Hamstring Injury Trends in Major and Minor League Baseball

Epidemiologic Findings From the Major League Baseball Injury Surveillance System

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I (and my co-authors) have nothing relevant to this presentation to disclose

Background

- Hamstring strains are the **most common injury** in MLB
- **Prolonged recovery & high reinjury rate**
- Imp. to identify factors that **influence injury** and **time out of play**

Purpose

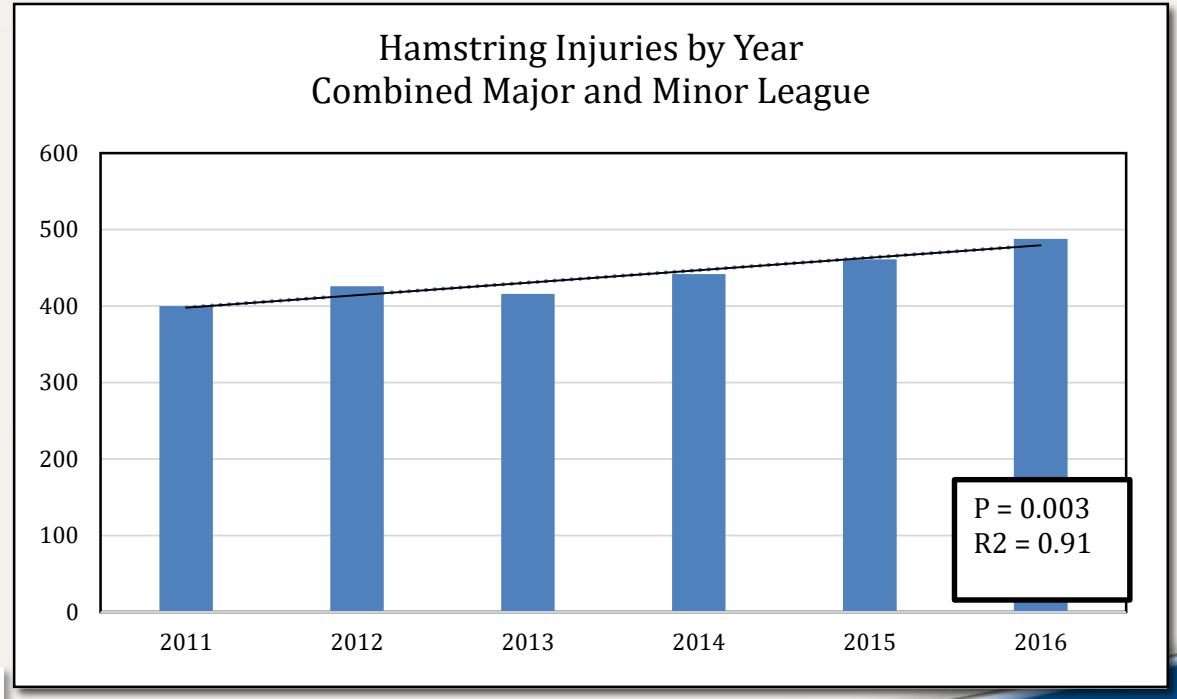
- To Determine:
  - If **incidence** has increased **over time**
  - Effect of **player/injury characteristics** on **time out of play**
  - How **injury grade** correlates to **RTP**

Methods

- Used **MLB HITS database**
- Inclusion criteria:
  - All **Hamstring strains**/spasms/tears during **the 2011-2016 seasons**
- Exclusion criteria:
  - Injuries in spring training, post-season, or off-season
- **Player & Injury characteristics** were then **extracted** from the database

Results

Total: 2,633



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Results

Injuries by month

Month	N (% of Total)	Games Played (2011 - 2016)	Injury Rate (1 hamstring injury every n games)
April	85 (19%)	2189	26
May	93 (21%)	2536	27
June	81 (18%)	2433	30
July	55 (12%)	2303	42
August	60 (14%)	2533	42
September	67 (15%)	2419	36

Average time missed: 14.5 days

Results

Time Lost	MLB n (%)	MiLB n (%)
1 - 3 days	138 (32%)	520 (25%)
4 - 7 days	61 (14%)	356 (17%)
8 - 15 days	60 (14%)	541 (26%)
16 - 30 days	100 (24%)	468 (22%)
> 30 days	67 (16%)	221 (10%)

Time missed: Recurrent injuries – 16.4 vs. 14.5 primary, p = .02

Results

Injury Grade	N	%
1	128	39.1%
2	143	43.7%
3	56	17.1%

Specific Muscle	N	%
Biceps Femoris	181	55.4%
Semitendinosis	68	20.8%
Semimembranosus	34	10.4%
Other	44	13.4%

Grade 3/2 injuries:
38 & 33 days lost

Vs.

Grad 1 injuries:
23 days lost p=.002

Location of Inj.	N	%
Proximal	134	41.0%
Middle	36	11.0%
Distal	146	44.7%
Unknown	11	3.4%

Discussion

- **Incidence** of hamstring injuries in:
  - 24 years **NBA (.69** per 1000 AE), 10 years **NFL (.77** per 1000 AE), 1 year **(2011) MLB (.70** per 1000 AE)
  - Our study **2011-2016 (1.09 per 1000 AE)**
- Majority of players suffered: Non contact inj. **Running to 1st base**.
  - **Pitchers highest injury rate**

Discussion

- **High Recurrence rate (16.3% MLB, 14.2% MiLB** over six years)
- Hamstring strains have **propensity for early season**
  - decreased core stability
  - decreased lower extremity flexibility
  - lower extremity weakness
  - fatigue

Limitations

- Database study
- Physical exam and surgical procedures not provided
- Exposures calculated indirectly using box scores
- Injuries prior to 2011 not reported

Conclusion

- Rate of hamstring injuries  in MLB over past six years
- Injuries are affected by:
  - Injury characteristics **(grade)**
  - Position played **(pitcher MC)**
  - **Running to 1st base**
  - Seasonal timing **(early season MC)**
  - History of hamstring injury **(high recurrence and inc. time lost)**

Thank You


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