

## Cranial Cruciate Ligament (CCL) - CANINE

### Cranial Cruciate Ligament (CCL)

What is the Cruciate Ligament?  
*Lakeshore Road Animal Hospital*

Overview and Image  
*PDSA*

#### What is the Cruciate Ligament? *Lakeshore Road Animal Hospital*

- First things first: let's talk about what the cruciate ligament actually is. Your dog has two cruciate ligaments (cranial and caudal) inside their knee joint.
- These ligaments are super important because they help stabilize the knee by preventing the shin bone (tibia) from sliding too far forward or rotating unnaturally.
  - Think of them as the support beams that keep everything in place!

#### Overview - *PDSA*

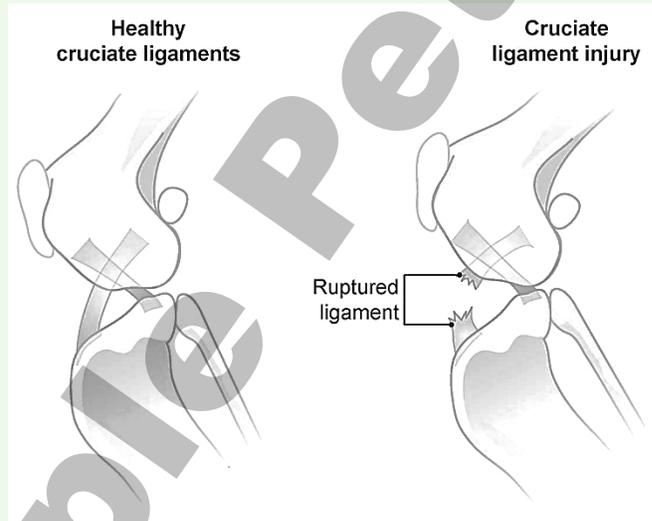
*The cruciate ligament is found in a dog's knee.*

- The cruciate ligaments, in simple terms, are like two pieces of strong elastic that hold the knee together.
- If a cruciate ligament is damaged the knee becomes wobbly and often very painful.
- The most common way for a dog to damage a cruciate ligament is by jumping, skidding, twisting or turning awkwardly.
- Limping is often the first sign of a cruciate problem.
- Cruciate problems can be treated with or without surgery – your vet will help you decide which is best for your dog.
- Any dog can injure their cruciate ligament, but it's more common in those that are overweight or that have an inherited weakness.
- Always contact your vet if your dog is limping or if you suspect they might have injured their knee.

#### What is a cruciate ligament injury? *PDSA*

A cruciate ligament injury is damage to one (or both) of the cruciate ligaments, either a small tear or a complete rupture.

- Some cruciate ligaments break after being weakened over time (like a fraying rope), and some rupture suddenly (often due to a knock or fall).



## Table of Comparisons of Large vs Small Dog Breeds

NIH – National Library of Medicine

See <https://pmc.ncbi.nlm.nih.gov/articles/PMC11987738/> for the complete study

Characteristic	Large Breed Dogs	Small Breed Dogs
<b>Common Breeds Affected</b>	Labrador Retriever, Rottweiler, Saint Bernard, Newfoundland	Shih Tzu, Yorkshire Terrier, Miniature Poodle
<b>Joint Conformation</b>	Increased tibial plateau angle, leading to higher shear forces on the CCL	More prone to patellar luxation, affecting ligament stability
<b>Primary Contributing Factor</b>	Degenerative changes due to chronic stress and weight-bearing forces	Tibial instability secondary to patellar luxation (especially Grade IV cases)
<b>Management Approach</b>	More likely to require surgical intervention (TPLO, TTA)	Conservative management may be more effective, but surgery is indicated in severe cases
<b>Postoperative Recovery</b>	Longer due to higher mechanical loading on joints	Typically faster, but risk of complications from concurrent orthopedic issues (e.g., patellar luxation)

