Title: Sport-related concussion practices of medical team staff in elite football in the United Kingdom, a pilot study

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Title: Sport-related concussion practices of medical team staff in **elite** football in the United Kingdom, **a pilot study**

Objectives: Explore sport-related concussion (SRC) awareness, behaviours and attitudes of medical team staff working in elite football in the United Kingdom. Including usage and awareness of the FA guidelines, concussion education rates of players and coaching staff, and collection of baseline concussion assessments. Additionally, pitch-side confidence in SRC recognition, associated perceived influence of players, coaching staff, referees and other officials on decisions, and attitude towards a “concussion” substitute were explored.
Methods: Cross-sectional questionnaire study distributed online by organisations including or representing medical staff working in elite football in the United Kingdom.
Results: 120 responses were gathered. High awareness rates of the FA guidelines were found (97%) with variable rates of player and coaching staff concussion education. Baseline concussion assessments were collected by 78%. Of those, 99% collected SCAT5 with low rates of other neuro-psychometric testing (17%). Confidence of pitch-side SRC recognition was high (93% feeling very confident or confident). A small number of respondents thought players never under-reported symptoms to avoid removal (6.6% selecting it rarely or never occurred). There is a perception of coaching staff trying to influence removal decisions with 40% often or sometimes feeling influence. Introduction of a “concussion” substitute was seen as strongly positive for player welfare (85% strongly agreeing or agreeing).
Conclusions: High awareness rates of the FA concussion guidelines are **not consistent** with adherence to recommendations around baseline concussion assessment and concussion education. Confidence in SRC recognition was high but removal decisions could be subject to attempted influence by players and coaching staff.

Keywords: soccer, assessment, strategy, doctor, physiotherapist, therapist

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Introduction

Sports-related concussion (SRC) can be defined as representing the immediate and transient symptoms of traumatic brain injury (McCrory *et al.*, 2017). Given the significant potential of immediate and long-term consequences of SRC it is gaining an increased spotlight (Harmon *et al.*, 2013; Gouttebarge *et al.*, 2017). A 2009 questionnaire study of club medical officers in the top 4 leagues in England found 27.8% had not heard of the 2008 concussion Consensus Statement **(McCrory *et al.*, 2009)**, and only 22% collected baseline concussion assessments (Price, Malliaras and Hudson, 2012). **To improve player welfare the Football Association (FA) produced guidelines in 2015 outlining recommendations around concussion practice (Football Association, 2015).**

It is established that injuries have a significant influence on team performance in elite football (Hagglund *et al.*, 2013). A study of injury rates in elite level European clubs between 2001-2008 quoted a concussion rate of 0.06 concussions/1000 hours of exposure, or one concussion per team every other season (Ekstrand, Hägglund and Waldén, 2011). **This remains the largest, most recently published dataset to date in elite European football** (Prien *et al.*, 2018; O'Leary *et al.*, 2020). **This figure is thought to underestimate the true incidence SRC with five confirmed concussive injuries diagnosed during the 2014 Brazil FIFA World Cup matches alone, equating to 2.44 concussions/1000 player match hours** (Nilsson *et al.*, 2013; Junge and Dvořák, 2015; Abraham *et al.*, 2019). **Due to the difference in player match hours vs. player exposure hours (matches and training) direct comparison between studies is difficult.**

The FA guidelines set a standard of care for management of **all players across all leagues** with suspected SRC, but are not mandated (Football Association, 2015). Medical staff who make player removal decisions can face pressure from both coaching staff, management, and the players themselves (Broglio *et al.*, 2010; Williams *et al.*, 2016). **Informed and educated players have been shown to willingly return-to-play with ongoing concussive symptoms, indicating that education alone is not the answer** (Tsao, 2014). Concussion specific education has been shown to improve attitudes of professional footballers and coaching staff towards concussion **in Italy (Broglio *et al.*, 2010), and The Netherlands (Gouttebarge *et al.*, 2019)**. **Rates of education and adherence to FA guidelines within elite clubs in The United Kingdom is unknown.**

Methodology

Questionnaire Development

An original questionnaire based on the 5th Consensus Statement on Concussion in Sport and the FA concussion guidelines (Football Association, 2015; McCrory *et al.*, 2017) **was created (Appendix A). Areas explored included respondent demographics, and awareness and implementation of the FA guidelines. Confidence and personal experience around concussion recognition and pitch-side management were explored using a 5-point Likert Scale.** Questionnaire usability, relevance, and **content validity** was checked by all the authors and by members of the Football Association medical team acting as external experts.

