                                   |
| <b>Finding</b>                   | Asymmetrical areas of hyperthermia throughout the medial aspect of the RF carpus and descending distally through the medial soft tissue structures of the fetlock, pastern, coronary band, and the medial quarter of the hoof.                                   |
| <b>Impression</b>                | Increased perfusion of these structures, possibly resulting from inflammation arising from the compensatory strain from unbalanced placement of the foot during locomotion.                                                                                      |



## Question

Who benefited more: the Patient or the Practice?

# Better Care for Equine Athletes



## Intervention Based on Findings

### Further Diagnostics

- Radiographic study of the right scapulohumeral joint.

### Findings

- Fracture of the supraglenoid tubercle of the scapula.



## Patient Benefits

- The client was able to visualize the involvement of the shoulder structures and complied with the radiographic study.
- Objective baseline temperature data for comparison on future re-evaluations.



## Practice Benefits

- This patient was presented after three lameness exams at other equine practices over the past 30 days; two radiographic studies and an MRI of the cervical area were unable to identify the lameness issue.
- IRTI provided a screening tool that resulted in a definitive diagnosis.
- The IRTI exam provided visual baseline temperature data, allowing objective monitoring of the healing process.
- IRTI saved valuable time while performing the lameness exam.



## Take-Aways

1. The IRTIs of this patient identified the area causing the primary lameness issue and allowed visualization of the compensatory stress being placed on the medial aspect of the distal right forelimb.
2. Incorporating IRTI into a lameness exam aids in the identification of all structures that would benefit from further examinations and diagnostic procedures.



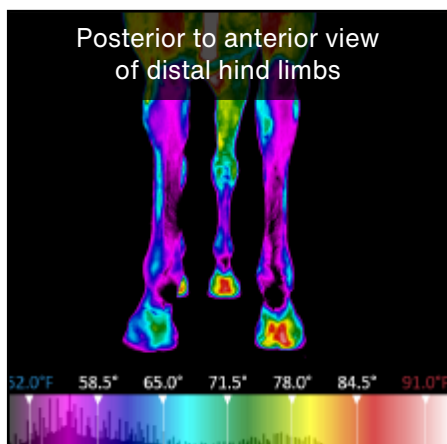
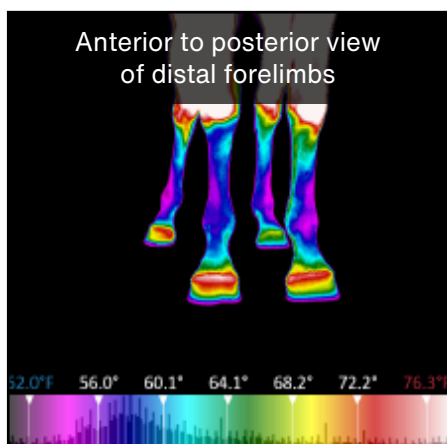
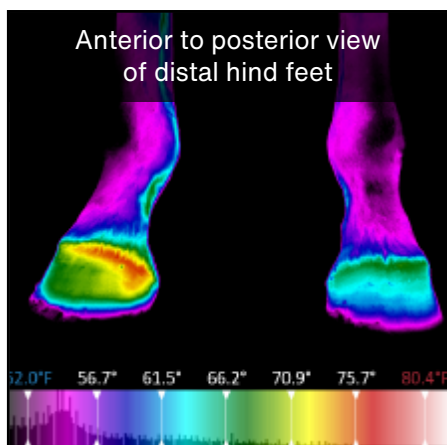
## Presentation

**Owner:** Mild intermittent shifting lameness over the past three weeks.

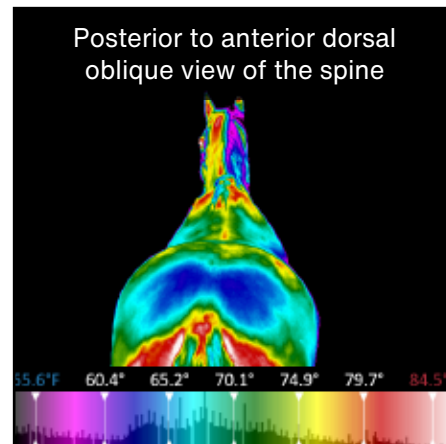
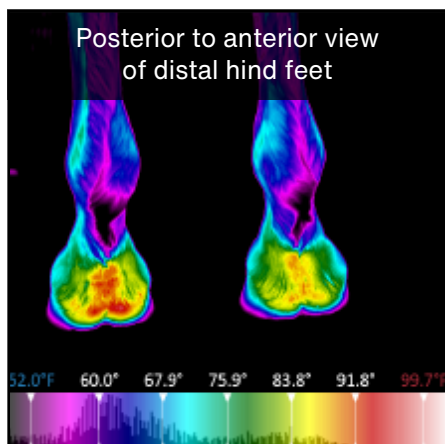
**Lameness exam:** Grade 1 lameness of indeterminable origin. Bilateral muscle laxity throughout the paravertebral and gluteal musculature. Negative on the tail pull test. Normal urination and fecal expulsion.



