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FINAL PROGRAMME
Despite their importance in sports performance, referees received little scientific attention in the decades prior to the year 2000. Since then, research on sports officials has begun to proliferate, with investigations into stress, decision making and judgment, communication and physical performance. Sport refereeing is becoming a scientific field in its own right (Dosseville & Garncarzyk, 2007; Dosseville, Laborde, in press). However, a citation analysis reveals very little connectivity between the different studies into sports officials (Hancock, Rix-Lièvre, Côté, in press).

The aim of this conference is to provide researchers studying sport refereeing with a discussion space in order to increase and improve the scientific network in this area. This network is then expected to answer new queries and to meet the practical challenges of sport refereeing.

Referees are often subject to criticism from various sources: the media, the staff of sports clubs, coaches, and supporters – not sure whether criticisms are ‘correct’/justified or not. Many rules of sport are complex and ambiguous, which leads to differences in interpretations. Furthermore, refereeing in naturalistic settings is not a robotic application of the letter of the law. The referee must take into account the entire game context, to “sell” decisions, and to balance flow and control issues (Mascarenhas, Collins, Mortimer, & Morris, 2005; Mascarenhas, O’Hare, & Plessner, 2006). As referees are often interactors – i.e., they are in interaction with the players on the pitch – (MacMahon & Plessner, 2008), they must balance the need to make decisions and enforce the rules, with the need to move about the performance space, and manage the athletes and ensure their safety. In such a complex task, it is challenging to determine the optimal methods to measure, teach, refine, and enhance performance.

Few researchers have studied the complexity of sport refereeing in naturalistic settings (c.f., Rix, 2005; Mascarenhas, Button, O’Hare, & Dicks 2009). More research is needed, therefore, to understand and to identify the barriers and facilitators to elite refereeing performance. Several studies have already proposed and evaluated the interest and the impact of referee training programs (e.g., Mascarenhas, et al., 2005; MacMahon, Starkes, & Deakin, 2007). In order to continue and grow this area of work and the application to on-field performance and demands, additional study is required.

Given the state of the research on sports refereeing at present, the scope of this conference includes a broad range of work which contributes to a greater understanding of refereeing performance and/or provides some directions for the development of this area.

This conference also aims to bring together the research and the practitioner (e.g., referees, referee managers). Several recognized practitioners will provide an applied perspective on research, and account for the main practical challenges present in the current sport refereeing environment.
Monday 22th September
Pôle Physique, Amphithéâtre Recherche (Campus des Cézeaux)

8h15 – Registration

9h - Opening session
Mathias BERNARD, Blaise Pascal University’s President
Michel RECOPE, Representative of the laboratory « Activity, Knowledge, Transmission, education » (ACTé)
Eric DORE, Head of Faculty of Sports and Human Movement Sciences and Physical Education
Alain BUSSIERE, First Vice-President of the Auvergne Region
Christine DULAC-ROUGERIE, First Deputy-Mayor of Clermont-Ferrand City
Joel DUME, Head of Referee Department, French Rugby Federation
Alain SARS, Deputy-Head of Referee Department, French Football Federation

10h–10h45: Why a conference on Science and Practice of Sports Refereeing?
Géraldine RIX-LIEVRE - A Lack of Interconnectivity for Research on Sport Officials
Duarte ARAUJO, Clare MAC MAHON, Duncan MASCARENHAS - Several expectations…

Coffee break

11h-12h15: Cognitive and physiological constraints on referees' performance 1
Chair: Daniel COURTEIX
ELSWORTHY Nathan - Comparison between the match demands of elite and sub-elite Australian football umpires
DIXON David - An examination of the relationship between decision making and hydration status in Futsal Referees
METZ Lore - Nutritional adaptations in referees: a pilot study

Lunch break

14h Werner HELSEN, Expert Perception and Performance in Refereeing: did 20 years of research make any difference?
Chair: Duarte ARAUJO

Coffee break

15h20-17h: Cognitive and physiological constraints on referees' performance 2
Chair: David HANCOCK
BAPTISTA António M. G. - Visual Characterization of Elite Football Referee’s & Assistant Referees
ELS WORTHY Nathan - Psychomotor skill training and match simulation performance: a training study for team sport officials
PUT Koen - Extensive training of perceptual-cognitive skills in complex dynamic offside events
PIZZERA Alexandra - Can decisions by soccer referees be improved by technology?

17h10-18h: Refereeing and media  
Chair: Christopher BALDWIN
BOREL-HANNI François - Journalists’ Responsibility towards Football Referees: a Case Study of Referees’ Vulnerability to Sports Media
TERFOUS Fatia - The question of refereeing performance in media narratives: the case of the rugby world cup

Gala Dinner (L’en but Restaurant)  
19h30 – Marcel Michelin Stadium

Tuesday 23th September  
Pôle Physique, Amphithéâtre Recherche (Campus des Cézeaux)

9h-10h40: Refereeing : what values are at stake ?  
Chair: Janie FRAMPTON and Ashley SYNNOTT
WEBB Tom - Standardising elite Association Football refereeing: An historic problem, no easy solution
CHAPRON Tony - The referee, the moral guardian of the game
RECOPE Michel - Emotion and decision making in refereeing: the affective core of judgment acts
RUSSELL Scott - Interacting constraints shape emergent decision-making of football referees

Coffee break

11h-12h15: Social Perceptions of Refereeing  
Chair: Alexandra PIZZERA
DUTREVIS Marion - How referees are socially perceived? A first study about referees stereotype content
CABAGNO Geneviève - Reputation or situational information about severity of referee: what information is preferably used by soccer players when they intend to behave aggressively?
JIQUEL Florent - Effects of soccer refereeing education on young soccer players’ behavioral and social representations of referees and refereeing

Lunch Break (Restaurant Les hauts de l’Artière)
14h Henning PLESSNER, **Improving referees’ decisions concerning contact situations by video-based training**

*Chair: Clare MAC MAHON*

15h-16h15: **Football Refereeing in Portugal: organization, education and research**

*Chair: ARAUJO Duarte*

PEREIRA Vítor - Organization of Football Refereeing in Portugal: state of play
PINA João - Education and training towards excellence in Portuguese Football Refereeing
ARAUJO Duarte - Research in Football Refereeing in Portugal

*Coffee break*

16h30-18h10: **Refereeing Teams & Decision Making**

*Chair: Duncan MASCARENHAS*

SCHNYDER Urs - Gaze behaviour in offside decision-making in football: A field study
SPITZ Jochim - The use of a web-based platform to measure the decision-making accuracy of additional assistant referees
BOYER Simon - Prerogatives and coordination among officials in soccer during a match
HANCOCK David - Are Referee “Groups” Actually “Groups”?*

*City hall reception (Down town)*

19h15 – **Round table “What is the future in elite refereeing?”**

*Chair: Clare MAC MAHON and Geraldine RIX-LIEVRE*

DUME Joel, IRB assessor and Head of Referee Department, French Rugby Federation
HELEN Werner, KU Leuven, FIFA/UEFA Instructor
PEREIRA Vitor, President of the Referee Council of the Portuguese Federation of Football
STOKES Richard, Head of Competitions & Referee Department, FIBA Europe
**Wednesday 24th September**

*Pôle Physique, Amphithéâtre Recherche (Campus des Cézeaux)*

9h-10h40: **Motivation and constraints**  
*Chair: Michel RECOPE*  
Baldwin Christopher - Women referees’ experiences officiating rugby union  
Louvet Benoit - Anxiety and coping relationships among high-level soccer referees: a multi-trajectory model

*Coffee break*

11h-12h15: **Refereeing performance, a co-construction**  
*Chair: Duncan MASCARENHAS*  
Rix-Lievre Géraldine - How to study the refereeing performance?  
Cunningham Ian - Concepts of communication and interaction in sport officiating  
Calvin Sarah - Coaching program of French elite rugby referees

*Lunch break*

14h-15h15: **About the development of sport officials**  
*Chair: Peter SIMMONS*  
Mac-Mahon Clare - A Framework for the Development of Sports Officials  
Pegg David - Generic Standards for Sports Officials-Sports Officials UK Limited  
Synnot Ashley - Developing and supporting officiating talent in Australia

15h30-16h30: **Closing session: Main issues and perspectives for Science and Practice of Sports Refereeing**  
Henning Plessner, Clare MAC MAHON, Duncan MASCARENHAS, Geraldine RIX-LIEVRE
Access Maps:

Clermont-Ferrand Downtown

City Hall
Round Table “What is the future in elite refereeing?”
Tram stop: Hotel de ville

Restaurant L’en but
Marcel Michelin Stadium
Tram stop: Stade M Michelin

MIU
Maison Internationale Universitaire
Tram stop: Universités

Campus des Cézeaux
1rst International conference
Science and Practice of Sports Refereeing
Pôle Physique
Tram stop: Cézeaux Pellez
Campus des Cézeaux

Campus des Cézeaux entrance
24 avenue des Landais
63000 Clermont-Ferrand

1rst International conference
Science and Practice
of Sports Refereeing
Pôle Physique

PERF Arbitrage
UFR STAPS

Restaurant
Les hauts de l’Artière
KEYNOTES
Expert Perception and Performance in Refereeing: did 20 years of research make any difference?

W. Werner Helsen. Professor W. Helsen will review the main concepts and findings with respect to research in refereeing. He will start from what has been done in the past, to then discuss what is now the state of the art, and finally suggest challenges for the near future.

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Association football is a very popular sport all over the world. In 2006, FIFA counted 265 million football players of which 113,000 players were professional. Additionally, 5 million people were involved in football as a referee or an official. 843,000 were active as a referee (FIFA, 2006). At the highest level, football has become big business with increasing media coverage. This results in a lot of stress for the different actors. First, players must excel in the technical, tactical, perceptual-cognitive, physiological and psychological domain to keep up with the highest standards of play (Janelle & Hillman, 2003). Second, coaches and clubs have to provide the players with the prerequisites to develop and maintain top-level. Third, supporters should motivate the players to give their best. And fourth, referees and assistant referees must apply the Laws of the Game (FIFA, 2009) in a correct and consistent way to allow the organisation of fair competitions. In this perspective, the latter group of actors are considered to be an impartial group. Nevertheless, the other actors and the media go over their match decisions with a fine-tooth comb. Consequently, referees and assistant referees have to also excel in the physical, perceptual-cognitive and psychological domain.

Research on perceptual-cognitive skills in referees and assistant referees is interesting and challenging for several reasons. First, the complex, dynamic and unpredictable environment of football matches creates overwhelming demands for their perceptual-cognitive skills. Differences between experts and novices may assist in developing training strategies. Second, several studies in sport demonstrated the importance of practice to achieve expertise (e.g., Helsen, Starkes, & Hodges, 1998; Hodge & Deakin, 1998; Hodges & Starkes, 1996; Starkes, Deakin, Allard, Hodges, & Hayes, 1996). As the domain of refereeing is a practice-poor environment, in particular with respect to perception and decision-making issues, studying and developing new training strategies is worth the effort (Put et al., 2013). Third, an important research question is to what extent refereeing skills are domain- or role-specific. Possibly, research in refereeing can help us understand the process of skill acquisition in many daily life tasks in which persons have to take decisions under time-stress (e.g., traffic, aviation, medicine, military).

Besides its significance for referees and assistant referees, this research on perceptual-cognitive expertise in sport is important both for theoretical and practical reasons. The majority of sport offers a dynamic, unpredictable environment with overwhelming demands where human behaviour is challenged and pushed to the limits. From a theoretical perspective, sport is an excellent domain to explore the validity of models developed in other fields. At a practical level, knowledge of the mechanisms underlying the development of expert performance in sport provides opportunities for enhancing performance in other domains (Ericsson, 2003).
References


Referees’ decisions play an important role in sports like soccer and basketball. Among other decisions, referees have to discriminate between foul and legal play and they have to judge the severity of foul play. As a substantial proportion of referees’ decisions concerning contact situations is wrong, training methods for referees’ decisions are needed. We suggest that understanding referees’ decisions can be improved by using the Brunswikian lens model framework. Based on these considerations we developed a video-based training method. Several experimental studies using control groups as well as different training groups indicate that the training method is indeed able to improve referees’ decisions. First, referees who participate in the training program improve their ability to discriminate between options (e.g., foul play or legal play) and to judge the severity of foul play. Second, video training can influence referees’ response tendency, leading to predictable decisions in ambiguous situations. The presentation provides an overview of these studies and discusses the possibilities and boundaries of this approach.
ABSTRACTS
A Lack of Interconnectivity for Research on Sport Officials

Géraldine Rix-Lièvre, Blaise Pascal University, geraldine.rix@univ-bpclermont.fr
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Jean Côté, Queen’s University, jc46@queensu.ca

Key-words: Refereeing, citation analysis, decision making, stress, personality

Empirical, peer-reviewed research on sport officials began to appear in the 1970s with investigations into stress, decision making, communication, and physical performance. Through the proliferation of research papers since 2000, the field has gained momentum. Despite this, the common elements that constitute this field of research have not yet been identified, resulting in a knowledge base that lacks structure and visibility. The visibility not only improves the efficiency and effectiveness of ongoing research, it also provides clear direction to practitioners and researchers alike. Although review papers exist that qualitatively synthesize our knowledge of sport officials (see Mascarenhas et al., 2005; Plessner & Haar, 2006), no quantitative reviews have been performed. Thus, our purpose was to conduct a quantitative analysis of sport officials research using citation network analysis.

