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Implementation of concussion guidelines in community Australian Football and Rugby League—The experiences and challenges faced by coaches and sports trainers

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ABSTRACT

Objectives: While guidelines outlining the appropriate management of sport-related concussion have been developed and adapted for use within community sport, it remains unknown how they are experienced by those responsible for implementing them.
Design: Longitudinal study.
Methods: 111 coaches and sports trainers from community-level Australian Football and Rugby League teams completed pre- and post-season surveys assessing their attitudes towards using concussion guidelines. Participants also provided post-season feedback regarding their experiences in using the guidelines.
Results: 71% of participants reported using the guidelines in the preceding season. Post-season attitude was related to pre-season attitude ($p = 0.002$), football code ($p = 0.015$), and team role ($p = 0.045$). An interaction between team role and guideline use ($p = 0.012$) was also found, with coaches who had used the guidelines, and sports trainers who had not, reporting more positive post-season attitudes towards using the concussion guidelines. Implementation challenges included disputing of decisions about return-to-play by players, parents, and coaches, and a perceived lack of time. Recommendations for improved guideline materials included using larger fonts and providing for witnessing of advice given to players.
Conclusions: This is the first study to examine the implementation of concussion guidelines in community sport. Training of coaches/sports trainers needs enhancement. In addition, new education should be developed for parents/players about the importance of the return-to-play advice given to them by those who follow these guidelines. Information provided by those who attempted to use the guidelines will assist the refinement of implementation and dissemination processes around concussion guidelines across sports.

1. Introduction

Concussion, a form of mild traumatic brain injury, is associated with a range of symptoms including headache, dizziness, nausea, vomiting and impaired memory.[1,2] Repeated, subsequent concussions can also lead to longer term adverse health impacts, particularly if the subsequent concussion occurs before the individual has recovered fully from their initial injury.[3] Unfortunately, a large number of sport-related concussions occur each year across a range of sports, with recent evidence suggesting that the incidence of sport-related concussions is rising.[4] In a recent population-based study from Victoria, Australia, the number of hospitalizations for sports-related concussions increased by 61% over a nine year period,[4] while a significant increase in the number of reported concussions in the Australian National Rugby League was reported between 1998 and 2010.[5] Furthermore, in elite soccer players, experiencing a concussion increased the risk of sustaining a different subsequent sports injury by up to 70% in the following year, most probably due to altered neurological and cognitive function.[6]

Recognition of the potential longer-term health impacts associated with sustaining single or multiple concussions, and the increasing incidence of this injury in sport, have prompted the development of guidelines outlining how to appropriately recognise and manage sport-related concussions.[1,7,8] Unfortunately, the extent to which these guidelines have been formally adopted by team personnel is unknown, although the knowledge, attitudes, and actual behaviours of the personnel working directly with

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injured players (i.e., coaches, sports trainers, sports medicine support staff) appears to influence how effectively they use these guidelines.[9–12] Concerns have also been raised about the extent to which the guidelines can be translated to non-elite, community-level sporting contexts[13]. Thus, unless factors that influence the uptake and use of concussion guidelines are addressed from the outset, it is highly unlikely that these guidelines will be implemented effectively by team personnel, particularly in community sport.[9,12,14]

To better understand the factors that influence concussion guideline uptake, recent research has begun to focus on the knowledge and attitudes of the team personnel tasked with implementing concussion guidelines. With respect to knowledge, gaps have been identified with respect to team personnel's understanding of how to recognise concussion symptoms and what actions should be taken following concussions.[11,15,16] For example, a recent study in community-level Australian Football (AF) and Rugby League (RL) found that fewer than half of the surveyed sports trainers and coaches recognised the increased risk of subsequent concussion following the initial episode of concussion, and <25% realised that younger players are at greater risk of concussion.[11] In an earlier Australian study in Rugby Union, there was little evidence of awareness of concussion guidelines or appropriate return-to-play procedures following concussion.[17]

While knowledge gaps are often identified, attitudes towards concussion guidelines tend to be positive, at least among those anticipating using concussion guidelines in the coming season.[10] What remains unclear, however, is whether attitudes towards concussion guidelines change over time once team personnel have actually had a chance to use them. A negative experience with using the guidelines, for instance, could reduce the likelihood that the guidelines would be utilised in future instances, especially if they are perceived as being difficult to implement or not relevant to the specific sporting context in which they are being applied.

