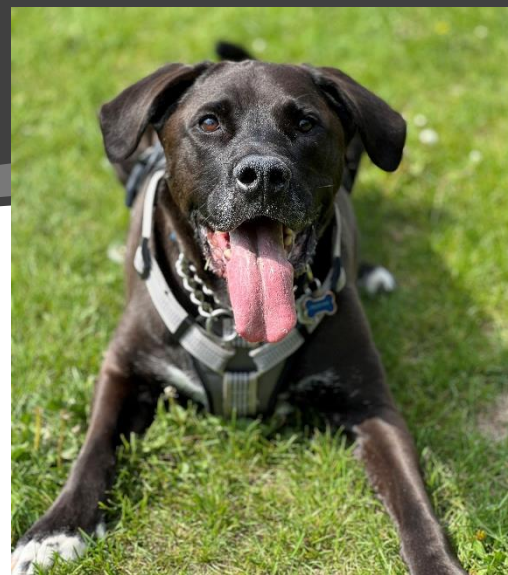




TPLO Home Recovery Program

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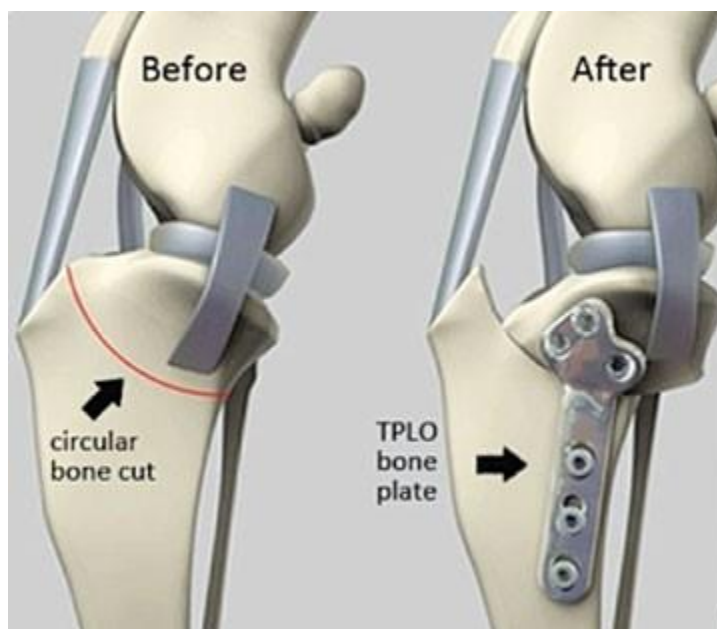


The Cranial Cruciate Ligament (CCL)

There are several ligaments in a dog's stifle (knee) that contribute to joint stability. The Cranial Cruciate Ligament (CCL) is the primary ligament responsible for limiting "cranial drawer" motion (excessive forward and backward sliding of the femur on the tibia bone). When a dog has a partial tear or ruptures this ligament the joint instability causes inflammation and pain which is why your dog favors the leg. Osteoarthritis, also known as OA, degenerative joint disease, or degenerative arthritis, is a form of arthritis caused by inflammation, breakdown, and the eventual loss of cartilage in the joints. There are many factors that lead to the progression of osteoarthritis; failure to stabilize this joint will accelerate this process.

What is a TPLO?

The TPLO (Tibial Plateau Levelling Osteotomy) procedure neutralizes the effect of this drawer motion. A circular cut is made in the top of the tibia and the smaller portion of bone is rotated to reduce the slope of the tibia. A special surgical grade stainless steel plate is used to hold the two bone segments together. Over time the bone segments will heal together to provide lifelong stability.



This booklet serves as an overview to help you prepare for the critical healing period (the first 8 weeks) following your pet's TPLO surgery. A week-by-week recovery schedule will be included in your pet's custom home care package when they are discharged from the hospital. If at any point you feel your pet has stopped making progress or is struggling with their recovery, please contact the clinic.

