

THROWING WORKLOAD AND INJURY RISK IN ELITE CRICKETERS

Saw R, Dennis R, Bentley D, Farhart P (2011). Throwing workload and injury risk in elite cricketers. *British Journal of Sports Medicine*. 45 (10), 805- 808.



Background

- Baseball data:
workloads associated with upper limb injuries
- Anecdotal evidence:
increased injuries from ‘throw downs’
- Fast bowling workloads:
shown to increase risk of injury

Objective: To investigate the association between throwing workload and injury to the upper limb in elite cricketers



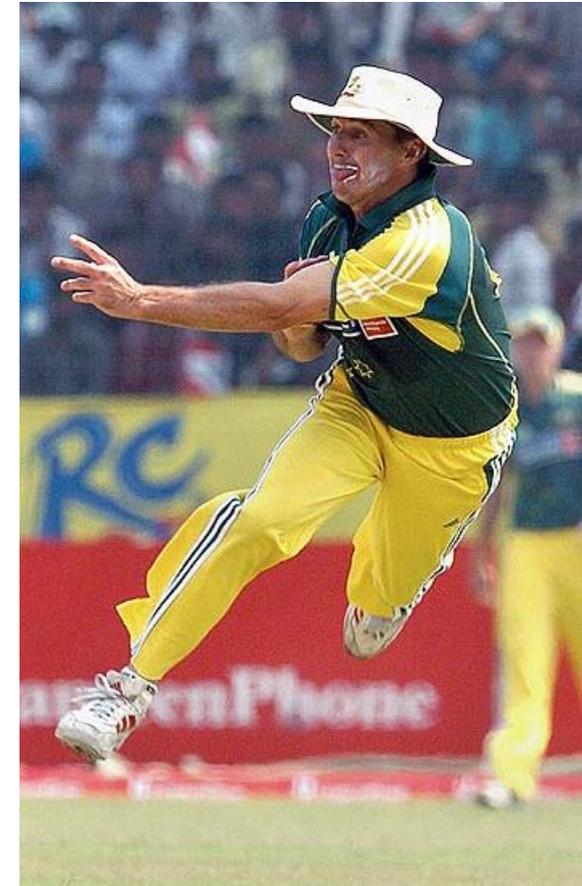
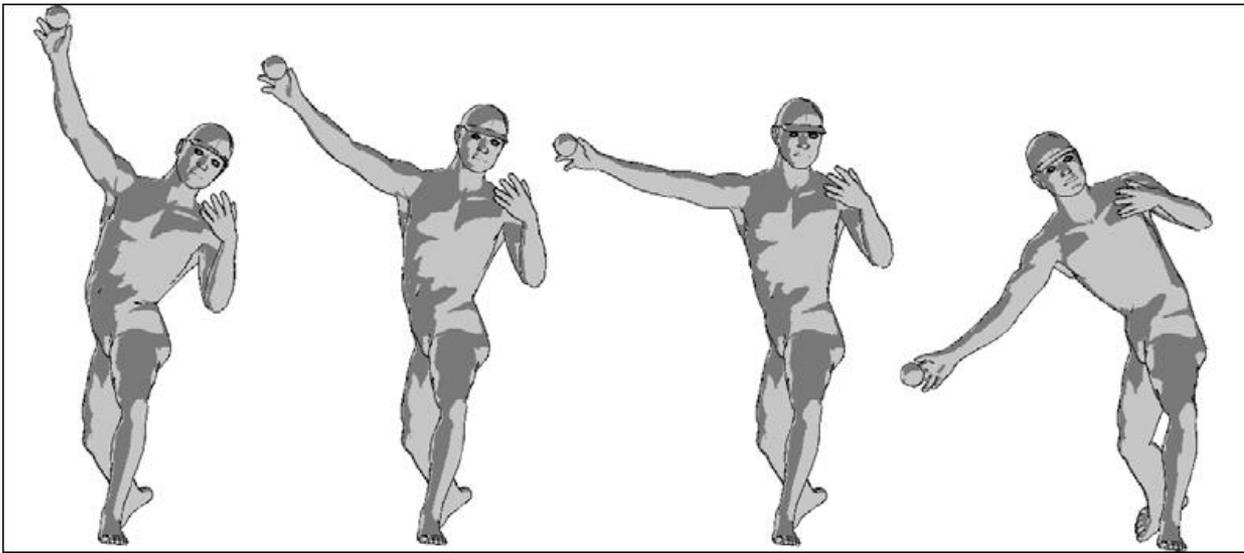
Baseball- Throwing Workload

