Hamstring Injuries: Rehabilitation and Return to Play

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Goals

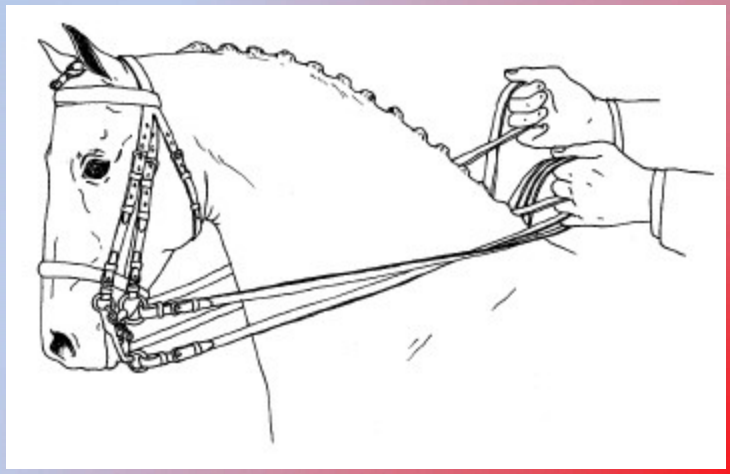
- Anatomy - ”Cliffs Notes” version
- Personal/Organizational Roadmap
- Eureka!!!!
- Hamstring Rehabilitation “Phillies Style”
- Exercise ideas

- Gray Institute Influence and miscellaneous ideas sprinkled in!

Relevant Anatomy

- On the table vs. upright function

- "GRAY INSTITUTE" FUNCTIONS
- Open chain exercises ask the hamstrings to do something that gravity does for free
- In gait, they are activated in the swing phase before the foot hits the ground



“What we used to do…”

- Straight Leg Raises
- Isometrics
- Isokinetic machines
- Passive PNF Patterns
- Running poles

- There has to be a better way!

“The Sherry article”

A Comparison of 2 Rehabilitation Programs in the Treatment of Acute Hamstring Strains

Marc A. Sherry, PT, LAT, CSCS[1]
Thomas M. Best, MD, PhD[2]

J Orthop Sports Phys Ther • Volume 34 • Number 3 • March 2004

Sherry MA & Best TM, 2004

- Evaluated the time to return and re-injury rate in the first two weeks for 24 athletes involved in two different rehabilitation programs
  - Standard (stretching/strengthening) vs Progressive Agility and Trunk Stabilization
- 70% (7/11) of “standard” reinjured, only 7.7% (1/13) of PATS.
- PATS participants returned to play 2 weeks sooner (34 days vs 22) (NOT STAT SIG)

Similar Concepts

- 2010 JOSPT article with similar concept:
  - “Early mobilization has been shown to promote collagen penetration and orientation of the regenerating muscle fibers through the scar tissue, as well as recapillarization of the injured area.”
- Both studies identify control of the pelvis as important for proper function (and therefore less injury risk) of the hamstrings.

Heiderscheit, BC et al. Hamstring Strain Injuries: Recommendations for Diagnosis, Rehabilitation, and Injury Prevention. *JOSPT* 40(2): 67-81, 2010.

Novel Rehabilitation Protocol from US Military

- 48 consecutive grade I or II hamstring strains, treated with early motion, static stretching and running.
- 6.2% re-injury rate (3/48) with 11.9 day average return to play (5-23)

Kilcoyne, KG et al. Outcome of Grade I and II Hamstring Injuries in Intercollegiate Athletics: A Novel Rehabilitation Protocol. *J Sports Health* 3(6): 528-533, 2011.

Hamstring Rehab Concepts… Philly-style!

Rehabilitation Goals

List of dysfunctions…

- Comparison to Spring Training baselines
- Foot/Ankle/First Ray mobility?
- Hip ROM?
- Pelvic mobility and control? **
- UE exercises
- Soft tissue restrictions

Initial Treatments

- (Urine test)
- Ice?
- Hivamat
- Contrast
- Compression
- Needling?
- Laser?

Day 1 (or ASAP)

** Early loading = early adaptations
Aligning early scar tissue formation

“Hamstring Protocol”
3 x 1’ each: Side Stepping, Carioca, Two Step
* Own pace!!
Between rounds:
- Side plank 2-3x 20 seconds
- Front plank 2-3x 20 seconds
- Glute bridge (if able)

Hamstring Protocol Progression

- Continued daily, progressing speed as they are comfortable
- Planks progress in reps and other core exercises added

Closed Chain Exercise Progressions

- Squats and lunges
- Toe touch balance
- Lunge matrix
    - Add low reach to emphasize eccentric load
- Walking lunges progressing to ramp
- Tubing Deceleration

Higher Intensity Exercises – Later Stage

- Lateral bounds or Slide board - dynamic strength of lateral hip to control pelvis in frontal plane
  - Applicable in gait cycle
- Scissor Jumps

- Nordic hamstring exercise – start with low volume because of high intensity

Hopping

Single Leg Hopping

- 3-dimensional deceleration (eversion) and acceleration (inversion)

Running

- Progressions from 120 feet to shorter distance as speed increases
- Baserunning
- Defense
  - OF progression
  - Cover a lot of ground (Route data?)
  - IF specific drills

Return To Play Concepts

- “Traditional” criteria (MMT, ROM) may not give us enough information
- Isokinetic testing and exercises not realistic in our population

Return To Play Concepts

- Functional testing
  - Hop Test
  - Broad Jump
  - T-Test or 5-10-5
  - LEFT - ?

- Is everybody comfortable with this?
- Manager, ATC, strength coach, GM, coaches, analytics staff
- Bottom line – Is the player comfortable?

Reinjury Risk

- Persistent weakness…. (Heiderscheit article)
- No link between flexibility program and risk of reinjury (Heiderscheit article)

- If it’s good enough for rehab, its good enough for prep program

Thank you!