Method

Article Retrieval - Searching three relevant sport science databases (SportDiscus, PsycINFO, and Physical Education Index), we examined peer-reviewed, English articles, published before 2012, and that targeted interactors as participants. Interactors, the most common sport official, are those who attend to a high number of cues and have a high level of interaction with athletes (i.e., football referees; MacMahon & Plessner, 2008). As such, “judges” and “umpires” were excluded from our search. To maintain a manageable dataset, studies related to officials’ physiology were also eliminated from the study. This search procedure yielded 115 unique articles for analysis.

Analysis - To analyse the search results, we created a comprehensive matrix of the manuscripts that cited, or were cited by, other articles in the network. The article matrix was imported into UCINET® 6 for analysis. The first step of the citation analysis was to identify the centrality scores, operationalized as the number of times a manuscript was cited by, or cited, another article in the matrix. The second step in UCINET® 6 was to produce a visual representation of the citation network. This allows for further inspection of the network, particular the identification of any sub-groups within the network.

Results & Discussion

For the first result, which centres on the centrality measures, there were total of 490 citations across the 115 articles (an average of 4.25 citations per article, with a median value of 2.0), indicating rather low interconnectivity within the network. In-degree scores ranged from 0 to 30. This lack of interconnectivity leads to many questions. Among these questions is an important discussion of the aim of research on sport interactors. It is possible that researchers are using sport interactors as a medium to investigate general theories of expertise such as decision-making, perception, or stress, which can then be applied to other populations including athletes, medical professionals, or the military; therefore, researchers would cite literature specific to these purposes. This perspective, though helpful to understanding expert performance, would not aim to accrue knowledge on sport interactors, possibly explaining the lack of interconnectivity. A second possibility is that researchers who are interested in progressing the field might reference literature from other types of sport officials, such as monitors or reactors, in
order to inform their research. Certainly it should be encouraged to incorporate the global body of literature on sport officials; however, this practice should not preclude the use of interactor research to inform studies. Rather, it should supplement extant research on their studied populations.

The second contribution of this study results from the visual inspection of the clusters within the network. Interestingly, three distinct fields of sport interactors research emerged in these clusters. For group one, the articles concentrated on personality, whereas group two focused on stress. The third group, on the other hand, targeted decision-making. While there were some connections in the network between stress and decision-making, as well as stress and personality, there were very few connections between personality and decision-making. This possibly demonstrates a narrow, compartmentalized approach to sport interactor research, rather than a broad, inclusive approach. This compartmentalized approach to sport official research likely contributes to its lack of connectivity and visibility.

This paper, which underlies the lack of interconnectivity for research on sport officials, is an invitation for researchers to increase the links between the different studies, as well as to spark debate amongst researchers for which studies ought to create the structure for the field. This seems a necessity in order to develop a stronger research area on sport officials.

References
Comparison between the match demands of elite and sub-elite Australian football umpires

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Ben J. Dascombe, University of Newcastle, Australia, Ben Dascombe@newcastle.edu.au

Key-words: Performance analysis, time-motion, decision-making, perceptual-cognitive skill

Sub-elite Australian football (AF) competitions are important for umpire development towards the elite level. The development pathway for umpires exists to allow a refinement of various match performance criteria including physical fitness, positioning in relation to the ball and most importantly decision-making skill to an elite standard. However, limited data is available comparing the match demands between elite and sub-elite competitions. Brewer et al. (2010) reported that elite AF match play is more demanding than sub-elite competition for AF players. Specific to referees, Castagna et al. (2004) has reported that national level soccer referees cover more distance and perform more high speed running when compared to international level referees. In addition, the decision-making role is the most important characteristic of AF umpires, yet the available data examining this performance aspect is limited to elite match play Elsworthy et al. (2014). Therefore, the aim of this study was to compare the movement and decision-making demands of elite and sub-elite competition in AF field umpires.

Method
Elite (n=29, 32 ± 6 yr; 182 ± 6 cm; 74 ± 5 kg) and sub-elite (n=7; 23 ± 2 yr; 178 ± 11 cm; 71 ± 7 kg) AF field umpires volunteered to participate in the current project. Overall, 29 matches were assessed (elite: 22 matches; sub-elite: 7 matches). In each match, GPS devices (5 Hz, Catapult Innovations, South Melbourne, Australia) monitored the movement demands of each field umpire, and umpire observers assessed decision-making performance using post-match video. Free kicks were adjudged as correct, missed or unwarranted according to umpire observer assessment with missed and unwarranted categorised further as incorrect. Free kick decision-making accuracy was calculated as the number of correct free kicks, divided by the total number of free kicks (i.e. correct plus incorrect). The time of each free kick (match quarter and elapsed time), field location, and type of free kick were recorded. The average demands (distance covered, high speed running [>14.4 km·h⁻¹], decision-making accuracy [%]) were assessed according to the match quarter and for the entire match. Data are shown as mean ± SD and were analysed using a one-way repeated measures ANOVA to examine within match variations for each group. Independent sample t-tests were performed to compare measures between groups. Decision-making data were non-parametric and as such were assessed using non-parametric equivalents (Mann-Whitney U and Wilcoxon signed ranked tests). Further, these data are shown as median ± interquartile range. Effect sizes (ES) were calculated and Cohen’s ES were applied (small: 0.2; moderate: 0.5; large: 0.8) (Cohen, 1988). Statistical significance was set at p<0.05.

Results & Discussion
The total distance covered for elite (10,563 ± 723 m) umpires was significantly lower (p<0.05; ES=1.6) than sub-elite (12,866 ± 1,561 m). High speed running was also significantly lower (p<0.05; ES=1.8) in elite (1,952 ± 504 m) competition, compared to sub-elite (3,679 ± 861 m). For both groups, the first quarter had significantly greater demands compared to the fourth quarter (p<0.05). Free kick decision-making accuracy was higher in elite umpires (84 ± 3%) when compared to their sub-elite (68 ± 2%) counterparts. The total number of free kicks was similar between groups (elite: 45 ± 3; sub-elite: 48 ± 3; p>0.05; ES=0.2), however, sub-elite
umpires made significantly more incorrect decisions (elite: 7 ± 2; sub-elite: 16 ± 1; p<0.05; ES=0.4) on average, per match. For both groups, there was no significant within match variation in decision-making accuracy (p>0.05).

The main finding is that the movement demands of sub-elite umpires are greater than elite umpires, while elite umpires demonstrate a higher decision-making accuracy. Differences in the movements demands of AF umpires is similar to that reported by Castagna et al. (2004), whereby higher level officials performed less running. Player skill execution, umpire anticipatory skill and team structure/tactics could influence the demands between elite and sub-elite competitions. Differences in decision-making quality highlight the superior perceptual-cognitive skill of elite umpires. Elite umpires appear to have a greater understanding of the laws of AF, and are more skilled when differentiating between legal and illegal acts of play. Inadequate positioning by sub-elite umpires may also contribute to less accurate decision-making. Altogether, the increased running demands and decreased decision-making accuracy could suggest that sub-elite umpires are less able to anticipate play, placing them in a poor position in relation to the ball, thus potentially obstructing their view of infringements. Alternatively, the increased physical demands could negatively affect the perceptual-cognitive processing required to adjudicate play. Umpire coaches should develop methods to replicate the match environment in order to improve decision-making performance of sub-elite umpires.

References
An examination of the relationship between decision making and hydration status in Futsal Referees

David Dixon, University of East London, London, UK, d.dixon@uel.ac.uk

Key-words: Cognition, hydration, futsal, referee, physiology

Futsal is the only 5-a-side form of football that is officially sanctioned by FIFA. It is played indoors on a pitch that measures 40 x 20m and is played over a time of 20 minutes each way. Although, the clock is stopped every time the ball goes out of play so in reality each half usually lasts between 30 and 40 minutes. The game itself is classed as an intermittent high-intensity sport and is officiated by two referees who operate similar to Assistant Referees in the 11 a side version. Most current research on the physiological demands of referees has been done on the 11 a side version, however, a study investigating Portuguese Futsal referees showed that the referees covered an average of 5892m, (Rebelo, et al., 2011). This is a sufficient distance to cause fatigue and may impact on decision making. To the authors knowledge no data exists about decision making in futsal referees, it has been reported in the 11 a side version that a referee will make on average 137 observable decisions in a game (Helsen and Bultynck, 2004), therefore any affect of fatigue could potentially have a significant effect. These are the initial findings of a continuing project.

Previous research in adults has found that dehydration has an effect on the visual attention of adults in particular the speeded processing or the attention required to do the test, (Edmonds, et al., 2013) both of which are required by referees. However, this research was conducted in a non-sport environment and dehydration was self-rated. Therefore the aim of this pilot study was to establish if changes urinary of osmolality is linked to cognitive performance.

Method
The participants were experienced futsal referees (n=7) either FIFA referees (n=5) or home association (n=2). The study was explained and written consent was obtained from all the referees involved. The study was carried out in accordance with the Declaration of Helsinki and was given ethical approvals by the University of East London.

Urine were collected approximately one hour before kick-off, at half time and within 20 minutes of the end of the game and Urine samples were then analysed with an Osmocheck (Vitech Scientific, England) which was calibrated with distilled water before and after each referees group of three samples. Blood lactate were taken at rest and within 5 minutes of the end of the first and second halves collected via finger prick blood method in order to establish lactate concentration using a Lactate Pro (Arkay Global Business Inc, Japan). Weight, (Tanita) and a 20 second letter cancellation test for visual attention (Edmonds, et al., 2013) were undertaken one hour before kick-off and within 20 minutes of the game finishing. Other data was collected which will contribute to future studies.
Results & Discussion

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<th>Pre Match</th>
<th>Half Time</th>
<th>Post Match</th>
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<td>Osmolarity (osmmol.L(^{-1}))</td>
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<td>Letter cancellation Score</td>
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<tr>
<td>Blood Lactate (mmol.L(^{-1}))</td>
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<td>1.74</td>
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There was no difference between Pre and Post Game letter cancellation (t=0.063\(_{17}\) p = 0.951). Post-game osmolarity was significantly greater than pre game (t=-5.557\(_{16}\) p = 0.000) and there was tendency for blood lactate to be greater at half time compared to pre-game (t=-1.783\(_{16}\) p = 0.094).

There was no correlation between the difference in letter cancellation scores and post-game osmolarity levels (r=-0.187; p=0.432). Although on an individual level the games on the second day of competition showed the highest osmolarity scores and the biggest differences between pre and post-game letter cancellation scores (average pre match to post match 355.0 vs 662.50 osmol.L\(^{-1}\) and 29.00 vs 24.75 for the letter cancellation).

This study shows that the referees experience similar changes in blood lactate to other studies (Rebelo, et al., 2011; Dixon, 2014), but the initial findings do not support the findings that dehydration affects the cognitive processes in a sporting environment (Edmonds, et al., 2013). In this study there was no difference in the pre to post game letter cancellation scores (26.67 vs. 26.61) even though the referees had gone through the process of dehydrating through the game (313.89 vs. 585.88). This was despite the osmolarity results show that the referees would not be considered hypo hydrated at the end of the game as the manufactures cut is suggested to be 600 osmol.L\(^{-1}\) (Vitech Scientific, England). However, the individual results from the games on the second day of competition suggest that there may be a link which requires further investigation. If further games show the same trend, this will have implications on the advice given to Futsal referees by the Sport Science support teams.

References


Nutritional adaptations in referees: a pilot study

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Key-words: Refereeing, nutrition, performance, stress

Although nutritional patterns are mainly cultural, they are actually a major health concern. Since nutrition is fundamental in sport performance, plenty of studies explored its impact on endurance or strength training and performances. However few data are available regarding the potential relationships and implications between nutritional habits and refereeing performance. Soccer refereeing leads to an important metabolic cost including muscular energy expenditure and energy demand from attentional and cognitive tasks. DaSylva and collaborators have shown that the energetic demand of refereeing could reach about 800 kilocalories (daSilva et coll 2008) which could represent 25% of total daily energy expenditure. Only one study has investigated the nutritional intake of soccer referees (Teixeira et al 2014) and shown that their carbohydrate intake was under the recommended values. More information is today needed on nutritional habits of referees to optimize their game performance. Our goal was to investigate if refereeing could impact nutritional habits.

Method
Dietary intake was assessed using a 24h adapted food-frequency questionnaire in 6 soccer referees of different ages and refereeing levels. The evaluation was done during one control day (without match) and during a day with a match. Nutritional intake was analyzed using the Bilnut4.0 software. Hunger and stress levels before each meal were assessed thanks to visual analogue scale.

