

Concussion Reporting Behaviors in Athletes: *Application of a Systematic Review*

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Today's Objectives

Present the current problems concerning concussion reporting in athletics that prompted the systematic review.

Discuss the systematic review process and outcomes.

Application of the latest evidence from the systematic review into your clinical practice.

Time for questions and discussion!



Background of the Problem

A significant amount of research is being conducted around the world on sport-related concussion (SRC) evaluation, diagnosis, and rehabilitation techniques.

But if we can't get the athletes to report their potential concussions, all of those new techniques are inconsequential for those athletes.

New research is being conducted on athlete concussion reporting behaviors (CRB) across the country.

While athletes are demonstrating greater SRC knowledge with the greater focus on concussion education, the reporting trends are remaining dismally low.

This is a cultural problem, and changing culture is no easy task!



Current Research on Reporting

Estimated 3.8 million SRCs¹

Non-reporting between 40%² and 50%³ in high school student-athletes

Higher^{4,5}, up to 70%⁶ may not be reporting, in collegiate student-athletes

How do we get athletes to self-report or peer-report in greater numbers?

Let's see what all of the CRB research says to date.



Systematic Review Process

Full literature search

- Databases: CINHALL, PubMed, and Web of Science
- Key words: *concussion report* AND behavior, self-report* AND concussion, athlete AND concussion report* behavior, concussion report*, concussion AND report* decision, concussion AND report* intention*
- Spring of 2017

Titles and Abstracts were reviewed

Systematic Review Process

INCLUSIONARY CRITERIA

- English
- 2000-2017
- Original and peer-reviewed research
- Concussion reporting in athletics

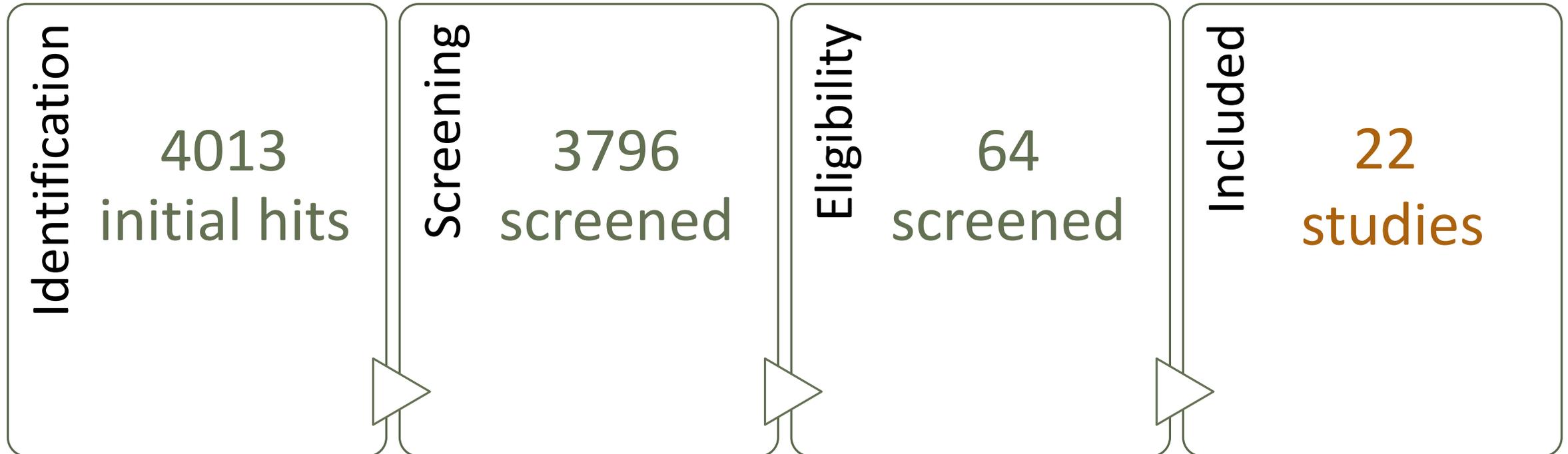
EXCLUSIONARY CRITERIA

- Brain imaging studies
- Post-injury evaluation
- Qualitative methods
- Did not answer clinical questions

Three Clinical Questions

1. What are the most prevalent barriers to reporting SRC?
2. What strategies have healthcare providers/ATCs used to encourage reporting?
3. Which of the most common strategies used to encourage reporting are most effective as supported by current evidence?





