



Conservative Cruciate Care

When the patient is bigger than expected!

by Jemma Cooper-Boot

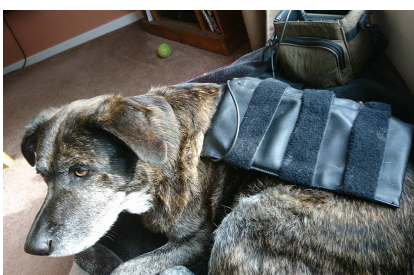
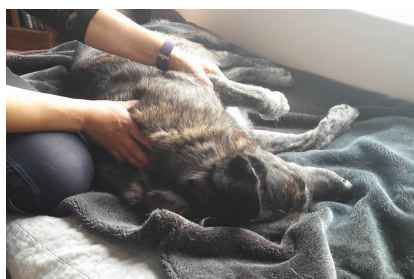
CRUCIATE ligament injuries are becoming increasingly common in Veterinary practices. Although we have cases year round, spring time seems to be our busiest season, possibly due to lighter evenings, nicer weather and suddenly longer, more intense walks for our 4-legged friends. Most commonly cruciate trauma occurs due to sporting injuries or sudden sharp, quick movements that causes the ligament to suddenly snap. Imperfect conformation can also be a factor, where the cruciate ligament is put under strain due to abnormal loading. Here the ligament slowly stretches and eventually gives up. There is little we can do about confirmation but excess weight will exacerbate potential problems so this should be managed strictly.

When the cruciate ligament is torn, the stifle joint becomes unstable, and therefore the bones are subjected to an abnormal range of motion. This leads to a cascading effect, where the bones and meniscus cartilage experience wear and tear, which further leads to degenerative changes and of course pain. When there is damage to the cruciate ligament, the lateral collateral ligament loosens, allowing internal rotation. Muscles also weaken either due to lameness, none weight bearing or where they have become redundant due to the angles of loading during movement.

A medial buttress is generally seen in a large percentage of cruciate injuries and is defined as an osteophyte formation along the trochlear ridge. Significant atrophy to the quadriceps and hamstring muscles is a common finding and during walking, there may be noticeable internal rotation of the tibia, a phenomenon known

as a pivot shift due to weakness of the biceps femoris muscle group. It is these changes to muscle distribution and misuse that physiotherapy can massively help strengthen as well as being an aid to reduce pain and improve mobility.

There are a variety of surgical techniques that can be used to correct a cruciate ligament injury, such as the lateral suture, Tibial Tuberosity Advancement and Tibial Plateau Levelling Osteotomy, which aim to stabilise the stifle. The choice for surgery and type greatly depends on the degree of damage to the ligament and joint, patient size, breed, age and financial constraints of the owner. Due to these, sometimes it is opted for conservative management of the joint. With both surgical and conservative options, there will unfortunately be a degree of degenerative joint disease,



however surgical options aim to minimise these and delay onset. Post-operatively and conservatively, early physiotherapy intervention is now advocated, and veterinary surgeons are seeing the benefits of how much this can benefit their patients.

In all cruciate injury cases, I work closely with the patients Vet to ensure pain has been addressed adequately, the importance of the use of joint supplements in the long-term management has been discussed and the massive impact weight can have on such an injury.

Weight Management – from a Vet Nurse/ Physiotherapist Point of View

This topic, being a Veterinary Nurse, is something I have a massive passion about. There really is no excuse for our pets to be overweight. At the end of the day, we feed them. End of story. They don't choose the food they eat (or at least aren't meant to), so therefore we are responsible for their body shape, the nutrients they receive and their intake of calories. Don't get me wrong, the sappy puppy dog eyes that desperately want that treat have had me hook, line and sinker before, but sometimes tough love is needed to ensure these patients aren't carrying an excess load.

The cruciate ligament may have become weakened due to carrying too much weight, as well as obesity making recovery time much longer and making the other knee also very susceptible to cruciate rupture. I can't stress enough to my clients just how important weight loss or ideal weight maintenance is when their animal has a cruciate injury.

continued overleaf

GENERAL CONSERVATIVE MANAGEMENT PROGRAM

The conservative approach to cruciate injury focuses on similar goals to that of the surgically repaired stifle: pain reduction, maintaining or improving range of motion, early activity modification, neuromuscular knee rehabilitation and strength training. Time alone is not the signal for advancement from one programme to another, and attention should be paid to range of motion, strength, and fluidity of performance of functional activities (Edge-Hughes, 2018).

Weeks 1-4: Protection and Rest

The vet usually specifies strict rest for at least the first few weeks following injury. During this time, the joint has chance to heal itself, as well as minimising uneven stress on the joint and further injury. The problems that can arise are generally muscle related, and atrophy to the surrounding muscle groups can occur quickly.

