

The Relationship between Past Concussion History and Current Depression Levels of Junior College Football Players

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Introduction

- “A trauma-induced alteration in mental status that may or may not involve loss of consciousness” (Broglia et al., 2014)
- ~1.6-3.8 million sports related concussions occur each year (Langlois et al., 2006)
- 52.5% of 1,051 concussions were accounted for by football players (Kerr et al., 2017)
- 452 football players, 118 (26.1%) players suffered at least 1 concussion (Houck et al., 2016)

Introduction

Headache

Nausea

Confusion

Blurred Vision

Dizziness

Sensitivity to
Light

Difficulty
Remembering/
Concentrating

Signs and Symptoms

(Harmon et al., 2013)

Introduction

- Armstrong et al. (2009) found that 33.5% of college athletes suffer from clinically significant levels of depression
- People with a previous concussion were at a higher risk for lifetime prevalence of major depression (Holsinger et al., 2002)
- Depression Trends on the rise (Weinberger et al., 2018)

Background - Previous Studies

# of Concussions	# of Participants	% of Participants
Zero	32	15.7%
1 or 2	67	32.8%
3+	105	51.5%
Total	204	100%

Table 1 (Kerr et al., 2018)

Of the 204 Concussions:

- 39 of the 204 (19%) participants reported moderate to severe depression (Kerr et al., 2018)
- 30 of the 39 (76.9%) who reported moderate to severe depression suffered 3 or more concussions (Kerr et al., 2018)

Background - Previous Studies

- Athletes reporting 3 or more concussions were 2.4 times more likely to present with moderate to severe depression (Kerr et al., 2014)
- 3+ concussions= 3 times more likely to be diagnosed with depression than those with no concussions history (Guskiewicz et al., 2007)
- 1 or 2 previous concussions= 1.5 times more likely to be diagnosed with depression than those with no concussion history (Guskiewicz et al., 2007)

Purpose Statement and Hypothesis

- The purpose of this study was to determine the relationship between past concussion history and the current depression status of junior college football players
- We hypothesized that there would be a positive relationship between concussion history and depression levels of junior college football players.

Methods – Participants and Instrumentation

- 105 Players on the roster
- Round 1
 - Survey at pre-season meeting via SurveyMonkey
- Round 2
 - Email to team to fill out survey via SurveyMonkey
- Inclusion Criteria
 - Junior college football player
 - Currently on the roster
 - ≥ 18 years old
- Health History Questionnaire (HHQ)
 - # of diagnosed concussions
- Patient Health Questionnaire for Depression
 - PHQ – 9

Methods – Procedures

- Recruitment script was read at preseason meeting
- All players received information packet with SurveyMonkey link
- Participants follow the SurveyMonkey link
- Consent was granted when the link was followed and the survey was completed
- Participants completed the survey

