

Your Guide To

Managing Canine Cranial Cruciate Ruptures

AQUACANINE
HYDRO & VETERINARY PHYSIO

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Contents

Your Guide To Understanding Cranial Cruciate Ruptures 4

What is a cruciate rupture, and how does my dog get it? 5

Risk factors for CCLR 6

What are the best ways to treat canine cruciate ruptures? 7

Surgical treatment options 7

Conservative treatment approaches 9

When you don't have options 11

How can you best help your dog recover from cruciate surgery? 12

Prepare your home environment 13

Equip yourself 15

Consider your daily routine 17

Consider diet 18

Tips for managing rest and controlled activity 19

Mental stimulation 19

Three exercises that will help your dog improve their strength and recovery 21

Planning for the future 23

You are not alone 24

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Managing Canine Cranial Cruciate Ruptures

Cruciate ligament ruptures are the most common cause of hindlimb lameness in dogs. They can significantly impact your dog's quality of life and function, causing pain and arthritis in the stifle joints if left untreated.

There are multiple treatment options available for this disease, broadly grouped into surgical interventions and conservative interventions, with surgical interventions believed to offer the best outcomes. Dogs treated for cruciate disease can return to their normal or competitive lives successfully!



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What is a cruciate rupture, and how does my dog get it?

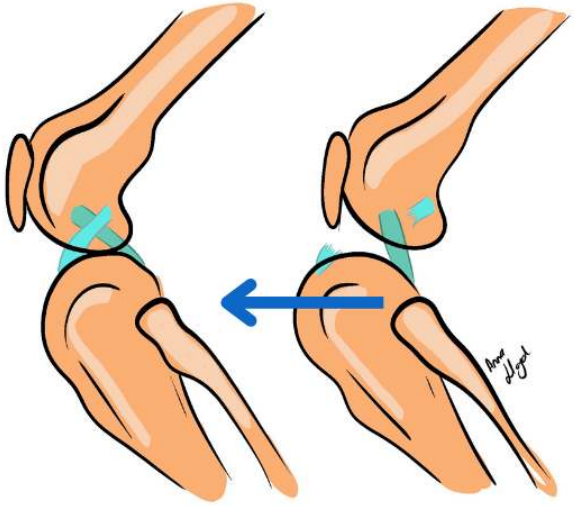
The stifle (knee) joint in dogs is a complicated joint depending on multiple structures to provide it with stability in motion. The structures that are affected in this condition are the cruciate ligaments, most commonly the cranial cruciate ligament and the menisci of the stifle.

Like people, dogs have two crossed ligaments inside their stifle – the cranial and caudal cruciate ligaments. Together they prevent the two bones from sliding back and forth on one another, provide stability to the joint, especially when the leg is carrying weight in standing, walking, running or playing activities. Without these two ligaments, the stifle will be unstable. The cranial cruciate ligaments prevent the tibia (the larger of two bones supporting weight below the knee) from sliding forward as the dog takes weight.

The menisci are little pads inside the stifle joint that ensure that the bones of the stifle fit together nicely and have a smooth surface to glide on during movement. When the movement of the stifle becomes unstable, the menisci can tear, causing pain and lameness in our dogs.

The cruciate ligament can also rupture as a result of trauma or degeneration of the ligament.

Traumatic injuries happen when the knee joint quickly and suddenly twists. For example, when your dog is playing fetch, they are likely to jump, twist and turn simultaneously to catch the ball in the air, or they may come to a sudden stop, twist and turn as they grab the ball on the ground. Both of these movements happen at high speed and can lead to a traumatic rupture in the cruciate ligament. Chronic degeneration of the joint can also happen, where the ligament fibres slowly weaken over time.



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Risk factors for CCLR

- large breed dogs
- sterilisation
- obesity
- stifle arthritis
- patella luxations

In addition, the rupture of one cranial cruciate ligament increases the risk of the other cruciate ligament being ruptured.

The good news is that with treatment, your dog with a cruciate ligament rupture will be able to live a full, healthy and pain-free life again.

