COMMON SOCCER INJURIES

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GOALS

- Discuss top soccer injuries and treatment strategies
- Simplify hip and groin injuries in soccer players
- Highlight top knee injuries
- Address differential diagnosis for posterior heel pain
CONCLUSION

• Re-injury rate (15%) in the hip/groin region causes a significantly longer absence
• Adductor related groin pain is the most common groin injury in soccer
• Large quadriceps contusion should be flexed at 120 degrees with compression wrap
CONCLUSION

• The degree and time of onset of swelling can reflect either intra-articular or extra-articular injury.

• If the patient volunteers having heard a “pop”, “snap” or felt a “tear”, the injury should be considered as an ACL tear until proven otherwise.
CONCLUSION

• The combination of morning stiffness and pain confined to a tendon is a hallmark of Achilles tendinopathy

• A thorough history, physical exam and imaging study is necessary in evaluation of posterior heel pain
SOCCER INJURY EPIDEMIOLOGY


*Due to a small number of cases with unknown diagnosis, totals do not sum to 100%.

*Data represents weighted national estimates.
Epidemiology of Soccer Injuries

![Chart 1: Percentage of Soccer Injuries by Type]

- Muscular: 42%
- Knee Sprain: 18%
- Ankle Sprain: 16%
- Contusion: 12%
- Tendonitis: 10%
- Dislocation: 2%

![Chart 2: Injuries by Body Part]

- Legs: 85.30%
- Trunk: 7.80%
- Arms: 6.60%
CAUSES
## RTP AFTER MUSCLE INJURIES

<table>
<thead>
<tr>
<th>OSICS 2 diagnose</th>
<th>N</th>
<th>%</th>
<th>Mean ± s</th>
<th>Median</th>
<th>IQR</th>
<th>Sum</th>
<th>% of sum</th>
<th>Re-injuries</th>
<th>% re-injuries</th>
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</thead>
<tbody>
<tr>
<td>[TH12] Thigh strain/bear hamstring</td>
<td>1322</td>
<td>34.3</td>
<td>18 ± 19</td>
<td>13</td>
<td>15</td>
<td>94,000</td>
<td>26.2</td>
<td>311</td>
<td>16.2</td>
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<tr>
<td>[GT1] Groin strain/pain adductor group</td>
<td>1190</td>
<td>21.2</td>
<td>15 ± 22</td>
<td>9</td>
<td>11</td>
<td>17,314</td>
<td>19.5</td>
<td>192</td>
<td>16.1</td>
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<tr>
<td>[TH2] Thigh strain/quadriceps</td>
<td>781</td>
<td>13.9</td>
<td>19 ± 22</td>
<td>12</td>
<td>16</td>
<td>15,087</td>
<td>17.0</td>
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<td>14.9</td>
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<tr>
<td>[QMH] Calf muscle strain</td>
<td>652</td>
<td>11.6</td>
<td>18 ± 16</td>
<td>13</td>
<td>16</td>
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<td>84</td>
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<td>[TV1] Thigh pain/hyper tension hamstring</td>
<td>242</td>
<td>4.3</td>
<td>7 ± 8</td>
<td>5</td>
<td>5</td>
<td>1591</td>
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<td>[GT2] Hip flexors/hip extension injury</td>
<td>178</td>
<td>3.2</td>
<td>15 ± 16</td>
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<td>15</td>
<td>2633</td>
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<tr>
<td>[BM1] Hip/buttock muscle strain/lower</td>
<td>80</td>
<td>1.4</td>
<td>9 ± 7</td>
<td>8</td>
<td>6</td>
<td>732</td>
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<td>[TM3] Thigh strain other</td>
<td>80</td>
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<td>16 ± 31</td>
<td>8</td>
<td>11</td>
<td>1311</td>
<td>1.5</td>
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<td>[TV2] Thigh pain/hyper tension quadriceps</td>
<td>71</td>
<td>1.3</td>
<td>5 ± 4</td>
<td>4</td>
<td>3</td>
<td>352</td>
<td>0.4</td>
<td>12</td>
<td>16.9</td>
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<td>[OIT2] Groin tendinopathy/strain other</td>
<td>67</td>
<td>1.2</td>
<td>17 ± 26</td>
<td>9</td>
<td>18</td>
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<td>[QY1] Calf muscle pain/hyper tension</td>
<td>66</td>
<td>1.2</td>
<td>6 ± 5</td>
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<td>[LM1] Lumbar muscle strain</td>
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<td>7 ± 6</td>
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<td>6</td>
<td>452</td>
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<td>[OM1] Abdominal muscle strain</td>
<td>50</td>
<td>0.9</td>
<td>13 ± 10</td>
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<td>663</td>
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<td>4.0</td>
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<td>[QM2] Lower leg muscle strain</td>
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<td>0.8</td>
<td>19 ± 20</td>
<td>13</td>
<td>17</td>
<td>817</td>
<td>0.9</td>
<td>4</td>
<td>9.3</td>
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<tr>
<td>[LZL] Lumbosacral/LBP</td>
<td>13</td>
<td>0.2</td>
<td>7 ± 7</td>
<td>4</td>
<td>5</td>
<td>93</td>
<td>0.1</td>
<td>1</td>
<td>7.7</td>
</tr>
<tr>
<td>[BY1] Hip/buttock muscle pain</td>
<td>12</td>
<td>0.2</td>
<td>6 ± 4</td>
<td>5</td>
<td>6</td>
<td>71</td>
<td>0.1</td>
<td>3</td>
<td>25.0</td>
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<tr>
<td>[KT1] Knee patellar tendonopathy/lower</td>
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<td>0.2</td>
<td>11 ± 9</td>
<td>9</td>
<td>11</td>
<td>157</td>
<td>0.2</td>
<td>1</td>
<td>8.3</td>
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<td>[NM1] Cervical muscle strain</td>
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<td>5 ± 3</td>
<td>4</td>
<td>6</td>
<td>54</td>
<td>0.1</td>
<td>1</td>
<td>8.3</td>
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<td>[OT1] Abdominal rectus tendinopathy</td>
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<td>0.2</td>
<td>15 ± 13</td>
<td>9</td>
<td>15</td>
<td>169</td>
<td>0.2</td>
<td>2</td>
<td>18.2</td>
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<td>Other muscle injuries</td>
<td>58</td>
<td>1.6</td>
<td>8 ± 7</td>
<td>6</td>
<td>7</td>
<td>466</td>
<td>0.5</td>
<td>8</td>
<td>8.6</td>
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<tr>
<td><strong>Total</strong></td>
<td>5863</td>
<td>100.0</td>
<td>18 ± 20</td>
<td>11</td>
<td>14</td>
<td>80,055</td>
<td>100.0</td>
<td>831</td>
<td>14.7</td>
</tr>
</tbody>
</table>
RISK FACTOR