Preparing for Your Pet's Recovery

Preparing Your Home

Prior to your pet coming home, you should determine where you are going to confine your dog during this post-operative period. Making your dog as comfortable as possible is as important as having a good rehabilitation plan. As your dog's mobility is to be restricted, we recommend that you utilize one or more of the following:

- ❖ A dog crate that is large enough that your pet can stand up and turn around.
- ❖ A gated-off area such as the kitchen or living room.
- ❖ Confinement to a room (preferably on a main level or with as few stairs as possible).

Surfaces such as hardwood floors, tile, linoleum, etc. can be very slippery. We suggest that you place some throw rugs with rubber backing or yoga mats on these surfaces to make it easier for your dog to walk around.

House Rules

- ❖ **No jumping!** No jumping on/off the bed! No jumping on/off the couch! No jumping on you! Overextension of the knee or slipping and falling could compromise the repair of your dog's leg and delay the healing time. Your dog is also more at risk of injuring the opposite leg if they slip and fall.
- ❖ **No active play!** Refrain from active play with your dog and do not allow him/her to play with other dogs until your veterinarian tells you otherwise (likely after the 8-week post-operative x-rays to confirm bone healing).
- ❖ **Limited Stairs:** For the first 2 – 4 weeks following surgery, stairs should be limited to a short flight to get in or out of the house. Your pet needs to be on a short leash and slowly guided up and down 2 – 3 stairs (use the sling provided under their belly for support). If you have stairs in your home, limit your dog's access to them with something like a baby gate to prevent unsupervised use of stairs. Longer flights of stairs should not be used for strength training but are allowed *with supervision* after the 4 weeks post-surgery *if* your dog is consistently using their leg. **Do not allow your dog to run or jump up the stairs.**



Caring for Your Pet’s Surgical Incision

- ❖ **No licking!** Allowing your dog to lick at the incision will compromise the healing process. Licking introduces bacteria to the area and, in severe cases, can cause infection to not only the incision but to the bone itself. This type of complication can delay the healing significantly and do permanent damage to the leg. *Infection due to licking is the most common complication following TPLO surgery and is **totally preventable**.*
- ❖ Your pet will most likely have a soft padded bandage on his or her surgical leg. This is a *temporary* bandage that helps by providing compression to reduce excess swelling (edema) following surgery. Please remove this bandage **8-12 hours** after leaving the clinic. *If the bandage becomes wet, soiled, or begins to slip down the leg and bunch up, please remove it immediately.*

Note: Leaving a wet/soiled or slipped bandage on your pet will increase the risk of infection and may cause bandage sores to form on the skin.

- ❖ After bandages are removed, **monitor the incision site! If any of the abnormal signs appear, contact your veterinarian.**

NORMAL	ABNORMAL
Swelling around the incision and the surgical leg for the first week	Swelling that lasts longer than a week
Bruising on the leg	Discharge that is not clear, is white, green, or sticky, or any discharge after the first few days
A small amount of clear or blood-tinged discharge from the incision (for first few days only)	Large amounts of discharge or bleeding
Mild discomfort around the incision and the leg itself	Discomfort that continues after pain medications and icing
Warm to the touch around the leg	Discomfort that causes your pet to cry out or bite

- ❖ If you are concerned about your pet’s surgery site, photos of the leg & incision may be emailed to the clinic to help determine if an in-person recheck appointment is needed.
- ❖ Due to lack of movement of the surgical leg, a buildup of fluid (edema) around the tarsus (hock/ankle) may occur. This should subside as your pet begins to use the leg more and with proper rehabilitation exercises.
- ❖ **Swelling around the stifle (knee) is NOT normal**; please inform the clinic right away if you notice this.
- ❖ The *incision* should be healed 10 – 14 days after the surgery. The sutures will need to be removed at this time. Please make an appointment so that we can assess the incision site and your dog’s recovery/progress.



Week by Week Recovery Program

The weekly recovery program described in the following pages is invaluable for ensuring your pet's recovery. The goals of this program are:

- ❖ Accelerate your pet's recovery to full function of the leg.
- ❖ Reduce pain and muscle atrophy (muscle loss and weakness).
- ❖ Strengthen muscles to help stabilize and support the joint.
- ❖ Enhance the healing of the affected bone and tissue by increasing blood flow.
- ❖ Restore normal joint range of motion.
- ❖ Decrease the risk for future injury.