Activities and games such as fetch, where dogs tend to accelerate and stop suddenly while twisting through their bodies, can put additional strain on the stifle. Many CCL ruptures occur while playing fetch or similar games.

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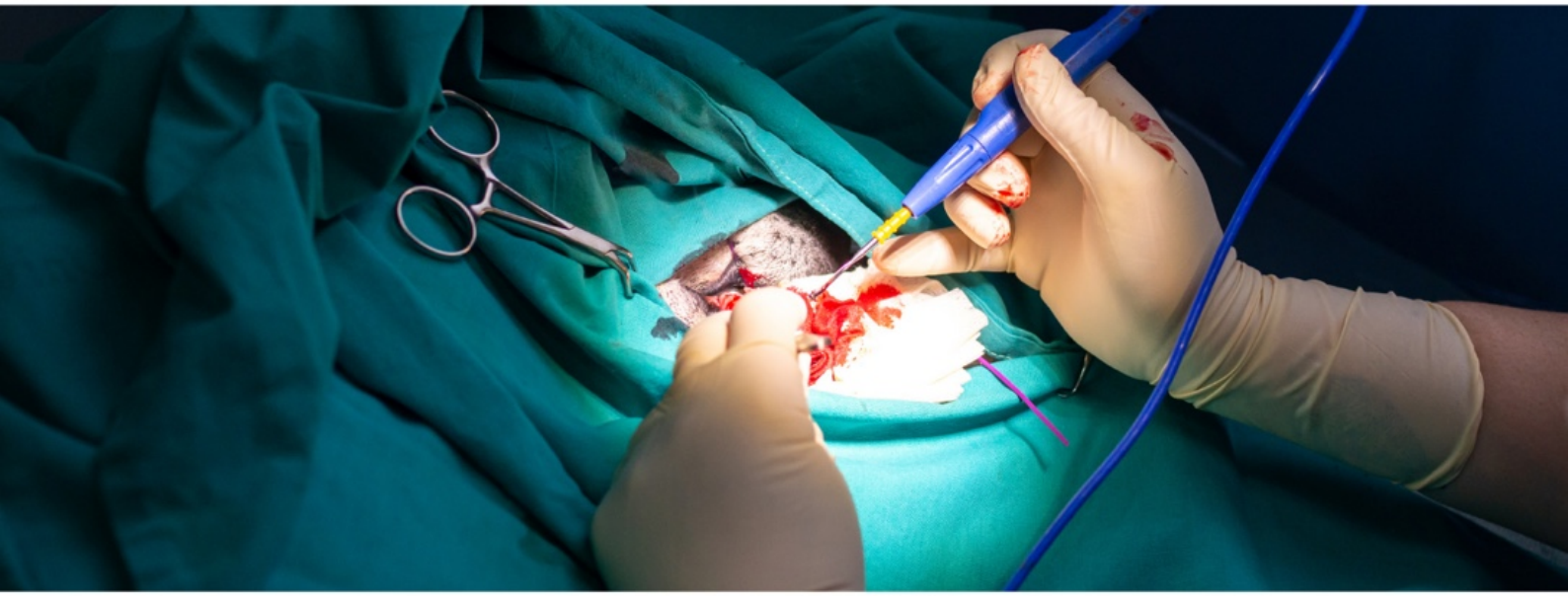
What are the best ways to treat canine cruciate ruptures?

Once your veterinarian has diagnosed a cruciate rupture, you will want to explore the different treatment approaches available. While the best treatment is generally a surgical repair to stabilise the stifle, there are alternatives that don't require surgery, which you need to be aware of. There is no one right way to proceed, and no one treatment approach that will work for every dog.

Surgical treatment options

There are more surgical techniques to repair cruciate ruptures than any other condition. Below we describe the three most used procedures so that you have an understanding of what your vet's recommendations include.

Surgery can be broadly categorized into surgeries that make the ligament redundant to the stability of the knee, and surgeries that replace the ligament.



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Surgeries that make the ligament redundant

1 Tibial plateau leveling osteotomy, or TPLO

During this procedure, your veterinary surgeon will rotate the joint surface of the tibia until the joint angle is level and becomes stable in motion. This is a highly effective and successful surgery that is very commonly performed.

