



Ben returned to agility training after being treated with a Class IV laser.

Using Class IV laser after iliopsoas muscle strain

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For The Education Center

Ben is a 2-year-old cocker spaniel agility dog that presented with a two-week history of poor performance and hesitation and complete avoidance of jumps and weave poles. His owners reported no lameness or stiffness during exercise.

Heat and pain at the lumbar musculature were detected upon physical examination. Ben resented extension of the right hip, especially with concurrent abduction or internal rotation, and he had a marked pain response on palpation of the iliopsoas muscle group.

Ben was admitted for radiographs and digital thermal imaging. The radiographs were unremarkable, but digital thermal imaging (**Figures 1 and 2**) revealed an increased heat signal in the right caudal lumbar musculature and in the region of the iliopsoas muscle group. A stance analysis using the Companion stance analyzer showed normal weight distribution in all four limbs.

Diagnosis of an acute right-sided iliopsoas injury was made based on clinical signs, lack of radiographic changes in the hip and stifle, and pain localization with palpation and thermal imaging.

A course of laser therapy was started using a Companion CTX laser using pain/trauma settings appropriate for the size of dog, hair length color and depth of penetration required. Ben had eight sessions of laser therapy over four weeks along with physiotherapy, including static active stretches to maintain muscle length during the repair process.

The laser was targeted to include the entire right side lumbar musculature, and this was extended to include the origin through to the insertion of the iliopsoas group on the proximal medial femur (lesser trochanter).

Digital thermal imaging was used to target specific areas with laser therapy before each treatment session. Ben was rested for six

weeks and not allowed to jump during this time.

Upon examination at six weeks post-diagnosis Ben was pain-free and exercising normally. Agility work was gradually introduced through some small jumps, and this was increased over the following four weeks.

At 12 weeks post-diagnosis, Ben was back to full agility training. He showed no hesitation at jumps and cleared them again with ease.

Laser therapy is ideal for treating acute injuries because it provides fast pain relief, improves blood supply and stimulates healing at a cellular level through a process called photobiomodulation. Laser therapy has been shown to heal tissues without the formation of scar tissue, which can lead to reinjury.

Laser and Regenerative Medicine Case

Flora, a 3-year-old, spayed Labrador cross breed, presented to Greenside Veterinary Practice in Scotland with a six-week history of right hind limb lameness that started after she chased a deer. The lameness did not respond to rest or NSAIDs and was worse after rest.

An examination found pain on manipulation of the right hock and a marked joint effusion. There was no obvious instability or problems with the associated ligaments, tendons or muscles. Radiographs and joint fluid were taken under sedation. A joint fluid analysis revealed a high white blood cell count containing 71 percent agranulocytes. Cytology revealed predominantly lymphocytes and reactive synovocytes consistent with a chronically inflamed arthritic joint. Both hocks were radiographed, and evidence showed osteoarthritis with osteophytes extending across the ventral tarso-etatarsal joints.

A stance analysis demonstrated an abnormal weight distribution with less weight carried in the right hind, and this was compensated for by an increase in weight distribution to the right thoracic limb.

After a discussion with the own-

ers and consideration of Flora's age, it was decided that regenerative medicine would be the best option to treat the young, fit athletic dog to give her the best chance of regaining full activity for an extended period and without long-term medication.

Under general anaesthesia, 30 milliliters of bone marrow was harvested from the right femur using the

Stance analysis

Results before treatment with regenerative therapies and afterward

| Time from treatment in weeks | Left front | Right front | Left rear | Right rear |
|------------------------------|------------|-------------|-----------|------------|
| 0 | 31 | 36 | 19 | 14 |
| 2 | 29 | 31 | 21 | 19 |
| 6 | 28 | 30 | 21 | 21 |
| 26 | 30 | 29 | 21 | 20 |

Companion BMAC harvesting kit. This was then processed with the Companion CRT system to provide 3 ml of BMAC.

A blood sample was taken and processed with the CRT system to provide 4 ml of platelet-rich plasma (PRP). Flora's whole blood contained 209 K/ μ L of platelets, and the PRP contained 1098 K/ μ L, which equated to a fivefold increase in platelet numbers.

A complete blood count performed on the PRP sample revealed a virtual elimination of red blood cells and neutrophils. The PRP and BMAC were combined in equal proportions and mixed. A 21-gauge needle was inserted into the hock joint and all joint fluid aspirated before implanting 1.5 ml of the BMAC/PRP mixture.

Laser therapy was started immediately post-implantation. A companion CTX laser was used with settings selected for arthritis treatment of the hock, with a treatment protocol appropriate for her size, body condition, coat length and color (7 Watts for 2.39 minutes, with a total energy of 889 Joules] per session for six sessions repeated three times a week for two weeks and then again at six weeks post-implantation.

Initially, the lameness worsened for 36 hours following implantation, but this was treated successfully with NSAIDs and opioid analgesic administration.

For the first two weeks Flora's exercise was restricted to short lead walks three times a day. At the two-week examination, the lameness had resolved completely and all analgesic administration had been stopped. Stance analysis showed a normal and equal weight distribution pattern with 30 percent of the weight distributed in each thoracic limb and 20 percent in each pelvic limb. There was no joint effusion palpable in the hock joint and no pain on manipulation of the joint.

Exercise was increased slowly over the next six weeks. Similar findings were evident at the six and 26 week check-ups. No lameness or stiffness were reported by the owners. Flora was exercising normally at six months.

BMAC in combination with PRP and laser therapy seems to be a very effective, drug-free, minimally invasive treatment option for osteoarthritis in dogs. ●

Dr. Andrew Armitage is a partner at Greenside Veterinary Practice in St. Boswells, Scotland. His interests include investigating the use of Class IV laser therapy and regenerative medicine for acute and chronic conditions.

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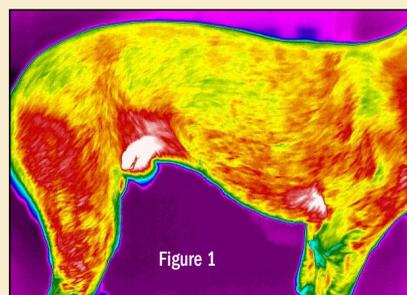


Figure 1

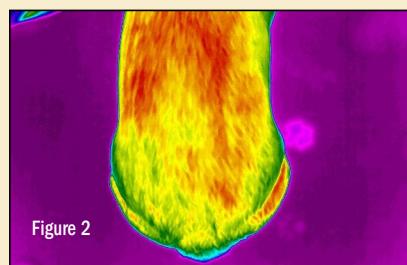


Figure 2



A radiograph of Flora's hock revealed osteoarthritis and osteophytes extending across the ventral tarso-metatarsal joints.