



The impact of rule changes and legislation on the incidence of concussion in high school football in the state of New Jersey



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OBJECTIVES

To determine the change in reported concussion rates from 2011, 2017 & 2019 in order to study the impact of legislation and rule changes on the Incidence rate of concussion in high school football in the state of New Jersey.

DESIGN

Comparative Study

METHODS

Licensed athletic trainers working in the secondary school setting in the state of New Jersey voluntarily participated in an IRB approved online survey on the incidence of concussion in the sport of football. This de-identified data was compared with data collected from a similar survey conducted in 2011 and 2017.

Days of Practice or Number of Games x Hours per Practice or Games = Hours of Exposure

$$IR = \frac{\text{Number of Concussions}}{\text{Number of Athletes x Hours of Exposure}} \times 10,000 \text{ hours}$$

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RESULTS

There were 97 Licensed Athletic Trainers surveyed with a total of 6,249 student athletes represented from their corresponding schools. The total incidence of concussions in the 2019 football season was 567 with 62.8% (356) occurring in games and 211 (37.2%) occurring in practices. Out of the total concussions, Freshman incidents accounted for 136, JV for 196 and Varsity for 235. The overall IR was 1.2/10,000 Hours of Exposure. Comparatively, there was a significant decrease in overall IR/10,000 Exposure Hours from 2017 (5.54/10,000 Exposure Hours) and 2011 (5.55/10,000 Exposure Hours).

DISCUSSION

2010 -Legislation increased awareness, mandated education and evaluation.
2011- Represented getting up to speed with new legislation, reporting and guidelines.
2017- Rule changes, officiating points of emphasis, NJSIAA recommending reduced contact
2019- "Practice like Pros" implemented.

CONCLUSIONS

- *Decreasing contact in practice significantly reduced practice-related concussions
- *Concern still exists for concussion in games, particularly for younger players.
- *Younger players are at greater risk for concussive injury.
- *Linemen continue to demonstrate greatest IR for injury.
- *This study offers a snapshot of concussion IR in HSFB. Important to review.

References:

1. New Jersey Concussion Law; (PL 2010, c94 (A2743 3R), Ch 40, 18A New Jersey Statutes; Approved December 7, 2010, Governor Chris Christy.
2. NJSIAA Football rules and points of emphasis; Football – www.njsiaa.org
3. Practice Like Pros - <https://www.practicelikepros.com/mission>

| 2011 Football Season | 2017 Football Season | 2019 Football Season |
|--|--|--|
| 45 schools/3,497 athletes (358 Total concussions) 179 in Games (50%) 179 in Practices (50%) | 65 schools/4,927 athletes (602 Total Concussions) 355 in Games (59%) 247 in Practices (41%) | 97 schools/6,249 athletes (567 Total Concussions) 356 in Games (62.8%) 211 in Practices (37.2%) |
| 5.55 IR/10,000 Exposure Hours (p=.0001) | 5.54 IR/10,000 Exposure Hours (p=.0001) | 1.2 IR/10,000 Exposure Hours |

Table 1. Breakdown of Overall Concussion Incidence and Overall Concussion IR/10,000 Exposure Hours by year

| Football Season | Practice (IR per 10,000 Exposure Hours) | Game (IR per 10,000 Exposure Hours) |
|-----------------|---|-------------------------------------|
| 2011 | 3.0971 | 16.871 |
| 2017 | 2.47 | 26.4 |
| 2019 | 0.46 | 23.9 |

Table 2. Overall Concussion IR/1000 Exposure Hours by year comparing practice and game

| IR Practice (By Playing Level) per 10,000 Hours | IR Games (By Playing Level) per 10,000 Hours |
|---|--|
| Freshman IR: 0.44 | Freshman IR: 33.3 |
| JV IR: 0.55 | JV IR: 35.5 |
| Varsity IR: 0.41 | Varsity IR: 16.8 |

Table 3. Overall 2019 IR/10,000 Exposure Hours by Playing Level for Practice and Games.

| IR (By Position) per 10,000 Hours |
|---|
| QB: 0.12 |
| RB: 0.39 |
| WR: 0.43 |
| Lineman: 0.84 |
| Linebacker: 0.55 |
| Defensive back: 0.40 |
| Kicker/Punter: 0.02 |
| Kickoff: 0.18 (Practice + Game Exposure Hrs.) |
| Kickoff: 2.27 (Game Exposure Hrs. ONLY) |