Methods – Procedures

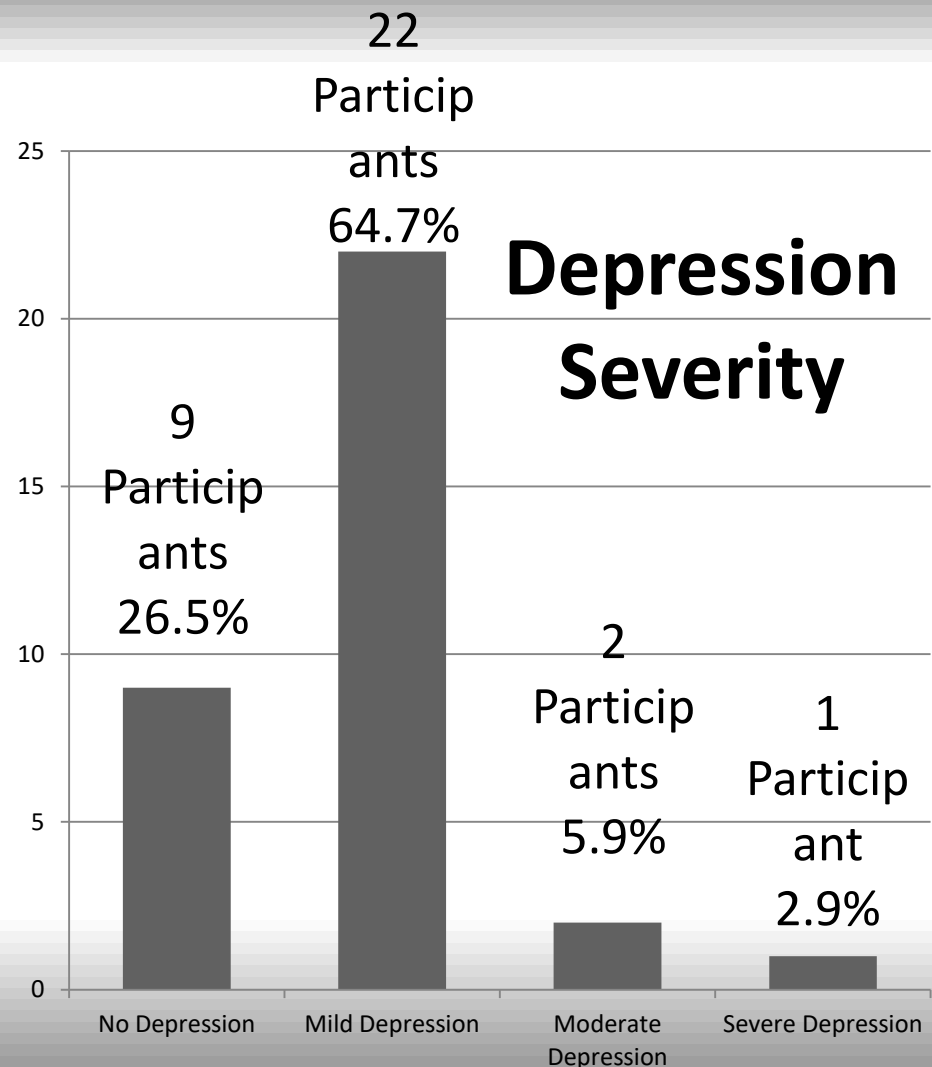
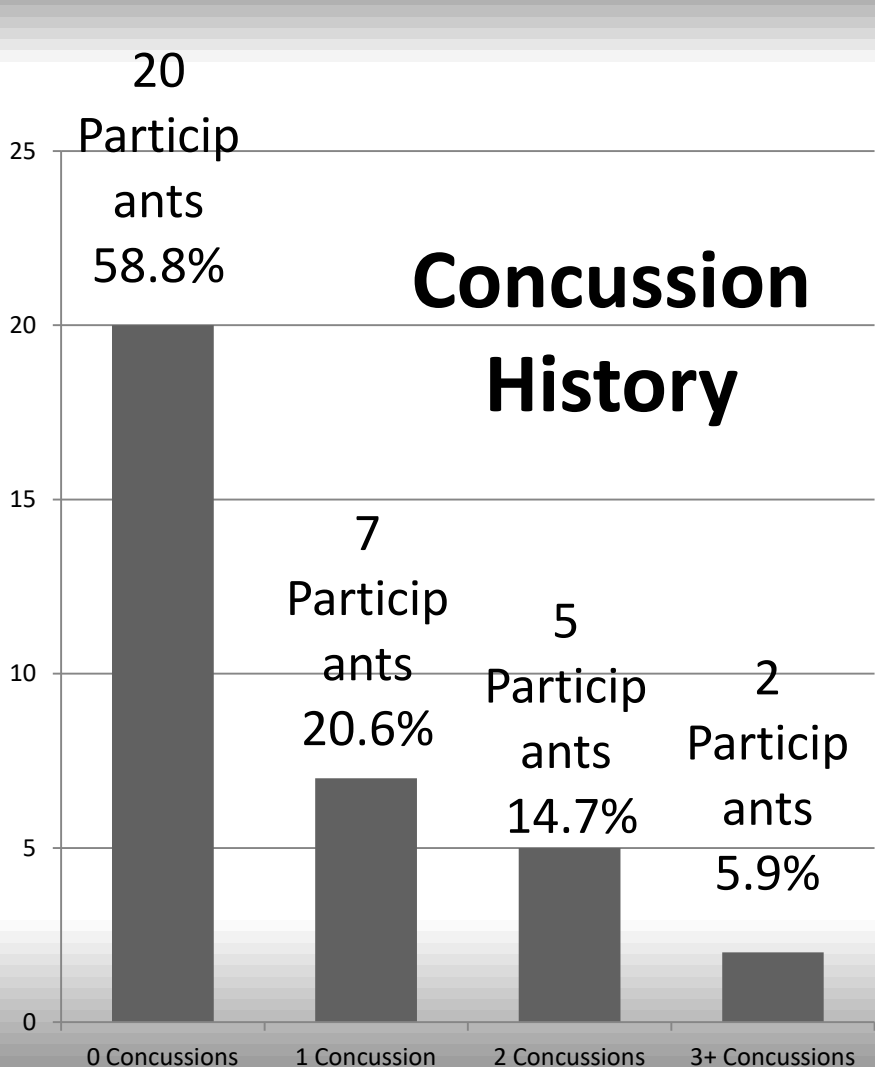
- Email sent to Certified Athletic Trainer for recruitment
- Email forwarded to the players
- Followed the SurveyMonkey link
- Consent was granted when the link was followed and the survey was completed
- Participants completed the survey