### Breeds at Risk

Top Ten Dog Breeds Prone to CCL Tears  
*Specialized Pet Solutions*

#### Top 10 Dog Breeds Prone to CCL Tears - *Specialized Pet Solutions*

- **German Shepherds**  
High-energy working dogs, especially in their youth, are prone to overexertion.
- **Labrador Retrievers** (including black, yellow, chocolate, and golden)  
Energetic and food-motivated, they're prone to both zoomies and weight gain.
- **Newfoundlands**  
Large breed dogs often predisposed to hip dysplasia, which adds stress to the stifle joint.
- **Rottweilers**  
Muscular and active, they're commonly used as working dogs—raising their risk.
- **St. Bernards**  
Another large breed with a tendency toward hip issues, increasing joint stress.
- **Mastiffs**  
Their size and genetic predisposition to joint problems make them vulnerable.
- **Bichon Frise**  
Though small, they are surprisingly prone to orthopedic injuries, including CCL tears.
- **Staffordshire Bull Terriers**  
Strong, muscular, and energetic—especially when they get the zoomies.
- **Akitas**  
Large, high-energy working dogs that are often at risk due to their activity levels.
- **German Shorthaired Pointers**  
Bred for hunting, they're high-energy and need constant activity to stay balanced.
- Honorable Mention: **Boxers**  
Strong, athletic, and playful—Boxers check all the boxes for CCL tear risk.

<p><b>Causes</b></p> <p>Causes of CCL Tears <i>Dr. Loudon</i></p>	<p><b>Causes of CCL Tears – Dr. Loudon</b></p> <p>CCL tears can occur due to a variety of reasons, including:</p> <ul style="list-style-type: none"> <li>• <b>Trauma from sudden movements:</b> Quick starts, stops, or sharp turns, especially during play or exercise, can strain or rupture the ligament.</li> <li>• <b>Degeneration over time:</b> Overweight dogs, or dogs who have been over-exercised on hard surfaces, are more prone to ligament weakening.</li> <li>• <b>Genetic predisposition:</b> Certain breeds like Labrador Retrievers, Rottweilers, and Boxers have a higher likelihood of developing CCL tears.</li> <li>• <b>Juvenile spay/neuter:</b> Dogs that are spayed or neutered before their growth plates close are more susceptible to CCL injuries due to the imbalance in hormone levels that affect bone and joint development. <ul style="list-style-type: none"> <li>○ In a study, there were no cases of cranial cruciate ligament tears diagnosed in intact males or females, but in early-neutered males and females the occurrences were 5 percent and 8 percent, respectively.</li> <li>○ Across several breeds, a study of CCL found that neutered males and females were two to three times more likely than intact dogs to have this disorder.</li> <li>○ Neutering has also been shown to be associated with a threefold increase in excessive tibial plateau angle – a known risk factor for CCL.</li> </ul> </li> </ul>
<p><b>Signs &amp; Symptoms</b></p> <p>Clinical Signs <i>Merck Veterinary Manual</i></p> <p>Symptoms of CCL Tears in Dogs <i>Covetrus: Great Pet Care</i></p>	<p><b>Clinical Signs – Merck Veterinary Manual</b></p> <p>Clinical signs involve lameness, pain, medial joint swelling, effusion, crepitation, excessive cranial laxity of the proximal tibia relative to the distal femur (drawer sign, or positive compression test), and increased internal tibial rotation.</p> <ul style="list-style-type: none"> <li>• Partial cranial cruciate ligament tears are characterized by a reduced cranial laxity, usually more pronounced in flexion.</li> <li>• Medial meniscal injury may be identified by a clicking sound during locomotion or flexion and extension.</li> <li>• A tibial compression test (flexion of the hock and cranial displacement of the tibial tuberosity) can also be used to demonstrate laxity of the cranial cruciate ligament.</li> <li>• Radiography reveals joint effusion and signs of degenerative joint disease in chronic injuries.</li> <li>• Arthrocentesis may reveal mild cellular increases and hemarthrosis.</li> <li>• Arthroscopy can confirm the diagnosis but requires specialized equipment.</li> </ul> <p><b>Symptoms of CCL Tears in Dogs - Covetrus: Great Pet Care</b></p> <p>Pet parents may be concerned that their pet has a torn CCL if they see any of the following signs:</p> <ul style="list-style-type: none"> <li>• Limping, including not wanting to put weight on the affected back leg</li> <li>• Vocalizing, including crying or whining</li> <li>• Trembling and sensitivity to touch of the leg</li> <li>• Unwillingness to rise from a sitting position</li> <li>• Difficulty climbing stairs</li> <li>• Sitting with the affected limb out to the side of the body</li> <li>• Decreased muscle mass of the bad leg</li> <li>• Variable lameness with exercise that may resolve with rest</li> <li>• Increased thickness of the joint capsule, especially on the inside of the leg</li> </ul>