"**Consultant level doctors" in the United Kingdom are deemed as those who have completed a training program in their chosen specialty. General practioners (GPs) are not deemed as consultants. "Referees and other officials" would be assumed to include the referee, two assistant referees, and a 4th official.**

Inclusion Criteria

Respondent inclusion criteria included healthcare professionals working in elite football within the United Kingdom, who are involved in the recognition and/or management of SRC pitch-side. **This included staff working in Men's and Women's football in first team, academy settings, national teams, and in disability football.**

Distribution Approach

Recruitment was via organisations whose membership included medical staff working in **elite football. This recruitment approach was chosen to increase participation, rather than only contacting the clubs' designated medical officer. Organisation selection was agreed by all authors, and all those contacted agreed to participate and included**: The British Association of Sport and Exercise Medicine (BASEM), The Faculty of Sport and Exercise Medicine (FSEM), The Football Medicine and Performance Association (FMPA), and The Football Association Medical Society (FAMS). **Healthcare members of the organisations were sent at least one email with some also promoting recruitment via social media** (Twitter and Linkedin). Involvement was without obligation with no financial benefit. **Recruitment opened beginning of January 2020 and closed end of February 2020.** The nature of distribution prevented **an exact** response rate being calculable.

Ethical approval was granted by Queen Mary University of London ethical research committee, ethics code QMREC2018/48 030. Consent was gained using a pre-participation

leaflet with confirmation of acceptance being required. Respondents could withdraw up until completion of the questionnaire. All information collected was anonymous and non-identifiable. The questionnaire was hosted on a secure website by Online Surveys (JISC, Bristol, United Kingdom).

Statistical Analysis

Analysis was conducted within Statistical Package for Social Sciences (SPSS; version 26, IBM Corp, NY, USA) with significance set at P□≤0.05., Pearson X^2 was used to assess difference in nominal data between groups. Differences in non-parametric **Likert scale responses were assessed using Mann-Whitney U tests (U) for differences between two distinct groups including gender, or Kruskal-Wallis test (H) for differences between more than two distinct groups including profession. When analysing responses to coach or player education or baseline concussion assessment rates, answers of "not sure" were grouped with "no" responses, due to any uncertainty around the definite delivery of education and/or concussion assessment collection inferring deviation from the FA recommendations.**

Results

A total of 136 completed questionnaires were received. Five respondents were excluded for not working pitch-side, five for not working in the United Kingdom, and six for not working in football leaving 120 included responses - with demographics seen in Table 1. 97% (N=116) of respondents indicated they were aware of the FA guidelines.

****** Table 1 near here ******

A lower proportion of doctors were female (11%) compared to physiotherapists (31%) and sports and/or rehabilitation therapists (43%). Of the 64 doctors 33% (N=21) were consultants, and 67% (N=43) were non-consultant level.

Coach Concussion Education

Less than half of respondents indicated coach education occurred, (38%, N=46), 40% saying it did not (N=48), and 22% being not sure (N=26). There was a lower rate of coach education in Women's football compared to Men's, 13% vs. 42% seen in Figure 1 (P=.033). The **mean** coach education rates in the top 4 male leagues (Premiership to League Two) was 44%. Respondents with five or more years of experience working in football (N=68) had significantly higher rates of coach education **than** those with four or less years of experience (N=52) (P=.009).

Player Concussion Education

Half indicated player education was delivered (48%, N=57), 38% said no (N=45), and 15% (N=18) were not sure. The rate of player education was significantly lower in Women's football compared to Men's seen in Figure 2, 27% vs 51% (P=.033). In Men's football, varying player education rates were seen across leagues with 63% (N=15) of Premier League teams, 56% (N=14) Championship, 53% (N=9) League One, and 29% (N=4) League Two teams (P=.442).

****** Figure 1 near here ******

****** Figure 2 near here ******

Baseline Concussion Assessments

Collection of baseline concussion assessment was reported by 78% (N=93), whilst 22% (N=27) did not **or were not sure.** A breakdown of baseline concussion assessment by team structure demonstrated similar tendencies between Men's and Women's first teams (Table 2).

****** Table 2 near here ******

Of the 93 respondents collecting baseline assessments, 99% (N=92) collected SCAT5 (Echemendia *et al.*, 2017b) with other assessment modalities collected including:

- ImPACT (Lovell *et al.*, 2001) collected by twelve (13%) respondents. One respondent collected only ImPACT with eleven also collecting SCAT5. All twelve respondents worked in Men's football, with eight working in first team and four working in teams aged 17-23. Seven worked in Premier League and five in Championship clubs.
- CogSport (Collie *et al.*, 2003) collected by two (2%) respondents. Both also collected SCAT5. Teams collecting CogSport were one Premier League men's team and one international team.
- CSx (CSx) collected by one (1%) respondent working in a Men's first team in the Premier League who also collected SCAT5.
- King-Devick Test (Oride *et al.*, 1986) was collected by one (1%) respondent working in a Men's first team in the Championship who also collected SCAT5.

Respondents with five or more years of experience working in football (N=68) had significantly higher rates of baseline concussion assessment collection that those with four or less years of experience (N=52; P=.01).

Pitch-side Concussion Assessment

When asked who had the final say about removal of a player with a suspected concussion 96% (N=115) identified the medical team, 2% (N=2) said referee and 3% (N=3) manager/coach.

