

# THE SPHERE LAB

Sport Policy Health Ethics Research



## Factors Influencing College Football Players' Beliefs about Incurring Football-Related Dementia

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## BACKGROUND

Football participation is associated with risks to acute and long-term health, including the possibility of incurring football-related dementia. Concerns have been raised regarding media coverage of these risks, which may have influenced athletes' beliefs. However, little is known about football players' views on football-related dementia. The risk perception literature suggests that related risk perceptions and features of individual cognition, such as the ability to switch to reasoned deliberative thinking, may influence individual perception of a long-term risk.

**This study aims to describe the characteristics of college football players who believe that they are likely to incur football-related dementia.**

## METHODS

Members of four NCAA Division I Power 5 Football teams participated in this survey-based study, providing responses to demographic, athletic, and risk posture questions, and completed the cognitive reflection test. Surveys were administered in person during spring 2017, using pen and paper, on the athletes' home campuses.

Throughout the survey, athletes filled out 7-point scales to indicate their beliefs about a variety of prompts.

| Directions: Now think about your future after football. Please rate how likely it is that the following things happen <u>to you</u> . | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| I will have problems with my health later in life because I played football.  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I will develop dementia, Alzheimer's disease, or chronic traumatic encephalopathy (CTE) later in life because I played football.      | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Logistic regressions were used to evaluate relationships between beliefs about football-related dementia and factors including: athletic and demographic characteristics, football-risk posture, health-risk posture, and cognitive reflection test score.

## RESULTS

296 Players from four teams participated in the survey. Teams represented three of the NCAA Division I Power 5 conferences. Participating Athletes played football for an average of 11 years and had sustained on average one suspected concussion. For each additional suspected concussion in an athlete's career, his odds of believing football-related dementia is likely increased by 24%. Compared to lineman, skill players had lower odds of believing football-related dementia was likely.

**Table 1. Participant Demographics and their Association with the Belief that Incurring Football-Related Dementia is Likely**

|                              | Descriptive Measure | OR          | 95% CI            |
|------------------------------|---------------------|-------------|-------------------|
|                              | Median (IQR)        |             |                   |
| <b>Suspected Concussions</b> | 1.00 (0.0, 3.0)     | <b>1.24</b> | <b>1.07, 1.45</b> |
| <b>Diagnosed Concussions</b> | 0.0 (0.0, 1.0)      | 0.81        | 0.50, 1.34        |
| <b>Years of Football</b>     | 11.0 (9.0, 13.0)    | 0.95        | 0.83, 1.08        |
|                              | N (%)               |             |                   |
| <b>Position (Lineman)</b>    | 82 (28%)            | REF         | --                |
| <b>Position (Skill)</b>      | 214 (72%)           | <b>0.35</b> | <b>0.14, 0.89</b> |

Acute and chronic football-related risk perceptions, as well as non-football-related health risk perceptions, were positively associated with athletes' belief that football-related dementia was likely. Higher cognitive reflection test score, a measure of ability to switch to slow deliberative thinking, is positively associated with odds of believing football-related dementia is likely.

**Table 2. Association between Believing Football-Related Dementia is Likely and Beliefs about Other Football- and Non-Football-Related Risks**

|  | Mean (SD)  | OR          | 95% CI             |
|--|------------|-------------|--------------------|
| <b>Model 1: Football-Related Risks</b>             |            |             |                    |
| Likelihood of Future Football Injury               | 14.1 (5.6) | <b>1.16</b> | <b>1.04, 1.30</b>  |
| Likelihood of Chronic Health Problems              | 3.7 (1.7)  | <b>3.54</b> | <b>2.24, 5.57</b>  |
| Severity of Future Football Injury                 | 8.6 (4.3)  | 1.03        | 0.91, 1.15         |
| Severity of Chronic Health Problems                | 2.1 (1.3)  | <b>0.42</b> | <b>0.22, 0.82</b>  |
| Severity of Football-Related Dementia              | 1.6 (1.1)  | <b>2.63</b> | <b>1.36, 5.07</b>  |
| <b>Model 2: Football-Related Risks v. Benefits</b> |            |             |                    |
| Short-term Risks v. Benefits                       | 5.7 (1.4)  | 1.35        | 0.94, 1.94         |
| Long-term Risks v. Benefits                        | 5.1 (1.6)  | <b>0.67</b> | <b>0.48, 0.94</b>  |
| Health Risks v. Benefits                           | 4.3 (1.7)  | 0.79        | 0.60, 1.04         |
| <b>Model 3: Non-Football Health-Related Risks</b>  |            |             |                    |
| DOSPERT Risk                                       | 28.3 (7.1) | 1.02        | 0.97, 1.08         |
| DOSPERT Likely                                     | 21.8 (7.6) | <b>1.06</b> | <b>1.00, 1.12*</b> |

Abbreviations: Domain-Specific Risk-Taking Scale (DOSPERT)  
\*Lower bound of 95% CI <1.00 but rounds to 1.00

## DISCUSSION

In this study, we evaluate factors that are associated with football players' perception that football-related dementia is likely in their future. We found that athletes who hold this view also hold measurably different views on football-related risks, and health-related risks beyond football, than their peers. Compared to their peers who perceived that football-related dementia is not likely in their futures, football players who believed future football-related dementia is likely also perceive a greater likelihood of future acute football injury and chronic non-dementia football-related health problems. Summarily, there appear to be two profiles of the risk perceptions of college football players. One is that football is viewed as generally riskier, with a comparatively greater perceived likelihood of acute and chronic health problems from football. The other is that football is viewed as generally less risky, across acute and chronic health risks. It is unclear what underlies these two divergent views, although this study provides insights as to individual-level factors that may contribute, including:

- Suspected Concussion History
- Long-term Outlook
- Cognitive reflection

## CONCLUSIONS

The present study finds that some athletes view football as generally riskier, while others view football as generally less risky, across acute and long-term outcomes. These risk postures are informed by athletes' self-reported concussion history as well as their ability to switch from fast-reactive thinking to slow deliberative thinking. Despite these differences in risk perception, all participants were current football athletes. Ensuring that athletes have a reasonable understanding of the risks of football participation, and knowledge of what to do if they incur a football-related injury, is an important responsibility for all colleges with a football team.

## REFERENCES

Baugh CM, Gedlaman MA, Daneshvar DH, Kroshus E. Factors Influencing College Football Players' Beliefs About Incurring Football-Related Dementia. *Orthop J Sports Med.* 2021 Apr 28;9(4):23259671211001129. doi: 10.1177/23259671211001129. PMID: 33997067; PMCID: PMC8107942.