Watch this video by Fitzpatrick Referrals, demonstrating how a TPLO works

2 Tibial tuberosity advancement, or TTA

During this procedure, the front of the tibia is cut and moved forward. This changes the biomechanics to create a stable joint surface. In both procedures, the slope of the joint surface becomes perpendicular to the patellar tendon.

Watch this video from Fitzpatrick Referrals for a better understanding of how a TTA is performed.

Surgeries that replace the ligament

There are many ways in which surgeons might 'replace' the cruciate ligament. The most common ones are replaced on the outside of the joint surface. In comparison with the previously described techniques, this surgery has a higher risk of complications and failure, but is much more affordable. The risk is even higher in large breed or obese dogs, and it is not recommended for highly active and athletic dogs who want to return to a high level of activity or performance. Essentially, we are replacing a structure that has already failed, without changing the mechanics that probably caused the injury to begin with.

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Conservative treatment approaches



There are various reasons you might choose not to have surgery performed for your dog, including the increased risks of surgery that come with advancing age, or the lack of financial resources.

In the past, conservative management has primarily been focused on **rest and pain control**. This is not an effective strategy, as the stifle will remain unstable, continuing to cause pain, and progressing the development of arthritis over time. For the best chance of success, the stifle must be stabilised to allow movement without pain and further damage to the joint. **A custom stifle brace** can help provide stability during movement, allowing your dog to remain relatively active in their day-to-day lives. Surgery comes with complication risks, a wound recovery period, a healing period, rest and restricted activity post-op, and of course the risks associated with anesthesia; braces remove almost all of these factors.

Watch this video to see how an outdoor dog and owner navigated surgical repair and a braced recovery period.

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Braces do, however, come with their own set of challenges. They cannot be worn around the clock, so there will be times when your dog does not have that additional support. They can cause friction sores – always have a custom dog brace made for your dog to reduce this risk. Use needs to be supervised – your dog will wear the brace when they are with you during periods of activity, but should not wear it when they are home alone.

If you want to explore this treatment option further, discuss it with your veterinarian and rehab professional.

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When you don't have options

Cruciate ruptures are often coupled with an injury to the meniscus. This can happen at the same time as the cruciate rupture or be delayed by weeks. The meniscus does not always become injured, but the risk is significantly increased if you pursue conservative management. With any surgical repair, the meniscus health will be checked to ensure that it does not cause a problem during recovery.

If you have pursued a conservative treatment approach and the meniscus tears during the recovery period, surgery has to be pursued. A meniscal tear cannot be treated conservatively.

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How can you best help your dog recover from cruciate surgery?

Once you have decided on a treatment course for your dog, you will want to prepare yourself for their recovery. The biggest part of recovery is in your hands, since it depends on the day-to-day activities and routines you establish during this period.

The guidelines for recovery will be determined by your vet's post-op recommendations. Where the advice below differs from their recommendations, please either follow your vet's directions or discuss the differences with your vet to find the best way forward for you and your dog.



Let's discuss how you can prepare your home ahead of time, and what you can do to ensure full recovery as quickly as possible.

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Prepare your home environment

Your dog will be in recovery for six to twelve weeks whether they have had surgery or you have chosen to pursue conservative management. A poorly set up environment can considerably delay healing, so it is worth taking the trouble to ensure an optimum environment for recovery. Here are some pointers:

A confined space

How you set up a confined space for your dog will depend on you, your home, and your dog's activity level.

1. A crate is the safest and most restricting option. If your dog is already crate-trained, that is great! If you have a very active dog, a crate is the safest space to restrict mobility as they are unable to jump or pick up speed.

2. A play pen can offer an alternative, but is only an option if your dog won't be tempted to jump over the sides.

3. A small room can be a great alternative if you have a dog that will be calm and relaxed and sleep through most of the day. Your room will have to have a non-slip floor, and there should also be no furniture that the dog will be tempted to jump onto.



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Factors to consider

As you consider the best space for your dog, think about **where you will** be during the day. If you work from home, a crate next to your desk or the room where your office would be perfect, as you will be able to monitor their movement and activity continuously. If you will be away from home for several hours each day, a crate would be safer.