Confidence in recognizing a concussion pitch-side was high with 33% (N=39) feeling very confident, 61% (N=73) feeling confident, and 7% (N=8) felt neither confident nor unconfident, with none feeling unconfident or very unconfident (Figure 3). There was no difference in confidence level between gender (P=.461) or profession (P=.725). Doctors who were consultant level were more confident in

recognising concussion pitch-side with 48% being very confident compared to 26% of non-consultant level doctors. Those with five or more years of experience working in football (N=68) were more confident in recognising concussion pitch-side compared to those with four or less years of experience (N=52; P=.02).

The Concussion Recognition Tool (CRT) (Echemendia et al., 2017a) was regularly used by 48% (N=58), 26% (N=31) were aware but did not regularly use it, 23% (N=27) were aware but did not use it, and 3% (N=4) had not heard of it. More female respondents used it compared to male, 63% vs. 44% (P=.084). More sports and/or rehabilitation therapists used it compared to doctors and physiotherapists, 61% vs 46-47%, (P=.45). Those that regularly used the CRT were more frequently very confident recognising concussion pitch-side compared to those who do not regularly use it, 40% vs 28% (P=.166).

****** Figure 3 near here ******

****** Figure 4 near here ******

Assessment Time for Concussion Pitch-Side

Respondents overall felt that referees and other officials gave them enough time to assess for concussion pitch-side (Figure 4). Only 12% felt they rarely or never had enough time, with similar figures seen in staff working in Men's (12%) and Women's football (13%).

View on *"*Concussion*"* Substitutions

It was felt that the potential introduction of a "concussion substitution" would positively benefit player welfare with 67% (N=80) strongly agreeing, 18% (N=22) agreeing, 11% (N=13) neither agreeing nor disagreeing, 3% (N=4) disagreeing, and 1% (N=1) strongly disagreeing. All of the 13 respondents who felt they rarely or never had enough time **from referees and other officials** to assess for concussion pitch-side either agreed or strongly agreed. There was a significant difference between professions with sports and/or rehabilitation therapists and physiotherapists strongly agreeing that it would positively benefit player welfare compared to doctors, 78-81% vs 55% (P=.016).

Player Reporting of Symptoms Pitch-side

A significant difference in responses of whether it was felt players under-reported their symptoms pitch-side was seen by gender (P=.026), with 53% (N=49) of male respondents

feeling players sometimes underreported compared to 30% (N=8) of female respondents, and 33% (N=31) of male respondents feeling very often compared to 59% (N=16) of females. Of sports and/or rehabilitation therapists, 74% (N=17) thought players always or very often under reported symptoms, compared to 44% (N=14) of physiotherapists and 36% (N=23) of doctors (P=.057). There was no difference in responses between those working in Men's or Women's football (P=.359). No difference was seen between groups that educated players and those that did not (P=.51). A significant difference in response between those collecting baseline neurological testing and those that either did not or were not sure (P=.26), with 40% (N=37) felt players always or often underreported symptoms compared to 67% (N=18). Those with 4 years or less of experience working in football (N=52) significantly thought more players under-reported their symptoms compared to respondents with 5 or more years of experience (P=.024).

Influence on Decision Making from Manager or Coaching Staff Members

When asked how often have you felt the manager or other member of the coaching staff try to influence your decision making with respect to removal of a player who you suspected might have a concussion; 13% (N=16) said often, 27% (N=32) sometimes, 33% (N=40) seldom, and 27% (N=32) never as seen in Figure 5. Gender differences were seen with more female respondents felt coaching staff often try and influence their decision making compared to male respondents (26%; N=7 vs to 10%; N=9). Of male responders 30% (N=28) never felt attempted influence compared to 15% (N=4) of female responders (P=.071). A difference in profession was seen with 16% (N=5) of physiotherapists often feeling influenced, compared to 6% (N=4) of doctors, and 30% (N=7) sports and/or rehabilitation therapists but no significant difference was seen (P=.819). In teams that did not have concussion education for their coaches every season, 22% (N=6) often felt coaches influence them, compared to 11% (N=10) in those that did educated coaching staff (P=.928).

****** Figure 5 near here ******

Discussion

This **pilot** study aimed to assess the awareness, attitudes and behaviours of medical staff in Men's and Women's football in the United Kingdom. Awareness of concussion guidance is now much higher than in 2009, when 27.8% of English football doctors were aware of the 2008 Zurich Consensus Statement (Price, Malliaras and Hudson, 2012). However,

awareness of guidelines did not infer application of guidance, with the majority of English football team medical staff in 2009 not routinely following concussion guidelines (Price, Malliaras and Hudson, 2012; Niederer *et al.*, 2018). **A disconnect between recommendations and implementation has been found in other areas of player care including injury prevention programs** (Bahr, Thorborg and Ekstrand, 2015; Bizzini and Dvorak, 2015).