<p><b>Diagnosis and Evaluation</b></p> <p>Diagnosing Cranial Cruciate Ligament Tears in Dogs <i>Dr. Loudon</i></p> <p>Diagnosing a Cruciate Injury: It's Not Always Clear-Cut <i>Gun Dog Doc</i></p>	<p><b>Diagnosing Cranial Cruciate Ligament Tears in Dogs – Dr. Loudon</b></p> <p>When a dog presents with lameness, particularly in one of the hind legs, veterinarians often suspect a cranial cruciate ligament (CCL) tear.</p> <ul style="list-style-type: none"> <li>• Diagnosis is typically made by a combination of physical examination and diagnostic imaging.</li> <li>• One of the key diagnostic tests used by veterinarians is feeling for what's called the cranial drawer sign. This test involves palpating the knee joint to assess for abnormal movement, which indicates laxity and damage to the CCL. <ul style="list-style-type: none"> <li>○ The cranial drawer test is one of the most reliable indicators of a CCL tear.</li> </ul> </li> <li>• The tibial Compression Test is similar to the cranial drawer test, it evaluates stability of the tibia relative to the femur. <ul style="list-style-type: none"> <li>○ Instability on this test is referred to as cranial tibial thrust. The test is more sensitive with the animal under sedation.</li> </ul> </li> <li>• In some cases, your dog may need a mild muscle relaxant or sedative to help the veterinarian perform the test accurately, especially if the dog is in pain or too tense.</li> <li>• If the diagnosis is still unclear after the physical exam, or if the vet wants to rule out other causes of lameness, they may recommend radiographs (X-rays) to assess for any other issues like fractures or arthritis.</li> <li>• Before surgery, an orthopedic surgeon may also recommend advanced imaging like a CT scan or MRI to get a clearer picture of the injury, particularly if the diagnosis is uncertain or if there are concerns about additional soft tissue injuries.</li> </ul> <p><b>Diagnosing a Cruciate Injury: It's Not Always Clear-Cut – Gun Dog Doc</b></p> <p>When people mention a “partial tear,” this is often based on how the cruciate bands respond to flexion and extension during the physical exam. It's important to assess drawer motion in both extension and flexion to distinguish between partial and complete tears.</p> <p>A couple of critical points about diagnosing cruciate injuries:</p> <ul style="list-style-type: none"> <li>• X-rays don't show cruciate ligaments: You can't actually see the ligaments themselves on an X-ray. <ul style="list-style-type: none"> <li>○ However, you can spot indirect signs of cruciate disease, like joint effusion, displacement of the infrapatellar fat pad, or—in rare cases—drawer displacement. But, for all practical purposes, an X-ray only provides evidence, not a definitive diagnosis.</li> </ul> </li> <li>• MRI can visualize cruciate ligaments, but it's costly: Given the expense, you might be looking at nearly the same cost as the surgical repair itself.</li> <li>• Most diagnoses are made based on a thorough physical exam. However, this isn't always straightforward, especially with larger, well-muscled dogs. I experienced this firsthand when I tore my own ACL and meniscus nearly 25 years ago. It took multiple exams and even a misread MRI before I got an accurate diagnosis.</li> <li>• If your dog has rear leg lameness and your vet suspects a cruciate injury but isn't certain, there's no shame in seeking a second opinion from someone who regularly performs these exams. <ul style="list-style-type: none"> <li>○ Too many dogs go undiagnosed or are improperly treated because they didn't get a thorough assessment.</li> </ul> </li> </ul>
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<p><b>Treatment &amp; Surgeries</b></p> <p>Treatment - Surgeries <i>Spruce Pets (The)</i></p> <p>Treatment options – Conservative <i>PDSA</i></p>	<p><b>Treatment / Surgeries – Spruce Pets (The)</b></p> <p>Although rest and medication may help, surgery is usually recommended to repair the ruptured cruciate ligament.<sup>1</sup> There are several different surgical approaches, each with its pros and cons.</p> <p><b>Cruciate Surgery: Extracapsular Repair</b></p> <p>In this method, a strong suture is placed to secure the femur and tibia, essentially replacing the function of the torn cruciate ligament.</p> <ul style="list-style-type: none"> <li>• The suture supports the knee joint while scar tissue builds up and the muscles surrounding the knee strengthen. <ul style="list-style-type: none"> <li>○ The suture invariably loosens or breaks at some point in the future. It must stay intact for eight to 12 weeks for healing to occur.</li> </ul> </li> <li>• This is a relatively quick and uncomplicated procedure with good success rates, especially for smaller dogs.</li> <li>• It is less expensive than other methods.</li> <li>• Long-term success varies and may be better for smaller dogs.