Physical therapy exercises should be started slowly and cautiously. It is best to time these approximately 30-60 minutes after you administer your dog's pain medications so that he/she is most comfortable. It is unfair to ask a dog to exercise when it hurts to do so. Watch for signs of discomfort such as struggling or significant resistance to the exercises.

Signs of pain and discomfort can include:

- ❖ Decreased appetite.
- ❖ Excessive panting.
- ❖ Vocalization.
- ❖ Aggression or decreased interaction with family members.
- ❖ Altered or hunched posture.
- ❖ Restlessness.
- ❖ Flinching when touched.
- ❖ Elevated heart rate and respiratory rate, and/or dilated pupils.

If your dog is stiff and reluctant to allow further manipulation you may need to reduce the amount of physical activity and/or request additional pain medications from your veterinarian. Your dog may be hesitant or reluctant at first, but his/her comfort level will increase as you progress.

Adequate rest and physical therapy are the keys to obtaining and maintaining normal limb function. If your dog does not appear to be making positive progress, has any complications, or you have any questions, please contact us anytime.

It is extremely important to follow your pet's discharge instructions as closely as possible to ensure proper recovery. The exercises described in this package are to be used in combination with your pet's custom home care package. Please refer to [youtube.com/crestwoodvetcentre](https://www.youtube.com/crestwoodvetcentre) for video examples of the described exercises.



Rehabilitation Part 1 - Day 0 to 14

Goal: Control pain, encourage weight bearing, and work on range of motion.

Manual therapy can begin as soon as the bandage is removed but may be delayed up to 48 hours to when post-operative pain better controlled. The following exercises should be done daily until your pet is consistently using their leg and has full range of motion in the knee (when you can bend and straighten the surgical leg the same amount as the non-surgical leg).

We also recommend performing these exercises on the non-surgical leg and gently massaging the muscles in the lower back as these areas will likely develop tension and discomfort from compensating for the injured leg. This is also a great way to practice your technique on a “healthy” limb to build your confidence and gauge your dog’s comfort level.

- 1) **Massage and Passive Range of Motion (PROM):** Massaging your dog’s leg is important for relaxing the muscles prior to performing the exercises for rehabilitation. Lay your pet on his/her side on a comfortable surface with the surgical limb up. Target the muscles above and below the joint. Start the massage by pressing down on the muscles with the heel of your palm. You should press down firmly enough to move the skin over the tissues below. Using the heel of your palm, it’s unlikely that you will press too hard and possibly injure healing tissue. If your dog shows no signs of discomfort, go back, and massage the same areas with the balls of your fingers (where your *fingerprints* are, not your *fingertips*). This provides a deeper massage. Next, run the palms of your hands over the whole massaged area. Finally, flex and extend the affected limb several times, gently, until a little resistance is felt. Support the joint while doing this to prevent any twisting of the limb.

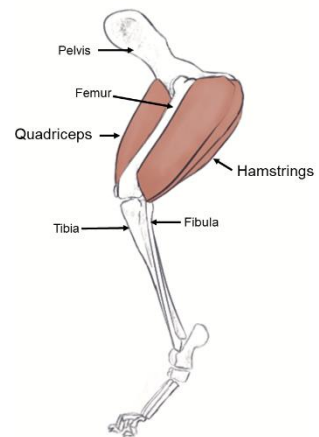
- 2) **Controlled leash walks:** This exercise requires your dog to be on a short lead very close to your body so that you have complete control of him/her. Leash walks must be done slowly and for short periods of time to build up strength in the leg. For the first few days any walks outside should be for urination or defecation only. Your dog will benefit more from several short walks in one day rather than a single long walk. The slower you walk your dog the more inclined he/she will be to place weight on the leg. Make sure to support the hind end under the belly with a sling if needed. This is particularly important on slippery surfaces. Controlled leash walks benefit your dog by:
 - ❖ Keeping the muscles strong and lubricating the joints
 - ❖ Encouraging use of the affected limb
 - ❖ Decreasing pain
 - ❖ Positively rewarding your dog emotionally

- 3) **Cryotherapy (Ice Therapy):** After completing the above exercises, it is especially important to apply cold therapy to the affected knee to reduce pain and inflammation. You can use gel ice packs from the drugstore, frozen bags of popcorn kernels, or bags of crushed ice. Wrap the ice material in a towel before applying. Place the ice on both the



inside and outside of the knee. After cryotherapy, the skin should feel cool (not cold) to the touch.

