Rehab Protocol ACL Reconstruction with Meniscus Repair

PHASE I (surgery to 6 weeks after surgery)

Appointments	• Rehabilitation appointments begin 3-5 days post-operatively and then approximately 1-2 times per week
Rehabilitation Goals	• Protection of the post-surgical knee and graft • Restore normal knee extension • Eliminate effusion (swelling) • Restore leg control
Precautions	• Bilateral (two) axillary crutches • TTWB x 6 weeks with crutches • Brace locked in extension for ambulation and sleeping • Brace settings: • Week 1-2: 0-30 degrees • Week 3-4: 0-60 degrees • Week 5-6: 0-90 degrees • Range of Motion (ROM): Goal of 0-90° within 6 weeks. Avoid flexion past 90° to protect meniscus repair. The goal in the first phase is to achieve hyperextension equal to the other side, unless excessive hypermobility exists. Generally, 5° of hyperextension should be a maximum.
Suggested Therapeutic Exercise	• Quad sets, isometric knee extension at multiple angles in allowed range of motion and as tolerated at patellofemoral (PF) joint • Isometric and OKC hamstring strengthening in pain free ROM • Hip 4-way SLR (straight leg raise) • Ankle and foot stretching and strengthening in non-weight bearing • Scar and soft tissue massage, patella mobilizations • NMES (neuromuscular electrical stimulation) for quadriceps atrophy, strengthening as needed

	• HVPC (high volt pulsed current) for effusion (swelling) reduction as needed • Cryotherapy 6-8 times per day for 15 to 20 minutes each
Cardiovascular Exercise	• Upper body circuit training or upper body ergometer
Progression Criteria	• Hip flexion SLR without knee extension lag • Full knee extension • Knee flexion to 90° • Minimal joint effusion

PHASE II (6 weeks after surgery, when Phase I criteria met)

Appointments	• Rehabilitation appointments are 1 to 2 times per week
Rehabilitation Goals	• Full ROM • Progress neuromuscular retraining • Hopping without pain, swelling or giving-way • Adherence to HE
Precautions	• Transition to full weight bearing with crutches • Avoid over-loading the fixation site by utilizing low amplitude low velocity movements • No active inflammation or reactive swelling • ROM Brace discontinued • ACL Brace for ambulation, activities
Suggested Therapeutic Exercise	• Progress ROM and flexibility to full if limited • CKC multi-plane activities within pain-free ROM • OKC knee flexion and extension 90 to 40 with 1# weight increase per week • Hip and core strengthening • SLS, BAPS, unstable surfaces • Joint repositioning • Perturbation training (balance against resistance) • Frontal (forward) and sagittal (side) plane double-leg plyometrics, plyometric leg press

	• • NMES for quadriceps atrophy, strengthening as needed • • HVPC for effusion reduction as needed • Cryotherapy 6-8 times per day for 15 to 20 minutes each as needed for swelling
Cardiovascular Exercise	• UBE, stationary bike, treadmill ambulation
Progression Criteria	• Dynamic neuromuscular control with multi-plane activities without pain or swelling • Isokinetic quad strength 90% of non-involved side tested at 300°/sec

PHASE III (12 weeks after surgery, when Phase II criteria met)

Appointments	• Rehabilitation appointments as needed. Usually 1 time every 1-2 weeks.
Rehabilitation Goals	• Normal running gait without side to side differences or compensations. • Normal double leg landing control without side to side differences or compensations for sub-maximal squat jump. • Adherence to HEP
Precautions	• No active reactive swelling or joint pain that lasts more than 12 hours.
Suggested Therapeutic Exercise	• Proceed to treadmill running gradually progressing toward running for 10-15 mins at a pace of 6-8 mins per mile and 3-5% grade. Steadily advancing to outdoor running • Low amplitude low velocity agility drills: forward and backward skipping, side shuffle, skater's quick stepping, carioca, cross overs, backward jog, forward jog • Running patterns at 50 to 75% speed • Initial sports specific drill patterns at 50 – 75% effort • Closed chain strengthening for quadriceps and glutes - progressing from double leg strengthening to single leg strengthening; lunge progressions and single leg squat progressions

	• Single leg balance exercises and progressions, progressing from stationary to deceleration in to holding posture and position • At ~12-14 weeks initiate low amplitude landing mechanics: med ball squat catches, shallow jump landings, chop and drop stops, etc. • Hip strengthening - especially oriented at neuromuscular control in prevention of hip adduction at landing and stance • Core strength and stabilization - especially orientated at preventing frontal plane trunk lean during landing and single leg stance
Cardiovascular Exercise	• Stationary bike with moderate resistance • Deep water running and swimming • Elliptical trainer at moderate intensity
Progression Criteria	• Normal jogging gait • Good single leg balance • Less than 25% deficit on Biodex strength test • No reactive swelling after exercise or activity

PHASE IV (16-20 weeks after surgery, when Phase III criteria met)

Appointments	• Rehabilitation appointments are once every 2-4 week
Rehabilitation Goals	• Normal multi-planar high vel without side to side differences or compensations. • Normal double leg landing control without side to side differences or compensations. • Adherence to HEP
Precautions	• No active reactive swelling or joint pain that lasts more than 12 hours.
Suggested Therapeutic Exercise	• Progressive agility drills: forward and backward skipping, side shuffle, skater's quick stepping, carioca, cross overs, backward jog, forward jog • Landing mechanics - progressing from higher amplitude double leg to single leg landing

	drills. Start uni-planar and gradually progress to multi-planar • Movement control exercise beginning with low velocity, single plane activities and progressing to higher velocity, multi-plane activities • Unanticipated movement control drills, including cutting and pivoting • Agility ladder drills • Strength and control drills related to sport specific movements. • Sport/work specific balance and proprioceptive drills • Hip strengthening - especially oriented at neuromuscular control in prevention of hip adduction at landing and stance • Core strength and stabilization - especially orientated at preventing frontal plane trunk lean during landing and single leg stance • Stretching for patient specific muscle imbalances
Cardiovascular Exercise	• Progressive running program. Design to use sport specific energy systems
Progression Criteria	• Patient may return to sport after receiving clearance from the orthopedic surgeon and the physical therapist/athletic trainer. Progressive testing will be completed. The patient should have less than 15% difference in Biodex strength test, force plate jump and vertical hop tests, and functional horizontal hop tests.