Results & Discussion
Total daily energy intake did not differ significantly between the two conditions but it appears that the referees tended to modify the repartition of the energy consumed between meals. Indeed, their energy intake tends to decrease before the game and to increase after the game compare to the control day. Carbohydrates intake (44% of daily energy intake (DEI)) was below the recommended values (50-55% DEI) and protein intake was far above (26% of DEI) the recommended values (15% of DEI). Those results are in accordance with those of Teixeira et al who have also shown the non-adequacy with recommended values. Appetite feelings were not different between conditions. However we found a tendency of increase in stress feelings before the pre-match meal which could maybe explain the observed nutritional adaptations between the two days. This pilot study allows us to better understand how refereeing could impact nutritional intake but we need to increase number of subjects under study to confirm and specify our results.

References
Visual Characterization of Elite Football Referees & Assistant Referees

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Key-words: Refereeing, vision, visual skills, visual needs, visual parameters

Referees (R) and assistant referees (AR) are critical participants in a football game. Most of their judgements during a match derive from visual information, making vision a critical factor for excellence in officiating.

The aim of the present study was to determine the most important visual skills in refereeing and to obtain reference data of visual function for elite football referees and assistant referees (C1 and AC1 categories).

Method
Eighteen R and 21 AR participated in the present study, with mean age±SD of 38.0±3.09 and 37.6±3.98 years, respectively. A questionnaire was used to ascertain the most important visual skills from the R & AR’s point of view. The visual skills assessed were: distance visual acuity (LogMAR visual chart - ETDRS); stereopsis (TNO); vergence facility (using 3 base in/12 base out flippers); contrast sensitivity (Pelli-Robson, PR) and colour vision (Ishihara tests). The percentage of R and AR passing and failing the reference values was obtained.

Results & Discussion
Referees indicated that “predicting the outcome of a situation based on visual clues” was most important and AR highlighted the importance of “keeping visual capabilities throughout the game”. The threshold values we used were: for visual acuity: pass if logMAR was <-0.10 logMAR; stereopsis: pass if stereo was ≤60 seconds of arc; vergence facility: pass if facility was ≥8 cpm; contrast sensitivity: pass if PR ≥1.90 log CS. The percentage of R failing the reference values were 17%, 28%, 0% and 0% respectively for visual acuity, stereopsis, vergence facility and contrast sensitivity, respectively. For the ARs, the corresponding figures were 43%, 43%, 19% and 5%. All participants (Rs & ARs) passed the colour vision screening test.

Visual skills were scored differently between R and AR showing that these two groups perceive themselves to have different visual needs. Considering the percentage of R & AR failing the criterions, R had better visual skills than AR.
Psychomotor skill training and match simulation performance: a training study for team sport officials

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Sports’ officiating is a demanding task that requires fast and accurate perceptual-cognitive processing, in conjunction with extensive physical match demands. In preparation, structured physical conditioning and decision-making training tends to be completed separately for match officials. The main decision-making skill for officials is interpreting illegal acts of play (i.e. a foul), which are typically trained using video-based methods in a classroom-like setup involving general discussion of scenarios between coaches and officials. It remains unknown as to the benefits of combining these important skills (i.e. physical and decision-making) during training and the effects on match performance. As such, this study aimed to quantify changes in psychomotor performance during a match simulation, following a 6 week combined physical conditioning and psychomotor training program.

Method
Ten moderately trained team sport officials (23 ± 4 yr; 182 ± 8 cm; 76 ± 10 kg) from Australian football (n=8), rugby league (n=1), and soccer (n=1), completed the following testing protocols prior to a 6 week training program. To determine maximal aerobic power (VO₂max) and velocity at VO₂max (vVO₂max), a continuous run to exhaustion was performed. A maximal sprinting speed (MSS) test was completed on a non-motorised treadmill (Woodway, Waukesha, USA) using previously described methods (Sirotic & Coutts, 2007).

Match simulation - A 45 min match simulation was performed on the non-motorised treadmill to replicate the physical demands of team sport officiating. Six running speeds were based as a percentage of individual MSS (Sirotic & Coutts, 2007). Psychomotor performance was assessed throughout the match simulation, using a modified Eriksen Flanker task (Davranche, Hall, & McMorris, 2009). Wireless handheld response keys recorded the response of each stimulus and response time.

Training protocol - Pair-matched groups were created according to psychomotor performance during the match simulation. Participants completed the same high intensity interval training (HIIT) consisting of 4x3 min and 4x4 min intervals across 6 weeks (2 sessions/week). The control training (CT) group only completed the HIIT. The psychomotor training (PT) group completed 3x30 s trials of the Stroop test on an iPad (Apple Inc., CA, USA) during the rest intervals (3 min) of the HIIT.

Statistical methods - A 2 (group) x 2 (time) repeated measures ANOVA was performed on data from VO₂max testing, and match simulation measures. Paired sample t-tests compared pre- and post-testing measures for each group to determine the practical differences of the psychomotor training using magnitude based inferences (Hopkins, Marshall, Batterham, & Hanin, 2009). The magnitude of the observed differences between groups and time were quantified using Cohen’s effect size (ES) statistics, where 0.2, 0.5, and 0.8 represent small, moderate and large effects, respectively (Cohen, 1988). Statistical significance was set at (p<0.05).
Results & Discussion

$\text{VO}_2\text{max}$ ($p<0.05$) and $v\text{VO}_2\text{max}$ ($p<0.05$) significantly increased following the 6 week training intervention with moderate to large ES (0.66-1.01) identified between pre- and post-testing sessions. There were no significant differences between training groups for $\text{VO}_2\text{max}$ and $v\text{VO}_2\text{max}$ ($p>0.05$). During the match simulation, the distance covered ($p<0.05$) and high speed running distance ($p<0.05$) were significantly increased for post testing, with moderate ES (0.22-0.77). Measures of psychomotor performance were improved across both training groups during post-testing. Specifically for the CT group, a small ES (0.16) was identified with an unclear effect of performance during the match simulation. However, for the PT group, training had a beneficial effect on psychomotor performance during the match simulation with a moderate effect (0.29) identified.

These findings suggest that by implementing a combined perceptual-cognitive training and physical conditioning program, the psychomotor performance of team sport officials can be improved. Physical performance during the intermittent match simulation was improved as a result of the HIIT as was $\text{VO}_2\text{max}$. For the CT group, an unclear effect suggests that the physical training alone had no effect on psychomotor performance during the match simulation. However, with the implementation of psychomotor training, the beneficial effect signifies that the performance during the intermittent match simulation was improved. As such, it could be suggested that the ability to complete a psychomotor task during an intermittent match simulation could be improved by implementing perceptual-cognitive skill development in conjunction with physical conditioning sessions. The findings of the current study suggest the potential benefits of combined psychomotor/physical training and could provide a framework for training methods specific to team sport officials.

References


Extensive training of perceptual-cognitive skills  
in complex dynamic offside events

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Key-words: Assistant referees, offside decision making, perceptual-cognitive training, recognition, web-based training tool

In association football, the underlying processes leading to incorrect offside decisions have already been studied extensively (e.g., Gilis et al., 2009). Assistant referees (ARs) are now aware of their exposure to visual illusions (e.g., flash-lag effect & representational momentum), which can (partly) be overcome by correcting and compensating for them at a cognitive (decision) level (Put et al., 2013). As it becomes clear from the original definition of an offside position, the moment of the pass is a crucial time point for which ARs have to judge whether the attacker is in an offside position or not. Thus, one can argue that being able to capture the position of the players requires both well-developed spatial (i.e., where are the players relative to one another) and temporal (i.e., the exact moment of the pass) landmarks, as well as specific processing skills (Williams et al., 2011).

It is important that ARs know the exact deviation between the real position of the attacker relative to second-last defender at the exact moment of the pass and their perceptions of it. Although the actual offside decision is the most important one, it is clear that ARs definitely base this decision on their perception of the players’ positions and have to make a mental abstraction from a dynamic situation to a static snapshot.

Therefore, in the present study, an intensive training experiment consisting of 720 offside situations over 12 training sessions, was set up to examine to what extent the memory accuracy of the ARs (and the processes leading to it) could be improved. In other words, ARs were learned to freeze, hold and scan the mental image in order to better read off the spatial positions of the key-role players, possibly resulting in a better overall decision-making performance.

Method

In total, twenty ARs (mean age = 35.3 years, SD = 4.2) were included with on average 4.9 years (SD = 2.6) experience as an AR. The participants were divided into a training group (n = 10, mean age = 33.9 years; s = 4.1) and a control group (n = 10, mean age = 36.7 years; s = 4.0). Both the training group and the control group were exposed to a pre- and posttest. In between, only the training group received 12 off-field offside training sessions via a web-based training protocol (www.perception4perfection.eu).

First, the ARs assessed 80 offside situations as accurately as possible (i.e., 40 video simulations from an in-game perspective and 40 computer animations from a top-view perspective). They were instructed to indicate whether it was offside or not within a time window of 5 seconds.

Second, the ARs performed a frame recognition task in which they were asked to select within ten seconds one of 5 photos, corresponding with the spatial position of the attacker and second-last defender at the moment of the pass. To investigate the memory accuracy in more detail, the parameter ‘weighted mean’ was calculated. If, for example, the weighted mean is > 0, this means that the AR chose a position following the correct answer (i.e., attacking player was positioned further to the right than in the actual position). If the weighted mean is < 0, then rather a position
preceding the correct answer was chosen (i.e., attacking player was not positioned to the right as much). In the training sessions (12 x 30 video simulations & 12 x 30 computer animations), the task demands were similar to those used in the pre- and posttest (i.e., offside decision making and frame recognition). However, immediate and accurate feedback on their decision-making performance was provided both in terms of the offside decision and frame recognition.

Results & Discussion
First, the overall response accuracy in the offside decision-making task for the training group improved from pre- to posttest in both video simulations \( (\text{Mdn} = 60.5\% \text{ (pre)} \text{ and } 78.0\% \text{ (post), } \text{pcorr} < .025) \) and computer animations \( (\text{Mdn} = 71.5\% \text{ (pre)} \text{ and } 88.0\% \text{ (post), } \text{pcorr} < .025) \). The control group, however, did not differ in its performance between the pre- and posttest for both formats (video simulations: \( \text{Mdn} = 58.0\% \text{ (pre)} \text{ and } 65.5\% \text{ (post), } p = .44; \text{ computer animations: } \text{Mdn} = 72.5\% \text{ (pre) } \text{ and } 71.5\% \text{ (post), } p = .64 \).

Second, the weighted mean decreased in the training group from pre- to posttest in both video simulations \( (0.77 \pm 0.35 \text{ (pre)} \text{ and } 0.53 \pm 0.28 \text{ (post)}) \) and computer animations \( (0.33 \pm 0.37 \text{ (pre) } \text{ and } 0.03 \pm 0.22 \text{ (post)}) \). This measure did not change in the control group from pre- to posttest in both formats (video simulations: \( 0.69 \pm 0.40 \text{ (pre) } \text{ and } 0.68 \pm 0.35 \); computer animations: \( 0.38 \pm 0.42 \text{ (pre) } \text{ and } 0.35 \pm 0.34 \text{ (post)}. \)

It is clearly shown that the accuracy of memory significantly improved from pre- to posttest thanks to the use of a ‘kind learning environment’ that perfectly fits within the requirements of the multiple-cue probabilistic learning framework (Plessner & Haar, 2006). In this type of setting, in which intuitive decision making is stimulated intentionally, the ARs of the training group were provided access to observable, accurate and relevant feedback.

From a social information processing network point of view, the successfulness of this web-based training protocol can also be explained by the fact that the intervention impacts on several steps (perception, categorization, memory processing). Based on our results, it can be assumed that the critical distinction between perceptual factors (influencing what is seen) and cognitive factors (influencing the process of turning a percept and a known rule into a decision to flag or not to flag) seems to be key to understand expert perception and performance in offside decision making. The training group learned 1) to better use their iconic memory to mentally read off the proper positions of the key-role players, and 2) to cognitively correct these as a function of the direction and speed of motion and the distance traveled in the period just before the last pass.

References


Can decisions by soccer referees be improved by technology?

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Key-words: Sports officials, decision making, technology, soccer, video clips

During the Soccer World Cup 2014, the FIFA allows for the first time additional technology to support referees’ decisions. However, research has shown that given the costs of some technologies, the gains obtained through better technology could also be obtained by investing in refereeing training (Borooah, 2013). The present study was aimed to investigate if referees change their decisions with the help of additional technology and if yes, do their decisions get better?

Method
In a first pilot study, we asked \( N = 31 \) soccer players (\( M_{\text{age}} = 25.52 \pm 3.40 \) years; \( M_{\text{playing experience}} = 16.20 \pm 5.38 \) years, \( M_{\text{visual experience}} = 16.90 \pm 4.65 \) years) to judge 19 video clips with regard to foul decisions in the penalty box. The video clips included infringements inside the penalty box that were difficult to judge. Each video clip was shown once in real time, followed by the same video clip shown twice in slow motion. After the video clip in real time and after the second presentation in slow motion, the participants were asked to decide if the situation should be categorized as no foul, foul, yellow card or red card. Before conducting the experiment, the correct decisions were determined by referee experts. In addition, participants were asked to indicate how confident they were with the decision, on a 6-point Likert scale, with 1 representing a low and 6 a high confidence level.