GOALS:

- **Decrease pain and effusion:** Cryotherapy (application of cold), passive range of motion within pain tolerance, massage of other muscles, modalities such as Pulsed Electro Magnetic Field Therapy, Ultrasound and Neuro-Muscular Electro Stimulation.
- **Maintain/ improve range of motion:** Passive range of motion exercises, flexion and extension of joints, practice sitting 'squarely' with both hindlimbs tucked neatly underneath themselves, and cycling exercises.
- **Increase muscle function, balance and proprioception:** active sit to stand exercises guiding legs straight, toe pinches to elicit nerve responses and increase proprioception, slow lead toileting, increasing to 2-5 minutes walks a few times daily ensuring correct foot placement, gradually increasing time over the coming weeks by 3-5 minutes per week if there is no deterioration or joint inflammation, weight shifting exercises, walking in circles and figures of eights and standing on soft surfaces.
- **Address compensatory issues:** Massage techniques, stretching, heat therapy to sore muscles, modalities.

Weeks 5-8: Early Strength Training

This is the time where usually exercise is increased gradually, as well as adding in strength exercises to start fully engaging muscles and utilise the effected leg. Exercises tend to put emphasis on correct use of the effected limb and encouraging a normal gait.

GOALS:

- **Full Range of Motion:** as previous, but may add in stair stands to encourage more extension, increase sit to stand exercises.
- **Normal Gait:** Walking and trotting, increasing the period of time on walks and adding in small slopes/hills to encourage hindlimb activation, walking with a disturbance on the unaffected foot (boot, band, bandage) to encourage more use of the affected limb.

- **Increase Strength and Proprioception:** 3 leg standing and weight shifting, hydrotherapy, side stepping, pole work of increasing difficulty and intensity, backwards stepping, sort surface walking, uneven terrain walking, stairs and steps.

Weeks 9-12: Increased Strength Training

This is where we start to increase the intensity and duration of the strength exercises and aim to have regained normal function by the end of the 12 weeks with a return to normal activities following this. This may not be the case for agility/ working dogs, who may have to endure more intense training in the few weeks following this stage usually involving much more complex strength movements and weighted exercise, to ensure maximal strength of the joint.

GOALS:

- **Exercises as above at a higher intensity and duration.** Walks should still be being increased gradually aiming to be at normal walking length/ distance for the patient by the 12th week.
- **Increased Strength and motor control:** Walking with a weight on the affected leg, trotting up and down hills, more difficult uneven surfaces, some faster work incorporated: e.g. running between two people.
- **Intensive Strength Training:** For agility/ working dogs and aims to increase strength, coordination and sport specific activities such as short ball retrieves, plyometrics and weight packs being worn for exercises.

A study by Wucherer et al (2013) concluded that while it is reasonable for a Vet to tell dog owners that there is some evidence their pets will benefit more from having surgery than not having it, they must also be informed that most dogs will have a good long-term outcome even without surgery. This study compared surgically treated and non-surgically treated overweight, large breed dogs and provided some support that overweight, large-breed or giant-breed dogs have better long-term outcomes when treated with both surgery and non-surgical therapy rather than non-surgical therapy alone. However, the non-surgically treated patients had overall very good outcomes that did not differ significantly from the patients who received surgical treatment.

It is important to emphasize that even with surgery, aggressive management of weight and physical therapy are important elements of comprehensive and successful treatment. For those owners who cannot afford surgery, or those patients who are not good candidates, there are still effective therapies that can be offered.

TOP WEIGHT LOSS TIPS:

- **Tough love:** If a therapist says it, as well as the Vet, and Vet Nurse most clients will start to understand. Some owners can get very offended, but using the current situation as a starting point and setting achievable goals for weight loss usually ends in the client feeling encouraged.
- **Explanation:** The client needs to understand why weight loss is important to not only their pet's health, but also for recovery from the injury the patient has.
- **Discussion:** Having a discussion on what food the patient eats, the amount they have and what treats they give is a good starting point. Although most of us are not nutritionists, the 37 treats the animal has daily, with an extra Sunday roast, and a 'dental chew' a day is definitely not good for weight loss! Ensuring they are feeding for their animal's IDEAL weight is usually a big factor and that they are properly measuring out food is a necessity.
- **Food Reduction:** Addressing correct feeding for the exercise the patient is now doing. When a cruciate injury occurs, often strict rest is advocated in the first few weeks – this means the patient goes from doing a normal amount of daily exercise to very little and their calorie intake needs to reflect this.
- **1 Week of No Treats:** Set the client a challenge – no treats for a week – instead using kibble out of daily rations or carrot chunks if they need to give something to aid exercises... once they've done a week, it should be much easier to continue!
- **Food Dispensing Toys:** Making the patient work for food – not great in the first few weeks where we are minimising exercise in case of overexertion but a great way to make the patients use more calories and mental entertainment to prevent boredom.
- **Referring to Weight Loss Clinics:** Most Veterinary Surgeries will hold weight loss clinics with a Veterinary Nurse. These are very good in supporting the client through their pet's weight loss journey as well as providing nutritional information and regular weigh ins.
- **Hydrotherapy:** Fantastic for weight loss, as well as strength training, non-weight bearing exercises, increasing range of motion and works very nicely alongside physiotherapy sessions for a holistic treatment.

