

REHABILITATION GUIDELINES FOR

ACL RECONSTRUCTION WITH AUTOGRAFT (QUAD, HAMSTRING, PATELLAR TENDON) WITH OR WITHOUT LEAT (LATERAL EXTRAARTICULAR PROCEDURE)

PHASE I (**0-2 WEEKS**) EARLY POSTOPERATIVE

DATES:

Appointments	Physical therapy 2-3x/week, beginning 2-5 days post-op
Rehabilitation Goals	- Decrease swelling/effusion - Protect Incision - Maintain/re-establish neuromuscular control (quads) - Decrease Assistive Device 0-Full Range of Motion
Precautions	- WB: - WBAT with crutches - May be weaned to 1 crutch with full extension if steady in gait. - Wean crutches when quad control returns, Full extension achieved, stable with low fall risk around 3-4 weeks - Brace - Brace locked in extension until first PT visit, then unlocked at all times. - May remove brace for sleep and exercises after 1 week - Ice 3-5x/day, 20 min each time, especially after exercises - Weaning from ice towards end of week 2 - No resistive open chain exercises with leg in full extension

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Suggested Therapeutic Exercises	• Edema mgt ◦ Ankle pumps, ball rolling • Restore full extension (including hyperextension) ◦ Prolonged extension- prone hang, supine with roll under ankle • Gentle knee flexion (to protect incision and reduce effusion) ◦ Heel slides, wall slides, prone knee flexion • Neuromuscular control ◦ Quad sets (with NMR as needed), SLR (all planes), HS isometrics • Gait Training and Proprioception/Balance exercises ◦ weight shifts forward, retro, lateral and single leg stance ◦ Assistive Device Training
Cardiovascular Exercises	• UBE • Stationary bike: as soon as motion (0-115 degrees) allows ◦ No resistance
Progression Criteria	• Incision wound progressing appropriately • A-SLR without extension lag

PHASE II (**2-8 WEEKS**) INTERMEDIATE POSTOPERATIVE STAGE

DATES:

Appointments	Continue physical therapy 2-3x/week
Rehabilitation Goals	• Decrease Swelling/effusion • Scar tissue healing / remodeling • Continue to progress ROM • Restore efficient gait • Begin to restore muscle girth symmetry • Restore Proprioception • Limb speed and Coordination
Precautions	• Wear brace except for sleeping, exercises • No open chain resistive exercises with weights in full extension ◦ Can use therabands for HS/Quad or manually resisted

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	No Swimming (freestyle kick or breast-stroke) but can swim with buoy between legs after 3 weeks
Suggested Therapeutic Exercises	- Reduce Effusion - Ankle Pumps, ball rolling - Scar Tissue Healing/remodeling - Scar mobilizations, patellar mobilizations - Restore ROM (0-full) - Prone Extension hangs, CREEP knee extension stretch, Prone QS, SLR, Standing TKE, Backwards Gait - Heel Slides, Wall Slides, Ball Rolling, Total Gym, Reformer - Restore muscle girth symmetry & double limb movement competencies - Blood Flow Restrictive Training <i>Quad & Glutes</i>: Bridges, Squats, Wall Squats (isometric holds), Prone leg lifts <i>Hamstring</i>: bridge with feet on FR or ball, Stool Scoots, Hip Hinge/Deadlift, Prone knee curls (with manual resistance and/or theraband) <i>Calf</i>: double or single leg heel raises <i>Hip stabilizers</i>: Standing hip extension, ABD, ADD with surgical limb in weight bearing - Clamshells, Fire hydrants, Lateral Steps with TB around knees/feet - Proprioception and Coordination - Double leg balance progressed to balance board/wobble board for early NM retraining - Slight flexion in knee with balance activities - Wall Drills (Double leg triple extension drive) - Marching Drills (A-march forwards, backwards, laterally) - Gait Training – wean from Assistive Device
Cardiovascular Exercises	- Stationary bike: as soon as motion (0-115 degrees) allows - Elliptical - Stairmaster - Pool: walking, aqua-jogging, Swim with buoy between legs after 3 weeks
Progression Criteria	- ROM (0-120) - Minimal Effusion (<1+ on Stroke Effusion Test) - Normalize Gait

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	○ DC brace: with adequate quad control for gait on level surfaces, inside. 6 weeks post-op. ○ Cavat - ACL Sport Brace when “at risk” (8 weeks)
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PHASE III (8 WEEKS – 3 MONTHS) *FOUNDATION BUILDING* DATES:

Appointments	Continue physical therapy 1x/week with emphasis on developing HEP
Rehabilitation Goals	• Restore full ROM, flexibility • Restore muscle girth symmetry • Proficient with single limb bodyweight movement competencies • Restore proprioception • Limb speed and coordination (micro-plyos) • Begin USTART testing (movement competencies, balance, girth, strength testing)
Precautions	• Gentle downhill walking, downhill biking until 4.5 months, Road biking with flat (no clips) • No unsupervised plyometrics • May start resistive open chain muscle strengthening • Use soreness rules to advance their therex program
Suggested Therapeutic Exercises	• Restore muscle girth symmetry ○ Leg Press, Blood Flow Restrictive Training • Restore flexibility ○ HS, Quads, Adductors, ITB/TFL • Single Leg bodyweight movement competencies ○ SL squat to box, Lunges (sagittal and lateral), Step Ups/downs (anterior/lateral) • Restore proprioception ○ SL Balance progressing to unstable surface ▪ Knee must be in slight flexion (30deg) ○ Perturbations with sports cord with DL movements (anterior, laterally with squats, lunges) • Limb speed and coordination (micro-plyos) ○ Single leg triple extension, SL triple ext drive and double tap ○ A-march with ankle flips (forwards/backwards/lateral) • Pool: lateral movement, deep water jogging in place (no freestyle or frog/breaststroke kick)
Cardiovascular Exercises	• Road biking on flat roads only • Treadmill walking • Pool walking/jogging

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Progression Criteria	• Y Balance assessment – establish baseline at 6-8 weeks • Girth Measurement (target <2cm) • Pass USTART Movement Competencies, • Score USTART flexibility and countermovement (does not need to pass)
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PHASE IV (3 TO 5 MONTHS) ACCUMULATION

DATES:

Appointments	Home Exercise program with monthly check in or begin group exercises with ATC
Rehabilitation Goals	• Restore muscle girth symmetry and strength • Flexibility • Proprioception • Plyometrics ○ Hop drills without difficulty ○ Good landing mechanics with jumping ○ Hopping/agility drills without knee pain or effusion • Impact activities – ○ Running without knee effusion (begin jogging at 12 weeks) ○ Progress to running patterns at 75% speed
Precautions	• No downhill walking/running, downhill biking until 4.5 months • May start freestyle swimming (No breast-stroke kick)
Suggested Therapeutic Exercises	• Strength Training (Barbell, Kettlebell, medicine balls, Free weights, weight machines) both open chain and closed chain • Jumping ○ Double Limb Drop Jumps and counter jumps ○ Box jumps • Agility drills: ○ Agility Ladder drills, jump rope drills, • Sport Specific Training (may train with team) ○ Running/Cutting Drills
Cardiovascular Exercises	• Increasing endurance (duration and frequency) with closed chain exercises 3-4x/week • Return to Running program (on Track or Treadmill) • Pool: may start freestyle swimming (no breaststroke kick)

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(Phase IV continued) Progression Criteria	• Y Balance: assessing for progress • Girth Measurement (<2cm) • Single leg hop for distance (15% symmetry) • Pass USTART (movement competencies, counter movements and flexibility) • IPRRS objective measure score
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PHASE V (5 TO 8 MONTHS) TRANSITION

DATES:

Appointments	Transition to an IND HEP program or group/dry land training with ATC or Coach
Rehabilitation Goals	• No longer needs modifications to avoid pain, swelling, ROM with activity and exercise. • Able to complete a running program (3 miles at varying speeds) • Restore previous levels of training in volume and intensity
Precautions	• Return to sport testing at 9 months post-op, prior to MD visit • may advance swimming (avoid frog/breaststroke kick)
Cardiovascular Exercises	• Running • Swimming
Progression Criteria	• Pass Return to Sport testing • Quadricep and hamstring strength at 90% of unaffected limb • Single leg hop test and vertical jump at least 90% of opposite leg • Jog, full speed run, shuttle run and figure of 8 running without a limp • Full controlled acceleration and deceleration • Squat and rise from a full squat • Subjective Measurements of function (IKDC and IPRRS)

References:

Mammoth Orthopedic Institute
 The Steadman Clinic
 USS Return to Sport Protocol
 UD Delaware Physical Therapy Clinic

PT name and date: Melissa Buehler, PT, DPT 4/10/20

MD name and date: Dr. Brian Gilmer, 5/18/20

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