Results & Discussion
The results revealed decision accuracy improvements from real time (\( M = 12.13, SD = 2.01 \)) to slow motion video displays (\( M = 13.71, SD = 1.92 \)), as indicated by a paired samples \( t \)-test, \( t(30) = 4.93, p < 0.01, d = 0.89 \). Participants changed 3.61 decisions on average, with 2.42 decision improvements and 1.61 decision deteriorations. Results for the confidence levels revealed that participants rated the confidence with their decisions significantly higher after the slow motion video displays (\( M = 4.95, SD = 0.59 \)) as compared to after the real time displays (\( M = 4.11, SD = 0.79 \)), \( t(30) = 10.83, p < .01, d = 1.93 \).

Soccer players seem to change their decisions after watching the video clips in slow motion. Their decision changes resulted in more accurate decisions as well as higher confidence levels. This study is used as a pilot study for further realization with actual referees. Since they already perform on a high level (see Schweizer, Kahlert, Plessner & Brand, 2011), the current study attempted to first investigate, if participants that have no refereeing expertise, but a high level of motor and visual experience (see Pizzera & Raab, 2012, for a discussion on the influence of motor and visual experience on decision making), can benefit from such video replays. The preliminary results seem interesting, considering the current discussions about the additional use of technology in soccer. However, economic investigations such as the study by Borooah (2013) in cricket’s decision review systems, should also be considered. So far, one can conclude that even the use of little technology (with replay in slow motion, but no additional viewing perspectives or zooming in) was able to increase decision accuracy and decision confidence, which in turn could be a benefit for refereeing performance on the field.
References
Journalists’ Responsibility towards Football Referees: 
a Case Study of Referees’ Vulnerability to Sports Media

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Key-words: Football, referees, journalism, responsibility, authority

Football players, coaches and fans alike often point the finger at referees for decisions they feel unjust or prejudicial to their side. Such behaviour, commonplace in football, nowadays makes headlines in the media, even more when stakes are high. Echoed by sports media and journalists, derogatory speech on referees paves the way for endless debates about their legitimacy and skills. Oft-repeated calls for video assistance in French professional football, already legal in other sports (rugby, ice-hockey), induce that football referees in 2014 are not able to rise to the challenge they are faced with. Has the standard of refereeing in France become so low or is it just an accepted wisdom? In this case, media and journalists’ responsibility could be involved in the wave of hostility French football referees have testified in the latest years. According to the French Football Federation, their numbers have declined since 2005 (from a peak of 29000 to 24997 registered referees in October 2013), while aggressions against them have remained, since they first got reported by the French Ministry of Home Affairs in 2007, at the rate of 1 per 141 games, a figure qualified as ‘bad’ by the Federation itself.

Several studies have proved that media are able to turn speech into reality and/or to transform reality through the repetition of connoted representations (Thomas, 1928; Austin, 1960; Hall, 1973). This phenomenon, called performativity, gets an extra boost when the mentioned representations are based on imaging techniques (Wolton, 1997), especially television. Our research aims at investigating if this process of performativity can explain how French football referees are faring. With Foucault (1975) and Weber (1978), we take as a starting point that charisma and representation of the self are cornerstones of authority, making referees heavily reliant on the image they protrude. As such, they are indeed vulnerable to how media and journalists represent them but unable to intervene in that process, especially in the twenty-first century when TV cameras are ubiquitous.

Method
The first part of our investigation is an archival research on the representation of football referees in French media since the advent of television, in other words since they have had to deal with another representation of themselves, distinct from the one they have control on, i.e. their own body. We led a hypothetico-deductive analysis of how the authority of football was represented on TV and on print in the last 50 years, and noticed a parallelism between the path followed by football referees in France and the connoted representations found in speeches, images, shot types and information. However speculative, this first approach allowed us to follow with the hypothesis that media and journalists’ responsibility was possibly engaged in the fate of football referees. Indeed, according to Ricoeur (1994), responsibility results from an intercourse in which someone has been trusted to care about something or someone precious to a third party. In this case, journalists would be in charge of referees’ public image and any deterioration of it could be, at least in part, put at their expense, especially when information given about referees is based on televised images. Thus we led a series of hour-long semi-directed interviews with four referees and seven media professionals (five journalists, two TV directors), in order to assess the impact media and television have had over referees and how journalists embrace – or not – the consequent responsibility. The dialogues were recorded, transcribed in full and submitted to a thematic analysis (Blanchet & Gotman, 1992). All quotations below come from these interviews.
Results & Discussion

It happens that referees use TV as a performance-enhancing tool. Elite referees ‘use image everyday’, as we were told by Stéphane Lannoy, one of the top French referees. First to have a feedback on themselves, then to learn about the players they deal with or from their colleagues’ performances. Thus TV pictures can be performative since they help the referee to deliver the adequate performance. But this tool must come ‘with strings attached’, explains anonymously a 26-year-old referee who also acts as a tutor. ‘We remind [the young referees he’s in charge of] that on the pitch, a referee doesn’t have the replay.’ All the officials interviewed warn that imaging techniques are not 100% trustworthy and do not reflect a referee’s performance. They come as a help, not as substitutes. However, excerpts from our archival research tend to show that media and journalists have such a blind faith in TV that they give to this technique the same value than a refereeing decision. Technical and human expertise are confused, even if any TV camera, even the sharpest one, allows only for a biased information (Derrida & Stiegler, 1996).

As a consequence, referees’ representations are mainly negatively-connoted since they are focused on their mistakes (a right decision escapes attention). ‘Referees cannot expect us to hide their mistakes’, pledges Hervé Mathoux, show host for Canal Plus, a private network. ‘Images are undisputable, they are mere facts’, adds Serge Carpentier, a former journalist for the public television network. The same rationale feeds the debate for video assistance in football: the value of a referees’ performance disappears behind the representation of it. Media and journalists’ responsibility would be to remind people that the human expertise displayed by referees is multifaceted and cannot be reduced to a couple of viewing angles. Broadly speaking, it is of their duty to provide a more plural and complete information on refereeing, coming from more sources than camera lenses, which would be a first step towards rehabilitating French referees whose reputation, according to our first hypothesis, has been recently dented under the influence of television. But our second hypothesis, proved both by archives and the interviews, shows that the current landscape in sports media favours entertainment over work-ethics, which is prejudicial to referees’ image.

References

The question of refereeing performance in média narratives: 
the case of the rugby world cup

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Key-words: Referees, rugby, performance, media, words cups

In team sports, the referee represents the authority figure: he has the power and obligation to achieve judgements, and doing, he shows to players what is possible and imposes it on them (Rix-Lièvre, Boyer, Coutarel, Lièvre, 2014). The authority assigned to the referee is inseparable from concepts of legitimacy and recognition on the part of those who submit to it (Weber, 1968). However, several actors challenge the legitimate authority and the performance of referees. Here, we hypothesise that the media have a negative representation of the authority figure and their performance.

Method
The study focuses on articles appearing in l’Équipe (daily sports newspaper) and Midi Olympique (weekly newspaper dedicated to rugby) during the past three rugby world cups organised respectively in Australia (10 October to 22 November 2003), France (7 September to 20 October 2007) and New Zealand (9 September to 23 October 2011). We inventoried and sorted all mentions of rugby referees. The mentions were classified in topics in order to analyse the speakers’ social representations and judgements of them. We paired this analysis with an evaluation of the positive, negative or neutral connotation of the terms of judgements expressed by the speaker.

Results & Discussion
This study shows that the proportion of publications concerned with rugby refereeing and/or referees is quite small. In either media, the journalists hardly ever speak in their own name. Above all, they present the discourses of certain actors (staff, player, directors). A convergence exists in the connotations of the judgments formatted by the journalists and commentators concerning referees: neutral, negative and positive. Even if, the proportion of publication, the figures and the connotations of the terms or judgments formatted by the journalists and commentators in L’Equipe and Midi Olympique varies. Stigmatization and stereotype concerning referees turn around professionalism, experience, decision making, application and interpretation of the rules, in other words in their performance. Also, journalists and commentators both support the idea that the problems and solutions of refereeing are linked. Referees’ performance and legitimacy appears to be shaken by the cult of performance and technological ideology (Habermas, 1973).

References
Standardising Elite Association Football Refereeing: An Historic Problem, no Easy Solution

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Key-words: Elite Referees, association football, standardisation, cultural differences, semi-structured interviews

The present study explores the concept of standardisation to showcase an overview of a detailed and in-depth investigation and analysis into elite Association Football referee training, preparation, and performance across three of the biggest leagues in European and world football. Consideration is given to the role of the referee and authorities in attempting to standardise refereeing in domestic, European and world football. As early as 1913 there are examples in England of an interest in refereeing matters ‘abroad’ (Stark, 1913) and how this links to referee training and assessment (Nevill, Webb, & Watts, 2013; Webb, 2014). In 1936 a section in ‘The Football Referee’ entitled ‘Continental tit-bits’ considered developments in Spain and the adoption of the diagonal system in Europe (“Continental tit-bits”, 1936). There was also interest in how referees were being trained in other countries (Tabak, 1955), evidencing some interest within England about the systems employed around Europe. An article in 1959 suggested that the application of laws should be internationally consistent (“The laws are international”, 1959) and by 1980 there were discussions around the implications of refereeing and standardisation ‘abroad’ (Wilson, 1980).

Today there is a continued focus on improvements in the quality and standardisation of elite refereeing. It is a primary consideration of organisations such as UEFA and FIFA with FIFA’s mission statement describing that, “…rules must be interpreted and applied with absolute consistency…FIFA therefore has a policy of ongoing training for its referees to ensure that refereeing standards continue to improve and the Laws of the Game are applied the same way everywhere” (“Refereeing missions and goals”, n.d.). There is, therefore, a tangible desire to increase the quality of officials at the elite level and also attempts to standardise officiating throughout national leagues.

Method
The research employed a phenomenological approach in the form of Interpretative Phenomenological Analysis (IPA). The use of a phenomenological approach was essential to gain direct experience, at face value, central to the way that humans think and behave (David & Sutton, 2004). The study draws on historical information as well as 53 semi-structured interviews with elite referees, ex referees, elite referee assessors, referee coaches in England, Spain and Italy as well as members/ex-members of UEFA and FIFA and professional football mangers in England. Interview respondents were selected through the use of purposive sampling involving the selection and involvement of a particular societial group or sample because of their unique position related to the research.

Analysis – Inductive content analysis was employed as a means of analysing the themes generated through the raw data. These themes and quotations were independently grouped and compared to the initial themes generated; these themes were then placed into general dimensions (Domestic and European Diversity, Organisational Structure and Governance of Competition, Training and Performance, Accountability and Preparation and Technology and Innovation) above which no general meaning could be identified.
Results & Discussion
Results cover a significant range of subjects that referees and those associated with refereeing have identified as particularly relevant. The general dimensions outline specific areas raised by the interview respondents, with one of the most meaningful comparisons between different leagues and competitions related to the standardisation of referee training, preparation and performance.

Findings indicate that there are historical, cultural and performance related barriers that referees and governing bodies face when attempting to standardise officiating. Most notably responses highlight differences in referee preparation between countries and in European competition, as well as between individual referees. In effect this means that referees are preparing and performing in a different way depending on the competition. Before referees even get to this point however, there are also significant areas of difference between the refereeing systems and development pathways within England (Webb, ‘In press’), Spain and Italy. This also extends to the training that referees undertake throughout their development and into elite refereeing – respondents have classified these areas of training into physical, technical and psychological training.

Finally, organisations such as UEFA and FIFA are also involved in this training and support process. These organisations provide guidance for the domestic associations regarding how systems, training and performance should be managed. Additionally, referees are trained specifically for competitions governed by UEFA and FIFA such as the Champions League, Europa League and international fixtures and tournaments such as the World Cup. Because different organisations are involved in the delivery of elite referee training, uniformity and standardisation within refereeing across domestic, European and world football is difficult to achieve.

References
The referee, the moral guardian of the game

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Key-words: Referee, laws, ethic, civilisation

In order to understand what the referee does and the position he occupies in the field of sport, let us start with a question: why did the referee not exist when originally most sports – football especially – were given their rules?

The referee does not appear in the initial laws of Football. It may be supposed that originally it had not occurred to the gentlemen of the public schools that players could fail to respect the ethics of the game. And as an admission of failure they rather reluctantly integrated the referee as a guardian of the spirit of the game and its rules (Holt, 1992). Thus, the referee’s emergence was both a phase in the civilising process at work in the 19th century and a symptom - in so far as the participants’ self-control was insufficient to allow the contests to be held peacefully (Elias, 1975).

For it is not so much law itself but the relationship to law that is a civilising force. If, as Elias (1975) wrote, "[civilisation] owes its origin and permanence to the intrinsic dynamic of a network of interrelations and specific modifications of forms of behaviour that living together imposes on men", the referee takes part in this dynamic. Like the judge he is the holder of the knowledge of the laws in force; in the eyes of observers he embodies the sport’s Absolute Ethic (Rix et al, 2013). And at the same time, the law guarantees his power and authority. Institutionally, he must watch over the respect of the rules and to do this the institution invests him with the power and duty of judging (Serres, 2010). The referee’s double-faced relationship with the game laws places him at the heart of the diffusion of moral and civilising values.