Results

1. What were the most prevalent barriers to reporting SRC?

- McCrea et al. (2004)³; Delaney et al. (2015)⁴; Broglio et al. (2010)⁸; Kerr et al. (2016)⁹; LaRoche et al. (2016)¹⁰; Kroshus et al. (2015)¹¹; Kroshus et al. (2017)¹²; Register-Mahalik et al. (2017)¹³; Wallace et al. (2017)¹⁴; Anderson et al. (2016)¹⁵.

2. What strategies have healthcare providers/ATCs used to encourage reporting?

- Kroshus et al. (2014)⁵; Kurowski et al. (2014)¹⁶; Greenwald et al. (2012)¹⁷; Anderson et al. (2016)¹⁵; Bramley et al. (2012)¹⁸; Cournoyer et al. (2014)¹⁹; Kroshus et al. (2014)²⁰; Kroshus et al. (2015)²¹; Kroshus et al. (2015)²²; McDonald et al. (2016)²³; Baugh et al. (2014)²⁴; Register-Mihalik et al. (2013)²⁵; Kroshus et al. (2015)¹¹; LaRoche et al. (2016)¹⁰.

3. Which of those strategies used to encourage reporting were most effective as supported by current evidence?

- LaRoche et al. (2016)¹⁰; Kroshus et al. (2017)¹²; Bramley et al. (2012)¹⁸; Kroshus et al. (2014)²⁰; Register-Mihalik et al. (2013)²⁵.

Most Commonly Reported Barriers (10 studies)

Didn't think it was serious enough to report

Didn't know it was a concussion

Didn't want to be removed from play

Concussions are part of the game

Didn't want to let the team down

Pressure from coaches, peers, family, fans

Risk was okay to assume to keep playing

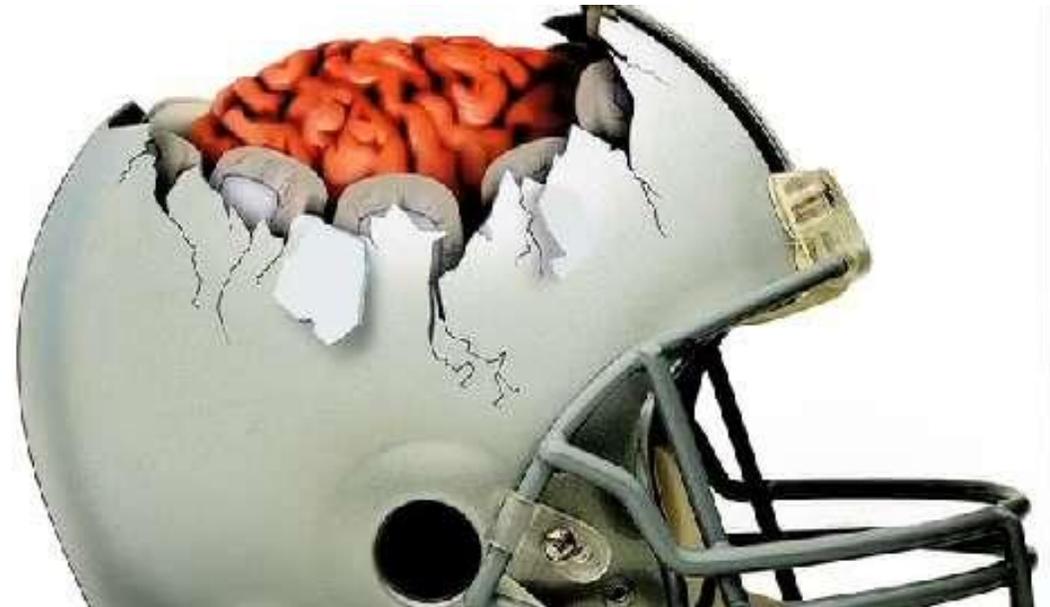
Previous history of SRC (related to poorer reporting behavior)



Strategies Used to Increase Reporting (14 studies)

Four themes:

- Concussion education
- Coach support
- Intention to report
- State law mandates



Effective Strategies to Improve CRB (5 studies)

Bramley et al. (2012)¹⁸

In a study of 60 high school soccer players, 72% percent of the athletes who received SRC education said they would always tell a coach of a suspected SRC, while only 36% of the athletes who did not receive education stating that they would tell a coach.

