

Original article

English professional football players concussion knowledge and attitude

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Abstract

Background: Concussions are a common pathology in football and multiple misconceptions exist amongst the players and managers. To address these misconceptions, and potentially reduce concussion associated sequela, effective educational interventions need to be developed. However, the current knowledge and attitude status must be ascertained to appropriately develop these interventions. The purpose of this study was to assess the concussion knowledge and attitude of English professional footballers.

Methods: Twenty-six participants from one English Football League Championship club completed the study. A mixed methods approach included the Rosenbaum Concussion Knowledge and Attitudes Survey (RoCKAS) and a semi-structured interview. The RoCKAS contains separate knowledge (0–25) and attitude (15–75) scores and was followed by a semi-structured interview consisting of concussion knowledge, attitude, and behavior related questions.

Results: The mean score on the RoCKAS knowledge was 16.4 ± 2.9 (range 11–22) and the attitude score was 59.6 ± 8.5 (range 41–71). The interview responses identified inconsistencies between the RoCKAS and the intended behaviors, endorsing multiple concussion misconceptions, and revealed barriers to concussion reporting.

Conclusion: The results of this study suggest that Championship Level English footballers have moderate concussion knowledge, safe attitudes, and good concussion symptom recognition when assessed with pen and paper questionnaires. However, within the semi-structured interview many respondents reported unsafe concussion behaviors despite accurately identifying the potential risks. Further, multiple barriers to concussion reporting were identified which included perceived severity of the injury, game situations, and the substitution rule. These findings can help form the foundation of educational interventions to potentially improve concussion reporting behaviors amongst professional footballers.

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Keywords: Concussion; Concussion recovery; Concussion reporting; Football; Mild traumatic brain injury; RoCKAS

1. Introduction

Football, soccer in the US, is the world's most popular sport with an estimated 270 million participants worldwide with 1.5 million participants in England.^{1,2} While participation in football conveys many positive aspects, the risk of concussion is substantial with almost a quarter of all injuries being concussions and a 50% 10-year concussion risk amongst male elite players.^{3,4} Recent high profile football

concussion cases (e.g., Hugo Lloris, Taylor Twellman, and Jeff Astle) and the controversies at the 2014 World Cup have served to heighten the awareness in the football community.⁵ Thus, the International Federation of Association Football (FIFA) has endorsed the 4th International Consensus Statement on Concussion in Sport (4th CIS) to improve concussion care amongst footballers.⁶ Unfortunately, English Championship League teams are largely non-compliant with the CIS guidelines with limited preseason testing, lack of utilization of objective evaluation methods, and limited fixed rest periods.⁷

Appropriate and timely concussion management is critical to reduce both the immediate and long-term effects of concussions. A multifaceted concussion assessment program, with

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comparison to premorbid data, is highly sensitive in acute concussion diagnosis, once a concussion is suspected.^{8,9} However, most concussions do not present with loss of consciousness or obvious disorientation; therefore, patient self-report of symptoms is critical to appropriate concussion management.¹⁰ Unfortunately, underreporting of suspected or potential concussions remains prevalent which may delay appropriate care.^{11,12} Timely recognition is critical to prevent second impact syndrome which, while rare and debated, is potentially fatal.^{13,14} Furthermore, once an individual has suffered a concussion they are at a 3–6 times elevated risk for repeat concussion which will likely present worse and have prolonged recovery.^{15–17} Finally, multiple lifetime concussions may elevate the risk of later life neurological impairments.^{18–20}

Multiple concussion-related misconceptions persist which may impede appropriate and timely care. Generally, US based studies have reported increasing concussion knowledge amongst athletes compared studies from the early 2000s.^{11,21–27} Despite these reported improvements, multiple misconceptions persist including not recognizing subtle concussions symptoms, not recognizing a potential concussion, and the risk of potential complications.^{11,21–25} Further, important misconceptions underlie common responses that athletes continue to participation despite experiencing concussion related symptoms.^{28,29} These misconceptions appear to be similar between the US and UK and are potentially driven by inaccurate media portrayal of concussions.²⁸ The British general public concussion misconceptions include underestimating of the seriousness of a concussion, a lack of knowledge of the dose–response relationship or increased vulnerability to subsequent concussion, and believing the patient is the best source to identify recovery.²⁹ Further, there is no relationship between personal history of concussion and concussion knowledge suggesting individuals themselves are ill-equipped to recognize and self-report a potential concussion.²⁹