However, although these values are often invoked they are only decreed loosely. During the game, the referee has a definite latitude in setting out what is possible and impossible – thereby constructing an ethic of the game. While the law defines what is permitted and authorised and what is not, the referee, like the judge, orders in the sense that he puts society and social interrelations in order by the authority of the law but based on his active participation in a particular situation. It has to be considered that the ethics of the game, as the referee constructs it, is not independent of his own system of values, or of the sporting culture of which he is the bearer, but it is not independent either of the institutional logic in which he is placed – assessment, hierarchy, promotion/sanction... His spontaneous evaluation of the players’ practices and attitude to how they play, and the way he shows and imposes what is possible are based on his value system and sports culture. But as the institution’s appointee to referee a match at a given competition level, this value system and sports culture implicitly seem to be in conformity with what the sport institutions define as acceptable and what they wish to promote. It is through what the referee shows and imposes not just on the players but also on all the game’s spectators that the institutions are able to make a system of ethics exist. What is at work is the social transposition of bodily practices regulated in the context of the game to the entirety of social practices. To a certain extent the referee becomes the herald of an institutional and state ethic (Chapron, 2006) and takes part as a mandated agent in the ethico-legal control of society, when “the issue is moral discipline of the populations” (Foucault, 1973).
Unlike the Greek athlothetes who were responsible for organising and supervising the games, referees are the guarantors of the match’s conformity to the rules but also and just as much of the respect for the moral values the sport inherently and blindly represents (Attali et al., 2002). Not just as observers but as active participants referees are entrusted with a mission to moralise the game’s participants – more by making certain usages standard-practice than by applying the rules in the narrow sense. As the messenger of the legislator the referee is permanently part and parcel of a dynamic on the level of the community and society as a whole. As such he deals directly with behaviour that circumvents the most intrinsic rules and standards. The ways he reacts to and deals with this deviant behaviour form on-the-spot solutions that will become both regulatory and moral precedents and fix – for a time at least – the standard to observe.

It might be legitimate to call upon the ethics of the players but the referee’s presence seems to free them of the obligation to respect the sporting Ethic. The invention of the referee allowed them to establish an ethical base they can rest on and refer to which they do not have to support themselves. This explains our initial finding that there was no place for the referee in the original rules for the sports. By establishing the referee as the guardian of the sporting Ethic the players ratified the possibility of dispensing themselves from the game’s moral values. To preserve the ideal of sports ethics they made themselves a moral back-up in the figure of the referee. How, in this light, should the proposal of certain sport institutions to give players and/or managers a right to contest the referee’s decisions – what he shows and imposes on the players - be regarded? Is it contrary to the Absolute Sport Ethic? Does it add to the necessity for the referee to relate the match’s technical ethic constructed in situation to the Sport’s Absolute Ethic and so justify his judgments? Or, on the contrary, does it aim to make players and managers responsible by making their judgments apparent in situation and so the way in which they take part in constructing the ethics of the game?

References
Emotion and decision making in refereeing:  
the affective core of judgment acts

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Key-words: Enactive and ethnographic approach, rugby referee, self-confrontation, sensibility to, sense-making.

This study examined the origin and the role of emotions in decision making in refereeing. It is based on a new conception of refereeing, which considers referees’ decisions during games as judgment acts (Rix, 2005). Referees’ judgment acts show and impose on players what is possible.

According to the enactive approach, which is an alternative to the classical cognitivist approach, affects and cognition intertwine to a great extent (Colombetti, 2014): there is no difference in kind between affectivity and cognition, there is no cognition without affect, and affects always have a cognitive element. That is why the word “sense-making” is used, intimately related to the one of Umwelt: it entails a point of view from which the adaptive autonomous system and the environment are evaluated. To be a sense-making system is to live in a world that has a specific significance or value for it, and to behave according to norms that it brings forth in interaction with the world. This then implies a discerning perspective on the part of the system (here, the referee), from which the organism discriminates what is good or bad for itself, in various degrees. This last point is valuable because it enables both a relationship to be established and a difference to be made between an affect and an emotion.

Such a claim is enhanced from the appraisal theory of emotions by Scherer & Sangsue (2004), who rejects the existence of separate cognitive and affective systems, an idea that they call Plato’s error: the distinction between cognition, emotion and conation is not yet overcome, and it compromises progress toward integrative approaches which is now an urgent need.

Backed onto the enactive position that there are deep affective and normative modes -we call them “sensibility to …” (Récopé & al., 2014) which engage our world at a level that precede and underlies our perceptions and our conscious emotional experiences, this study examined how they contribute to judgment acts.

The two mains goals were to verify: (1) whether the negative affects felt by referees arise from their normative relationship to the unfolding game, and (2) whether judgment acts are able to end their unsatisfactory situation.

Method

This study used a long-term ethnographic approach and incorporated other specific research methods to investigate official matches in the French professional rugby championship. For each investigation, (1) the match was filmed from the stands, (2) the referee was equipped with a head-mounted camera, and (3) after the game, the referee was asked to describe his activity during a self-confrontation interview based on the latter video recording.

We analyzed the interview excerpts in which the referees reported negative affects and distinguished two cases. In the first case, dissatisfaction was related to an abnormal situation. The referee showed what was not “normal” for him and overcame his dissatisfaction through a judgment act. In the second one, dissatisfaction was related to a paradoxical situation. The return to a state of satisfaction occurred when, within the dynamics of the situation, a norm or value became sufficiently predominant to allow the referee to determine the normality or abnormality of the situation.
Results & Discussion
The ethnographic materials we present confirm and specify the main assumptions of the enactive approach. They open another account of interventions of the referee when the situation appears to him as unacceptable. They reveal, and -by virtue of the notion of “sensibility to… - allow the interpretation of the norms and values (Canguilhem, 1989) underlying the internal conflicts, sometimes (often?) at work within the referee’s activity.

References
Interacting constraints shape emergent decision-making of football referees

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Key-words: Constraints, constructivist grounded theory, ecological dynamics, referees, values

Many studies that have evaluated the ability of performers (including referees), have done so using methodological designs that assess decision-making using simulated tasks in carefully controlled laboratory settings (Ericsson & Lehmann, 1996). A popular way of determining a performer’s accuracy in these research designs, has often been to explore whether or not a performer is able to arrive at the same (single) correct decision as pre-determined by an expert panel (e.g. Fuller et al., 2004; Gilis et al., 2006). A regular outcome of such approaches has been to try and absolve these ‘inaccuracies’ by attempting to develop uniform responses (deemed correct by the expert panel) to video incidents, in order to develop ‘consistency’ amongst decision-makers. This view does not fit well with ecological dynamics approaches, which instead postulate that elite athletes display unique, functional and emergent patterns of behaviour, which are context specific and dependent on interacting constraints (Araújo, et al., 2006).

Method
A constructivist grounded theory (CGT) approach was undertaken from the perspectives of the participants themselves (Charmaz, 2006). This study aimed to evaluate (i) why referees make decisions at all (ii) what ‘informs’ their decision-making judgements and (iii) how they perceive their role. 7 A-League (national competition) and 8 Brisbane (local competition) referees were interviewed, with data collected and then analysed using a CGT framework. This provided a unique opportunity to assess how the referee’s viewpoint, their performance settings and their interpretations of that relationship, were contributing factors in the emergence of decision-making actions.

Results & Discussion
The results indicated that referees made decision-making interventions based on nuanced cultural understandings regarding: safety, fairness, accuracy, and entertainment. This decision-making process was underpinned by ‘contextual sensitivity’, which related to the ability of a referee to be aware of (i) how much their decisions had impacted on or influenced the construction of the context throughout a game and (ii) how consistently they had maintained their four key task goals (termed the ‘four pillars’) throughout the match. Referees in this study often commented that their decisions were not predominately aimed at demonstrating accuracy but were rather focussed on a mixture of task goals such as: placating a player, enforcing their authority as a referee or maintaining control (i.e. preserving the game). These task goals were in part informed by shared co-invested task outcomes of players, spectators, coaches and fellow referees (i.e. desires pertaining to flow, style, mood, tempo and image of the given football match).

The results of this study can be explained using a constraint-led perspective, with referee decision-making interventions a type of system micro-component, which constrains the action possibilities for players throughout the match, by providing information to guide interactions between sub-systems (e.g. between players) (Collier & Hooker, 1999). In turn, referees adopt unique decision-making solutions for specific performance scenarios in order to achieve their individualised task goals, underpinned by intentionality constraints (i.e. the ‘four pillars’) of safety, fairness, entertainment and accuracy. These intentionality constraints therefore (i) acted
as a type of environmental constraint on the players by adding to the initial task conditions and (ii) framed the referee’s perception and interpretation of the perceptual-action coupling of players’ actions (i.e. how the referee ‘sees’ the incident) during the match (Seifert & Davids, 2012). These findings provide a number of theoretical clarifications to previous research, namely that (i) methodologies that evaluate the accuracy of referee decision-making as either right or wrong, do not truthfully represent the process of decision-making of referees; (ii) the role of the referee is to provide visible demarcations (in the form of decisions) which act as informational constraints for the players about how they may interact during the match and (iii) referee decision-making is an emergent process nested within task goals, shaped by constraints.

References
How referees are socially perceived?
A first study about referees’ stereotype content

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Key-words: Stereotypes, sports refereeing, stereotype threat

When the 2014 FIFA World Cup began with what we can consider as a referee mistake, medias, supporters and players immediately questioned the competency and/or the integrity of the referee. The penalty in favor of Brazil, the host state, triggered a quite unanimous reaction among the audience that sounded like: “we can already insure that Brazil will reach the final! Referees have instructions in that sense!” This example illustrates how rightful it seems to discredit the referee, perhaps especially in football. According to us, this example, as well as many others, raises the question of referees’ social stereotypes. Stereotypes can be defined as “...a fixed, over generalized belief about a particular group or class of people.” (Cardwell, 1996). It seems of great interest to question the social stereotypes regarding sport referees. Indeed, social stereotypes may have strong deleterious consequences on performance. Past literature indeed showed that negatively stereotyped individual might suffer when performing in a stereotype-relevant environment. For example, stigmatized pupils and students underperform in academic domain if their social group is negatively stereotyped regarding their school competences (Steele & Aronson, 1995). The same phenomenon, called “stereotypes threat”, appears in other domains and with other social groups such as women in driving (Chateigner, Chekroun, Nugier, & Dutrévis, 2011; Yeung & von Hippel, 2008) or white men in sports (Stone, Lynch, Sjomerling, & Darley, 1999). So if we demonstrate the existence of negative stereotypes about referees, it could contribute to explain their sometimes-disappointing performances. Moreover, stereotypes may also impact targets’ well-being and, as a consequence, their investment in their practice (Branscombe, Schmitt, & Harvey, 1999; Crocker, Major, & Steele, 1998).

Method
The presented study is a preliminary work designed to measure the content of referees’ stereotypes. To deal with this question, we chose a traditional measure of stereotypes that allows respondents to spontaneously describe referees. Stereotype content research has a long history. As soon as in 1933, Katz & Braly studied ethnic and national stereotypes through different measures. This study was largely reproduced during the 20th century (for a synthesis, see for example Madon Guyll, Aboufadel, Montiel, Smith, Palumbo, & Jussim, 2001). In each research, three measures are consecutively used. We will focus on the first one. A questionnaire simply instructs participants to write down as many attributes as necessary to describe referees. 139 participants were students from the University Blaise Pascal (Clermont-Ferrand, France). 3 questionnaires were created. Some participants (n= 40) had to spontaneously describe referees in general. Another group of participants (n= 40) had to characterize football referees. And the last group of participants ( n=42) was asked to give attributes of rugby referees. We hypothesized that referees would be described through the use of stereotypes; and we investigated whether some differences appeared between the three groups of participants.
Results & Discussion
Results are currently under scrutiny. Three blind coders have examined the valence of each generated attribute. The next steps consist in 1) determining the main emerging categories (1) and examining the possible differences between football referees, rugby referees, and the general group “referees”(2). Results will be deeply presented and discussed, regarding their impact for referees’ performances and well-being.

References
Reputation or situational information about severity of referee: what information is preferably used by soccer players when they intend to behave aggressively?

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Key-words: Referee, soccer, aggressive intentions, reputation, severity

Various studies concerned with the issue of sport aggression have highlighted that many factors influence unsportsmanlike conduct, particularly in the context of team sports. Thus, personal factors related to the “aggressor” (motivation, perceived legitimacy of aggression) as well as situational or contextual factors (score, location) contribute to the implementation of these behaviours by players. However, very few studies have focused on the potential role that the referee could play, directly or not, in the regulation of these interactions. The analysis of referee’s action can be meaningful only in the production, by the players, of interactions and transgressive or sometimes aggressive behaviours. In the same way, the analysis of players’ activity cannot exclude the referee from the equation, whose function is precisely to control these behaviours.

A few studies have analysed the influence of the referee on the intentions and behaviours of players. Thus, Avanzini and Pfister (1994) showed that the severity of the refereeing could impact the number and the nature of aggressive behaviours displayed by the players. Similarly, some players affirm to be sensitive to refereeing (Traclet, Romand, Moret, & Kavussanu, 2011). These works focused on actual behaviours of the arbitrator (more or less severe in its achievements) but did not consider the role of indirect information (beliefs about referees) that can be mobilized by players.

