



Brian B. Gilmer, MD
US Ski Team Physician

Karly M. Dawson PA-C
Teaching Associate

REHABILITATION GUIDELINES: BEAR IMPLANT FOR ACL REPAIR

PHASE I (0-4 WEEKS)

DATES:

Appointments	<ul style="list-style-type: none"> Physical therapy 2-3x/week, beginning 2-5 days post-op
Rehabilitation Goals	<ul style="list-style-type: none"> Edema control (Ice/elevate) Slow progression of knee ROM Quad re-education (BFR and NMES) Protect repair
Precautions	<ul style="list-style-type: none"> Gait: PWB 50% with crutches and brace on and locked to 0 degrees x 4 weeks ROM Progression: 0-45 degrees at 0-2 weeks, 0-90 degrees at 2-4 weeks Sleep with brace on and locked at 0 degrees x 6 weeks No Scar massage until 6 weeks post-op
Suggested Therapeutic Exercises	<ul style="list-style-type: none"> Passive knee extension stretching towel under ankle (no prone extension hang until 4 weeks post-op) Supine, seated heel slides for knee ROM within protocol limitations Quad set, SAQ once 0-45 degrees has been optioned is ok, SLR, avoid open chain ex's with any resistance, BFR and NMES ex's encouraged Patellar mobility
Cardiovascular Exercises	<ul style="list-style-type: none"> Seated UBE arm bike
Progression Criteria	<ul style="list-style-type: none"> 4 weeks post op

PHASE II (4-7 WEEKS)

DATES:

Appointments	Continue physical therapy 2x/week
Rehabilitation Goals	<ul style="list-style-type: none"> Full knee extension

REHABILITATION GUIDELINES FOR ACL WITH QUAD TENDON AUTOGRAFT

	<ul style="list-style-type: none"> • Good quad contraction • Flexion ROM >90 • Minimize pain and swelling
Precautions	<ul style="list-style-type: none"> • Wear brace except for sleeping, exercises
Suggested Therapeutic Exercises	<ul style="list-style-type: none"> • Prone knee extension stretch can be added to extension stretching • Continue with patellar mobility all planes • Continue with quad strength/activation (quad sets, add SLR if no extension lag present, LAQ 0-90) • Initiate closed kinetic chain ex's with step-ups, stair reciprocal training, mini-squats, as allowed per protocol with ROM and brace use. • Gait training progressing to normal heel-to-toe with brace unlocked 0-90
Cardiovascular Exercises	<ul style="list-style-type: none"> • Seated UBE arm-bike
Progression Criteria	<ul style="list-style-type: none"> • 7 weeks post op • 0-90 ROM

PHASE III (7 WEEKS – 12 WEEKS)

DATES:

Appointments	Continue physical therapy 2x/week as indicated
Rehabilitation Goals	<ul style="list-style-type: none"> • Minimize pain and swelling • Full knee extension ROM • Good quad control (able to do 20 SLR with no extension lag) • Normal gait pattern
(Phase III continued) Precautions	<ul style="list-style-type: none"> • 0-110 degrees AROM by week 7, then ROM to full • Change from Hinged knee brace to ACL brace when ROM > 110 degrees. • ACL brace worn during walking and all weight bearing/CKC ex's x 12 weeks
Suggested Therapeutic Exercises	<ul style="list-style-type: none"> • SLR with no extension lag • Bilateral squats • HS curls • Open/closed chain proximal hip strength ex's • Calf raises • Reciprocal stair training (step up/down) • Water jogging ok in pool starting at 8 weeks post-op

REHABILITATION GUIDELINES FOR ACL WITH QUAD TENDON AUTOGRAFT

Cardiovascular Exercises	<ul style="list-style-type: none"> • Bike (no resistance) ROM
Progression Criteria	<ul style="list-style-type: none"> • Ability to do 20 SLR with no extension lag • Normal gait • Full extension and at least 90 degrees knee flexion ROM • Quad index 60-80% • Minimum of 12 weeks post op

PHASE IV (12 TO 20 WEEKS)

DATES:

Appointments	Continue physical Therapy 2x per week
Rehabilitation Goals	<ul style="list-style-type: none"> • Full ROM • Strength progression • Progress proprioception and Balance
Precautions	<ul style="list-style-type: none"> • Return to running may start at week 18 if ok by surgeon • No pivot/cutting motions • No plyometrics until 20 weeks post-op
Suggested Therapeutic Exercises	<ul style="list-style-type: none"> • Closed Kinetic Chain strength as focus progressing from bilateral to single leg (squats, lunges, step up/down) • Single leg strength progression including single leg balance • Leg press • Proximal hip/core strength progressing from double leg to single leg
Cardiovascular Exercises	<ul style="list-style-type: none"> • Bike • Swimming with flutter kick only can start at 12 weeks • Walk/hiking • Running may start at 18 weeks if cleared by surgeon • Transition to straight line running on treadmill (zero gravity or standard treadmill) or in a protected environment after clearance by operating surgeon and quad QI ≥80%, zero eusion and full ROM, otherwise, hold o on straight line running until Phase 5
Progression Criteria	<ul style="list-style-type: none"> • Full ROM • Functional strength and control in daily activities (QI > 80% LSI) • Minimum of 20 weeks post op