The aims of this study were therefore to: (i) describe the experiences of, and challenges encountered by, coaches and sports trainers who attempted to use concussion guidelines over a playing season in community football; and (ii) identify factors associated with more favourable post-season attitudes towards the concussion guidelines. These results provide insights into how the guidelines could be improved to ensure their wider adoption in community sport settings.

2. Methods

Individuals were eligible to participate in this longitudinal study if they were aged 18+ years and registered as a coach or sports trainer at a community AF or RL club in Australia. To be included in the data reported in this paper, participants must have completed the nationwide baseline (pre-season) survey, which has been previously described.[10,11] In total, 617 community AF and RL coaches and sports trainers completed the baseline survey at the start of the 2012 playing season out of an eligible national population of approximately 100,000 community AF and RL coaches. At baseline, the survey respondents were invited to provide their contact details so that they could be recontacted at the end of the season to report their actual use of the concussion guidelines (3rd Concussion Consensus Statement)[18]. After the 2012 playing season, an email invitation to complete an online post-season survey was sent to everyone who had provided their consent to be contacted ($n = 510$). The time between the pre-season and post-season survey was 26 weeks. Of these, 111 AF and RL coaches and sports trainers completed the follow-up (post-season) survey, representing a follow-up response rate of 22.0%.

Both baseline and follow-up surveys were administered via Qualtrics, an online survey platform. Completion of the online survey(s) was taken as indication of informed consent. Consistent with the baseline survey,[10] the semi-structured follow-up survey (which included a combination of multiple choice and open-answer questions) contained items measuring the central theory of planned behaviour constructs (i.e., intention, attitude, subjective norm, self-efficacy) as well as an extension to this theoretical framework (i.e., personal norm).[19,20] However, as reflected in our aims, only results pertaining to the attitude construct are reported in the main body of this paper. Results pertaining to the other constructs of theory of planned behaviour (intention, subjective norm, self-efficacy and personal norm) are contained in a supplementary file (Appendix A). For both surveys, attitude was assessed using nine items scored on 7-point Likert scales ranging from strongly disagree (1) to strongly agree (7). Items were summed to form an overall attitude scale that could theoretically range from 7 to 63, with higher scores indicating a more positive attitude towards using the concussion guidelines. At follow-up, respondents were also asked whether they had used the concussion guidelines during the current, recently completed season and, if so, were asked to complete open-ended questions seeking additional feedback about: (i) how they had used the guidelines; (ii) any problems experienced in using the guidelines or how they could be improved; and (iii) elements about the guidelines that were found to be useful.

Statistical analyses were conducted using SPSS version 21.0. For the first study aim, participants' qualitative feedback about using the guidelines were coded into common themes relating to experiences when implementing the guidelines and the difficulties and positive aspects of using the guidelines. Thematic codes were generated by one reviewer (JK) where a set of procedures was followed using an inductive identification of themes. Once codes were generated, response data was allocated to each code by the same reviewer (JK). A second reviewer (PW) then independently allocated each response to the same codes. Any disagreements in code generation or allocation were resolved by a third reviewer (JN). For the second study aim, analysis of co-variance (ANCOVA) was conducted to explore the factors associated with post-season attitudes to the guidelines (dependent variable), after confirming data normality assumptions. The independent variables were use of the guidelines during the preceding season (as reported at baseline), football code (AF vs. RL), and team role (coach vs. trainer), with the pre-season attitude score acting as a covariate. First order interactions between the independent variables were also analysed.

Ethics approval for this study was obtained through the Monash University Human Research Ethics Committee (number HREC CF12/1178–2012000575).

3. Results

Of the 111 respondents who completed both the baseline and follow-up surveys, 79 (71%) reported using the guidelines during the intervening AF and RL season. Table 1 reports the themes identified and common responses, and shows that amongst the 79 respondents who had used the concussion guidelines during the season between the baseline and follow-up surveys, the implementation experiences were generally similar across team roles and sporting codes. Implementation challenges included disputing of decisions about return-to-play by players, parents, and coaches, and a perceived lack of time. Recommendations for improved guideline materials included using larger fonts and providing for witnessing of advice given to players.

Pre- and post-season attitude scores (mean and 95% confidence intervals) for sports trainers and coaches are shown in Fig. 1. Post-season attitudes towards using the concussion guidelines