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Orthopedic Sports Medicine and Hip Preservation

Proximal Hamstring Repair Rehabilitation

Phase 1 (Weeks 1-4) [protect repair and avoid hip/knee stiffness]

- Passive knee range of motion 0-90 degrees with hip extended
- No active knee flexion
- Wean from brace by 3-4 weeks post-op with crutches/walker
- Use short stride gait pattern to avoid aggressive hamstrings activation
- Passive logrolling and hip extension
- Passive hip flexion to 30 degrees with knee flexed to 60 degrees

Exercises: • Quad sets • Ankle pumps • Abdominal isometrics • Passive knee range of motion (ROM) with no hip flexion during knee extension • Scar mobilizations

Cardiovascular Exercise: • Upper body circuit training or upper body ergometer (UBE)

Phase 2 (Weeks 5-8)

- Restore full knee flexion with hip extended
- Begin active assist knee flexion at week 5-6 when repair site pain-free
- Wean off crutches by 6-8 weeks post-op. My use a cane at this point if necessary.
- Progress passive hip flexion to 90 degrees with knee in 30-45 degrees flexion

Exercises: • Non-impact balance and proprioceptive drills – beginning with double leg and gradually progressing to single leg • Stationary bike • Gait training • Begin hamstring strengthening – start by avoidance of lengthened hamstring position (hip flexion combined with knee extension) by working hip extension and knee flexion moments separately; begin with isometric and concentric strengthening with hamstring sets, heel slides, double leg bridge, standing leg extensions, and physioball curls • Hip and core strengthening

Cardiovascular Exercise: • Upper body circuit training or UBE

Progression Criteria: • Normal gait on all surfaces • Ability to carry out functional movements without unloading the affected leg or pain while demonstrating good control • Single leg balance greater than 15 seconds • Normal (5/5) hamstring strength in prone with the knee in a position of at least 90° knee flexion

Phase 3 (Weeks 9-16)

- Progress to active knee flexion
- Restore full knee flexion
- Restore full hip flexion and rotation
- Progress isometric and closed-chain hamstring strengthening

Exercises: • Continue hamstring strengthening – progress toward strengthening in lengthened hamstring positions; begin to incorporate eccentric strengthening with single leg forward leans, single leg bridge lowering, prone foot catches, and assisted Nordic curls • Hip and core strengthening • Impact control exercises beginning 2 feet to 2 feet, progressing from 1 foot to the other and then 1 foot to same foot • Movement control exercise beginning with low velocity, single plane activities and progressing to higher velocity, multi-plane activities • Initiate running drills, but no sprinting until Phase IV

Cardiovascular Exercise: • Biking, elliptical machine, Stairmaster, swimming, and deep water running

Progression Criteria: • Dynamic neuromuscular control with multi-plane activities at low to medium velocity without pain or swelling • Less than 25% deficit for side to side hamstring comparison on Biodex testing at 60° and 240° per second

Phase 4 (Weeks 17+)

Progress strengthening

Progress hamstring stretching including hip flexion/knee extension

Return to sporting activity at 6 months if full ROM and strength <10% less than contralateral side

Exercises: • Continue hamstring strengthening – progress toward higher velocity strengthening and reaction in lengthened positions, including eccentric strengthening with single leg forward leans with medicine ball, single leg dead lifts with dumbbells, single leg bridge curls on physioball, resisted running foot catches, and Nordic curls • Running and sprinting mechanics and drills • Hip and core strengthening • Impact control exercises beginning 2 feet to 2 feet, progressing from 1 foot to other and then 1 foot to same foot • Movement control exercise beginning with low velocity, single plane activities and progressing to higher velocity, multi-plane activities • Sport/work specific balance and proprioceptive drills • Stretching for patient specific muscle imbalances

Cardiovascular Exercise: • Replicate sport or work specific energy demands

Return to Sport/Work Criteria: • Dynamic neuromuscular control with multi-plane activities at high velocity without pain or swelling • Less than 10% deficit for side to side hamstring comparison on Biodex testing at 60° and 240° per second • Less than 10% deficit on functional testing profile

Notes: Postoperatively, the patient may be placed in a hinged knee brace that prevents full knee extension. The patient walks with crutches and foot-flat touch-down weight-bearing for two weeks. The hip is maintained in an extended position. After two weeks, partial weightbearing to 25% is permitted. Weight-bearing is increased weekly with a goal of full weightbearing by six weeks. Starting at two weeks, gentle passive range of motion of the hip and knee is permitted. At six weeks active range of motion is initiated. Passive stretching is continued to restore full range of motion and to further improve hamstring flexibility. In addition, a closed-chain exercise program and core strengthening should be implemented. At three months, aerobic conditioning begins. We recommend beginning a non-impact activity such as the use of an elliptical trainer or StairMaster followed by a light jogging program. An isokinetic evaluation should be performed to ensure that the injured extremity has regained at least 80% of the strength of the uninjured limb before return to sports. Typically, one can expect to return to sports at approximately six months.