Education and Baseline Assessments

Concussion education levels of coaching staff and players were low. Club delivered education is not the only source of concussion knowledge therefore a low education level does not automatically indicate inadequate knowledge (Guilmette, Malia and McQuiggan, 2007; O'Donoghue *et al.*, 2009). The education figures were similar to a study in Welsh elite and semi-professional rugby union from 2016, where 62% of players and 66% of coaches had not received concussion education (Mathema *et al.*, 2016). Player and coaching education rates were lower in Women's football than Men's, with **varying** rates of both player and coaching education being reported in teams **across the leagues**. **Given the increased concussion incidence in female athletes** (Harmon *et al.*, 2013) staff working in Women's football should be **especially** vigilant, but may be secondary to differences in staffing and resource levels between leagues and pathways. Concussion education in professional footballers has been shown to improve players attitudes towards concussive injuries (Gouttebarge *et al.*, 2019). Pre-season education in other sports increased the self-reported likelihood and confidence of athletes to report concussion symptoms in themselves and other teammates (Bramley *et al.*, 2012; Kurowski *et al.*, 2015; Cash, 2019). **The FA guidelines only specify that an "enhanced care setting" requires a concussion education program, with no mention of whose responsibility delivering the education is. Designating that responsibility a specific figure could increase accountability for delivering education.**

Historically, club medical officers viewed baseline concussion assessments to be of low importance. At the start of the 2009/2010 season, cognitive baseline assessment collection was 22% across the top four male leagues in English football (Price, Malliaras and Hudson, 2012). The landscape has changed significantly since then with 78% of respondents now indicating that their club collected baseline concussion assessments with similar numbers across Men's and Women's teams. This was consistent with 82% collection in an Italian club level football study (Broglio *et al.*, 2010).

The SCAT5 was by far the most collected baseline concussion assessment with other concussion assessment tests being used in much lower frequencies, and collected alongside SCAT5 except by one respondent. The use of computerised and/or formal neuropsychological evaluation is increasingly being recommended in consensus statements but it appears this has not yet been translated into practice (McCrory *et al.*, 2017; Patricios *et al.*, 2018) .

Pitchside Management

Identification that the medical team had the final say on player removal was high, as was confidence of recognising SRC pitch-side (93% feeling confident or very confident) with high levels were seen in consultant level doctors. **The FA guidelines do not comment on who within the medical team has the final say on player removal, unlike in the NFL where the final decision is the responsibility of the team clinician (Patricios *et al.*, 2018). This study has not explored whether behaviour changes in leagues who have access to pitch-side real time video replay, which has been shown to improve the identification and decision making around player removal** (Fuller, Kemp and Raftery, 2016; Patricios *et al.*, 2018).

Use of the Concussion Recognition Tool (CRT) (Echemendia *et al.*, 2017a) was varied with 48% regularly using it. High usage was seen in female and sports and/or rehabilitation therapy respondents. Increased confidence in recognising concussion pitch-side was found in those that used the CRT regularly. The CRT is a diagnostic aid designed to assist non-medical personnel but these results indicated usage amongst medical staff was high and might improve SRC recognition confidence levels (Echemendia *et al.*, 2017a; McCrory *et al.*, 2017; Patricios *et al.*, 2018). Reason behind this are unknown, but exploration may give insight into how to better support pitch-side assessments.

Respondents overall felt **referees and other officials** gave them enough time to assess for concussion, with female respondents feeling **referees and officials** did not give them as much time compared to male respondents. SRC knowledge in professional level football **referees and other officials** has not yet been investigated but increasing concussion awareness in other sports has increased confidence in calling injury stoppages and facilitating medical assessments (Kroshus, Parsons and Hainline, 2017). When making player removal decisions, varying levels of manager or coaching staff influence was felt with 40% of respondents *sometimes*, or *often* feeling pressure with less influence being felt in teams that educated their coaching staff. Future research exploring differences in perceived influence by gender and profession may support staff in making player removal decisions.

Pitch-side underreporting of symptoms has previously shown to be an issue in football with the latest although potentially outdated evidence from 2010 revealing that 62% of Italian players did not report concussion symptoms to anyone (Broglio *et al.*, 2010). Player under-reporting of symptoms has shown to be multi-factorial and can be influenced by not wanting to be removed from play, a lack of awareness of SRC symptoms and severity, the perceived importance of the match, the possibility of being prevented from playing future games, or the availability of substitutes (Broglio *et al.*, 2010; Williams *et al.*, 2016). More female respondents felt players underreported symptoms as well as sports and/or rehabilitation therapists, but it is unknown whether this correlates with an increased removal rate. Higher confidence in true symptom reporting pitch-side was seen in those who collected baseline neurological testing compared to who did not, supporting the argumentation for the use of baseline neurological testing.

The recent consensus statement highlighted football as not having a replacement policy, which potentially comprised clinicians concussion evaluation (McCrory *et al.*, 2017; Patricios *et al.*, 2018). Not having remaining substitutions heavily influenced players under-reporting of concussive symptoms (Williams *et al.*, 2016). The International Football Association Board (IFAB) recently agreed to trial substitutions in cases of concussion (The International Football Association Board, 2020). The possible introduction of such a substitution was felt to be a positive benefit for player welfare with 85% of respondents *strongly agreeing* or *agreeing*. All respondents who felt that **referees and other officials** rarely or never gave them enough time to assess for concussion pitch-side *agreed* or *strongly agreeing* it would improve player welfare.