- Previous groin injury
- Higher level of play
- Reduced hip adduction strength
- Gender
- Sports-specific training
- Pain and lower strength with adductor squeeze test
- Reduced hip internal rotation
DOHA AGREEMENT

• Acute groin injury
  – Adductor-related, iliopsoas related, inguinal related and pubic related groin pain
  – Hip-related groin pain
  – Other causes of groin pain
HIP/GROIN INJURIES

• Accounts for 5-28% of soccer injuries
  – 4-19% in male clubs
  – 2-14% in female clubs
• Adductor and hip flexor injury are the most common injury
  – Adductor re-injury rate of 15%
**RTP MODEL FOR HAMSTRING INJURIES IN FOOTBALL**

**DEFINITION OF RTP**
The moment the player has received criteria-based medical clearance and is mentally ready for full availability for match selection and/or full training.

### RTP CRITERIA TO INCLUDE
- Absence of pain on palpation
- Absence of pain during strength and flexibility testing
- Absence of pain during functional performance
- Absence of pain after functional testing
- Similar hamstring flexibility
  - Both the passive and active straight leg raise test should be assessed
- Psychological readiness / athlete’s confidence
- Performance on field testing:
  - Repeated Sprint Ability test
  - Deceleration drills
  - Single leg bridges
  - Position specific GPS
  - Targeted match specific rehabilitation
- Medical staff clearance

### POTENTIAL RTP CRITERION
- Similar eccentric hamstring strength

### RTP CRITERIA TO EXCLUDE
- Similar concentric / isometric hamstring strength
- Neuromuscular function
- MRI
- Completion of a number of full friendly matches
- Completion of a number of full training sessions

* 0-10% difference compared to pre-injury data and/or uninjured side - depending on which data are available or are
HAMSTRING

Hamstring Injuries in Professional Soccer Players: Extent of MRI-Detected Edema and the Time to Return to Play.

Crema MD1,2,3, Goev IRB1, Abdalla RM1,4, de Aquino JS5, Ingham SJF4,5, Skaf AY1,6.

Author information

Abstract

Background: Discrepancies exist in the literature regarding the association of the extent of injuries assessed on magnetic resonance imaging (MRI) with recovery times.

Hypothesis: MRI-detected edema in grade 1 hamstring injuries does not affect the return to play (RTP).

Study Design: Retrospective cohort study.

Level of Evidence: Level 4.

Methods: Grade 1 hamstring injuries from 22 professional soccer players were retrospectively reviewed. The extent of edema-like changes on fluid-sensitive sequences from 1.5-T MRI were evaluated using craniocaudal length, percentage of cross-sectional area, and volume. The time needed to RTP was the outcome. Negative binomial regression analysis tested the measurements of MRI-detected edema-like changes as prognostic factors.

Results: The mean craniocaudal length was 7.6 cm (SD, 4.9 cm; range, 0.9-18.1 cm), the mean percentage of cross-sectional area was 23.6% (SD, 20%; range, 4.4%-99.6%), and the mean volume was 33.1 cm³ (SD, 42.6 cm³; range, 1.1-161.3 cm³). The mean time needed to RTP was 13.6 days (SD, 8.9 days; range, 3-32 days). None of the parameters of extent was associated with RTP.