</li> </ul> <p><b>Cruciate Surgery: TPLO</b></p> <p>Another surgical option is the tibial plateau leveling osteotomy (TPLO). This is a more complex procedure than the extracapsular method and requires specific surgical equipment and training.</p> <ul style="list-style-type: none"> <li>• The TPLO alters the biomechanics of the knee joint, allowing it to function properly without a cruciate ligament.</li> <li>• A complete cut is made through the top of the tibia (tibial plateau). <ul style="list-style-type: none"> <li>○ The tibial plateau is rotated to change the angle of this portion of the bone.</li> <li>○ A metal plate is affixed to repair the cut bone.</li> <li>○ The tibia heals over several months.</li> </ul> </li> <li>• Partial improvement can be seen within days; however, full recovery will take several months, so cage rest is essential.</li> <li>• Generally, the long-term prognosis is good, and re-injury is uncommon.</li> <li>• The plate does not need to be removed unless problems occur later.</li> <li>• As with any surgery, complications are possible, including infection.</li> <li>• The TPLO is significantly more expensive than traditional surgery.</li> </ul> <p><b>Cruciate Surgery: TTA</b></p> <p>A third surgical method is the tibial tuberosity advancement (TTA).</p> <ul style="list-style-type: none"> <li>• The details of this method are slightly different from a TPLO, but the TTA still involves cutting the tibia and placement of metal implants.</li> <li>• Some surgeons describe the TTA as a less invasive procedure than the TPLO.</li> <li>• The TTA may have a faster recovery than TPLO, as well, though some surgeons see little difference.</li> <li>• The dog's anatomy and lifestyle are also deciding factors.</li> <li>• The cost of the TTA is comparable to the TPLO.</li> </ul>
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<p><b>Treatment &amp; Surgeries</b></p> <p><i>Continued</i></p> <p>Treatment - Surgeries <i>Spruce Pets (The)</i></p> <p>Treatment options – Conservative <i>PDSA</i></p>	<p><b>Treatment options - PDSA</b></p> <p><b>Without surgery ('conservative treatment')</b></p> <p>Treatment without surgery ('conservative treatment') relies on building extra strength around the knee to take the strain off the cruciate ligaments.</p> <ul style="list-style-type: none"> <li>• This type of treatment is mostly used in dogs that weight less than 10kg and dogs with mild signs.</li> </ul> <p>Treatment usually includes:</p> <ul style="list-style-type: none"> <li>• Strict rest and then a very gradual and controlled return to exercise</li> <li>• Pain relief (anti-inflammatories) for the first few weeks</li> <li>• Weight control</li> <li>• Physiotherapy, if available</li> <li>• Conservative treatment often takes a few weeks to a few months but if it's not successful or suitable, surgery may be recommended.</li> </ul>
<p><b>Prognosis</b></p> <p>Prognosis for Dogs With a Cruciate Ligament Injury <i>Spruce Pets (The)</i></p>	<p><b>Prognosis for Dogs With a Cruciate Ligament Injury – Spruce Pets (The)</b></p> <p>In general, the prognosis after surgery is good, with an 85 to 90 percent chance of a return to normal activity levels. Post-surgical medical management consists of multiple steps for your dog's long-term recovery. It helps to know that smaller dogs (weighing less than 25-30 pounds) may fare better than heavier dogs. Medical therapy involves the following:</p> <ul style="list-style-type: none"> <li>• Several weeks of cage rest</li> <li>• Brief, calm leash walks for bathroom breaks only</li> <li>• Sit-to-stand exercises</li> <li>• Underwater treadmill therapy and/or swimming</li> <li>• Veterinary-approved oral anti-inflammatory drugs and supplements to support joint health</li> </ul> <p>Following your vet's recommendations will give your dog the best chance of full recovery with fewer complications.</p> <ul style="list-style-type: none"> <li>• As with any orthopedic surgery, it is common for dogs to develop arthritis in the future. With proper care, your dog can live a full, healthy, and comfortable life.</li> <li>• These dogs may develop osteoarthritis in the affected knee joint. In addition, dogs affected by this injury have a 40 to 50 percent chance of tearing the ligament in their other knee.</li> </ul>
<p><b>Prevention</b></p> <p>Prevention Tips <i>Animal Wellness</i></p> <p>Prevention of Sprains and Strains in Dogs <i>PetMD</i></p>	<p><b>Prevention Tips – Animal Wellness</b></p> <p>While not all ligament injuries can be prevented, you can reduce your dog's risk:</p> <ul style="list-style-type: none"> <li>• Maintain a healthy weight to reduce joint stress</li> <li>• Provide regular, moderate exercise to keep muscles strong</li> <li>• Always warm up before intense activity</li> <li>• Avoid repetitive high-impact activities on hard surfaces</li> <li>• Consider age-appropriate exercise modifications for older dogs</li> </ul>