Methods – Statistical Analysis

- The data was analyzed using SPSS (version 23; IBM Corp. Amonk, NY) and Microsoft Excel 2007.
- Percentages calculated for concussion history and depression levels
- Means and standard deviations were calculated on the PHQ-9 scores from each concussion subgroup (0, 1, 2, 3+)
- A Spearman Rho Correlation was used to analyze the correlation between past concussion history and current depression levels

- 105 players on the roster
- 18 (17.1%) participants after preseason meeting
- 18 (17.1%) more participants after email recruitment
- 2 participants did not answer all question
- 34 (32.4%) total participants

Results



Mean PHQ-9 Scores between each Concussion Sub Group

# of Concussions	n	Mean (SD)
0	20	2.5 (3.1)
1	7	2 (1.5)
2	5	7 (7.4)
3+	2	9 (7.1)

PHQ – 9 – Patient Health Questionnaire

N – Number of Participants

- Positive Correlation found between concussion history and current depression levels
- Spearman Rho correlation coefficient was found to be $r = 0.380$ with the significance of $p=0.027$.

- 42.2% with at least 1 concussion
- 73.5% in the category of mild, moderate or severe depression
- Positive Correlation
 - As seen by Kerr et al. (2014)
- Rise in PHQ – 9 score among participants with zero to three concussions
 - As seen by Kerr et al. (2018) and Kerr et al. (2014)

- Guskiewicz et al. (2007)
 - 1 or 2 previous concussions 1.5 times more likely than 0 concussions
 - 3 previous concussions 3 times more likely than 0 concussions
 - Supports that our PHQ-9 scores of 3+ concussions is greater than 0 concussions
- Results from our study correspond with other studies that there is a correlation between past concussions and depression in athletes.
 - (Kerr et al., 2018, Kerr et al., 2014, Yang et al., 2015, Vargas et al., 2015, Guskiewicz et al., 2007)

Limitations

- Limited junior college football teams in region
- Low number of participants (34)
- Low completion rate (32.4%)
- Mental health stigma
- Concussions go unnoticed

Recommendations for Further Research

- Other populations to help support previous findings
- Email reminders
- PHQ-9 for depression tool
- Screening for baseline depression
- Screen all for post concussion depression

Conclusions

- We found there is a positive correlation between past concussion history and current depression levels of Junior College football players
- We saw the mean PHQ-9 score increase as the number of concussions increased
- We need more studies in different populations to generalize that there is a correlation between concussions and depression

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