Think about how you and your dog will **access** their safe space. The pathway from their space to outside should be short and easy to navigate. Avoid stairs, slippery floors, and passageways that are too narrow for you to provide your dog with physical support.



Consider **the daily activity and traffic** in your home, and how your dog responds to it. For example, does your dog love to lie by a window and look out at the street? If so, placing their bed or crate where they can look out is the considerate thing to do – for a calm dog. If your dog tends to get excited when they see activity outside, positioning them away from the window would be best, ensuring that they remain restful throughout the day. If you or someone else is home in the day, can the crate be placed in a position where the dog will be physically close to you? By simply placing your dog's bed or crate in a spot in the home where they will be happiest, you can significantly reduce anxiety during their rest period. The ideal spot will depend on your home and your dog. Lastly, think carefully about flooring. The slippery surface of most wood-finish vinyl flooring is not suitable, as it can cause dogs to slip, and their legs to splay out. If this is your home, consider placing carpets, runners or yoga mats on the floor to provide traction for your dog as they walk.

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Equip yourself

There are a few simple pieces of equipment that can provide great benefit to you and your dog during the journey of recovery.

- **Heat and ice packs** will form a big part of your pain management programme. Heat increases blood flow and helps ease stiffness and pain, while ice also helps with pain and reduces swelling and inflammation. Use both regularly. Heat should be used before exercise to warm up the muscles and joints, while ice should be used after exercise to reduce possible pain and inflammation. Ensure that you have heat and ice packs available in sizes and shapes that will be comfortable for you and your dog. Ice packs that are non-rigid can be shaped to, and wrapped around, the contours of your dog's leg, making them more comfortable and effective. A heat pack that is big enough to cover the knee joint and a part of the upper leg will also be useful.



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- A comfortable **harness** is essential. During recovery, your dog should be on a lead any time they leave the house. A harness provides multiple benefits over a collar during this period. A well-fitted Y-harness will allow you to support some of your dog's body weight in the early days after surgery when they are still very painful.



- A **comfortable bed** is essential, too. Make sure your dog's bed is easy to get into and out of, and is supportive and accessible. You will want a bed that is flat, even, and relatively firm. An orthopedic bed is highly recommended, especially for heavy dogs, or dogs with arthritis in other joints. They are an investment that your dog will benefit from for the rest of their lives.



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Consider your daily routine

During the period of recovery, your dog will benefit from a regular daily routine. They will need your time and attention for 10 to 30 minutes at least three times a day – more if you can manage it.

The routine might look as follows in the early days after surgery:

AM: Wake up, walk outside for long enough to toilet, then go back inside to the crate.

7:00 AM: Breakfast and medication.

7:30 AM: Apply ice or heat to the stifle for 10 minutes, followed by five minutes of passive range of motion stretches, and five minutes of walking and sniffing outside, followed by five minutes of specific exercises prescribed by your vet or rehab therapist. Return to crate.

12:00 PM: Five minutes of walking outside to use the toilet, and return to crate.

5:00 PM: Dinner and medication.

5:30 PM: Apply ice or heat to the stifle for 10 minutes, followed by five minutes of passive range of motion, and five minutes of walking and sniffing outside, followed by five minutes of specific exercises prescribed by your vet or rehab therapist. Return to crate.

PM: Go outside for a last toilet break before bed.

There is a lot of room for adjusting this schedule to suit your daily commitments, and as your dog recovers, the routine will change. Walking time will become longer and exercises might become more involved. One session per day might be long, while the others are short.

In providing you with this schedule, we hope to give you an idea of what your day could look like, not what your day has to look like.



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Consider diet



As your dog recovers from his injury, you might want to **review his diet** to ensure that his recovery is supported by the appropriate nutrients. Ensure that your dog maintains an optimal weight, erring on the side of less weight rather than more. The more optimal your dog's body weight, the better he will be able to heal, the less inflammation will occur in his body, and the less pain he will experience.



A joint-protective diet or good supplement will make a necessary addition to his lifelong management, as eventually arthritis will develop in the joint. Reducing inflammation in the body and adding joint protective nutrients can delay arthritis and reduce its severity.



