

FALL  
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# NEWS



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## Cruciate repair and cruciate rehab... Read on to learn more!

### What vets are saying about spending time with us at the Canine Fitness Centre!

"I felt very fortunate to be able to spend time with all of the therapists and staff at the Canine Fitness Centre.

It was a warm relaxed atmosphere for myself as well as the clients and patients. I felt like watching these patients being treated was like

watching a miracle. To see pain disappear and hear about how the pets are being helped was a joy.

I am so thankful that this area is growing and wish more people could see how much rehabilitation can do. I truly feel that my time spent at the Canine Fitness Centre has made me a better vet."

Julianna Parsons, DVM, CCRT  
Nova Scotia

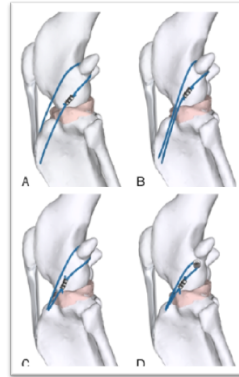
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### Want to know more about what we do at the Canine Fitness Centre?

Check out the video on our home page  
[www.CanineFitness.com](http://www.CanineFitness.com)

We hear plenty from our clients about what they like about their vet clinics, and how they see rehab and the use of non-veterinary professionals in the care of their pet. Most of our clients are happy with their vets. They like when their vets are open minded about alternatives or complementary services. They like that if their vet doesn't know the answer to a question or problem, that they are up front about saying so and then seeking to find an answer or refer them. Feel free to give us a call at any time if you ever wish to discuss a potential case for referral.



## Osteoarthritis & TPLO

DeLuke AM, Allen DA, Wilson ER et al.  
Comparison of radiographic osteoarthritis scores in dogs less than 24 months or greater than 24 months following tibial plateau leveling osteotomy. *Can Vet J* 2012; 53: 1095 – 1099.

**What do the stifle x-rays look like in dogs following TPLO surgery at follow up of 1 – 3 years?**

Sixty dogs were followed for up to 3 years following TPLO surgery for cruciate deficiency. There was a significant increase in osteoarthritis score from post-operative to follow-up evaluations for all dogs studied. However, the osteoarthritis did not progress in a linear fashion over time.

The authors cited several papers that also disputed the claim that TPLO stops the progression of osteoarthritis; however this was the first study to look at whether or not there was a relationship between osteoarthritis changes and time.

Unfortunately, this study was not able to make conclusions for all patients in this study regarding concurrent meniscal injury or surgery as that information was not always available.

(Note: human studies find a high correlation between meniscectomy and knee osteoarthritis - Neuman et al 2008)

*Relevance to Rehab?*

*Osteoarthritis is coming... regardless. Prepare the owner and make appropriate recommendations (i.e. nutraceuticals, exercises, etc).*

## Lateral suture technique vs TPLO for CCL repair in dogs

Gordon-Evans WJ, Griffon DJ, Bubbs C, Knap KM, Sullivan M, Evans RB. Comparison of lateral fabellar suture and tibial plateau leveling osteotomy techniques for treatment of dogs with cranial cruciate ligament disease. *J Am Vet Med Assoc* 2013; 243: 675 – 690.

**Objective:** To compare the one year outcomes after LFS and TPLO.

**Method:** 80 dogs with naturally occurring unilateral CCL disease were randomized to have either the LFS technique or TPLO. Outcome measures were collected at 6 and 12 weeks and 6 and 12 months post-operatively, and included values of pressure platform gait analysis variables, Canine Brief Pain Inventory, owner satisfaction ratings, thigh circumference and stifle joint goniometry values.

**Results:** Canine Brief Pain Inventory, goniometry, and thigh circumference results indicated dogs in both groups improved after surgery, but significant differences between groups were not detected. Peak vertical force of affected hind limbs at a walk and trot was 5% to 11% higher for dogs in the TPLO group versus those in the LFS group during the 12 months after surgery. Owner satisfaction ratings at 12 months after surgery were significantly different between groups; 93% and 75% of owners

of dogs in the TPLO and LFS groups indicated a satisfaction score  $\geq 9$  (scale, 1 to 10), respectively.

**Noted in the discussion:** Results of the present study differed from those of 2 observational studies (Conzemius et al 2005; Au et al 2010), in which no significant differences were detected between dogs that underwent TPLO and those that underwent an LFS procedure. Observational studies are not randomized; therefore, an unidentified confounding variable may have improved outcomes for dogs that underwent an LFS procedure or decreased outcomes for dogs that underwent TPLO in those studies. Additionally, in both of those other studies, dogs that underwent LFS procedures also underwent targeted physical rehabilitation at the hospital in which surgeries had been performed.

**Relevance to Rehab:** This study is good to note. What should also be noted is that the owners were blinded to the surgical technique their dog received and all were charged \$1200 for the surgery. If cost were not a factor, then perhaps this study would suggest that all dogs should receive a TPLO... however cost does play a factor, and from personal observations in the field, not all owners are given all choices. The TPLO appears to be a good choice if affordable!

## THE IMPORTANCE OF HAMSTRINGS!!

Kanno N, Amimoto H, Hara Y et al. In vitro evaluation of the relationship between the semitendinosus muscle and the cranial cruciate ligament in canine cadavers. *Am J Vet Res* 2012; 73 (5): 672 – 680.

