



Physiotherapy With TPLO Surgery

- A Guide for Practices

Phase	Expected Timeframe	Rehabilitation Clinic Program	Home Program	Outcome Assessment Measures	Criteria for Movement to Next Phase
Pre-operative	From diagnosis to time of surgery	<p>Aquatic Therapy Exercises</p> <ul style="list-style-type: none"> Brief training to aquatic therapy to ensure patient comfort and compliance <p>Medications</p> <ul style="list-style-type: none"> Injectable polysulfated glycosaminoglycan agents (discontinue within 24hours of surgery) <p>Modalities</p> <ul style="list-style-type: none"> Transcutaneous electrical stimulation for pain relief (15-20 min SID) NMES for muscle strengthening (15 min SID PRN) Cryotherapy (15-20 min BID) 	<p>Therapeutic Exercises</p> <ul style="list-style-type: none"> Rest in a confined space Slow, controlled leash-walking only to go outside, no more than five minutes at a time <p>Medications</p> <ul style="list-style-type: none"> NSAIDs (discontinue within 48hours of surgery) Oral chondroprotective agents <p>Modalities</p> <ul style="list-style-type: none"> Cryotherapy (15-20 min BID) 	<ul style="list-style-type: none"> Baseline bilateral stifle ROM – goniometry; other joints if applicable Baseline bilateral thigh circumference Weight 	Surgery should be performed as soon as possible after diagnosis to reduce the onset and severity of osteoarthritis as a sequela of motion on an unstable stifle

This protocol is for use by licensed personnel who have been trained in canine rehabilitation. The therapist must keep in mind that these timelines are intended as guidelines and may be influenced by many factors affecting individualised patient care.

N.B. Loss of extension range of motion is more common than flexion after a tibial plateau levelling osteotomy.

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Step 1: Non-weight bearing to toe-touching	Immediate to 48-72 hours post-operative	<p>Therapeutic exercises</p> <ul style="list-style-type: none"> • PROM for stifle flexion/extension of operated limb (10 reps BID-TID or more if PROM is poor) • Slow leash walking with sling support available, only to go outside (up to 5 minutes, 2-3 times per day) <p>Medications</p> <ul style="list-style-type: none"> • NSAIDs (administration 30-60 minutes prior to first therapy session recommended) • Opioids PRN <p>Modalities</p> <ul style="list-style-type: none"> • Mild pressure bandage (first 24 hours post-operative) • Gentle massage and thigh/stifle tissue mobilisation • Transcutaneous electrical stimulation for pain relief (15-20 min SID-TID) • Cryotherapy (15-20 min BID) – first session immediately post-operative • Therapeutic laser therapy SID 	Inpatient status during this phase	<ul style="list-style-type: none"> • Post-operative bilateral stifle ROM – goniometry; other joints if applicable • Post-operative bilateral thigh circumference • Response to activity and subjective pain level • Lameness score at a stance and walk • Weight 	<ul style="list-style-type: none"> • Early toe-touching • Adequate resting analgesia • Decreased perioperative swelling and lack of incisional damage • ROM 60-80 degrees flexion, 120-135 degrees extension

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Step 2: Early weight bearing	72 hours to 3 weeks post-operative	<p>Therapeutic exercises</p> <ul style="list-style-type: none"> PROM and flexion/extension stifle stretches of operated limb (10-15 reps BID-TID) until near normal stifle ROM achieved Slow, controlled leash walking, 5 minutes working slowly up to 20 minutes at a time TID Balance exercises on a soft foam pad or bi-directional balance board for weight-bearing Aquatic therapy – Underwater Treadmill (UWTM) walking 5-10 min SID-BID (do not begin until incision is sealed, approximately 1-2 weeks post-operative) <p>Modalities</p> <ul style="list-style-type: none"> Heat therapy before activity (10-15 min BID-TID, NOT within 72 hours after surgery or if CS of acute inflammation are still present) Therapeutic laser therapy PRN Cryotherapy (15-20 min BID) following exercises 	<p>Therapeutic exercises</p> <ul style="list-style-type: none"> PROM and flexion/extension stifle stretches of operated limb (10-15 reps) Slow, controlled leash walking, 5 minutes working slowly up to 20 minutes at a time TID <p>Medications</p> <ul style="list-style-type: none"> NSAIDs – PRN Wean off tramadol, NMDAs Oral chondroprotective agents <p>Modalities</p> <ul style="list-style-type: none"> Heat therapy (10-15 min BID-TID, NOT within 72 hours after surgery or if CS of acute inflammation are still present) Cryotherapy (15-20 min BID) following exercises 	<ul style="list-style-type: none"> Goniometry – Stifle ROM and other joints if applicable Reassess thigh muscle girth at 3 weeks post-operative Response to activity and subjective pain level Lameness score at a stance and walk Weight 	<ul style="list-style-type: none"> Consistent partial weight-bearing on operated limb on all strides at a walk Minimal pain with light activities Incision healing without complications ROM 50-60 degrees flexion, >150 degrees extension