Conflict of interest

It has been suggested that conflicts of interest between doctors, players, and coaching staff could present an obstacle to adherence to concussion guidelines (Partridge, 2014; Turner *et al.*, 2020). If pressure is applied to prevent or influence player removal decisions it could go against the professional responsibility that medical staff have for player welfare (Anderson and Gerrard, 2005). In an un-supportive environment, medical staff could find their professionalism being tested against obligations they felt towards employers who are concerned about success of the team, or players who will disregard their own wellbeing to continue to play (Polsky, 1998; Anderson and Jackson, 2013). **Clinical staff found to have failed to deliver a standard of reasonably expected care could find themselves open to negligence associated medicolegal risk (Turner *et al.*, 2020). Our results** suggested that pressure to influence player removal by coaching staff or players although low, was

present and should be explored further. **Some sports with higher concussion incidence utilize independent, unaffiliated medical personnel who can either over rule team medical staff (Rugby Union), or offer a second opinion (American Football; (Patricios *et al.*, 2018).**

Experience of Medical Team Staff

Respondents with five or more years of experience working in football had significantly higher rates of baseline concussion assessment collection and coaching staff concussion education compared to those with four or less years of experience. Higher rates of pitch-side concussion recognition confidence and lower perceived rates of player under-reporting of concussive symptoms pitch-side were also seen in the more experienced group. These results may suggest that experienced staff can positively influence club behaviour around education rates and protocols. Future research could explore this area in more detail.

Limitations

Due to the recruitment method calculating **an exact** response rate was not possible**.** Estimating a response rate of those working in **men's 1st team football in the top four leagues in the men's pathway** (Premier League to League Two) using available staff profiles on club websites accepting the wide limitations of this method suggests a response rate of 18%. **There were 51 responses from those working in men's football in these leagues, from an estimated 280 staff** (20 Premier League teams: each having 2 doctors, 3 physiotherapists/sports therapists. 24 Championship teams: 1.5 doctors, 2 physiotherapists/sports therapists. 24 League One teams: 1 doctor and 1 physiotherapists/sports therapists, 24 League Two teams: 1 doctor and 1 physiotherapists/sports therapists). **A 10% estimated response rate from those working in 1st team football in the Women's Super League and Championship, 6 responses from an estimate 58.** (23 teams total; 1 doctor and 1.5 physiotherapists/sports therapists). **A response rate from those working in academy settings not calculated due to lack of available**

The self-reported questionnaire nature of the study raises limitations within the data set including participation, response, and selection bias given that **participation was voluntary and respondents who self-selected to participate may not be a true representation of those working in elite football. The percentage of medical staff working in elite**

football being members of one of the recruiting organisations is unknown. Respondents whose roles may cross several teams and age groups, could only select the team they worked with most commonly. Responses from several staff members from within the same club was possible and due to the anonymity of participants this would not be identified. Due to the high heterogeneity and small number of respondents within some of the groups it limits intergroup comparisons and the potential significance of statistical analysis. **Age and experience of managers and coaching staff were not collected, whether this changes attitudes within the clubs could be explored in the future**. Given the novelty of the area of being explored there was no validated questionnaire available but questionnaire content and usability was piloted prior to distribution.

Conclusion

Awareness of The FA concussion guidelines is high, with an increased collection rate of baseline concussion assessments compared to a similar previous study. Player and coaching staff concussion education rates were low, as was use of neuro-psychometric testing beyond the use of the SCAT5. **A disconnect is seen between awareness of guidelines and implementation of recommendations designed to improve player welfare, with further research being needed looking into how to reduce this gap.** Pitch-side concussion recognition confidence was high however some respondent groups felt more pressure from the players, coaching staff, or the **referee or other officials** when making removal decisions. There was strong support the introduction of a "concussion" substitute being a positive thing for player welfare.

Disclosure of interest: CR, DB, and WC hold or have held clinical roles at the Football Association within the youth pathway teams. DB, WC, and RC hold clinical roles in Premier League football clubs. CR holds a clinical role in a Women's Super League team.

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Table 1: Respondent demographics