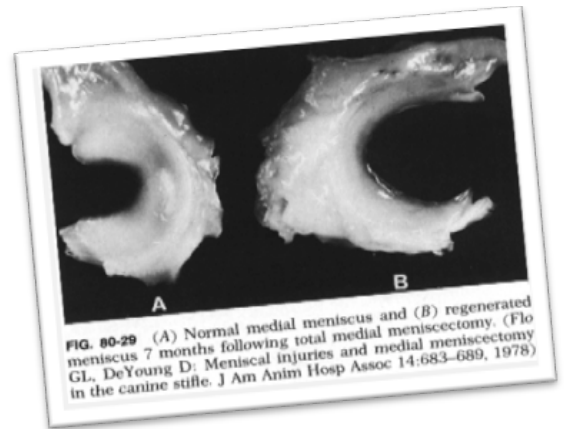
**Conclusion:** The semitendinosus muscle is an agonist of the CrCL in the stifle joint of dogs. Moreover, the quadriceps and gastrocnemius muscles may be antagonists of the CrCL. These findings suggested that the risk of CrCL rupture may be increased by diseases (such as cauda equina syndrome) associated with a decrease in activity of the semitendinosus muscle.

Hayes GM, Granger N, Langley-Hobbs SJ et al. Abnormal reflex activation of hamstring muscle in dogs with cranial cruciate ligament rupture. *Vet J* 2013; 196(3): 345 – 350.

**Conclusion:** Medium latency reflexes are abnormally prolonged in both pelvic limbs of dogs that have cranial cruciate ligament rupture, suggesting the possibility that abnormal neuromuscular control could play a causal role in progressive cruciate ligament damage. (In other words: the hamstrings are not contracting at the right time or for the right amount of time after a cranial translation stimulus in standing.)

**Relevance to Rehab:** We need to strengthen the hamstrings (in both legs) with our full or partial CCL – dogs.

## Meniscus lesions post -TPLO



Kim SE, Lewis DD, Pozzi A. Effect of tibial plateau leveling osteotomy on femorotibial subluxation: In vivo analysis during standing. *Vet Surg* 2012, 41: 465-470.

So there have been numerous cadaveric studies that evaluate the effects of TPLO on joint alignment. This study looked at 15 live dogs following TPLO surgery and radiographed the surgical legs pre-operatively, 1, 3, and 6 months post-operatively.

They found that 5 of the dogs (33%) has persistent cranial tibial subluxation at 2 or more postoperative evaluations. Four of these 5 dogs had undergone hemimiscectomy (of the medial caudal pole at 1 and 6 months post-operatively). The fifth dog had loss of osteotomy reduction and the tibial plateau angle had increased to 15 degrees at the time of the 1-month evaluation.

What does this mean?

It appears that the integrity of the medial meniscus appears to have a substantial influence on stifle stability after TPLO. The researchers reported that human studies have found the medial meniscus to be a critical stabilizer to anterior translation of the tibia, and that medial meniscectomy is also associated with rotational laxity. And “If the medial meniscus becomes a primary stabilizer of the stifle as our data imply, an intact meniscus may be subjected to supraphysiologic stresses after TPLO and consequently predisposed to subsequent meniscal injury.

*Relevance to rehab?*

*If you assess a dog with a full or partial cruciate tear, it is imperative to educate the owner on proper management... undergo surgery... expediently followed with post-operative rehab or proceed with conservative management. But either way, judicious care and professional management should be taken to avoid meniscal damage to the joint while rehab is attempting to building muscle control and strength to help support and stabilize the limb.*

Do you have clients that would benefit from some 'online' rehab information?

We have information on the Canine Fitness Centre website pertaining to the following:

- 1) Early post-operative rehabilitative care (video)
- 2) Geriatric-dog home assessment for joints (video)
- 3) Neurologic dog home care handout
- 4) General conditioning exercises (videos)
- 5) 'People' exercises for sporting-dog handlers (videos)

Clients can sign up right on our home page, in order to access the information.

And why not sign up yourself and keep apprised of what we're doing?!

## Treadmill and muscle activation in dogs

Laurer SK, Hillman RB, Hosgood GL. Effects of treadmill inclination on electromyographic activity and hind limb kinematics in healthy hounds at a walk. *Am J Vet Res* 2009, 70 (5): 658 – 64.

*Want to know one way to activate hamstrings in dogs?*

This study provides insight on one option. Eight healthy hounds were utilized in this study, and were walked on a treadmill at 0.54m/s at inclines of 5%, 0% and -5%. The researchers measured hip and stifle ROM as well as activations of the hamstrings, gluteals, and quadriceps muscle groups via surface electrogoniometric and myographic sensors.

*What did they learn?*

Well, as one would expect, with the 5% incline, there was an increase in hip joint ROM, and stifle joint extension decreased significantly. And at the 5% incline, there was an increase in hamstring activation at both the beginning and end of stance

phase. The gluteals and quadriceps muscle groups were not affected when the treadmill inclination changed.

*Relevance to Rehab?*

*We know that hamstrings are required in cruciate deficient, cruciate repaired (and even osteoarthritic) stifle joints. So... when your post-operative TPLO patient is weight bearing consistently try challenging him / her with incline walking!*



## Quotables!

### Ozzy Osborne



Rock star Ozzy Osborne saved his wife Sharon's Pomeranian from a coyote by tackling and wrestling the coyote until it released the dog.



### Longevity

The shape of a dog's face suggests how long it will live. Dogs with sharp, pointed faces that look more like wolves typically live longer. Dogs with very flat faces, such as bulldogs, often have shorter lives.



### Leadership

The Mayans and Aztecs symbolized every tenth day with the dog, and those born under this sign were believed to have outstanding leadership skills.

Source: Choron, Harry and Sandra Choron. 2005. *Planet Dog: A Doglopedia*. New York, NY: Houghton Mifflin Co