HIP RECTUS FEMORIS REPAIR POST-OPERATIVE GUIDELINES

The following Hip Rectus Femoris Repair Post-Operative Guidelines were developed by HSS Rehabilitation. Progression is both criteria-based and patient specific. Phases and time frames are designed to give the clinician a general sense of progression but do not replace clinical judgement. The rehabilitation program must be tailored to the exact surgical procedure performed, taking into account soft tissue and bone healing properties. These guidelines were developed to balance natural healing, gentle restoration of hip range of motion (ROM), and muscular balance and stability in the core, hip and knee.

Special attention should be given to this two joint muscle and activity modification should be addressed at both the hip and knee. Since this injury is frequently seen in young athletes involved in sprinting and kicking sports, it is important to regain cardiovascular conditioning and sport-specific skills. Transition to a performance program should be considered.

FOLLOW PHYSICIAN'S MODIFICATIONS AS PRESCRIBED.

HIP RECTUS FEMORIS REPAIR POST-OPERATIVE GUIDELINES

Post-Operative Phase 1: Day 1 – Week 6

PRECAUTIONS

- Protective 20 pounds partial weight bearing (PWB) with foot flat and appropriate assistive device (AD), MD directed
- Knee brace locked in extension, worn at all times including sleep (6 weeks)
- No rectus femoris contraction or stretching (avoid tensioning the repair)
- Wound care

ASSESSMENT

- Lower Extremity Functional Scale (LEFS)
- Numeric Pain Rating Scale (NPRS)
- Screen for red flags
- Wound and sutures
- Neurological status (global and local to surgical site)
- Weight-bearing (WB) status
- Bed mobility and transfers
- Activity level and tolerance
- Brace use
- Gait assessment
- Precaution awareness

TREATMENT RECOMMENDATIONS

- Patient education
- Rehabilitation timeline and expectations
    - WB status
    - Brace:
        - Wear brace at all times, including sleep
        - Can be unlocked when sitting
    - Activity modification (sitting, standing, bed mobility, prolonged postures, etc.)
    - Home exercise program (HEP)
- Gait training with crutches
    - 20lbs PWB with foot flat for 6 weeks
        - Progression is MD directed

- Home exercise program (HEP)
    - Supine abdominal bracing
    - Ankle pumps
    - Prone gluteal setting

CRITERIA FOR ADVANCEMENT

- MD clearance at 6 weeks post-operative appointment
- Normalized gait pattern with brace and crutches, 20lbs PWB with foot flat
- Pain free with daily activities

EMPHASIZE

- Tissue healing and protection
- WB status
- Activity modification and load management
- HEP

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Post-Operative Phase 2: Weeks 7-12

PRECAUTIONS

- No active hip flexion against gravity until 9 weeks post-operative
- No hip flexor strengthening exercises
- No hip flexor/quadriceps stretching exercises
- No passive hip extension
- Progressive WB with crutches (detailed below)
- Avoid premature progression of WB and activity level
- Emphasize good gait mechanics
- Managing scarring around incision

ASSESSMENT

- LEFS
- NPRS
- Screen for red flags
- Wound and sutures
- Neurological status (global and local to surgical site)
- Bed mobility and transfers
- Activity level and tolerance
- WB status
- Gait assessment

TREATMENT RECOMMENDATIONS

- Patient education
    - Rehabilitation timeline and expectations
    - WB status and progression
    - Activity modification and load management
    - Progressive HEP
- Gait training
    - WB progression (with MD clearance)
        - 6 weeks: 50% PWB, as tolerated
        - 7 weeks: 75% PWB, as tolerated
        - 8 weeks: weight-bearing as tolerated

    - Wean off crutches as gait normalizes, 2 crutches -> 1 crutch -> no crutch
    - Monitor and guide load progression
- Begin PROM
    - Avoid passive hip extension
    - Avoid combination of passive knee flexion with hip extension
- Begin active assisted range of motion
    - Gentle quadruped rocking
- Gentle scar and soft tissue mobilization, as indicated
- Initiate hip and core stability exercises
    - Abdominal strengthening supine → hooklying → standing, with upper extremity (UE) movements
    - Quadruped abdominal bracing, progress to UE movements
    - Quadriceps setting
    - Prone and supine gluteal setting
    - Hip abduction and external rotation strenghtening isometrics -> clamshells -> hip abduction (avoid hip flexor activation)
    - Hip flexion isometrics (begin week 9)
- Progress to closed-chain exercises (as WB status allows)
    - Leg press (double leg)— light weight, protective range (below 90 degrees hip flexion)
    - Mini squats (unweighted)
    - Calf raises
- Begin proprioception/balance training
    - Weight shifts
    - Balance board
    - Varying surfaces
    - Single-limb stance (SLS) (begin week 8)
        - Emphasize lumbopelvic stability and good LE alignment
- Flexibility exercises, as indicated
    - Gastrocnemius, hamstring
- Cardiovascular fitness
    - Stationary bike
    - Upper extremity bike (UBE)
- Aquatic therapy, as appropriate, once wounds have healed

CRITERIA FOR ADVANCEMENT

- Compliance with HEP and activity modification
- Normalized gait pattern without AD
- Hip and knee PROM within normal limits (WNL) with the exception of hip extension
- Pain free activities of daily living (ADL)
- Sit to stand without use of UE support

EMPHASIZE

- Protection of the repair
- Pain free ADL and therapeutic exercise
- Normalized gait pattern

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Post-Operative Phase 3: Weeks 13-24

PRECAUTIONS

- Avoid premature progression of activity level and gym program (as directed)
- Faulty movement patterns
- Hip flexor tendon overload
- Generalized anterior hip pain

ASSESSMENT

- LEFS
- NPRS
- Screen for red flags
- ADL tolerance (home and work)
- Hip and knee PROM and AROM
- Lumbar AROM
- LE flexibility
- MMT
- Functional testing for LE mechanics
    - Squat
    - 8” step down
    - Single-leg gluteal bridge
    - Etc.