PHASE V (20 TO 30 WEEKS MONTHS)

DATES:

Appointments	Continue physical therapy 1-2 visits per week
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Rehabilitation Goals	<ul style="list-style-type: none"> • Able to maintain full ROM • Able to complete a running program • Return to pain free running • Plyometric training without pain or instability
Precautions	<ul style="list-style-type: none"> • No cutting or pivot motions
Suggested Therapeutic Exercises	<ul style="list-style-type: none"> • Continue with double leg and single leg closed kinetic chain strength • Begin double leg progressing to single leg plyometrics • Continue with proprioception and balance progressing to single leg • Double leg jumping progression to hopping as tolerated
Cardiovascular Exercises	<ul style="list-style-type: none"> • Running (no cutting or pivot) and biking • Begin or continue running progression on treadmill or in protected environment after clearance by operating surgeon and QI = 80%, to trace eusion and full ROM • NO cutting or pivoting • All other cardiopulmonary equipment
Progression Criteria (Return to Sport)	<ul style="list-style-type: none"> • Running without pain or swelling • Able to hold single leg balance for at least 1 minute • 50% hop height on operated leg compared to non-operated leg (hop test in brace) • QI > 80% LSI • Minimum of 30 weeks post op

PHASE VI (30 TO 36 WEEKS)

DATES:

Appointments	Continue physical therapy 1 visit per week
Rehabilitation Goals	<ul style="list-style-type: none"> • Running patterns (Figure-8, pivot drills, etc.) at 75% speed without difficulty • Jumping without difficulty • Hop tests at 85% contralateral values (Cincinnati hop tests: single-leg hop for distance, triple-hop for distance, crossover hop for distance, 6-meter timed hop)
Precautions	<ul style="list-style-type: none"> • Return to sport given before cleared by surgeon for cutting sports
Suggested Therapeutic Exercises	<ul style="list-style-type: none"> • Continue single leg closed kinetic chain strength • Continue with single leg plyometrics • Agility training with change of direction, cutting, and pivot training • Sport specific training

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Agility Drills	<ul style="list-style-type: none"> Shuffling Hopping Cariocas Vertical jumps Running patterns at 50 to 75% speed Initial sports specific drill patterns at 50 to 75% effort
Progression Criteria	<ul style="list-style-type: none"> Maximum vertical jump without pain or instability 85% of contralateral on hop tests Run at 85% speed without difficulty IKDC Question #10 (Global Rating of Knee Function) score of ≥ 8 Completion of functional hop testing showing 85% function and clearance by operating surgeon QI 85% LSI

PHASE VII (36 TO 52 WEEKS)

DATES:

Appointments	Continue physical therapy 1-2 visits per week
Rehabilitation Goals	<ul style="list-style-type: none"> 90% contralateral quad strength 90% contralateral on hop tests Sport specific training without pain, swelling or difficulty
Precautions	<ul style="list-style-type: none"> Return to sport given before cleared by surgeon for cutting sports
Suggested Therapeutic Exercises	<ul style="list-style-type: none"> Continue with double leg and single leg closed kinetic chain strength Begin double leg progressing to single leg plyometrics Continue with proprioception and balance progression
Sport Specific Activities	<ul style="list-style-type: none"> Interval training programs Running patterns in football Sprinting Change of direction Pivot and drive-in basketball • Kicking in soccer Spiking in volleyball Skill/biomechanical analysis with coaches and sports medicine team
Return to Sport Evaluation Recommendations	<ul style="list-style-type: none"> Balance test: Single leg balance for 60 seconds without touchdown for each leg Single leg squat: Get to 60° of flexion, able to do without IR at the hip or valgus at the knee Hop tests (single leg hop for distance) to be 95% of contralateral side QI $\geq 90\%$

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PT name and date: Andrea Dillon 6/21/16

MD name and date: Approved by MD 6/21/2016

MAMMOTH ORTHOPEDIC INSTITUTE

85 Sierra Park Road ▪ Mammoth Lakes, CA 93546 ▪ 760.924.4084

162 South Main Street ▪ Bishop, CA 93514 ▪ 760.872.7766

SIERRA PARK PHYSICAL AND OCCUPATIONAL THERAPY

85 Sierra Park Road ▪ Mammoth Lakes, CA 93546 ▪ 760.934.7302

162 South Main Street ▪ Bishop, CA 93514 ▪ 760.872.2942