## WellVu Thermal Imaging



|  Hypothermia (Cold) |                                                                                                        |
|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| <b>Finding</b>                                                                                        | All four distal limbs demonstrate areas of bilateral asymmetrical hypothermia                          |
| <b>Impression</b>                                                                                     | Irritation of spinal nerves C5-7                                                                       |
| <b>Finding</b>                                                                                        | Bilateral asymmetrical areas of hypothermia throughout epaxial, paravertebral, and gluteal musculature |
| <b>Impression</b>                                                                                     | Nerve irritation within the cervical spine                                                             |





## Intervention Based on Findings

### Further Diagnostics

- Blood submitted for S. neuroma SAG1, 5, 6.
- Titer ratio: 1:4000

### Treatment Plan

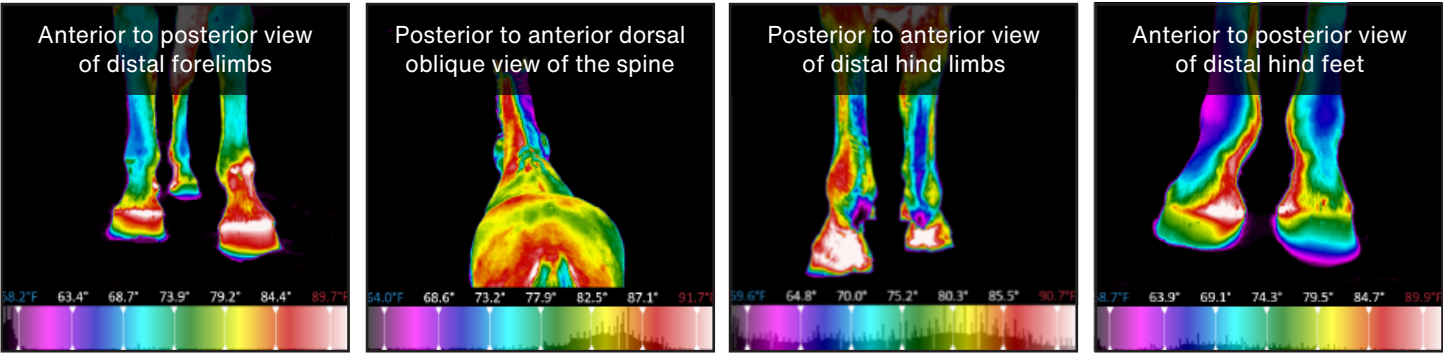
- Trimethoprim-sulfonamide orally for 30 days
- Ponazuril orally for 30 days
- Phenylbutazone orally for 14 days



## WellVu Thermal Imaging Recheck (30 Days)

**Owner:** Greatly improved. Question: when can they resume training?

**Lameness exam:** There is no evidence of lameness. The laxity within the musculature has almost resolved. All neurological testing was negative



|                    |                                                                                                                     |
|--------------------|---------------------------------------------------------------------------------------------------------------------|
| Hypothermia (Cold) |                                                                                                                     |
| Finding            | All images illustrate a re-establishment of circulation.                                                            |
| Impression         | The expected circulatory pattern has not been fully re-established; therefore, the patient has not fully recovered. |



## Intervention Based on Findings

### Treatment Plan

- Trimethoprim-sulfonamide
- Diclazril
- Phenylbutazone: reduced dosage to two grams/day