Kroshus et al. (2014²⁰, 2015¹²)

Found that reporting attitudes, self-efficacy, and subjective team norms were all significantly associated with intention. Connecting athletic performance to reporting early may increase intention to report.

Reported that pre-season SRC knowledge was not associated with in-season CRB. However, intention to report was associated with in-season CRB.

LaRoche et al. (2016)¹⁰

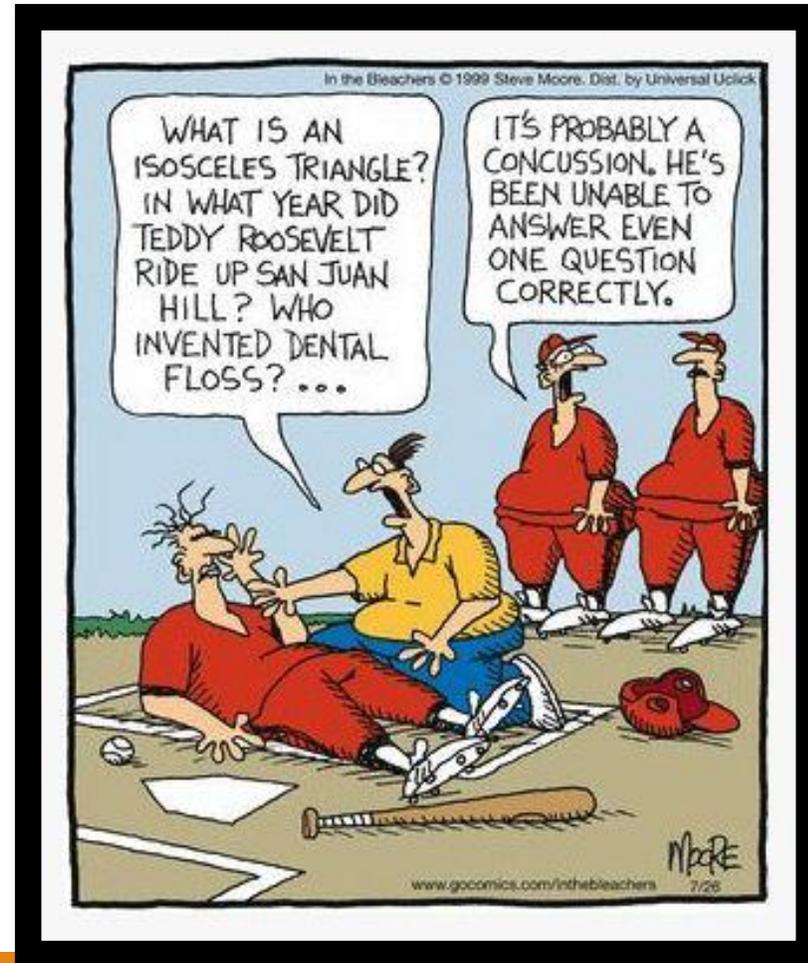
Found that state law which mandates SRC education made athletes significantly more likely (23.3% higher) to report a SRC when compared to years prior to the state law being enacted.

Register-Mihalik et al. (2013)²⁵

Found that reporting attitude, subjective team norms, and perceived behavioral self-control were all associated with intention to report. While intention to report was associated with decreased levels of participating while symptomatic, intention was not associated with actual CRB.

So what??

How do we apply this in the AT room?



Application in the AT room

First and foremost – concussion education for athletes and coaches.

- Don't assume that concussion knowledge translates to better reporting!!
- Your education content needs to provide more about changing the culture of non-reporting toward a culture of reporting.
- Include items such as:
 - Appropriate terminology
 - Earlier reporting = earlier RTP²⁶
 - Reporting immediately does not mean you must sit out. It simply means you get screened to determine if it is a SRC
 - Ex: 2 sites, Fa2017, 126 conc evals, only 23 diagnosed concussions
 - Brief symptom list
 - If they feel “not right” at any point – report, to be safe
 - Review how to report in various situations
 - Have coaches talk about their support for reporting