		N	Male N (%)	Female N (%)
Total		120	93 (78%)	27 (22%)
Country	**England**	107	83 (78%)	24 (22%)
	Wales	2	1 (50%)	1 (50%)
	Scotland	8	7 (88%)	1 (12%)
	Northern Ireland	1	0	1 (100%)
	Ireland	2	2 (100%)	0
Men's/Women's	**Men's football**	105	84 (80%)	21 (20%)
	Women's football	15	9 (60%)	6 (40%)
Profession	**Physiotherapist**	32	22 (69%)	10 (31%)
	Sports and/or rehabilitation therapist	23	13 (57%)	10 (43%)
	Sports scientist	1	1 (100%)	0
	Doctor	64	57 (89%)	7 (11%)
	Consultant level	21	20 (95%)	1 (5%)
	Non-consultant level	43	37 (86%)	6 (14%)
Age	**Under 20 years**	1	1 (100%)	0
	21-30 years	38	24 (63%)	14 (37%)
	31-40 years	40	34 (85%)	6 (15%)
	41-50 years	18	15 (83%)	3 (17%)
	51-60 years	17	13 (76%)	4 (24%)
	61-70 years	4	4 (100%)	0
	Over 71 years	2	2 (100%)	0
Years of Experience	**0-2 years**	27	17 (63%)	10 (37%)
	3-4 years	25	18 (72%)	7 (28%)
	5-6 years	19	15 (79%)	4 (21%)
	7-10 years	11	10 (91%)	1 (9%)
	11-14 years	13	12 (92%)	1 (8%)
	Over 15 years	25	21 (84%)	4 (16%)

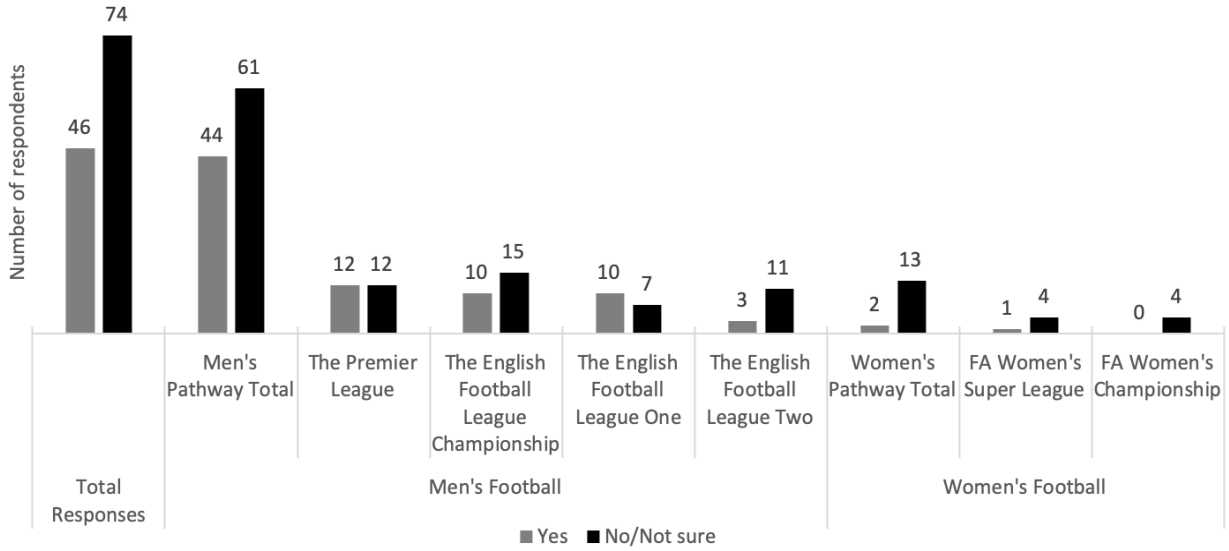

Figure 1: Response to "does your club deliver concussion education sessions to the coaching staff at least once a season" by Men's and Women's football pathways and leagues

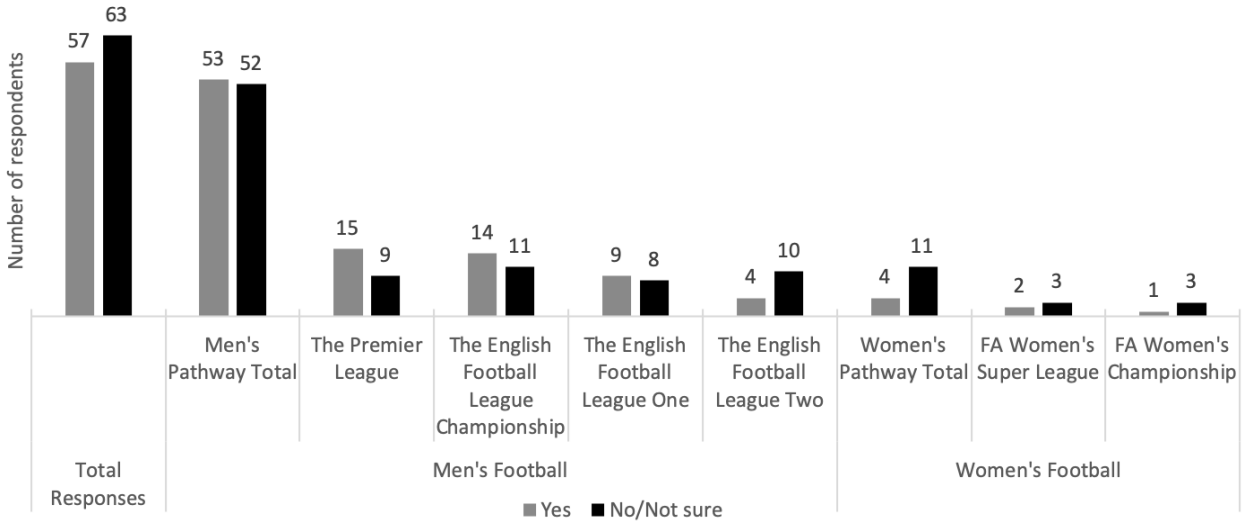

Figure 2: Response to "does your club deliver concussion education sessions to players at least once a season" by Men's and Women's football pathways and leagues