- 4) **Heat Therapy:** By the fourth day you can begin applying heat to the affected leg at the very start of your therapy session prior to massaging. The heat pack should be placed on the quadriceps, hamstrings, and hip/lumbar muscles. Heat will draw blood to the area to enhance circulation, which aids the healing process. A variety of products are available such as “Magic Bags” or other heat products from the drugstore. Do not use topical products such as gels or creams. Check the temperature before applying heat to the area and make sure that you use a light towel in-between the product and the skin. *Do not apply heat to the joint/directly on the knee.*



Rehabilitation Part 2 – Weeks 3-12

Goal: Gradually increase strength, balance, and body awareness so that your pet can return to normal activity.

These pages provide descriptions of some of the most common exercises. Please follow the detailed schedule provided in your personalized home care instructions.

- 1) **Controlled Leash Walks:** Walks should be on a 6’ lead with the dog by your side. This activity should only be increased if your pet is consistently using his/her leg at a walk. You can incorporate activities such as: Figure 8 patterns, walking up and down curbs in a S-pattern, gentle inclines (hills), stepping over obstacles/through long grass or snow, and short trotting intervals into these walks to make them more challenging and to increase muscle mass and strength.
- 2) **Weight Shifting Exercise:** Have your pet stand squarely on a non-slip surface and gently nudge the hind end from side to side. This will help with balance and core strength and will lay the groundwork for further core conditioning. For a further challenge, have your pet stand with the front legs elevated (first on a stable surface like some stairs, and then on an unstable one like a cushion, air mattress, or FitPAWS equipment). This will force more weight onto the hind end.
- 3) **Exercises to increase body awareness:** These exercises have you walking your dog on a leash in a “figure 8” pattern and/or through a series of obstacles in a “weave” pattern. This exercise helps to encourage the use of the leg and increases proprioception (Proprioception is the knowledge of where all one’s body parts are in space). Another great exercise to help with proprioception is walking slowly through the rungs of a ladder laid on the ground. As your pet walks slowly through this obstacle, they must carefully think about where they are putting their feet. Drop treats in between the rungs to make this an extra fun game.

- 4) **Cookie Stretches:** Have your pet stand squarely on a non-slip surface and guide his nose to each hip, up, and then down for one repetition. Once he is comfortable with this exercise, you can place him on an unstable surface such as a couch cushion (on the floor), air mattress, or FitPAWS giant disc/balance pad/peanut (available for purchase) to further challenge him. This exercise will help with spinal mobility and core strengthening.
- 5) **Sit-to-Stand:** This exercise is a “Doggy Squat”. Have your pet sit squarely and then stand. Dogs will tend to cheat and use their non-surgical leg to push up, so it is often helpful to have their surgical leg against a wall as you perform this exercise. This can also be incorporated into daily walks, or, at feeding time, you can use part of his kibble to entice him to do this exercise.
- 6) **Three-Legged Standing:** Have your pet stand squarely on a non-slip surface and then gently lift one leg off the ground and hold for 5 – 10 seconds. Alternate with all but the surgical limb. Once your pet becomes good at this exercise, you can try two-legged standing by lifting diagonal legs (left front and right hind) and vice versa.
- 7) **Wading in water:** Once your pet has their sutures removed, they can walk in water that is up to hip height. The buoyancy of the water will displace some of your pet’s weight and take some pressure off the joints. There is also resistance in the water, so they are also working on strength and flexibility.

IMPORTANT - If your pet will not walk in a controlled manner and likes to leap in water, then wading is not a good activity until after the 8-week x-ray is assessed by your veterinarian.