- Common injuries:
 - Rotator cuff tears / tendinopathy
 - Anterior laxity of glenohumeral joint
 - Elbow:
 - Ulnar collateral ligament sprains or laxity
- Most baseball workload data not published
- Workload as a risk factor:
 - more pitches per game (>75)
 - innings per game
 - pitches per year (>600)
 - games per year
 - months in a year (>8)



Relating Baseball Data to Cricketers

- Maximal effort
- Various distances
- Wind-up
- Throwing off balance + at awkward angles
- 'Poor' throwing style → increased risk of injury



The different styles of throwing. From left to right- overhead, $\frac{3}{4}$ arm, sidearm and submarine styles

Why Look at Throwing Workload in Cricketers?

- Anecdotal evidence:
 - More 'throw-downs'
 - Greater emphasis on fielding drills
- Injury data on missed matches only
 - May playing with throwing injury if it does not affect batting, bowling or wicket keeping
- 23% players sustained shoulder injury in English self-reported study
 - 69% did not miss any matches
 - 63% reported a negative impact on fielding
 - 57% moved fielding position



Study design

Counting throws

Training days

Throw downs

Drill throws



- Direct observation at training
- Player logbooks

Match days

Match warm up

Match throws



Physio

Video footage of 1st
and 2nd XI matches

Injury surveillance completed by state squad physiotherapist

- Injuries to the shoulder and elbow that were associated with throwing
- Affected ability to participate in a match or training

Results



- 2102 throwing sessions
- 42000 throws

**Throw
downs**
Mean = 67

**Drill
throws**
Mean = 42

**Match
warm up**
Mean = 27

**Match
throws**
Mean = 10

- 7 eligible injuries:
 - 3 superior labrum from anterior to posterior (SLAP) lesions
 - 3 internal glenohumeral impingements
 - 1 tear of anterior band of the ulnar collateral ligament of elbow

Throws per week & injury

Mean



p = 0.003*

Median: >75 throws

RR = 1.73*
(1.03 – 2.92)

Throws per day & injury

Mean

Uninjured
 38 ± 15

Injured
 50 ± 13

$p = 0.061$

Median: >40 throws

RR = 1.41
(0.88 – 2.26)

Rest days & injury

Mean (rest days
per throwing day)

Uninjured
2.88

Injured
2.61

$p = 0.555$

Median: <3 days

RR = 1.16
(0.77 – 1.75)

Injured players – 1 week prior

Mean throwing days
per week

Week prior
 4.1 ± 0.7

Season
 2.4 ± 0.7

$p = 0.0001^*$

Mean throws per week

Week prior
 146 ± 54

Season
 107 ± 33

$p = 0.0441^*$

Discussion

Workload thresholds for increased risk of injury

Our study:

>75 throws / week

>40 throws / day



Baseball:

>75 – 80 pitches / match



Fast bowling:

<120 deliveries / week

>190 deliveries / week

* Rest days (2-5)



Limitations

- Not able to record throw counts for grade club matches / training
 - But able to record full set of 'throwing days'
- Maximal vs sub-maximal efforts
- Throwing style
- Throwing workload study with junior players

Implications

- Alternatives to throw downs
 - Bowling machines
 - Dog-throwers
- Monitor loads during training camps, tours



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