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Step 3: Consistent weight bearing	3 to 6 weeks post-operative	<p>Therapeutic exercises</p> <ul style="list-style-type: none"> PROM and flexion/extension stifle stretches of operated limb (10-20 reps BID-TID) if normal ROM not yet achieved Balance exercises on a 360-degree wobble board or moderately unstable surface 5-10 min Sit-to-stand exercises – 5 working up to 10-15 reps BID-TID – operated side against a wall Aquatic therapy – Underwater Treadmill (UWTM) walking working from 5-10 min up to 15-30 min SID-BID Low Cavaletti Rails 5 reps x 6 rails to begin <p>Modalities</p> <ul style="list-style-type: none"> Ultrasound therapy if loss of tissue extensibility – perform in conjunction with PROM and stretching if needed Therapeutic laser therapy PRN Cryotherapy (15-20 min BID) following exercises if needed 	<p>Weight loss program can be initiated at this phase is warranted (minimises loss of lean tissue mass)</p> <p>Therapeutic exercises</p> <ul style="list-style-type: none"> Slow consistent leash walking – working up to 20-30 minutes BID-TID if progressing well 5-10 minutes of uphill inclines introduced at 4-5 weeks post-operative Sit-to-stand exercises – 5 working up to 10-15 reps BID-TID – operated side against a wall Walking in circles to left and right or Figure 8s to improve proprioception (beginning with wider and working towards narrower turns) <p>Medications</p> <ul style="list-style-type: none"> NSAIDs – PRN Chondroprotective agents 	<ul style="list-style-type: none"> Response to activity and subjective pain level Gait scale at walk Goniometry – Stifle ROM and other joints if applicable Weight 	<ul style="list-style-type: none"> Consistent improvement to weight-bearing to no more than subtle lameness on operated limb at a walk No evidence of pain with activities ROM 40-60 degrees flexion, >150 degrees extension

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Step 4: Improved weight bearing at a trot	6 to 8 weeks post-operative	<p>Therapeutic exercises</p> <ul style="list-style-type: none"> • Radiographs to demonstrate healing of osteotomy site are required to proceed • Sit-to-stand exercises – 20-30 reps BID • Aquatic therapy – UWTM walking • Swimming several times per week, 5 up to 20 min per session (gentle water entry/exit required) • Cavaletti Rails 10-20 reps BID, gradually reducing distance between rails • Stair climbing: 5-10 stairs up and down, BID-TID • Controlled tug-of-war, 5 min per session to tolerance SID <p>Modalities</p> <ul style="list-style-type: none"> • Heat therapy (10-15 min BID-TID) prior to exercises if needed • Cryotherapy (15-20 min BID) following exercises if needed 	<p>Therapeutic exercises</p> <ul style="list-style-type: none"> • Radiographs to demonstrate healing of osteotomy site are required to proceed • Prolonged leash walks, 30-40 min BID-TID, longer leash allowed • Controlled on-leash trotting, beginning at 5 working up to 10 min BID, in a straight line • Trotting in Figure 8s, no sharp turns • Sit-to-stand exercises – 20-30 reps BID • Stair climbing – 5-10 stairs up and down, BID-TID • Dancing on rear limbs 30 sec - 1 min per rep, BID-TID • Controlled tug-of-war, 5 min per session to tolerance SID <p>Medications</p> <ul style="list-style-type: none"> • NSAIDs – PRN • Chondroprotective agents 	<ul style="list-style-type: none"> • Response to activity and subjective pain level • Gait scale at walk and trot • Reassess thigh muscle girth at 7-8 weeks post-operative • Weight 	<ul style="list-style-type: none"> • Consistent weight-bearing at a trot • No evidence of pain with activities

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Step 5: Consistent weight bearing at a trot	9 weeks post-operative and beyond	<p>Therapeutic exercises</p> <ul style="list-style-type: none"> • Aquatic therapy – UWTM for conditioning, consider progressively increasing speed and use of jets when available • Swimming 15-20 minutes 3-4 times per week • Weights on affected limb (begin at 0.5-1 lb depending on dog size) or therabands for preferential strengthening • Playing ball • Jogging up hills and stairs • Additional therapeutic exercises as indicated for strength and speed <p>Modalities</p> <ul style="list-style-type: none"> • Cryotherapy (15-20 min BID) following exercises if needed 	<p>Therapeutic exercises</p> <ul style="list-style-type: none"> • Program may continue as before with the below additions • Running in a straight line • Trotting in Figure 8s and zigzag patterns • Weights on affected limb (begin at 0.5-1 lb depending on dog size) for preferential strengthening • Stair climbing – 1-2 flights 1-2 reps as tolerated <p>Medications</p> <ul style="list-style-type: none"> • NSAIDs – PRN • Chondroprotective agents 	<ul style="list-style-type: none"> • Response to activity and subjective pain level • Gait scale at walk and trot, eventually at faster gaits • Reassessment of thigh girth and joint goniometry as applicable • Weight 	<p>Progressions may be continued as long as lameness or pain with activity is not observed. If this occurs, decrease activity by 50% for 1 week and increase again by 10-20% weekly.</p> <p>Goals are based on multifactorial considerations, including age, presence/degree of osteoarthritis, and musculoskeletal status of other limbs.</p>

Adapted from Canine Rehabilitation and Physical Therapy by Darryl L. Millis and David Levine