- 8) **Walking in deep snow or in long grass:** Walking in deep snow and in longer grass will make your pet pick their legs up higher which will build strength. This should only be done if you have your dog on a short leash and have control of them.
- 9) **Swimming:** Swimming is allowed *after the 8-week x-rays* have been assessed and you have the go ahead from your veterinarian. The uncontrolled kicking action can be harmful in the early stages of your pet’s recovery, so it is important to be aware of this. Swimming is a great cardiovascular workout and is great for weight loss.
- 10) **Tug:** Tug games are a great way to burn energy and to work on strength. The best tug toys have a bungee cord in the tug rope to prevent jarring to your dog’s neck or your shoulders when the taut rope suddenly stops the dog.

As a rule, it takes 2 – 4 times as long to build muscle as it does to lose it. This means that for every 1 week of inactivity leading to muscle atrophy, 2 – 4 weeks are needed to rebuild that muscle mass. It may take 6 months before your dog’s hind legs have equal musculing.

If you have any questions regarding your dog’s level of fitness or post-operative progress, please discuss this with your Crestwood rehabilitation team and your veterinarian.



Special Cases and Challenges

We perform the TPLO surgery on a variety of dogs at different life stages. For most young healthy dogs, this program will be sufficient to get them back to the activity level they were at prior to their injury and surgery. Others may have unique physical challenges and pre-existing conditions to deal with as they recover, such as:

- ❖ Osteoarthritis.
- ❖ Bilateral knee surgeries.
- ❖ Hip dysplasia.
- ❖ Back pain.
- ❖ Muscle pain & myofascial trigger points.
- ❖ Chronic pain & muscle weakness.
- ❖ Obesity (BCS >7/9).

For these special cases, a consultation can be arranged with a Certified Canine Rehabilitation Practitioner (CCRP), who will work with our doctors to find the best way to address your pet's needs. Finding the right combination of pain management pharmaceuticals and physical modalities (therapeutic laser, massage, chiropractic, targeted exercises, diet changes, etc.) will help your pet's recovery and restore mobility and quality of life.

Studies show that dogs who injure one of their cranial cruciate ligaments are 60% more likely to injure the cranial cruciate ligament in the OTHER leg. Even uncomplicated cases with optimal post-operative care and conditioning are at risk.

Pain Management & Your Pet

Uncontrolled pain will slow down the healing process and delay your pet's recovery. We have supplied medications to alleviate post-surgical pain. It is important that you give all medications as directed so that your pet is most comfortable. This does not mean that they should have free reign because they "feel good". Failure to appropriately limit activity may compromise the surgery and may lead to prolonged recovery or additional surgeries.

Following surgery, your dog will limp on the surgically repaired leg. This is because your dog has lost muscle and the leg is weaker and may get sore from building muscle as you progress through your program. Your dog should be placing some weight on the surgical leg (even just touching toes to the floor) within 3-5 days from the date of the surgery. Over the next few weeks, the degree of limping should decrease.

If your pet is too active during recovery, his/her limp may become more severe. In this case, apply ice 3-4 times a day for 10-15 minutes at a time, allow 24 hours of rest, and give any prescribed pain medication. **Call your veterinarian if there is no improvement after the 24-hour rest period.**



Osteoarthritis & Surgery

Osteoarthritis, also referred to as Arthritis or Degenerative Joint Disease, is classified as primary or secondary. Primary arthritis is associated with aging, due to years of wear and tear on the joints. Secondary arthritis is the result of an external event or force (e.g., trauma, poor joint alignment, etc.) that once damaged the joint cartilage. Studies show that upwards of 20% of dogs (1 in 5) over one year of age will have some degree of arthritic changes.

We have stabilized your dog's stifle (knee) with this surgery but with any injury to a joint, there is an increased chance of developing osteoarthritis. Arthritis develops over time with inflammation in joints and leads to the formation of osteophytes (bone spurs) around the joint, which can cause pain. There are a couple of ways to supplement your dog to provide the "building blocks" for preserving cartilage and increasing joint lubrication, shock absorption, and mobility. There are also several medications available that are safe for long-term use that can help manage pain and inflammation associated with arthritis.