Jones, Paull, and Erskine (2002) showed that the referees were sensitive to aggressive reputation of a team when they make decisions. Similarly, Manley, Greenlees, Graydon, Thelwell, Filby, & Smith (2008) showed that athletes use information related to the reputation of the coach for forming an impression about him. With the same logic, we can assume that players can be sensitive to the reputation of the referee (more or less severe) and use this information to regulate their transgressive behaviours. This information could then be compared to situational information related to the severity of the referee, these two kinds of information being either coherent or contradictory.

The aims of this exploratory study were: a) determine whether information related to the referee (reputation and / or situational information) may influence the intentions of the players to behave aggressively; b) verify if this potential influence operates in the same way regardless of the type of behaviour; c) verify if this potential influence may depend on the nature of the information (coherent or contradictory).
Method
306 football players, aged 19 to 25 years (M = 21.3 ± 1.42), and playing football since 11.7 years on average, participated in the study. A hypothetical scenario describing a face to face situation with an opponent and providing information related to the referee (reputation and/or situational information, hard and fast or lenient) was proposed: for example, "At a game of soccer championship (end season, late in the game, the score is tied), you are in a defensive position due to an adverse placed attack and you try to prevent an opponent in direct confrontation from advancing. The referee of the meeting has a reputation for being rather hard and fast and the progress of the game confirms this reputation."

The intents to act aggressively towards the opponent were measured using a 5-point scale (0 = never to 4 = always), answering the question: “How often do you use the following behaviours to win your confrontation and prevent your opponent from progressing”? Several behaviours were proposed: two physical behaviours and one verbal behaviour. Two scores of aggressive intentions were then calculated (physical or verbal).

Results & Discussion
The intentions for physical aggressive behaviours were on average higher than the intentions for verbal aggressive behaviours (2.11 vs 1.31). A 2 x 2 MANOVA was conducted with the variables "type of information" (reputation / situational) and "severity level" (hard and fast / lenient) as independent variables and the two scores of aggressive intentions (physical / verbal) as dependent variables. It reveals that when only one type of information on the referee is provided (either reputation or situational information), the "lenient situational information" contributes the more to a high score for the intentions of the aggressive physical behaviours (2.33 vs 1.93, 2.02 and 2.09). For the intentions of the aggressive verbal behaviours, paradoxically, the condition "hard and fast reputation" provided the highest score and the condition "lenient situational information" provided the lowest score. A second 2 x 2 MANOVA was conducted with the variables "kind of information" (either coherent or contradictory information) and "severity level" (hard and fast / lenient) as independent variables and the two scores of aggressive intentions as dependent variables. This showed that for intentions of physical aggressive behaviours, “situational contradictory information” reinforced the effect of reputation, both in the case of a hard and fast refereeing than for a lenient one. This effect also appeared for intentions of verbal aggressive behaviours, but only in the case of a referee with the reputation of being hard and fast.

References
Effects of soccer refereeing education on young soccer players’ behavioral and social representations of referees and refereeing

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Key-words: Refereeing education, representations

Officials hold a particular position in the sport settings. Often judged, sometimes criticized, rarely forgotten, referees, judges or umpires are regularly in the heart of stormy debates and provide generous inspiration to sports media. The emergence of scientific studies underlines the complexity of officiating in sports. However, this growing body of literature has the tendency to focus on the physical aspects of officiating or to consider exclusively elite refereeing (Hancock & Ste-Marie, 2013; Nevill, Webb, & Watts, 2013; Schweizer, Plessner, Kahlert, & Brand, 2011; Weston, Drust, & Gregson, 2011), thereby neglecting refereeing training and education.

We assume that soccer refereeing is rarely approached during players’ education. Nevertheless, the awareness of refereeing difficulties could influence young soccer players’ behaviors (Margas, Demiselle & Dosseville, 2011). The main objective of this communication was to examine the effects of soccer refereeing education on young soccer players’ (U13 and U15) behavioral and social representations of referees and refereeing.

Method
Participants - Three hundred ninety soccer players took part in this study. They were randomly distributed to four groups: a control group without specific training, and three experimental groups (one group with practical learning -assistant referee-, where the soccer instructor acted as a supervisor and offered feedback during the game; one group with theoretical learning (integrated soccer games), and one group combining practical and theoretical learning.

Material and procedure - The refereeing training lasted 3 months (12 sessions of 20 min). Before and after the training, refereeing and referee representations, knowledge of rules and atmosphere within group were assessed. The first author created exercises on soccer refereeing to be used and integrated into regular training sessions. These exercises allowed connecting the player’s game experience to the refereeing experience.

Results and Discussion
In summary, results showed an improvement of knowledge of soccer rules and modifications in participants’ representations in the three experimental groups in comparison to the control group. Moreover, differences were found between the experimental groups. Limits and perspectives were discussed.

References


Organization of Football Refereeing in Portugal: state of play

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Key-words: Football refereeing, Portuguese Referees Academy, organization, recruitment, retention

Although Portugal is a country with few football referees (about 3500), in recent years the Portuguese officials were in major UEFA and FIFA competitions. It is difficult to establish a cause-effect relationship between the results achieved and the work we do. We believe, however, that the effort of linking scientific research to empirical knowledge is important and therefore we have implemented measures such as: i) encourage research on refereeing in Portugal, establishing agreements with various universities and facilitating access to study our referees. The first book of scientific research on refereeing in Portugal is one of the immediate results of this work; ii) restructure the process of performance evaluation; and iii) create specific development programs such as the national refereeing centers, the Refereeing Academy, the National Training Plan and the National Recruitment and Retention Plan.

We are reformulating the portuguese referees performance evaluating process (see Caetano, 2008; Gencay, 2011; and Çoban, 2010), because we believe it will be an important milestone to increase referees levels of satisfaction and referees organization commitment.

Training centers adopt an integrated perspective of training because, as argued by González-Oya & Dosil (2004) and Collina (2004), the referee’s success shall by appropriate combination of physical preparation, technical preparation, tactical preparation and psychological preparation. The existence of technical referees (former referees and assistant referees), as well as the work differentiation done by referees and assistant referees it’s crucial for theirs development (see MacMahon, Helsen, Starkes, & Weston, 2007). As the official training centers are insufficient to ensure an adequate supply throughout the country, the training coordinator broadcasts the training programs by all stakeholders (see Kizilet, 2011).

The Portuguese Referees Academy created a national training plan that articulates, from bottom to top, the different referees training components. As stated by Mike Rilley, FIFA instructor, "the Portuguese Referees Academy Provides an integrated program of regional training refereeing linking referee training with progression to the national level and through to the elite level. The program comprises instruction on each of the key elements of referee development. This includes modules on Psychology, Communication and the media, Sociology of Sport, Sports science, including nutrition, Learning methods, Football Coaching, Self-analysis, Instruction on tutoring (so that participants can cascade knowledge).

"The rigorous teaching methodology which includes detailed plans for each session, templates for use in each presentation and the distribution of teaching materials via dropbox to the participants", states Mike Rilley.

The Portuguese Referees Academy teaching methodology, as in the training centers, favours the constant feedback and the constant use of video analysis (see Schweizer, Plessner, Kahlert, & Brand, 2011).

Whereas the work of authors such as Alonso-Arbiol, Arratibel, & Gómez (2008), Kellett & Warner (2011) and Warner, Tingle, & Kellett (2013), we have conducted a national study on the recruitment and retention problem. This study resulted in the National Recruitment and Retention Plan, which will be implemented throughout the country, already this season. For the
Portuguese Refereeing it is essential to increase the recruitment base, while strengthening the retention strategies.

We believe that to improve referees performances we must combine research with practical knowledge of those who, like us, knows deeply this field. This still young marriage will give ripe fruits in the coming times.

References
Education and training towards excellence in Portuguese Football Refereeing

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Key-words: Football refereeing, training, excellence, mentoring

Football Refereeing has been studied by different authors and in different areas. In a research conducted in the Web of Knowledge, Scopus and PsycINFO, limited to the last 20 years, we found 205 articles relating to football refereeing. Physical (78) and technical performance (78) of referees and assistant referees are the most studied subjects. The results of this study suggest the need to broaden the scope of empirical investigations in refereeing while calling attention to the need to produce theoretical refereeing development models that may guide the referees training.

Method
In Portugal, we have tried to find a map that leads us to excellence and we have been introducing materials and methodologies in the training context to help the referees achieve high levels of performance in the shortest possible time. Inspired by the work of Mascarenhas, Collins, & Mortimer (2005), Mascarenhas, O’Hare, & Plessner (2006), MacMahon, Helsen, Starkes, & Weston (2007), Myers, Guillén, & Dithurbide (2012), Weston et al., (2012) and Slack, Maynard, Butt, & Olusoga (2013), among many others, we will present examples of how we try to link theory with practice.

Results & Discussion
Specifically, we discuss issues such as: i) the training of referees trainers; ii) the training of referees observers; iii) the stages and processes of mentoring; iv) integrated training programs; v) referees psychological analysis; and vi) other relevant referees development contents.

References
Research in Football Refereeing in Portugal

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Key-words: Medical evaluation, sport training, physiology, cognitive sciences, psychology, sociology.

For the referee to check if the rules of the game are being followed, during all the time and in all the places of the field, there are several factors of his/her performance that should be understood, and consequently prepared. This idea is expressed in the topics researched in Portugal in the last 15 years, after the landmark publication “O Manual do Árbitro” (The Referees Textbook; Gama et al., 1998).

This talk aims to describe the research conducted in Portugal across the last 15 years. The organization of the topics will be based on their links and not on a conceptual view about how knowledge on refereeing is organized.

About 100 studies were conducted on refereeing, and 20 were specifically concerned with soccer, and with the Portuguese referees. From these 20 works: 20% studied the physiological impact of the match; 20% decision-making; 20% sport psychology; 15% sport sociology, 10% medical assessment; and 20% methods and effects of training. These results confirm tendencies of the research on refereeing in other countries (González-Oya & Dosil, 2007; Pina & Passos, in preparation).

Research guides the preparation for a better performance, both at the level of management, and at the level of performance evaluation, training and education.

References
Gaze behaviour in offside decision-making in football: A field study

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Key-words: Football, refereeing, gaze behaviour, decision-making

The offside in football is probably one of the most disputed game-situation in sports. So far, perceptual errors in judging offside were investigated only in laboratory settings (Catteeuw et al, 2009). Therefore, the present study aimed to examine the gaze behaviour of assistant referees (AR) in real offside decision-making situations.

Method
6 ARs of the Swiss Football Association (3 experts: FIFA, 3 near-experts: 2nd Division) had to assess 36 offside scenes (9 mother scenes x 4 variations, i.e., different passing options) that were performed by a U-21 team (FC Thun) in a football stadium. Gaze behaviour was recorded with a mobile eye tracker (EyeSeeCam, 60 Hz) and decision-making skills were assessed using a digital video camera on the opposite side of the field of play. After editing the recorded videos (Kinovea 0.8.15), the number, lengths and locations of the fixations per scene were determined manually from the raw material.

Results & Discussion
The experts rated the offside situations significantly better than the near-experts, $\chi^2 (1, N = 177) = 4.93, p < .05, \phi = .17$. However, no differences were found between the groups for visual search patterns, $\chi^2 (1, N = 177) = 0.01, p = .91, \phi = .01$. Still, a strong correlation ($r = .62$) between decision accuracy and the number of the fixations at the moment of the final pass was revealed. Furthermore, a trend towards higher decision accuracy was observed when the offside line was fixated, $\chi^2 (1, N = 177) = 3.17, p = .07, \phi = .13$.

This field study, at least to the best of our knowledge, was the first examination on gaze behaviour in real offside decision-making situations. It could not be shown that AR with different levels of expertise differs regarding their gaze characteristics. For decision accuracy, it seems best to focus on the offside line in order to be able to accurately evaluate the attacker’s position relative to the offside line.

References
The use of a web-based platform to measure the decision-making accuracy of additional assistant referees

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Key-words: Referee, decision making, expertise, perceptual-cognitive skills, video training

Additional assistant referees (AAR) support the referees in association football (known as soccer in North America) to control the game in accordance with the Laws of the Game. They are involved in key decisions inside and around the penalty area. Given that these incidents may have an impact on the outcome of the game, it is important to judge them correctly. Specific perceptual-cognitive skills and refereeing expertise play a significant role in the decision-making process (Bar-Eli et al., 2011; Williams & Ford, 2008; Catteeuw et al., 2009; Catteeuw et al., 2010). The aim of the current study was to come to a better understanding of the specific skills of AAR. Therefore, a thorough analysis of AAR’ performance and decision-making processes on various critical incidents was conducted. The difference in decision-making performance and the most common errors in various skill levels of AAR were examined.