TREATMENT RECOMMENDATIONS

- Progressive HEP
- Progress hip PROM to WNL, as tolerated
- Gentle scar and soft tissue mobilization, as indicated
- Continue with previous therapeutic exercise
- Initiate light hip flexor strengthening, as tolerated
    - No active straight leg raise flexion
    - Supine → standing march progressing → resisted triple flexion in varying positions (standing, front plank, etc.)

- LE strengthening:
  - Leg press (full range → eccentric with progressive load)
  - Squat progression as strength and mechanics allow
    - Weighted
    - Decreased base of support
  - Unilateral cable column rotations, Paloff press
  - Side stepping (no resistance → resistance)
  - Step up (4" → up to 12")
  - Step down (4" → 8")
  - Static lunges
- Core strengthening:
  - Quadruped stability exercises
  - Front plank progression
  - Modified side plank → standard side plank progression
- Proprioception/balance:
  - SLS
  - Varying surfaces
  - UE/LE movements
  - Perturbations
- Flexibility, as indicated
  - Begin gentle hip flexor and quadriceps stretching
  - Foam rolling, as indicated (avoid compression of the hip flexor tendon)
- Cardiovascular fitness
  - Stationary bike
  - Elliptical when good mechanics with a 6" step up
  - UBE
- Physical therapist guided gym program
- Aquatic therapy, as appropriate
- Initiate return to running progression with sufficient single-leg stability and MD clearance (week 20+)

CRITERIA FOR ADVANCEMENT

- Pain free with ADL and therapeutic exercise
- No swelling
- Full hip and knee ROM
- MMT 5/5 bilateral LE strength
- Good control and LE mechanics with functional testing: squat—symmetrical, good hip hinge and depth to parallel
- 8" step down—good alignment and control, avoid hip adduction and dynamic knee valgus
- Single leg gluteal bridge—20 sec hold with good lumbopelvic stability

EMPHASIZE

- Good mechanics during functional movement patterns
- Functional hip and core muscle strength and endurance in preparation for return to sport phase

HIP RECTUS FEMORIS REPAIR POST-OPERATIVE GUIDELINES

Post-Operative Phase 4: Weeks 25+

PRECAUTIONS

- Avoid premature progression to recreational and sporting activity
- Faulty movement patterns
- Overloading anterior hip structures

ASSESSMENT

- LEFS
- NPRS
- Screen for red flags
- Activity level and tolerance
- LE PROM and AROM
- Lumbar AROM
- LE flexibility
- Advanced strength testing
    - Isokinetic testing, when available
    - Handheld dynamometer
- Return-to-sport testing
    - Hop testing
    - Star Excursion Test
    - T-test of agility
    - Etc.

TREATMENT RECOMMENDATIONS

- Advanced trunk and hip strength and endurance exercises
- Plyometrics
- Progressive sport specific functional exercises
- Collaborate with certified athletic trainer, performance coach/strength and conditioning coach, skills coach and/or personal trainer to monitor load and volume as patient returns to participation
- Consult with referring surgeon on timing for return to sport including any recommended limitations

CRITERIA FOR ADVANCEMENT

- Pain free with daily and recreational activities
- Full LE flexibility
- Full LE and lumbar ROM
- MMT 5/5 bilateral LE strength throughout
- LE strength 90% or better of the contralateral side (concentric and eccentric)
- Successful completion of return-to-sport progression

EMPHASIZE

- Pain-free with recreational and sporting activities

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References

Birmingham P, Muller M, Wickiewicz T, et al. Functional outcome after repair of proximal hamstring avulsions. *J Bone Joint Surg Am*. 2011;93(19):1819-1826.

Bowman EN, Marshall NE, Gerhardt MB, et al. Predictors of Clinical Outcomes After Proximal Hamstring Repair. *Orthop J Sports Med*. 2019;7(2):2325967118823712.

Gamradt SC, Brophy RH, Barnes R, et al. Nonoperative treatment for proximal avulsion of the rectus femoris in professional American football. *Am J Sports Med.* 2009;37(7):1370-1374.

García VV, Duhrkop DC, Seijas R, et al. Surgical treatment of proximal ruptures of the rectus femoris in professional soccer players. *Arch Orthop Trauma Surg*. 2012;132(3):329-33.

John R, Joshua H, William G, et al. Origin of the Direct and Reflected Head of the Rectus Femoris: An Anatomic Study. *Arthroscopy*. 2014;30(7):796-802

Meredith SJ, Rauer T, Chmielewski TL, et al. Return to Sport After Anterior Cruciate Ligament Injury: Panther Symposium ACL Injury Return to Sport Consensus Group. *Orthop J Sports Med*. 2020;8(6):2325967120930829.

Stephan E, David J, Mark F. H, et al. Proximal Rectus Femoris Avulsion: Ultrasonic Diagnosis and Nonoperative Management. *J Athl Train.* 2015;50(7):778–780.

Ueblacker P, Müller-Wohlfahrt HW, Hinterwimmer S, *et al.* Suture anchor repair of proximal rectus femoris avulsions in elite football players. *Knee Surg Sports Traumatol Arthrosc.* 2015;23(9):2590–2594.

Wellsandt E, Axe MJ, Snyder-Mackler L. Poor Performance on Single-Legged Hop Tests Associated With Development of Posttraumatic Knee Osteoarthritis After Anterior Cruciate Ligament Injury. *Orthop J Sports Med*. 2018;6(11):2325967118810775.

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