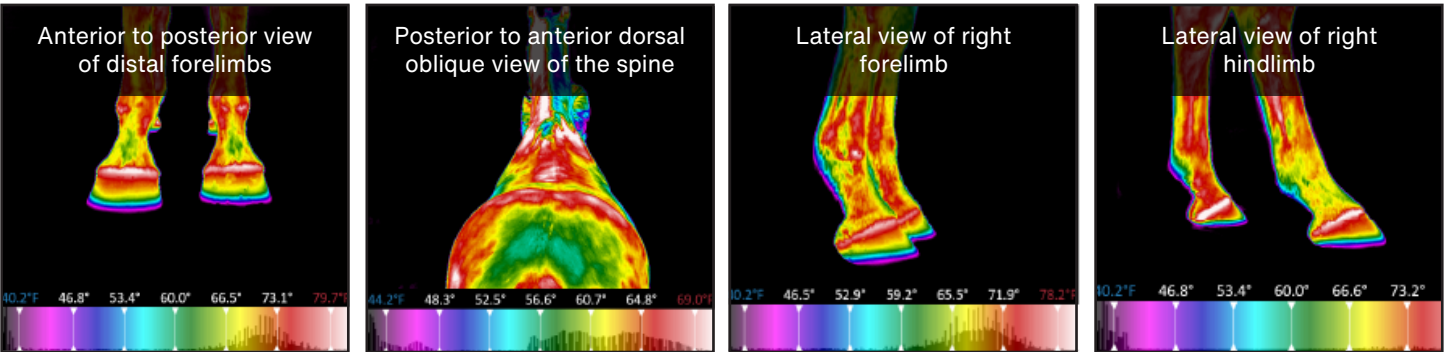




WellVu Thermal Imaging Recheck (60 Days)

**Owner:** : Patient has resumed normal activity when turned out.

**Lameness exam:** There is no evidence of lameness. All the neurological signs have completely resolved. Muscle palpates normally throughout all large muscle groups.



|                                          |                                                                            |
|------------------------------------------|----------------------------------------------------------------------------|
| <div><div></div>Hypothermia (Cold)</div> |                                                                            |
| Finding                                  | All images display expected normal bilateral symmetrical thermal gradients |
| Impression                               | The patient has completely recovered.                                      |



Patient Instructions

- Resume training with slow sessions for the first week to ten days, then increase gradually until the patient is fully back to work.
- Re-check in two weeks if necessary.



Question

Who benefited more: the Patient or the Practice?

# Better Care for Pets: Empowering Owners, Optimizing Outcomes



## Patient Benefits

- Client visualization allowed an understanding of the effect this organism has on the neurological system.
- Objective baseline temperature data for comparison on future re-evaluations.
- Client understanding of the importance of following the prescribed treatment plan.



## Practice Benefits

- Supportive evidence to the neurological exam.
- Objective measurement of the progress of the case.
- Client visualization allowed understanding and compliance with the recommended treatment plan.
- The client visualized that the patient had not returned to normal at the thirty-day recheck.
- Objective baseline data for comparison on future re-evaluations.

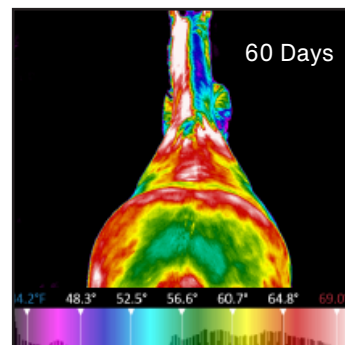
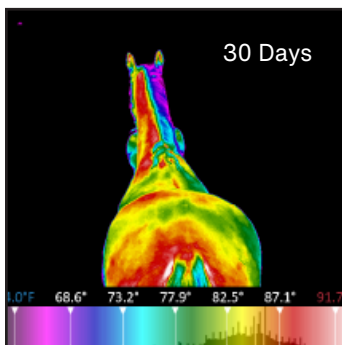
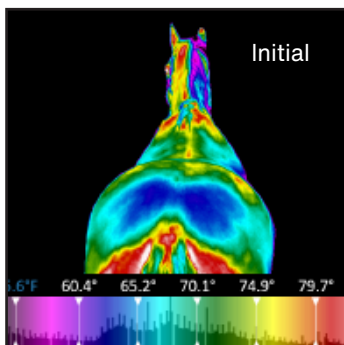


## Take-Aways

- The IRTI of this patient supported the initial neurological exam and allowed the client to visualize the complexity of this disorder.
- The patient appeared to have recovered at the thirty-day recheck, but the images provided evidence that additional treatment was necessary.
- The IRTI, which was taken at sixty days, provided evidence that the patient had completely recovered and could safely return to work.



## Infrared Thermography Objectively Monitored the Patient Progress:



## About Multi Radiance

Multi Radiance is a global leader in light-based technology, including medical imaging and a 20+ year focus on laser therapy. With 64+ peer reviewed articles, our commitment to research and education allows us to optimize our technology, validate our methodology, and create predictable and reproducible patient outcomes, both in-clinic and at-home.

