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PHYSICAL & OCCUPATIONAL THERAPY

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MENISCAL REPAIR PROTOCOL

General Considerations:

-It is important to recognize that all times are approximate and that progression should be based on careful monitoring of the patient's pain and functional status.
-Patients are STRICTLY non weight-bearing for the initial 4-6 weeks (per MD) with use of the knee immo bilizer/knee brace locked into 0 degrees of extension
    oTDWB may be allowed per MD instruction
-Knee immobilizer may be discontinued at 4 weeks if patient demonstrates good quadriceps control
-CKC exercises can be initiated at 6 weeks in full extension or between 20-70 degrees of knee flexion, and this is maintained until 4 months post-operatively. Should be limited to 90 degrees until 20 weeks, thereafter as tolerated.
-Overall, repetitive CKC movements involving deep knee flexion should be limited for the first 6 months post-operatively
-Active hamstring exercises should not be initiated until week 6, and not with resistance until weeks 8-10
-Return to sport will be based on the outcomes of a functional examination, and per MD evaluation

WeekS 1-6:

Goals:
-Protect the surgical repair
-Manage swelling, soft tissue
-Initiate protective PROM, restore full ROM (0-120 degrees by week 6)
Weight-bearing:
-Strictly non weight-bearing to touch-down weight-bearing if allowed per MD instruction
-TDWB should be performed in full extension only
-Discontinue immobilizer at 4 weeks per MD, and if demonstrates good quadriceps control

ROM:
-0-90^0 PROM only for the first 2 weeks, then after as tolerated
-No isolated hamstring activation
Suggested Interventions:
-Swelling and soft tissue management, tendon mobilizations
-Patellar mobilizations
-Quadriceps activation interventions, NMES/Russian Stimulation
-Quadriceps, gastroc/soleus stretching
-Heel/wall slides
-Hip and core strengthening
-Gait training
-Well-leg stationary cycling, upper body training

Weeks 7-9:

Goals:
-Achieve full WB, normalize gait mechanics (tolerate 20-25 min standing/walking by week 9)
-Restore full ROM
-Continue to manage swelling/soft tissue restrictions
Weight-Bearing:
-WBAT to full WB, wean from brace/immobilizer and any assistive device
-Minimize walking on uneven surfaces

ROM:
-No restrictions for P/AROM
-CKC Strengthening interventions should be performed in full extension or between 20-70^{o} of knee flexion to avoid excessive stress on the repair.
Suggested Interventions:
-Gait training, focusing on normalizing walking mechanics and weaning from AD
-Balance training consistent with WB status
-Initiate WB CKC activities in full extension (heel raises, SLS activities) or between 20-70^{o} of knee flexion (leg press, DL squats)
-Stationary cycling without resistance (until week 12, avoid loading knee with resistance past 90^{o})
-May begin hamstring curls at week 8

Weeks 10-15:

Goals:
-Progress strength and endurance training
Weight-Bearing:
-Patients should be FWB with normal gait mechanics before beginning phase III

ROM:
-Continue CKC ROM restrictions of <70^{o} knee flexion through phase III
Suggested Interventions:
-DL squats, focusing on normalizing firing patterns and weight-bearing between limbs, building endurance
-Static to dynamic lunges
-More advanced tandem and single-leg static balance drills
-Can introduce lateral exercises (side stepping), maintaining CKC ROM restrictions
-Avoid pivoting/twisting motions of the knee
-Stationary bike with increasing resistance
-Overall interventions should focus on building muscle endurance, focusing on 3-4 sets in the 15-20 repetition range
-At this stage, ensure patients receive adequate rest days for muscle recovery. HEP/activity should be 3-4 days per week, with rest days built in.

Criteria for Progression to Next Phase:
-Able to perform a 90s single-leg squat held at 45 degrees of knee flexion
-Post activity soreness should resolve within 24 hours

Weeks 16-20:

Goals:
-Progress strength and endurance training
-Progress to dynamic single-leg strength and stability interventions

ROM:
-Continued CKC ROM restrictions to 90^0 until week 20
-Repetitive CKC activities in deep knee flexion should still be limited as a therapeutic exercise

Suggested Interventions:
-Double-leg to single-leg squats
-Single-leg RDLs
-Dynamic single-leg stability exercises, including training on uneven surfaces
-Multi-planar lunges
-Stationary bike with resistance, elliptical, treadmill walking
-Begin plyometric exercise progressions as able to demonstrate good neuromuscular control of the hip, core/pelvic stability
    - o No jumping/hopping if patient cannot control knee valgus collapse

Criteria for Progression:
-Individuals/athletes should perform a comprehensive functional assessment to assess for readiness to progress to phase V, or before performing progressive plyometric training
    - o Reference Vail Sport Test, Y-balance test, agility T-test, limb symmetry index, as examples
-Involved quadriceps strength should be at least 80% of the uninvolved limb via dynamometry

Week 20:

Goals:
-Progress return-to-sport training
-Initiate a return to running program
-Discharge to independent HEP if not returning to sport, high-level activities

ROM:
-No CKC ROM restrictions, but continue to limit/avoid repetitive CKC activities in deep knee flexion
Suggested Interventions:
-Return to running program, see separate protocol
-Progress towards more dynamic plyometric training: DL/SL box jumps, hopping drills
-Sport-specific training programs
-Deep squatting (past parallel) should be avoided until 6 months
Criteria for Progression:
-Quadriceps strength should be at least 90% of uninvolved side via dynamometry
-Return to sport transition can begin at 6 months if able to pass functional evaluation without pain
    - o Reference Vail Sport Test, Hop Testing Battery (single-leg hop, triple-hop, crossover hop), limb symmetry index, agility T-test, Y-balance test as examples