

Rehabilitation Protocol: ACL Tear – Non-Operative

Tear: ☐ Partial ☐ Complete

Phases are based on **presentation and irritability**; progression is criteria-based and should align with patient goals. Partial tears may be progressed more slowly to allow healing. Brace use per our office. Avoid anterior tibial translation, pivoting and activities that cause instability; monitor for buckling episodes throughout. Concomitant ligament injury may slow progression. Please contact our office with any questions or concerns.

☐ Phase I – Acute / High Irritability

- **Precautions:** Modify irritating activities; assistive device/brace as needed; minimize effusion; monitor buckling and extension end-feel
- **Treatment**
 - Education: activity modification, HEP compliance; hamstrings as dynamic stabilizers
 - Edema: PRICE, modalities; manual therapy, joint mobilization, soft tissue work, taping as needed
 - ROM: low-load long-duration stretching for extension; AAROM; stationary bike; aquatic therapy if available
 - Neuromuscular: NMES quadriceps; biofeedback
 - Strengthening: quad sets, SLR; prone hamstring curls, hamstring isometrics; bilateral leg press; hip/ankle stabilizers; BFR with FDA-approved device and physician clearance; no limits on upper body/core that does not stress the knee
 - Gait: wean assistive device as tolerated; retrograde treadmill; non-reciprocal stairs
 - Bilateral squats 0–45° in a pain-free arc; weight shifting on various surfaces; cardio
- **Criteria to Progress:** Minimal to no effusion; extension 0° and flexion $\geq 120^\circ$; normal gait without device; SLR without lag

☐ Phase II – Sub-Acute / Moderate Irritability

- **Precautions:** Avoid premature return to activity, stressing injured ligaments, patellofemoral stress and knee hyperextension; monitor effusion and buckling
- **Treatment**
 - Education: 0/10 pain with all ADLs; hip versus knee strategy; edema management (PEACE & LOVE)
 - Achieve full, pain-free AROM; stretching and foam rolling as needed
 - Open chain knee extension: **partial tears 90–45°**; complete tears in a pain-free, crepitus-free range
 - Closed chain emphasized 0–90°: leg press double leg to eccentric to single leg
 - Hamstrings: standing curls, heel-raise bridge, RDL; hip/ankle stabilizers; upper body and core
 - Squat and step progressions (forward, lateral, down; progress height)
 - Single-leg balance (surfaces, eyes open/closed); perturbation training
 - Bike, elliptical with progressive resistance; aquatic therapy if available
- **Criteria to Progress:** Full ROM; pain and effusion controlled with increasing activity; quadriceps LSI $\geq 70\%$; symmetric squat; pain-free 8-inch step up and step down; single-leg balance without compensation; frontal plane knee stability

☐ Phase III – Chronic / Low Irritability

- **Precautions:** Avoid compensatory patterns, fatigue (adequate rest/recovery), patellofemoral pain and effusion with plyometrics; monitor buckling
- **Treatment**
 - Double to single leg and body weight to external resistance progressions (squat, leg press, bridge); isokinetics if available; full kinetic chain

- Dynamic proprioception, perturbation training, PNF (slow, controlled)
- Plyometrics, double to single leg, vertical to horizontal, one new exercise per week: box jump, jump in place, drop jump; forward, side-to-side and broad jumps
- Interval running program on non-consecutive days (antigravity treadmill if available)
- **Criteria for Discharge or Phase IV:** Single-leg squat with good alignment and control; quadriceps LSI $\geq 80\%$; no pain or apprehension with running and plyometrics

☐ **Phase IV – Return to Sport (if applicable)**

- **Precautions:** Avoid premature return to play and instability during sport-specific training; monitor effusion and patellofemoral pain
- **Treatment**
 - Strength maintenance; shuttle runs, sprinting, sport distances
 - Dynamic proprioception and PNF (high speed, high force); plyometric progressions; agility (ladder, hurdles, cutting)
 - Sport-specific training; functional sport brace per our office; collaborate with ATC/performance coach
- **Return to Sport:** Quadriceps/hamstring LSI $\geq 90\%$ (isokinetic if available); hop tests and star excursion $\geq 90\%$ of the other side; no symptoms with sprinting, cutting and plyometrics; clearance from our office. Recurrent instability should prompt re-evaluation for reconstruction.