Method
Representative video clips, filmed from an in-game perspective, were used to test the decision-making skills of AAR. The first category of clips consisted of contact incidents in and around the penalty area (foul situations). The second category of clips represented goal situations, where the ball did or did not cross the goal line. Three groups of participants with various expertise levels were tested: 1) experienced UEFA top-class AAR (UEFA AAR, n = 26), Belgian elite referees (BEL REF, n = 15) and association football players (PLAYER, n = 22). Participants were shown 40 foul/no foul situations (20 match situations; 20 training situations) and 20 goal/no goal situations using an online video platform (see Put et al., 2013). Just like in a real match, they had to 1) assess the foul situations and 2) give the appropriate sanction. For the goal situations, the AAR had to decide whether the ball crossed the goal-line or not. Participants had a personal account and their responses were stored online for further analysis.

Results & Discussion
Significant between group differences were found for the foul situations. For both the training and match situations, the UEFA AAR group (M = 72,7% ± 10,6 (training situations); M = 82,3% ± 6,2 (match situations)) and BEL REF group (M = 75,3% ± 11,3 (training situations); M = 79,3% ± 10,7 (match situations)) performed significantly better than the PLAYER group (M = 65,4% ± 11,0 (training situations); M = 69,4% ± 9,1 (match situations)) (p < .05). For the goal situations, no significant differences were observed between the groups (UEFA AAR: M = 82,7% ± 8,7; BEL REF: M = 82,5% ± 9,7 and PLAYER: M = 80,2% ± 8,7).

It is commonly expected that referees manage match situations in an appropriate way, according to the rules and without mistakes that may have an impact on the final outcome of the game (Fuller, 2004; Gilis et al.,2006). AAR have been introduced to improve the overall quality of decision making of the refereeing team. In this study, no differences were apparent between the different groups for the goal situations. The assessment of these situations can be seen as a straightforward, perceptual task. Refereeing expertise does not contribute to an improved performance on this specific task. For the foul situations, the UEFA AAR and BEL REF group
performed significantly better compared to football players in both match and training conditions. These foul situations can be considered as a categorization task, where perceptual information has to be encoded and classified according to the laws of the game. Referees and AAR most probably developed role-specific categorization skills to judge the foul situations more accurately. Implications for future training programs of match officials are discussed.

References
Prerogatives and coordination among officials during football matches

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Key-words: Referee and assistant referee, football, judgment act, recognition, coordination

Introduction
Refereeing is often considered as a decision making process that consists of applying rules to a reality (Mascarenhas, Collins, & Mortimer, 2005). But an analysis of the referee’s activity as it occurs during matches leads to a new conception of refereeing. A referee performs judgment acts (Rix, 2005). These acts are self-determined according to an action-coupling perspective: (1) the referee establishes the acceptability of the game situation - i.e. the acceptability of the players’ behaviors -, (2) and simultaneously the referee shows to the players what is possible. However a referee is not alone on the field, two assistant referees can participate in refereeing (Helsen & Bultynck, 2004). The rules prescribe the responsibilities of each. In order to determine if and how each official contributes to judgment acts during matches, this study considers not only the officials’ activity as it should be but as it occurs in real world setting.

To determine how officials coordinate with each other to contribute to perform judgment acts, we elicited the way in which each official contributes to (1) establishing the acceptability of the game situation and (2) showing to the players what it is possible.

Method
Six French elite professional football games have been studied. The researcher conducted individual self-confrontation interviews (Theureau, 2003) with each of the six referees and with each of the twelve assistant referees (n=18) who officiate during these matches. During interviews, the official is confronted with the video recording of his activity in game situations. Using a video recording of the match enables each participant to relate to a particular lived-experience (Vermersch, 1999), especially to make explicit what matters for him when his partners’ actions (including radio communications) are significant. For each match, the researcher generates a match log (Poizat, Bourbousson, Saury, & Sève, 2009), as a data presentation which maps on the one hand the observed description data recorded about the judgment act and on the other the corresponding verbatim transcription of the prompted verbalizations recorded during post-match interviews. Each judgment act constituted a case: the aim was to determine if the lived experiences of each official have been connected to each other so as to contribute to performing judgment act. Where required, research highlighted on which contextual information (Poizat et al. 2009) this connection is based on.

Results
During the match, game situations are understood by each official as a responsibility field, for himself and/or a partner. Also, they evaluate the possibility for each other to intervene - or not - in refereeing according to their responsibilities. In this way, officials recognize their own prerogative to participate to judgment act.
(1) They constitute their prerogatives to contribute to establishing the acceptability of the game situation by two ways: (a) an official recognizes directly, as obvious, his prerogative to intervene and he seizes spontaneously an opportunity to act in order to establish the acceptability; (b) an official recognizes indirectly his own prerogatives, i.e. according to his perception of the way his partner uses – or does not use – his prerogatives. In particular, the assistant referee reconfigures his own prerogative to make it compatible with the way the central referee uses his. He is
concerned about the game context in which the central referee uses his prerogative. Moreover, during the game the assistant is concerned about the way the referee judges the acceptability of the current players’ behavior. In order to participate in establishing the acceptability, he calibrates (Unkelbach & Memmert, 2008) the indications he makes in line with the way the central referee judges the situation.

(2) Each official recognizes his prerogative to participate in showing to the players what is possible by identifying, in the context of the match, the prescribed conditions in which the signaling tasks are to be carried out. This recognition is focused on the matching of the here and now characteristics of the game context with the rules prescriptions. Thus, the coordination of the team members of the officials’ team is based on the recognition by each of the contextual prerogatives of each to perform - or to participate in performing - a judgment act.

Conclusion
The analysis of officials’ respective activities shows their compliance with the prescriptions related to the ostensible part of judgment acts. It demonstrates also the need for access to subjective in situ perspectives to grasp the way officials coordinate in establishing the acceptability of the players’ behaviors. Notably, the coordination modalities among referees are based on the recognition, by the assistant, of his own prerogative to contribute to establishing the acceptability of game situations.

References
Are Referee “Groups” Actually “Groups”?

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Key-words: Cohesion, group dynamics, ice hockey referees, qualitative research, performance

Over the past three decades, researchers have discovered several perceptual keys to peak sport performance including anticipation (Abernethy & Russell, 1987), pattern recognition (Williams, Davids, Burwitz, & Williams, 1993), and decision making (Abernethy, Baker, & Côté, 2005). Whereas these processes operate at the individual level, performance in team contexts is largely influenced by the efficiency and success of teammate interactions. In fact group dynamics impact collective performance across numerous contexts including the military (e.g., Salas, Bowers, & Cannon-Bowers, 1995) and business (e.g., Stevens & Campion, 1994). Steiner (1972) advanced the notion that group performance is the result of the group’s available resources (e.g., individual skill, experience, and intelligence) minus its process losses (e.g., ineffective communication, poor teamwork, and conflict). In the context of sport, where performance is paramount, the importance of the group for both individual and team success is widely supported (e.g., Carron & Eys, 2012).

Despite support for the influence of group dynamics on sport performance (e.g., Martin, Bruner, Eys, & Spink, 2014), our understanding is typically limited to athletes and coaches. An important “team” that operates in the athletic environment, and has a tremendous influence on the execution and success of any sporting event, has largely been overlooked – sport officials. In many situations, officials seemingly function as teams. Consider ice hockey officials, who are the focus of this current study. While the referee has prescribed duties (e.g., to monitor penalties, goals, etc…) that are different from the linesman (e.g., to monitor offsides, icings, etc…), both work in conjunction to officiate competitions. Thus, it stands to reason that the dynamics exhibited within each referee “team” might influence overall effectiveness of a referee contingent; interestingly, a citation analysis of research on sport officials revealed no research dedicated to group dynamics (Hancock, Rix-Lièvre, & Côté, 2014). Therefore, the purpose of this study was to investigate the possible existence of group dynamics in ice hockey officials, specifically, do ice hockey officials self-identify as part of a group?

Method
At the time of abstract submission, data collection was ongoing. To this point, semi-structured interviews had been conducted with 15 male, Canadian hockey officials. All officials performed in leagues that utilized the four official system (i.e., two referees and two linesmen) including the Ontario Hockey League, the Central Canadian Hockey League, and the Ontario Junior Hockey League (Mage = 30.1 years; Mexperience = 12.9 years). Data analysis was completed using Charmaz’s (2006) initial, focused, and theoretical codes.

Results & Discussion
Herein, we present the results as they relate to: (1) self-identification of groups, (2) extant group characteristics, (3) positive and negative group experiences, and (4) the challenges associated with working with different groups each game (a rotation that is standard practice in current Canadian referee associations). Following, practical and theoretical implications of this research
will be discussed.

References
Women referees’ experiences officiating rugby union

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Key-words: Discrimination, marginalisation, referee, rugby union, women

There is very limited literature concerning female sports referees. Literature in general is sparse on sports referees unless the topic is looking at stresses faced by referees (Anshel & Weinberg, 1996; Rainey & Hardy, 1999); or biases that referees engage within (Boyko, Boyko, & Boyko, 2007; Sutter & Kocher, 2004); and training conducted by sports referees (Mascarenhas, Collins, Mortimer, & Morris, 2005). The closest parallel that can be drawn between women sports referees’ experiences with men is women’s sports coaches’ experiences with coaching men. Understanding the experiences of women in refereeing is quite important given the limited amount of research on the subject. This research reviews the extensive coaching literature of female coaches as a substitute for the limited female refereeing literature. Previous research looking at women sports coaches coaching men (Kamphoff, Armentrout, & Driska, 2010; Kane & Stangl, 1991; Yiamouyiannis, 2007) have highlighted the issues of discrimination, marginalisation, respect and tokenism that women in the sporting world can experience.

The central aim of this study was to better understand the experiences of current women rugby union referees. The study was designed to gain a better understanding of how these women referees obtained their refereeing roles and the continued barriers they experience in trying to maintain their positions within rugby union refereeing.

It is important to note that the situation’s faced by women referees is different to that of women coaches. Coaches have considerable time to establish their credentials with a skeptical male team, but referees have to impose their authority right from the start – even before the first whistle. So it is only natural that their difficulties would be greater.

Method

Five women who refereed in the NSW suburban rugby union premiership were interviewed. The women had been refereeing at the premiership level for a period of four consecutive years and between them had refereed over 300 games.

All five participants who agreed to partake in the study were interviewed individually in person at an agreed venue at a mutually convenient time over the course of eight weeks. Semi-structured interviews were used utilising interview guides from previous research focusing on women’s experiences with men in sport (Kamphoff et al., 2010; Kane & Stangl, 1991; Yiamouyiannis, 2007).

Analysis - A descriptive analytical strategy was used for the analysis and interpretation of the data (Creswell, 2007). In this approach, material from each interview was looked at and separated into individual statements. This process took place by way of the researcher highlighting key phrases on the interview transcripts and writing conceptual labels in the margins of the transcripts. As the researcher made their way through all of the transcripts, the conceptual labels that had been written in the margins were constantly compared to each other which reduced the number of labels developed and relationships could be established amongst common labels.

Once this had been completed, key phrases from the transcripts were placed into categories and labelled with the overlying theme of the phrases. All phrases with similar statements were then labelled with the corresponding theme. To further explain and reinforce the experiences of the participants, textual descriptions and written statements from the women are provided in the
analysis of the findings. This process occurred for all five interviews. The themes reported on in this research are present because of the frequency for which they were mentioned during the interviews and the significance of the comments that were provided by the participants.

Results & Discussion
The purpose of this study was to gain a better understanding of women rugby union referees experiences of officiating men in the NSW suburban rugby union premiership. Across the four reportable categories (Discrimination in women’s sports officiating; marginalization of women referees officiating male sports; previous experience and education) results were consistent with previous research, the participants in this research encountered experiences similar with trying to establish their credibility and place within officiating ranks in refereeing and learning to cope with sexist comments and remarks.

The women referees who participated in the study were well aware of their token status within the association and the competition as well as the difficulties that would accompany it such as gaining respect, establishing networks and support from coaches, players, spectators and on occasion, fellow referees. These findings are similar to those of Kamphoff et al. (2010) who found that women sports coaches who coached men also found it quite difficult to gain respect and support, suggesting that the women coaches were isolated and not wanted. All of the participants in this study indicated that at times they felt ostracised and out-casted because they were women. Much in the same way that tokenism existed within the female referees so did the feeling of marginalisation. This finding amongst the female referees is consistent with previous research which focuses on women coaches coaching men (Kamphoff et al., 2010; Kane & Stangl, 1991; Staurowsky, 1990; Yiamouyiannis, 2007).

Further research is needed to explore in more detail the experiences of female sports referees. These experiences could involve training programs, professional development programs, experiences with other referees either male or female, experiences with referee coaches, and experiences with team coaches and players. Further studies with large numbers of participants and other sports could also be utilised to investigate whether the results here are mirrored on a larger scale. There is also scope for comparative studies with female dominated sports such as netball, and/or sports where there is an equally large population of women players such as Basketball, Football and Tennis to see if the female official’s experiences in these sports are different to those who referee in male dominated sports.

