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Knee MCL Rehabilitation Protocol

I. Immediate post-injury phase: Emergency Management

A. Protection

1. Protected ambulation - PWB to WBAT
2. Bracing
 - a. Grades I & II - as ordered by physician, full ROM allowed (1) bilateral upright hinge
(2) Don-Joy/Ortho Tech (3) lateral knee guard
 - b. Grades II & III - rehab brace with ROM limited to +10° to +75°

B. Ice

C. Compression

D. Elevation

E. Accurate diagnosis is crucial to rule out associated injury, which may alter treatment plan.

II. Early post-injury phase: 0-3 weeks post-injury.

A. Continue bracing as described above

B. Continued protected ambulation PWB to WBAT

C. Exercise

1. Grades I & II
 - a. Patellar glides & tilts
 - b. Active ROM - to be performed within pain free limits
 - c. ROM in swimming pool/whirlpool
 - d. Isometrics for quad, hams including both PNF and spectrum
 - e. Bike with low seat & low resistance for ROM
 - f. Hamstring/calf stretching in a NWB position

- g. Resisted hip exercise with weights proximal for abduction and adduction
 - h. Resisted ankle exercise utilizing Theraband or rubber tubing for resistance
 - i. Resisted exercise for upper body and non-involved leg to maintain strength conditioning
2. Grade III
- a. Patellar glides & tilts
 - b. AROM 15° to 75° for 4 weeks then full ROM afterwards
 - c. Isometric for quads & hams including PNFs
 - d. Resisted hip exercise with weights proximal for abduction and adduction
 - e. Resisted ankle exercise
 - f. Resisted exercise for non-involved leg and upper body-include single leg biking (noninvolved)

D. Modalities: used PRN

- 1. Whirlpool
- 2. Ice post exercise
- 3. Electric stimulation for pain & swelling control and/or muscle re-education/strengthening
- 4. Biofeedback to improve quad control

III. Intermediate post-injury phase. Begin once full ROM is achieved - usually 3-6 weeks post-injury.

A. Grades I, II & III

- 1. Eliminate brace for ADLs
- 2. Progress to full weight bearing without assistive devices increasing distance as tolerated
- 3. Exercises
 - a. Bike with seat high & low resistance. Progress from 5-7 minutes, initially, to 15-30 minutes.
 - b. Flexibility exercise as determined by assessment of patient
 - (1) hams
 - (2) calf
 - (3) quad
 - (4) hip flexors/TFL
 - c. Physiologic knee extension (0° to 45°)
 - (1) leg press
 - a) supine with sports cord
 - b) leg press machine, mini squats
 - c) standing isometrics
 - d) bilateral mini squats
 - e) unilateral mini squats
 - f) standing sports cords
 - g) mini squats with free weights
 - d. Resisted knee flexion

- e. Resisted hip/ankle exercise
- f. Proprioception activities
 - (1) single leg support on solid base of support to progressively unstable surfaces (floor to mini tramp)
 - (2) BAPS board
 - (3) Profitter
- g. Swimming
 - (1) free style (no breaststroke)
 - (2) functional activities

IV. Return to Sport

- A. Continue with previous activities to increase flexibility, strength and muscular and cardiovascular endurance. Emphasis is on reconditioning for return to sport.
- B. Continue proprioceptive activity progressing as tolerated
- C. Begin functional strengthening program - sport-specific modified plyometrics program
 - 1. Slow speed to high speed
 - 2. Bilateral to unilateral support
 - 3. Low to moderate heights
 - 4. Soft to hard surfaces
- D. Functional activities progression
 - 1. Walk/Jog (flat track) - start at 1/2 mile, walk curves and jog straight-aways - progress to 2 miles
 - 2. Straight jogging (flat track) - start at 1/4 mile - progress to 2 miles
 - 3. 3/4 speed running (flat track) - start with 20 yard sprints doing 4 to 10 reps
 - 4. Full speed sprinting - 20 yard sprints doing 4 to 10 reps
 - 5. Backward jogging - 20 yard jog doing 4 to 10 reps
 - 6. Backward 3/4 speed running -20 yard run doing 4 to 10 reps
 - 7. Backward spring -20 yard sprint doing 4 to 10 reps
 - 8. Lateral Slides (defensive drills) 1/2 to 3/4 to full speed
 - 9. Zig-Zags 1/2 speed (soft cuts) - 5 yard increments for 20 yards progress 2 to 5 times
 - 10. Zig-Zags 3/4 speed (soft cuts) - 5 yard increments for 20 yards progress 2 to 5 times
 - 11. Zig-Zags full speed (soft cuts) - 5 yard increments for 20 yards progress 2 to 5 times
 - 12. Linebacker Drills - 1/2, 3/4 and full speed, backward-forward-side-to-side in 10 yard increments, progress 2 to 5 times
 - 13. Backward Zig-Zags - 1/2, 3/4 and full speed, 10 yard increments, progress 2 to 5 times
 - 14. Figure 8's - 1/2, 3/4, and full speed - progress from large circles to smaller circles then to faster speeds, progress from 5 to 10 times
- E. Criteria for Return to Sport:
 - 1. No signs of active inflammation

2. Full ROM & normal flexibility
3. Isokinetic Testing: bilateral comparison of peak torque and work within 85% of non-involved limb and hamstring to quadriceps ratio of 65%
4. Functional Tests
 - a. Vertical jump
 - 1) bilateral
 - 2) unilateral comparison
 - b. Standing broad jump
 - 1) bilateral
 - 2) unilateral comparison
5. Completion of functional progression leading to full participation in sport

F. Protective Bracing as ordered by physician

1. Lateral knee guards
2. Functional knee braces
 - a. Don-Joy: quick & relatively inexpensive
 - b. Ortho Tech: for heavier athletes
 - c. CTI: for small athletes requiring greater mobility

V. Maintenance - Continue Flexibility and Strength Training