ORTHOPEDICS & SPORTS MEDICINE
BAYCARE CLINIC

Dr. Harold Schock III, MD
ACL Reconstruction – Hamstring Autograft

* If a meniscus repair is performed in conjunction with an ACL reconstruction, **Please defer to the meniscus repair protocol**. *

Phase 1 – Maximum Protection Phase (0-6 weeks)

Goals for Phase 1

- Protect integrity of graft
- Minimize knee effusion
- ROM per guidelines listed, emphasis on extension
- Encourage quadriceps function
- Scar tissue mobility

Precautions

- Avoid knee hyperextension during this phase despite contralateral knee measurement
- No kicking in pool for 12 weeks
- No isolated resistance knee flexion for 6 weeks due to hamstring autograft

Immobilization/Weight Bearing

- **0-14 days:** NWB using crutches for 10-14 days until MD follow appointment
- **14 days:** start weight-bearing progression with crutches and brace locked in extension: add 25% weight while ambulating every day (25% WB for 1 day, then 50% WB for 1…etc)
- **3 weeks:** Discharge crutches if patient has controlled pain, controlled effusion, and appropriate knee control

Range of Motion

- **0-2 weeks:** 0-90°, emphasis on extension
- **0-6 weeks:** 0-120°, emphasis on extension
- **6+ weeks:** Full ROM

Brace

- **0-4 weeks:** locked in full extension at all times
- **4-5 weeks:** brace opened 0-30° for ambulation if patient displays controlled pain, appropriate quad strength, and controlled effusion
- **5-6 weeks:** brace opened to 90°
- Brace locked in full extension while sleeping for 6 weeks

Manual Therapy

- Patellar mobility (superior, inferior, medial, lateral)
- Scar massage when incisions closed
- Gentle flexibility using deep tissue mobilization or the “Stick” – hamstring, quadriceps, gastroc-soleus, ITB
- PROM/AROM knee flexion/extension, strong emphasis on full knee extension

Strengthening

- Quadriceps setting with focus on VMO activation
- NMES if needed to promote quadriceps contraction
- Avoid knee hyperextension with quadriceps setting
- Hip strengthening
    - **Weeks 0-3:** Multi-plane open kinetic chain SLR with brace on if needed for quad lag
- Stationary bike (seat height measure 85-95° hip flexion angle in upright sitting posture on upright bike)

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- Bilateral gym strengthening program (mini squats, leg press, 4-way hip strengthening, step-ups, bridging, calf raises)
- Core strengthening

Aquatics

- Initiate aquatic therapy program when incisions are closed

Neuromuscular Control

- Proprioception on stable surface

Modalities

- Vasopneumatic compression for edema management 2-3x/week (15-20 min)
- Cryotherapy at home, 3 x per day for 20 minutes each with knee elevated above heart
- NMES for quadriceps function if quad lag present

Phase 2 – Maximum Protection Phase (6-12 weeks)

Goals for Phase 2

- Minimize knee joint effusion
- Progress stretching, muscle strength, endurance, and balance

Precautions

- No kicking in pool for 12 weeks
- Avoid twisting and pivoting motions for 12 weeks
- Avoidance of impact activity until able to pass functional testing

Range of Motion

- Restore full ROM by week 8

Brace

- Discharge of brace based on controlled pain, appropriate quad strength, and controlled effusion.

Strengthening

- Stationary bike or elliptical for warm-up
- Bilateral gym strengthening with progression to unilateral as able (leg press, step-ups, hamstring curls, side-stepping, single leg squat, multi-directional lunges)
- Initiate knee flexion AROM using CKC strengthening with progression to OKC
- Core strengthening

Neuromuscular Control

- Advanced proprioception on unstable surfaces
- Add dual tasking and sport specific balance as able

Modalities

- Cryotherapy after activity

Testing to advance to Phase 3 protocol

- Functional strength testing to be scheduled before 12 week follow-up with MD (appt must be scheduled with Aurora BayCare Sports Medicine department – East Side location to complete testing). Please contact physician office if unable to make this arrangement for alternative testing.
- Y-Balance testing within 6 cm of involved LE
- 3PQ isometric quadriceps testing (<25% difference)

- Single leg squat without display of knee valgus

Phase 3 – Strengthening and Plyometric Phase (12-24 weeks)

Goals for Phase 3

- Progress single leg muscle strength, endurance, and balance
- Initiate impact activity
- Sport or work specific tasks

Strengthening

- Stationary bike, elliptical, treadmill
- Gentle flexibility – hamstring, quad, gastroc-soleus, ITB
- Unilateral gym strengthening program (single leg squats, eccentric leg press, lateral step-downs, advanced bridging, multi-directional lunges, CKC hamstring curls)
- Initiate impact activities
- **12-14 weeks:** sub-maximal body-weight impact exercise (pool, GTS, plyo-press, Alter G)
- **14+ weeks:** sagittal plane running, agility drills, sub-maximal plyometrics
- **16+ weeks:** advance to multi-directional running if able to avoid dynamic knee valgus, cutting and pivoting drills, plyometrics
- **20+ weeks:** sport specific drills
- Core strengthening

Neuromuscular Control

- Advanced proprioception on un-stable surfaces with perturbations and/or dual tasking, add sport specific balance tasks as able

Modalities

- Cryotherapy after activity
- Fit with functional ACL brace (based on MD recommendation)

Return to Function Testing: Aurora BayCare return to function for the lower extremity protocol to be used

- **Week 24:** **Return to function testing** per MD approval (appt must be scheduled with Aurora BayCare Sports Medicine department – East Side location to complete testing). Please contact physician office if unable to make this arrangement for alternative testing.
- Criteria: pain-free, full ROM, minimal joint effusion, isokinetic strength and functional testing at 90% compared to uninvolved, adequate knee control with sport and/or work specific tasks