Salina Regional Orthopedic Clinic
Salina Regional Health Center

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ACL Reconstruction- Full Protocol for PT Reference

This protocol encompasses the spectrum of ACL reconstruction techniques and may be modified to account for additional procedures and/or special circumstances outlined by the surgeon. Each therapist is encouraged to use evidence-based clinical reasoning when choosing an exercise or therapeutic procedure.

Key Considerations for Each Graft:

BPTB:	Closely monitor complaints of anterior knee pain during the rehab process (tendonitis, anterior interval scarring).
Hamstring Tendon:	Avoid isolated resisted hamstring exercises for ~6 weeks to allow scarring of the semitendinosus and gracilis to occur. Patients ready for resisted hamstring exercises will be non-tender to palpation and able to actively straight leg raise (SLR) to 70° without pain. Isometric hamstring activities can begin as early as 3 weeks.
Allograft:	Patients may have less pain & may be able to progress faster w/ rehab. Given high failure rate of allografts caution for RTS before 9 months is cautioned.

PHASE 1 (Week 1 – Week 6) – Graft Protection/Mobility

Goals	Minimize pain and swelling Restore patellar complex mobility with emphasis on patellar tendon mobility Restore voluntary quadriceps activation Normalize motion and gait pattern
Brace	Worn at all times while not exercising in PT for 5-6 weeks. Locked at 0° for 5-7 days (or until pt demonstrates adequate quad control), then unlocked 0°-90 ° for ~4 wks. Brace can be locked at 10 ° hyperextension if extension loss is present (or set -10°-90 ° during the 4 weeks). Sleep in brace locked in extension ~2 weeks or until symmetrical active extension is achieved
Weight-bearing	WBAT with 2 crutches Crutch progression: 2 crutches 1 crutch no crutch when gait is symmetrical with appropriate quad activation in stance phase
ROM	Patellar tendon and patellar complex mobilization emphasized for at least the first 6-8 weeks Restore ROM with goal of full range by 6 weeks. Emphasize symmetrical active extension.
Key Exercises	Quad sets and SLR (with NMES, biofeedback) Gastrocnemius stretch for extension ROM Wall/heel slides Bike for motion starting at 1-2 weeks Open- and closed-chain terminal knee extension (TKE) Anterior/posterior weight shifting in brace Double-leg shuttle leg press for muscle activation no earlier than 4 weeks (0-60°) ***Patient must demonstrate appropriate voluntary quad activation, co-contraction and endurance to allow for controlled motion on the shuttle
Exercises to AVOID	Squats with acutely inflamed knee Progressing CKC strength before full active extension has been achieved

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Criteria for Progression to Phase 2:

- Symmetrical active extension and >120° flexion
- Normal patellar mobility
- Minimal swelling (<1cm difference in mid-patellar girth)
- Minimal pain (<2/10 with activity)
- 3x30 straight leg raise with NO extension lag
- Static single leg balance x 1 minute (stable surface)
- Symmetrical gait

PHASE 2 (Week 7 – Week 12) – Endurance

Goals

Improve closed-chain single leg strength, endurance, and neuromuscular control
Develop strength and stability in the sagittal plane under various proprioceptive conditions with gradual initiation of frontal plane activities
Maximize cardiovascular fitness and muscular endurance (prepare patient for return to running)

Brace

Optional hinged knee brace per surgeon, unlocked (no brace in controlled PT environment)

ROM

Ensure full extension is maintained as CKC activities progress

Key Exercises

Increase repetitions/weight of Phase 1 exercises, plus:

1. Double/Single leg bridges
2. Shuttle progression; add bilateral shuttle jumps in late phase II
3. Squat progression, including double and single leg squats with sport cord
4. Step-up progression
5. Lunge progression
6. Balance progression
7. Deadlift progression

Exercise progression:

Double leg → Single leg
Stable surface → Unstable surface
Sagittal plane → Frontal plane

Exercises to Avoid:

- Progression of loading or CKC strengthening if full active extension is not maintained
- Running before 12 weeks given high likelihood of bone bruising with initial injury

Criteria for Progression to Phase 3:

- Minimal pain, no swelling
- No incidence of giving way
- Full AROM
- Y-balance Test anterior reach within 10cm
- Single leg squat with sport cord for 1 minute

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PHASE 3 (Week 13 – Week 20) – Strength

Goals	Increase intensity and build on foundation of strength and cardiovascular fitness/endurance Introduce transverse plane motions in late phase 3 Transition to movements geared towards speed, power, and function Incorporate functional balance activities utilizing muscle strength, proprioception, and external perturbation Emphasize safe deceleration, eccentric control, and proper biomechanical alignment/control ***Pass sport cord test between 5-6 months to allow return to participation progression to begin. Expected full clearance for returning to sport is 6 months or beyond. *** Best current evidence shows returning to sport before 7 months increases subsequent ACL injury by 15-25; and is doubled in females
Brace	Optional hinged knee brace per surgeon, unlocked (no brace in controlled PT environment)
Key Exercises	Focus on increasing sets/duration of four sport cord test components to prepare for test Increase intensity of cardiovascular interval training Initiate squat jump progression from shuttle to gravity dependent position Advance plyometrics from bilateral to unilateral as patient demonstrates quad control
Running	Timeline: Between 3-4 months Criteria: 1. Single leg squat with sport cord for 90 seconds 2. Forward & Backward sport cord jog for 1 minute each Progression Guidelines: *See return to run progression protocol

Criteria for Progression to Phase 4:

- Sport Cord Test ≥ 46/54 (black sport cord: >150 lbs.; blue sport cord: female or <150lbs)
- Symmetric running gait: audibly rhythmic foot strike without gross asymmetries in visual kinematics when running between 6-10mph
- Y-Balance Test anterior reach within 4 cm

PHASE 4 (Week 20+) – Return to Sport Spectrum

Goals	Plyometric Power Dynamic Balance Multi-Planar Movement Athletic Agility Cardiovascular fitness
Brace	Fit for sport brace (per surgeon preference)
Exercises	Sport specific movement patterns practiced in supervised and controlled environment
Return to Participation	Graded re-integration into sport activities (progressive loading) Controlled, predictable environment Unpredictable drills and environment Individual drills Team drills Non-contact Contact Supervised rehabilitation ~1x/week for 4-6 weeks with controlled practice and game participation Coordination with ATC

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Criteria for Progression to Return to Play:

- LESS of 5 or less
- Single hop for distance within 90% of uninvolved
- Y-Balance Test
- Biodex Isokinetic Strength >90% (if available)
- Hand-held dynamometry within 90% of uninvolved quad/hamstring/hip abductors

Return to Play	Clearance by surgeon, PT, and ATC for full, unrestricted return to sport at 6 months or beyond. Typical timeframe will be anywhere between 6-12 months.