Keys to Long-term Joint Health, Surgical Success, & Quality of Life

- ❖ **Weight Management:** The number one way to extend your pet's the lifespan and quality of life is by maintaining a lean and fit body condition. Studies show that dogs that are maintained at an ideal weight live on average 15% longer than dogs that are overfed. This translates to ~2 years longer in a dog the size of a Labrador Retriever. We use a body condition scoring system that scores your pet out of 9 points (5 out of 9 is ideal). Increased body mass significantly increases your dog's risk of developing osteoarthritis and can impact surgical healing.
- ❖ **Life-long physical fitness:** Physical activity is important for your dog's overall health and wellbeing. Dogs with regular physical activity live longer, healthier lives and have fewer behavior problems. Once your pet is fully healed from surgery, having a consistent exercise routine will benefit them both mentally and physically. Ask our rehabilitation team for exercise & activity recommendations to help engage your dog mentally and physically.
- ❖ **Prescription Diets:** If appropriate for your pet, we recommend working with your veterinary team to select a diet that supports either joint health or weight management. Purina, Royal Canin, and Hills all offer well-researched options. If your dog has a Body Condition Score of 7/9 or higher, we recommend a weight management diet to reduce your pet's weight first and then switch to a joint mobility diet.



Joint Health Diets

- PURINA® ProPlan Veterinary Diet JM Joint Mobility
- Royal Canin® Canine Advanced Mobility Support
- Hill's® Prescription Diet® Mobility j/d®

These diets have moderate protein to maintain lean body mass, high levels of Omega-3 fatty acids, and natural sources of Glucosamine and Chondroitin.

Weight Management Diets

- PURINA® ProPlan Veterinary Diet OM Overweight Management
- Royal Canin® Canine Satiety Support Weight Management
- Hill's® Prescription Diet® Metabolic

Combination Diets

- Royal Canin® Canine Advanced Mobility Support + Satiety
- Hill's® Prescription Diet® Metabolic + Mobility

- ❖ **Nutraceuticals (Oral Supplements):** Research shows that Omega-3 fatty acids, especially active Omega-3s such as DHA & EPA, may be helpful in reducing the inflammation associated with arthritis. *Animal sources of Omega-3s (such as fish oil blends) are better absorbed by the body compared to plant sources of Omega-3s.*

Adding a source of glucosamine and/or chondroitin, typically given orally as a tablet, or as a powder or liquid applied to the food, may also help support joint health. There are many choices of joint supplements on the market. We recommend one that is formulated for dogs for best absorption, effect, and palatability.

If your pet is being fed a diet formulated for Joint Health, they are likely already receiving elevated amounts of glucosamine, chondroitin, and Omega-3s. If your pet is unable to be fed one of these diets, added oral supplements may be beneficial. Please let our team know if you would like us to recommend a nutraceutical for your pet.

- ❖ **Disease Modifying Osteoarthritis Drug (DMOAD):** *Cartrophen VET* is a prescription medication of plant origin and is administered as a series of subcutaneous injections (under the skin). Typical treatment protocol starts with a series of weekly injections followed by a once monthly injection for maintenance. *Cartrophen VET* works by:
 - Stopping the destructive enzymes that break down cartilage, which is the body's natural shock absorber.
 - Stimulate the body's production of cartilage and joint lubricant.
 - Clear the blockages in blood vessels to deliver nutrition to the joint and bone.
 - Stimulate the production of antioxidants that block damaging free radicals.



- ❖ **Monoclonal Antibody (mAb) Therapy** (*Librela – Coming to Canada April 2023*): *Librela* is a prescription medication that functions like naturally-occurring antibodies to help reduce osteoarthritis pain. *Librela* is administered as a monthly injection under the skin and can be used alongside other medications for multi-modal pain management.

Librela works by:

- Specifically targeting and neutralizing Nerve Growth Factor (NGF), a key player in osteoarthritis pain. Concentrations of NGF are higher in arthritic joints, and causes inflammation, pain, and stimulates the release of *more* NGF.
- Studies show that *Librela* is effective and safe for long-term use in dogs over the age of 18 months.

If you think your pet would benefit from adding supplements to their joint care routine, or if you have questions about nutraceuticals and your pet, please speak with a member of our veterinary team.