Table 2 Number (%) of baseline concussion assessment collection by team level and age

	Yes (%)	No (%)	Not sure (%)	Total
Men's first team	51 (77%)	12 (18%)	3 (5%)	66
Men's team aged 17-23	23 (85%)	3 (11%)	1 (4%)	27
Men's team aged 16 and under	4 (44%)	5 (56%)	0	9
The Premier League	20 (83%)	4 (17%)	0	24
The English Football League Championship	21 (84%)	3 (12%)	1 (4%)	25
The English Football League One	14 (82%)	3 (18%)	0	17
The English Football League Two	10 (71%)	3 (21%)	1 (7%)	14
The National League	4 (80%)	1 (20%)	0	5
Scottish Premier League	3 (100%)	0	0	3
Women's first team	6 (75%)	2 (25%)	0	8
Women's team aged 17-23	3 (100%)	0	0	3
Women's team aged 16 and under	3 (75%)	1 (25%)	0	4
FA Women's Super League	5 (100%)	0	0	5
FA Women's Championship	3 (75%)	1 (25%)	0	4
Disability men's football	1 (100%)	0	0	1
International team	2 (100%)	0	0	2
Total	**93 (78%)**	**23 (19%)**	**4 (3%)**	**120**

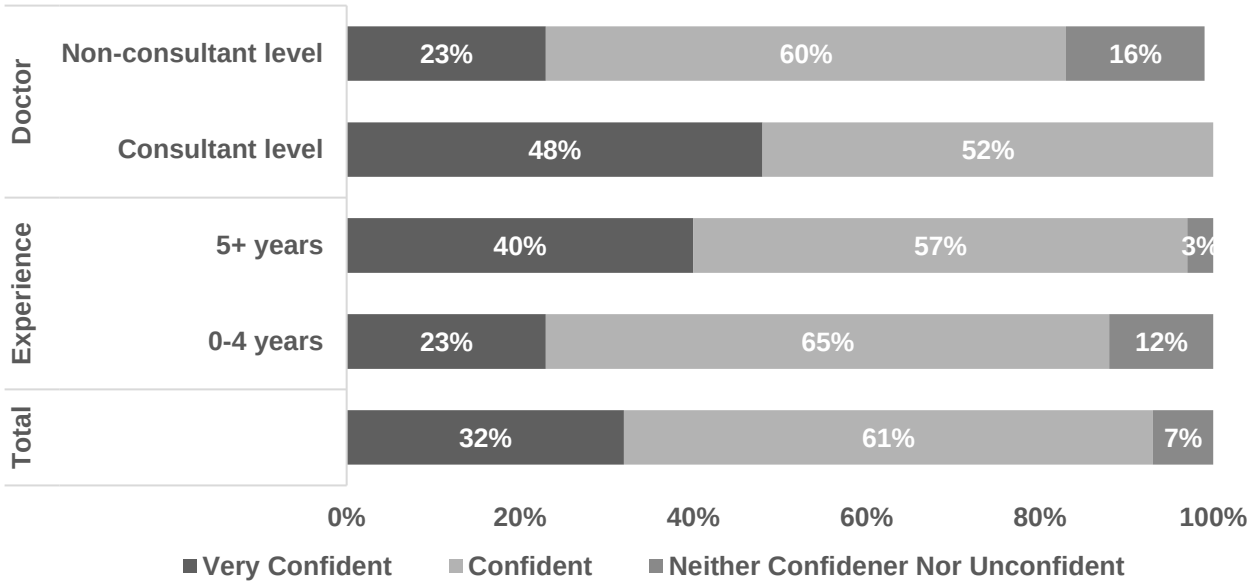

Figure 3 Confidence in recognising a concussion pitch-side, with sub-groups by experience and doctor level