You can also use your dog's diet to **provide him with additional mental stimulation** during the period of crate rest. For example, meal times could be a great opportunity to teach simple targeting exercises or set brain games for your dog. Toys like Kongs can keep your dog busy for extended periods of time during the day. Adding raw components to his diet, or switching to a raw diet can provide variety and stimulation. Speak to your vet or vetrehabber for their dietary recommendations during this period.

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Tips for managing rest and controlled activity

If you have an active dog, an extended period of crate rest can present multiple challenges, as energy levels remain high with little to no opportunity for release of that energy. You might be worried that you won't be able to keep your dog calm and quiet during their recovery. However, there are ways that you can help your dog release their mental and physical energy safely and effectively.

Mental stimulation



Mental stimulation can replace physical stimulation in situations of rest, and can be an effective way to mop up excess canine energy, leaving your dog exhausted and ready to sleep, even with little to no physical exertion. The best part about brain games is that they are incredibly fun and rewarding for both you and your dog.

Let's go though some ways that you can engage your dog's mind – at all times, but especially during recovery when other options are closed.

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1

Environment

Your dog's physical environment can provide them with a great deal of mental stimulation during the course of the day. Placing their crate or bed in an area where they can be with you throughout the day, or in a central position in the house where they can watch the comings and goings of family members, or at a window where they can watch outside activity, will help to keep their interest during the day.

2

Food and food puzzles

Mealtimes can offer a wonderful opportunity for stimulation for your dog. Meals can be split into several smaller portions through the course of the day, presented in a food puzzle, a snuffle mat, a slow-release food toy, or as part of a simple training exercise. You could vary the ways in which you feed your dog – for instance, food portions can be frozen in ice balls or blocks during hot weather, requiring your dog to slowly lick the food out of the ice. There are many home-made puzzle options available, such as an egg carton or muffin tray containing small portions of food, with tennis balls blocking the openings. Your dog will have to figure out how to remove the blockage and reach the food, and will find the stimulation enjoyable. There are also many food puzzles on the market that range from easy to challenging. Food puzzles may become a favourite in your household!

Fresh raw bones are another way to provide your dog with the opportunity to chew and keep themselves busy for extended periods. Please discuss the safest raw bone options with your vet if you would like to include this form of enrichment for your dog.

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3

Training games

You can also use small meal portions to play simple training games with your dog. For example, begin training your dog to target your hand or a tennis ball with their nose, or to target a hand or block with their feet, according to where food is hidden. The benefit of targeting is that you can start by simply establishing the behaviour in the first two weeks of recovery, and progress to basing your dog's rehab exercises on targeting in the weeks that follow. This makes your dog an absolute partner in the healing process, provides you with a great way to track and measure their ability and motivation, and it is mentally challenging and exhausting!

Nose work is another great way to include your dog's instinct to sniff in the provision of both food and mental stimulation. If you have any interest in tracking, this is a great time to teach it to your dog. Nose work in your garden or backyard can be used during toilet breaks, providing your dog with some purpose and enjoyment when they are in the yard.

If you would like to explore some of these training options further, speak to your vet rehab therapist about their recommendations for a trainer who can help you understand and master the basic techniques.



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Three exercises that will help your dog improve their strength and recovery

Your vet and vet rehab therapist will guide you during the rehabilitation period on which exercises are best for your dog and their recovery. Every dog is different and will need a personalised approach, but here are three safe exercises to start your dog's rehabilitation journey.

Passive range of motion



During the initial phases of recovery, it will be painful for your dog to fully flex and extend their stifle joint. For our joints to remain healthy, movement is really important. Passive range of motion allows you to take your dog's stifle joint through its most comfortable range, reducing pain, inflammation and swelling, and ultimately helping it to heal better. As you practice moving your dog's joint through its available range, you will find they become more able to take their limb through larger ranges themselves during movement.

Passive range of motion of the stifle requires that your dog is lying flat on his side in a relaxed position, and that you gently open and close the angles of his joints with your hands. Please ask your vet or rehab therapist to demonstrate this to you, and to practise it with you.