Both research findings and popular media reporting indicated that footballers routinely continue to play despite potential concussions and are often praised for their toughness.^{21,30–32} Indeed, over 60% of concussions were unreported amongst youth Italian footballers.³³ The first step in developing an appropriate education intervention is to assess the information of the current population;³⁴ however, the majority of concussion knowledge studies have investigated U.S. student-athletes and extrapolation to other populations/countries may be inappropriate.^{21,25} Further, many of survey's utilized in these studies provide little or no psychometric properties; therefore the Rosenbaum Concussion Knowledge and Attitudes Survey (RoCKAS) was designed to address these limitations.³⁵ The RoCKAS has undergone extensive psychometric testing, is valid and reliable instrument, and has successfully both identified continued participation despite potential concussion symptoms and the failure to report common concussion symptoms to appropriate healthcare providers.²⁶ Therefore, the purpose of this study was to assess the concussion knowledge and attitude of English professional footballers utilizing both a psychometrically appropriate questionnaire as well as a semi-structured interview.

2. Methods

2.1. Participants

There were 26 participants (age: 23.4 ± 4.5 years; playing experience: 16.4 ± 4.4 years; concussion history: 50%, 0.7 ± 0.8 prior concussions) from one English Football League Championship club out of 29 possible team members. The inclusion criteria for participation were being a team member (on the club's roster), over the age of 18, and speaking English as a primary language. One individual declined to participate in the study and 2 were excluded for being under the age of 18 at the time of the study. Participants were recruited with the team physiotherapist's assistance and no incentives were provided. All participants provided written informed consent prior to participating as approved by the Georgia Southern University Institutional Review Board.

2.2. Procedures

There were 2 assessments performed in this study: 1) the RoCKAS and 2) a semi-structured interview. The RoCKAS consists of 55 questions divided into 5 sections with 2 scores: a concussion knowledge index (CKI) and concussion attitude index (CAI).³⁵ The CKI contains 14 basic true/false questions in Section 1, 3 applied true/false questions, and recognition of 8 common concussions symptoms (with 8 non-scored distractors) for a total score range of 0–25 with a higher score representing greater concussion knowledge. The 16 potential symptoms were based on previous published symptom recognition studies as the distractors were deemed more plausible (e.g., abnormal sense of smell/taste, black eye, and neck pain) than the original RoCKAS distractors (e.g., hair loss, excessive studying, and arthritis) and is reliable.^{36,37} The CAI contains 15 Likert scale (1–5) questions and participants received 1–5 point per questions with the safer answer receiving 5 points and the least safe answer receiving 1 point for a potential score range of 15–75. The RoCKAS has undergone extensive psychometric testing and is valid and reliable.³⁵ An internal validity index consisted of 3 true/false questions in Section 1 and a score of <2 resulted in the test being considered invalid.

The semi-structured interview consisted of 27 primary questions and 10 follow-up questions based on current concussion literature. To ensure face validity and potential language issues of both assessments, the questions were 1) reviewed by experts within the field, 2) reviewed by 2 physiotherapists in the UK, and 3) pilot tested on several professional English football players (Appendix 1). To conduct the study, the lead author traveled to England and performed the investigation during the 2012 pre-season training camp. The potential participants reported not receiving formal concussion education prior to their enrollment in this study. After receiving written informed consent from the participants, the RoCKAS instrument was completed individually and privately. The semi-structured interview was performed last and conducted in a private setting without any teammates, coaches, or the physiotherapist present.^{6,28,30,33} The players were asked the questions

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