Conclusion: The extent of MRI edema in hamstring injuries does not have prognostic value.

Clinical Relevance: Measuring the extent of edema in hamstring injuries using MRI does not add prognostic value in clinical practice.
CLINICAL EXAM & IMAGING

- Patella-pubic percussion test
- FADIR
- MRI & US
TREATMENT

• 25% treated conservatively and 75% with surgery
• Supervised active physical therapy results in higher treatment success
**RTP**

- Participation in specific sports on an individual level or rest of the team progressing from 30 minutes to 90 minutes
- Participating in 1-3 weeks of full training before full return to sports
## ACUTE KNEE INJURIES

<table>
<thead>
<tr>
<th>Common</th>
<th>Less common</th>
<th>Not to be missed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medial meniscus tear</td>
<td>Patella tendon rupture</td>
<td>Tibial plateau fracture</td>
</tr>
<tr>
<td>MCL sprain</td>
<td>Quadricep tendon rupture</td>
<td>Avulsion fracture of tibial plateau</td>
</tr>
<tr>
<td>ACL sprain (rupture)</td>
<td>Acute patellofemoral contusion</td>
<td>Osteochondritis dissecans</td>
</tr>
<tr>
<td>Articular cartilage injury</td>
<td>LCL sprain</td>
<td>Quadricep muscle rupture</td>
</tr>
<tr>
<td>PCL sprain</td>
<td>Acute fat pad impingement</td>
<td></td>
</tr>
<tr>
<td>Patella dislocation</td>
<td>Avulsion of the biceps femoris</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Superior tibiofibular joint injury</td>
<td></td>
</tr>
</tbody>
</table>
KNEE INJURIES

- Accounts for 8-18% of injuries in practice and games

- **Meniscus injuries:**

- **Medial collateral ligament injuries:** inside of foot pass and block tackles put athletes at risk. Risk increases with poor techniques and when leg is extended away from body.

- **Osteochondral injuries:** presents with pain and/or swelling. MRI usually needed for diagnosis. Treatment depends on clinical picture.
OSGOOD-SCHLATTER DISEASE

- Associated with repetitive knee extension
- Self-limiting condition
- Manage with activity modification
- Load reduction is the key
ANKLE AND FOOT INJURIES

• 74% of ankle injuries occurs from direct player contact
• 80% are traumatic and 20% overuse
• Mechanical vs. functional instability
ANKLE INJURIES

-Ankle sprain is about 67% of soccer related ankle injuries
-Usually sustained during player contact
-Usually inversion-supination results in injury to the anterior talofibular ligament

-Osteochondral lesions has 50-70% incidence in all acute ankle sprains and fractures
-Symptoms include clicking and locking of the ankle
-Plain radiographs may miss 50% of OCL’s so further imaging such as CT scan and MRI are obtained
-Lesion size and location determines treatment option
-PRP and Stem cell injections

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ANKLE INJURIES

**Anteromedial impingement** is generally bony rather than soft tissue injury
- Recurrent stress to the ankle induce bone spur and soft tissue proliferation
- Thickened soft tissue can be compressed between talar and tibial osteophytes with ankle dorsiflexion

**Anterolateral impingement syndrome** is usually from chronic anterolateral ankle pain following ankle sprain
- Occurs usually after multiple tears of the ankle ligament
- Pain with limited dorsiflexion and swelling after activity
- Deep tissue massage and physical therapy modalities reduces inflammation

**Posterior ankle impingement** is characterized by posterior ankle pain with plantarflexion
- Caused by os-trigonum, fracture to lateral tubercle of posterior talus and posterior soft tissue compression
- Tested with rapid passive hyperflexion of ankle combined with rotational grinding motion at maximal plantarflexion.
## CAUSES OF PAIN IN THE ACHILLES REGION

<table>
<thead>
<tr>
<th>Common</th>
<th>Less common</th>
<th>Not to be missed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midportion Achilles tendinopathy</td>
<td>Plantaris tendon involvement</td>
<td>Achilles rupture</td>
</tr>
<tr>
<td>Insertional Achilles tendinopathy</td>
<td>Flexor hallicis/tibialis posterior tendinopathy</td>
<td>Lumbar spine referred pain</td>
</tr>
<tr>
<td></td>
<td>Posterior ankle impingement</td>
<td>Sever’s disease</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spondylarthropathy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Metabolic conditions</td>
</tr>
</tbody>
</table>
ACHILLES TENDINOPATHY

• Palpation tenderness of Achilles is not diagnostic
• Think about differential diagnosis
• Modify or treat intrinsic and extrinsic factors
• Treatment
SEVER’S DISEASE

- Heel pain is skeletally immature athlete
- Tenderness at the insertion of Achilles tendon
- Management consists of activity modification but can last 6-12 months
REFERENCES


Holmich P. Groin Injuries in Athletes- Development of clinical entities, Treatment, and Prevention. Danish Medical Journal


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SPORTS MEDICINE CENTER