Appropriate Terminology

CORRECT

Sport-related concussion

Concussion

Mild traumatic brain injury

INCORRECT

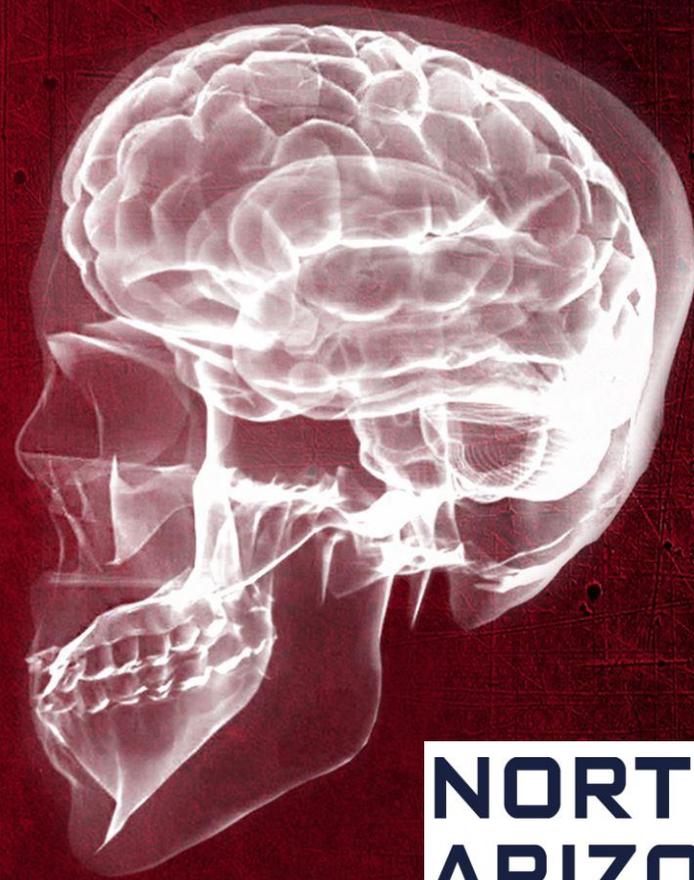
Ding

Bell ringer

Getting your bell rung

Clearing the cobwebs

**PLAYERS WHO
IMMEDIATELY
REPORT CONCUSSION SYMPTOMS
RETURN TO PLAY
5 DAYS
SOONER
THAN THOSE WHO WAIT**



**NORTHERN
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HITS HAPPEN

IF YOU AREN'T SURE ABOUT YOUR SYMPTOMS

ASK YOUR ATHLETIC TRAINER

**TAKE 5 MINUTES NOW, RETURN TO PLAY
5 DAYS SOONER**



Application in the AT Room

Second – Meet with your coaching staff and administrators.

- MUST change the culture toward that of athlete safety.
- Coaches MUST demonstrate support of athletes who report a potential concussion.
- Coaches should NEVER be making medical decisions – liability.
- Coaches should refer ALL potential concussions to ATC for evaluation - whether they witness the hit or another athlete reports it to them.
- Game day or practice should NOT influence their own decision making on whether to have a potentially concussed athlete report it to the ATC.



“Well, OK. Go check with the athletic trainer. ... But you’d better not be faking it just to avoid practice.”

Game Day Vs. Practice

Educate athletes that reporting behaviors should be the same in a game as in practice

- Future brain health
- Not as effective as a non-injured teammate
- Quicker return if reporting potential SRC *during game* than if they wait until after

Application in the AT room

Finally, team subjective norms play a big role in intention to report a potential SRC.

Negative team norm examples may be:

- Only weak players report SRCs
- The game is more important than reporting a single injury
- Coming off the field hurts the team
- Coaches may take my starting spot away

Positive team norm examples to implement:

- Earlier reporting = earlier RTP
- Taking care of your health now is vital to self AND team
- Earlier reporting = fewer injuries to body = better performance
- *Athletes must support each other in reporting*



Final notes...

We cannot rely on an athlete's injured brain to self-determine if a potential concussion should be reported.

If athletes choose to not report, then all of the research being conducted on evaluation techniques and rehab tools – goes to waste!

Reporting decisions are influenced by team culture – all teams in all sports by all people involved with those teams. We must focus on changing this culture toward greater athlete safety.

Research on concussion reporting continues across the country! Stay tuned!





Questions and Thank You!

Northern Arizona University – Master of Science in Athletic Training – Professional Master’s Degree Program

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