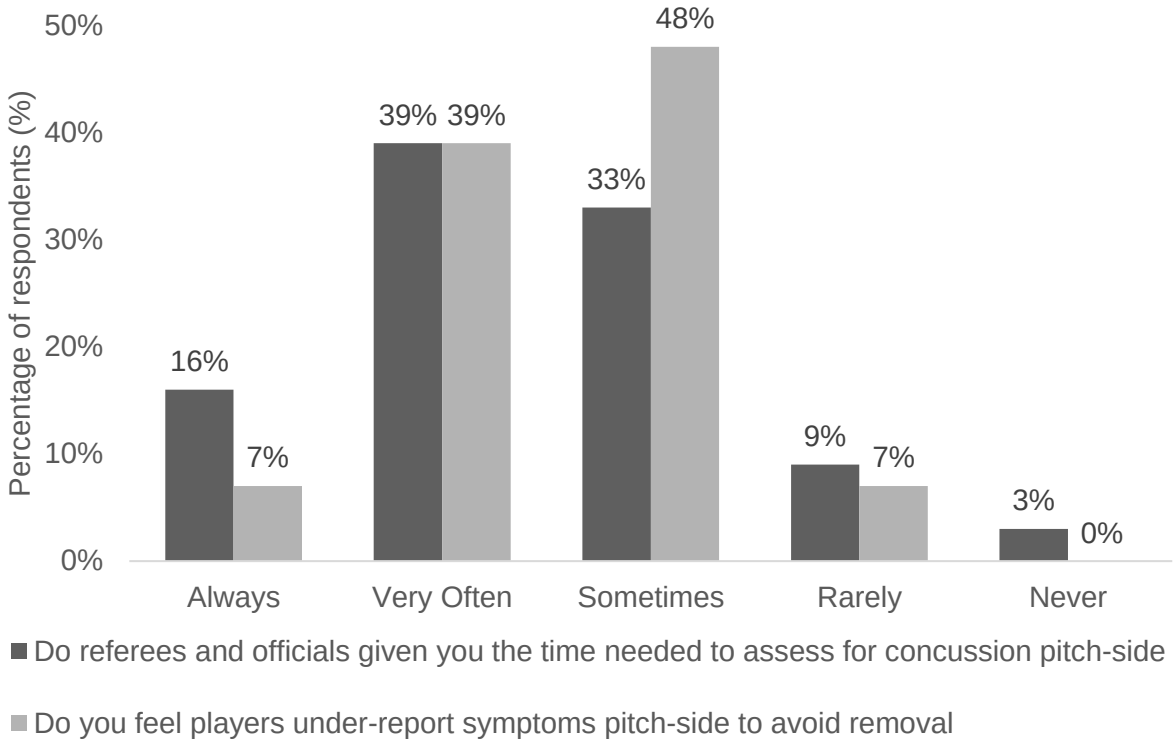

Figure 4 Percentage of respondents who felt referees and other officials gave them enough time to assess for concussion pitch-side, and whether they felt players under-reported their symptoms to avoid removal from play

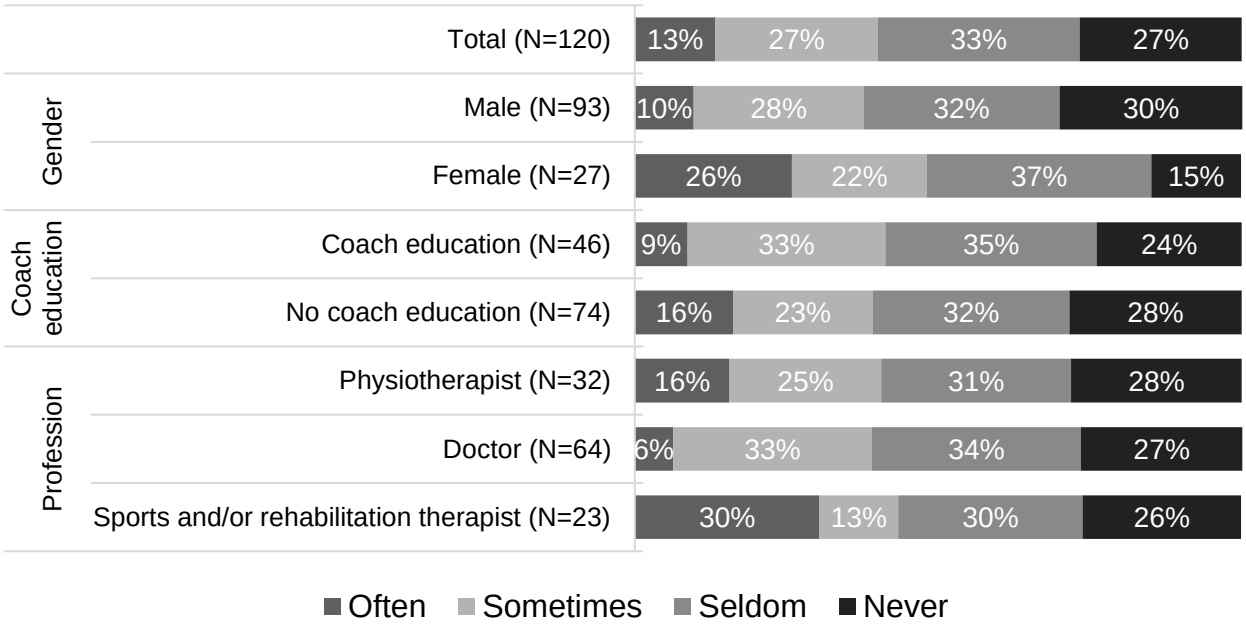

Figure 5 Perceived influence on Decision Making from Manager or Coaching Staff Members by percentage of respondents, including sub-groups by gender, profession, and by those that delivered coach concussion education