CASE STUDY: DORA: 9 YEARS OLD

*German Shepherd X - rescued from horrible conditions 7 years ago
Now at 37Kg (ideal), previous heaviest weight: 43.5Kg*

Dora was referred to me for physiotherapy after partially tearing her right hind cranial cruciate ligament through a beach related incident. Due to the cruciate only being partially torn, her current age and other conditions, the vet agreed to trial the conservative approach to treatment. She already presented with a medial buttress and atrophy to the quadriceps and hamstring muscles of the affected leg as the injury had taken place some weeks previously. Dora walked with an internal rotation of the tibia (pivot shift), and stepped very medially with the right hind. This had compensatory effects, resulting in reactive areas of her thoracic and lumbar muscles, particularly around her thoraco-lumbar area, as well as the knock-on effects of her throwing her weight forwards onto her front-end, resulting in tight forelimb musculature and reactive triceps. When Dora sat, her right hind always splayed out laterally and so really didn't engage or use it correctly when asked to stand. Dora received daily non-steroidal anti-inflammatories, alongside a good joint supplement daily.



Previously Dora was a very active dog, going for multiple long walks daily and particularly enjoyed swimming and the odd squirrel chase, so restricting her exercise was a challenge for her owner. Due to her natural size and current body condition score, I knew that these would not particularly aid her to a speedy recovery. Being a larger breed and overweight held complications in itself: not only did this put extra strain on the other leg as well as the already damaged joint, but also made strict exercise quite difficult as well as stopping a strong-willed personality doing things that could potentially be damaging, such as jumping on the sofa!

We first set about addressing the compensatory issues, with massage techniques, stretch movements and pulsed electro-magnetic field therapy treatments. Incorporated into these treatments, were passive range of motion exercises and treatment to start addressing the injury itself, and the cruciate management plan as mentioned was followed as a guide. A home plan was strictly adhered to by Dora's very compliant owner, which involved heat therapy to encourage muscle relaxation and circulation, occasional cryotherapy over the injury when indicated, and exercises as mentioned in the plan.

Simultaneously, we addressed Dora's diet! Her owner has been previously told that Dora was overweight by her Vet, but the time hadn't been taken to explain and correctly modify her diet. Dora's food was already being measured out daily, so reducing her intake in her meals, as well as cutting down on treats meant that Dora's weight started to come down. Lots of brain stimulation such as low impact tricks (ball rolling, food dispensing toys and touch games) entertained her while on restricted exercise and helped burn the calories off too! Regular weigh ins and measurements helped keep Dora and her owner on track for successful weight loss.

At around week 10, after following the progressive management plan we allowed Dora to start some gentle swimming and found that this was not only beneficial to her mentality and stifle joint range of motion, but had a massive impact on her weight loss and fitness. A good few months down the road (approximately 20 weeks post injury), Dora has reached her target weight and body shape and has good use of the affected leg with no lameness. There is still a small abnormality in her gait, with some slight rotation of the tibia medially, and a small difference in muscle mass when comparing the two hind limbs. Although there are still some slight compensatory issues that keep raising their ugly heads, she is now back to the exercise duration that was performed pre-injury, and enjoying lots of swimming. A maintenance plan is now in place to ensure we continue to improve, or at least sustain the range of motion in the affected stifle joint, her ideal weight and fitness levels. Hopefully this will ensure the best possible chance of continued progress and minimise potential injury to the other hindlimb.

REFERENCES:

- Edge-Hughes, L., (2018). Conservative Management of Cruciate Ligament Deficiency with Physical Therapy, The Canine Fitness Centre Ltd [online] Available at: www.caninefitness.com [2/4/18].
- Wucherer, K.L., Conzemius, M.G., Evans, R., and Wilke, V.L., (2013). Short-term and long-term outcomes for overweight dogs with cranial cruciate ligament rupture treated surgically or nonsurgically, *Journal of the American Veterinary Medical Association* 2013;242(10):1364-72.