<p><b>Prevention</b></p> <p><i>Continued</i></p> <p>Prevention Tips <i>Animal Wellness</i></p> <p>Prevention of Sprains and Strains in Dogs <i>PetMD</i></p>	<p><b>Prevention of Sprains and Strains in Dogs - <i>PetMD</i></b></p> <p>While some sprains and strains are unavoidable because of underlying genetic predispositions, you can work to keep your dog safe by limiting their access to common sources of injury.</p> <ul style="list-style-type: none"> <li>• Avoid letting them run on uneven or unfamiliar ground.</li> <li>• Pay attention to your dog’s effort level during exercise and play. <ul style="list-style-type: none"> <li>○ Most dogs will self-limit themselves and rest when they have had enough. However, sometimes they will ignore exhaustion when they are having a good time at a dog park or on another adventure.</li> <li>○ If your dog seems totally exhausted—they can't seem to stop panting or are straining to move—consider changing the pace.</li> <li>○ Take your dog for a slow walk and seek a change of scenery to bring their heart rate back down and allow them time to reconnect with their body to avoid overdoing it.</li> </ul> </li> <li>• Weight management can be very helpful in reducing injury risk. <ul style="list-style-type: none"> <li>○ Overweight dogs that jump off furniture or suddenly have rare bouts of high activity put more strain and force on their joints from the excessive weight, leading to breakdown and injury.</li> <li>○ Dogs at a healthy weight with regular exercise are much less likely to experience soft tissue injury. “Weekend warriors” is a good description not just for humans, but also for dogs that are relatively sedentary throughout the week, then go for long treks or extended periods of exercise on the weekend.</li> <li>○ These dogs are more susceptible to injury because their muscles and joints are not conditioned for regular, intense exercise.</li> </ul> </li> </ul>
<p><b>References</b></p>	<p><b>Animal Wellness - <i>Ligament Injuries in Dogs</i></b> Animal Wellness; September 15, 2025 <a href="https://animalwellnessmagazine.com/ligament-injuries-in-dogs/">https://animalwellnessmagazine.com/ligament-injuries-in-dogs/</a></p> <p><b>Best Pet Facts - <i>Identifying Canine Injuries: How to Distinguish Between a Sprain and a Torn Ligament in Dogs</i></b> September 9, 2025 by Calvin Gritton <a href="https://bestpetfacts.com/how-to-tell-the-difference-between-a-sprain-and-a-torn-ligament-in-a-dog/">https://bestpetfacts.com/how-to-tell-the-difference-between-a-sprain-and-a-torn-ligament-in-a-dog/</a></p> <p><b>Covetrus: Great Pet Care - <i>Torn ACL in Dogs: Understanding Cruciate Ligament Injuries</i></b> By Kathryn Heigel-Meyer, DVM; Reviewed by Catherine Barnette, DVM on 11/15/2024. Published on 11/28/2023 <a href="https://www.greatpetcare.com/dog-health/torn-acl-in-dogs/">https://www.greatpetcare.com/dog-health/torn-acl-in-dogs/</a></p> <p><b>Dr. Loudon - <i>Your Guide to Canine Cruciate Tears: Surgical vs. Holistic Treatment Approaches</i></b> <a href="https://drloudon.com/pet-health/your-guide-to-canine-cruciate-tears/">https://drloudon.com/pet-health/your-guide-to-canine-cruciate-tears/</a></p> <p><b>Gun Dog Doc - <i>Breaking Down Cruciate Ligament Disease: A Vet’s Perspective</i></b> <a href="https://www.gundogdoc.com/cruciate-ligament-disease-vets-perspective/">https://www.gundogdoc.com/cruciate-ligament-disease-vets-perspective/</a></p>

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