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Weight shifting



Simple weight shifting exercises allow you to encourage activation of the stabilising muscles in each limb, in a safe way. It can also encourage your dog to place more weight on their painful limb.

With your dog standing in a comfortable position as close to square as they can, place your hands on either side of their shoulders and gently rock them from side to side. Your rocking motion should remain small enough that they don't need to take a step to rebalance, and big enough so that you can see them shift their weight and activate the muscles in their shoulders.

Repeat the same rocking motion with your hands on either side of their hips, and then repeat the rocking in a diagonal direction from the front of one shoulder to the opposite hip.

Intentional lead walking



For the weeks ahead, your dog is going to spend all of their outside time on a lead to ensure that they stay safe during activity. It's a great idea to make the most of that time – it doesn't have to be a boring, negative experience for either of you. Rather it can provide an opportunity for a closer connection, better understanding, and ultimately a more positive future for you and your dog.

There is a fundamental difference between going for a walk on a lead for five minutes, and taking a five-minute sniffing/toilet break.

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Intentional vs wandering lead walking

Both will be applicable during your dog's recovery, but it's important for you to recognise when you might just relax and let your dog take the lead (excuse the pun), spending time sniffing and wandering around the garden, and when to intentionally walk your dog for the purpose of strengthening their leg.

On **wandering walks**, where your dog takes the lead and sniffs and snuffles around the garden or on the sidewalk, the dog determines the speed and direction. This is great, as it enables you to watch them move naturally and evaluate how they use their limbs, and allows the dog to warm up the muscles after being restricted for a few hours. This should be all you do on the first walk in the morning, and the last one in the evening, as well as for the first two or three minutes of each time out of the crate. During the first two weeks of recovery, this will be the normal walk for you, with potentially two to three minutes of intentional walking from Week 2.

During **intentional walks,** you want to make sure that you direct speed and direction, and that they maintain their focus on you and the activity. Incorporating positive reinforcement or simple lead walking exercises is a great way to do this. Ask your dog to slow down their walk as much as possible – the slower they walk, the easier it will be for them to place weight on the painful limb. If you find them lifting the limb more, stop and then start walking again. You might also ask your dog to sit down before continuing to walk again if they are struggling to use the limb. Try to maintain mostly straight lines and gentle wide turns in the beginning.

Slow and straight, encouraging them to place weight on the limb, is key. You don't want to be pulling on their lead during this time. Having their focus and attention on you can help to reduce pulling.



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Planning for the future

No matter how you chose to treat and rehabilitate your dog's cruciate rupture, there are a few things you should be aware of as you plan for the future.

Between 18 and 60% of dogs that sustain an injury to one cruciate ligament will also injure the cranial cruciate ligament in the other leg within a year and half. As an owner, you really do need to be aware of this possibility, and have a plan for it. Our hope is that through active and early rehabilitation, we can decrease the risk of the other cruciate ligament rupturing. The earlier dogs are able to walk normally on their repaired leg, the less strain will be placed on the healthy leg during recovery.

If you have opted for conservative management of your dog's injury, also be aware of the risk of a meniscal tear. This is a common secondary injury to a cruciate rupture, and does require surgery. To reduce the risk of the meniscus tearing, provide the stifle with as much stability as possible through a custom built brace, and be strict about controlled exercise and rest. You don't want your dog to run, jump or play during the first eight weeks or more following their injury. All exercise should be slow and controlled.

Finally, any injury to a joint will lead to the development of arthritis in that joint. Regardless of how it is treated, arthritis will develop as your dog ages. You can help reduce the severity by adjusting their diet to include joint protective nutrients and anti-inflammatory components, keeping them at an optimal body weight, and maintaining their functional mobility through healthy exercises.

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You are not alone

The journey ahead can feel overwhelming, and we completely understand that. But you don't have to walk the road ahead on your own. Surround yourself with a team that will guide you, advise you, and advocate for your dog on every step of the way. You should have a vet and a rehab therapist whom you trust and who listen to your concerns.



Book a consult today if you would like Aqua Canine to be a part of your team.

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AQUA CANINE

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