References


Anxiety and coping relationships among soccer referees: a multi-trajectory model

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Key-words: Coping, anxiety, soccer referees, multi trajectory model

Refereeing competitive sports represents an activity in which psychological processes play an important role in successful performance (Weinberg & Richardson, 1990). This is especially true in soccer as officials are constantly put under aversive conditions related to several sources of stress (Taylor & Daniel, 1988). In fact, referees have to deal with interpersonal conflicts coming from the criticisms of players, coaches, and even managers. They are often physically and verbally aggressed which institutes a climate dominated by the fears of making all sorts of wrong calls during the course of a game. Referees have also to manage familial, professional, and social life, which can be a struggling task given the time constraints associated with a career of referring. Adding together with the competition between referees and the poor social recognitions allowed to this profession, it is not surprising that referees are living under high levels of stress (Folkesson, Nyberg, Archer, & Norlander, 2002). Surprisingly, some researches (e.g., Burke, Joyner, Pim, & Czech, 2000) focusing on the intensity of stress experimented by referees reported low to moderate levels of anxiety.

One could hypothesize that some referees can experiment high levels of anxiety while others could be characterized by low intensities of anxiety. One could also wonder how referees cope effectively with the various requirements of officiating a game.

The aims of this study are (1) to determine prototypical profiles of coping utilization and of anxiety experiences and (2) to jointly analyze these profiles in order to highlight specific relationships of coping and anxiety with soccer referees over time.

Method
329 French soccer referees participated in this study and completed the Competitive State Anxiety Inventory-2 and the Ways of Coping Checklist three times over an entire competitive season.

Results & Discussion
Results showed three distinct profiles for cognitive and somatic anxiety (i.e., low and stable, moderate and stable, high and decreasing). They also revealed different trajectories for problem-focused coping (i.e., low and stable, moderate and increasing, moderate and decreasing, moderate and stable, high and stable), for disengagement-oriented coping (i.e., low and decreasing, moderate and decreasing, moderate and stable) and for seeking-support coping (i.e., low and decreasing, moderate and decreasing, moderate and stable). A dual-trajectory model was performed to assess joint probabilities of anxiety and coping and proposed specific relationships of intensity of anxiety with coping. For example, problem-focused coping is only flexible under low intensities of cognitive anxiety.
These results highlight the need to account for the multinomial heterogeneity of the longitudinal associations of coping and anxiety. Possible associations between the dual trajectories and other variable such as level of expertise or direction of competitive anxiety should also be analyzed. In-depth analyses of referees’ self-regulation processes are required to implement idiographic interventions in order to achieve a better adaptation to the competitive requirements of officiating a football game.

References
How to study the refereeing performance?

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Key-words: Rugby referee, experience, skills, performance, evaluation, work debates

What is the refereeing performance? Is it only what a referee does? We consider that to perform is to succeed. So, it is about someone doing something, but it is also about the assessment what is done. Accordingly, this paper takes another look at the referee performance as a whole through two studies: the first one focused on the referee’s actual performance on the field, the second one on the activity of the supervisor as he assesses the referee’s activity.

First study
Whilst various studies contribute to identifying the physical capacities on the one hand, and the cognitive and emotional capacities on the other, needed for applying the rules of the game properly, other research shows it is impossible to reduce the referee’s performance to an identification of faults. This performance is also concerned with managing the match, and with the fairness and consistency of the decision making or with maintaining safety (Mascarenhas, O’Hare, & Plessner, 2006). Once the referee’s activity is put back in its context the issue of his performance appears to be more complex: “refereeing at the top level is about ‘finding a set of solutions that work for you on the day’” (Ibid., 2006, p112). Consequently, understanding the factors determining refereeing performance presupposes looking at its practice, i.e. “what an athlete [here a referee] does in competition, and not at what is supposed to determine what he does” (Hauw, Durand, 2004, p122).

Method - In order to understand what a referee does during a match, we carried out observations of 4 matches of the French first level rugby championship (Top 14). Each game was filmed from the stands, the referee was equipped with a head-mounted camera, and a self-confrontation interview was realized. The head-mounted video was used during the interview in order to foster an experiential immersion and to approach the referee’s sensemaking.

Results – We present how a referee shows and imposes upon players what is possible. So what he shows and imposes depends on how he spontaneously comes to grips with the players’ activity: whether as a fact, a dynamic, or a problematic event. The construction of what is imposed cannot be separated from the way in which the referee imposes it. He imposes a fact as something obvious. He calls upon a rule to justify that the dynamic of the players’ activity has become unacceptable. He establishes a coherent scenario that identifies the logic of the event considered as problematic. The various dimensions of their activity (movement/positioning, decision, communication…) have to be envisaged as an entirety. Refereeing is therefore not just decision processing but an interactive activity. To perform, a referee has perhaps not so much to identify this or that foul as to stop the play or orient it toward what is acceptable. In other words, to referee is not to evaluate passively but above all to act, to make the match progress correctly. In this way, the referee’s performance seems inseparable from the players and how they spontaneously consider what the referee shows and imposes. The refereeing performance is thus co-constructed with players.
Second study
While the previous results lead us partly to deindividualise the refereeing performance by admitting that it is co-constructed with the players, an activity is only a performance if it is designated as such by the institution. This led us to take an interest in how the institution establishes the refereeing performance. To do this we investigated the practice of the supervisor responsible for assessing the referee’s performance on the field so as to understand how he attributes a value to the latter (Boyer, Rix-Lièvre, Récopé, 2014).

Method – Four supervisors contributed to this work during four matches in the French professional championships (three in Top 14, one in Pro D2). During each investigation we observed the supervisor’s activity throughout the match; we effected one pre-match interview and two post-match interviews - one immediately after, the other a few days later.

Results - The study on the supervisors’ assessment activity shows some tensions at the heart of the refereeing performance construction: (1) A tension between a performance built through the accuracy of the referee’s decisions on different game situations, each being taken separately, and the consideration of the refereeing dynamics throughout the match; (2) A tension between a performance carried out in accordance with objective elements and an assignment of value depending on community’s concerns; (3) A tension between the criteria prescribed a priori and some contextualized assessment elements. These tensions that constitute the evaluation reveal potentially contradictory expectations – expectations that have a heavy influence on the referee’s in match activity and can lead to dilemmas. The evaluation of the referee’s performance therefore participates in the refereeing performance on two counts: it determines its value and produces expectations that directly influence the referee’s performance on the field.

General discussion
This research also highlights the complexity as well as the collective and systemic nature of the refereeing performance. But these studies also lead us to envisage a way of developing the refereeing performance focused on how it is organisationally embedded. If the presence of contradictory logics and divergent criteria is the lot of any social system, many studies in the world of work have insisted on the role the organisation could play inside the system (Guérin et al., 1997). Following Clot (1999), in order to improve the refereeing performance, we envisage putting for debate both the constitutive tensions of the refereeing performances and the confrontation of various manners of managing these tensions. Once the prescribed criteria, the different working methods, and the tensions that constitute the performance are debated collectively, then they become important tools not only for developing the performance but also for constructing the art of the trade.

References
Concepts of communication and interaction in sport officiating

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Key-words: Sport officiating, communication, skilled interaction, dramaturgical sociology, training & development

Most officiating research has come from sport science and psychology, sport management, economics and law. Topics of most interest to officiating scholars have been recruitment and retention, stress and coping, physiological demands and decision-making. Most of the few studies on officiating communication use a “transmission” model to understand best ways to deliver decisions (Mellick, Bull, Laugharne, & Fleming, 2005; Simmons, 2010) and ideal officiating displays and attitudes (Dosseville, LaBorde, & Bernier, 2012; Simmons, 2011).

The study aimed to establish a deeper theoretical foundation for conceptualising officiating communication and make recommendations for improving the development of communication in officiating. Research on officiating communication has gathered information mostly from officials (especially of high experience, or status) and focused on one or two sports at a time. The aim here was to explore communication principles that exist across sports and incorporate different viewpoints from the practice community.

Method

Study phase #1 - Conceptualising sport official communication: Officiating development managers and coaches have said communication and interaction skills are difficult to teach. Officials learn their communication through a ‘hidden curriculum’ involving experience and advice from peers, mentors and coaches (Mellick, et al., 2005). The first phase sought to understand ways that development managers and coaches for Australian officials (n=11) conceptualise officiating communication, and how they view officials become better communicators and what they can contribute to that process. Interviews yielded four main themes in conceptualisations of communication and player management in sport officials; personal qualities that officials generally bring to officiating; impression management and mastery of one-way communication techniques and behaviors; monitoring situations and people; and skilled interaction, or ability to adapt appropriately to different situations (Cunningham, Simmons, Mascarenhas, & Redhead, 2014). Interviews with representatives from soccer, rugby union, Australian rules football, rugby league, hockey, basketball, and netball identified a mismatch between what they believe to be priorities (i.e., skilled monitoring and interaction), and current communication training provided to officials (which tend to neglect interpretive and interactive dimensions). The research questioned the dominance of transmission models of communication and highlighted other higher-order communication competencies and capacities (reading and interpreting players, skilled and contextual interaction) necessary to officiating.

It’s about interaction - This finding led the second phase of the study to a purposeful focus on interaction. Most communication training begins with an increased understanding about those with whom we communicate. Other fields (e.g., medicine, policing, teaching) where the study of communication is more advanced can help us to better understand the communication and interaction demands upon sport officials. Erving Goffman (1959; 1967; 1969) addressed interaction over years of study and his ideas have been used to understand professional identity
and interaction contexts in different occupational and institutional settings such as sport coaching (Wilson, 2013), restorative justice conferences (Bruce, 2013) and medical profession discourse with patients (Barton, 2004). He developed concepts through a dramaturgical vocabulary to describe impression management in face-to-face behaviour and other ritual ways we present ‘self’ to others. Two of Goffman's popular concepts, ‘front-stage’ and ‘back-stage’, describe parts of a person’s social interaction which function in general, fixed or adaptive fashion in the presence of others. From this perspective, 'communication' focuses on the meaning constructed from and through interactions and addresses the variety of motivational, strategic, and evaluative influences of the communication context. These ideas offer important considerations when studying the complexities of player-official interaction and player management.

**Study phase #2 - Player communication in interaction:** In the second phase, the study sought to understand the perspective of players in interaction with officials and improve understanding about differences in players’ attitudes and approaches to interacting with officials. It explored the types of interaction that emerge in player-official encounters including motivations and intentions of players in interaction and ways they manage impressions to officials. A video elicitation interviewing technique was used. Participants were player captains (n=11) from grassroots to national level and different ‘interactor’ officiating sports (MacMahon & Plessner, 2008). Recordings of player-official interaction were presented to trigger discussion about players’ attitudes and opinions about player-official encounters. Player attitudes to interactions were found to range from fatalistic acceptance of whatever the official decides, through selective challenge and complaint, to continuous opportunism. Players attempt to influence officials directly and indirectly through complaining, questioning, flattery or praise.

**Discussion**
This two-phase study emphasises dialogic and interactionist approaches to communication and uses an interpretive and generative methodology drawing on symbolic interactionism and a constructivist view of communication skills. It contributes to our understanding of the complexity of the task of officiating by revealing other inter-subjectivities and relational properties that underlie communication acts in sport interactions (Goffman, 1967), beyond a focus on the individual and their psychology. Findings contribute new knowledge about communication and interaction demands upon officials and support future practice-led innovations for communication development in officiating.

**References**


Coaching program of French elite rugby referees

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Key-words: Rugby, referees, coaching, accompanying program

Until recently, rugby was considered as a conservative sport. However, since the end of 90’s, its growing economic and sportive attractiveness led to its professionalization. Consequently, various stakeholders such as players, coaches, head managers and referees have seen their own role change. Requested by The « Direction Technique Nationale de l’Arbitrage » (DTNA) of the French Rugby Federation (FFR), we conducted an analyse focused on the specificity of referee’s activity and more precisely on its evolution. The challenge was to find the best way to support the transition toward progressive professionalization. Creating a program of support system for referees operating within the Pro D2 and the Top 14 turned out to be one of the most suitable solution. Witch forms this support should take to be the most effective and adapted to the requirements imposed by elite rugby refereeing but also to be the guarantor of referees’ image and well-being? Mentoring, tutoring, coaching, training? What are the key success factors of such a device and its blind spots? What lessons can be learned from what we know about the accompanying devices in business and in particular the coaching?

Method
The specificity of this research lies in its methodological framework. We aimed to provide with both a scientific interest and a great relevance for the action. Thus we conducted this research through a process of "action-research". Data were collected by means of participants’ observation and semi-structured, non-participating and exploratory interviews, essentially. The theoretical framework was based on a critical analysis of the literature focused on the different accompanying programs in business and sport and more specifically on coaching and mentoring.

Results and Discussion
The present accompanying selected program was tailor made for the rugby referees. Thus we built a hybrid model at the crossroads of coaching and mentoring. Coaches (so called for simplification) now retired were former top referees. Their legitimacy is based on their expertise, most of them had a recognised international standing. In order to regulate the coaching practice, we are currently developing a Charter. The results of the first three-years evaluation revealed that 92% (24 on 26) of interviewed referees found that the creation of the coaching program was « extremely » satisfying and beneficial for both technical and behavioral aspects. The program was judged helpful concerning setting short- and long-term goals together with their completion. Regular interaction with referees led us to enable future lines of improvement of the present coaching program such as the ongoing training of referees’ coaches.

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A Framework for the Development of Sports Officials

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Key-words: Development, motivation, expertise, skill acquisition

MacMahon and Plessner (2008) and Plessner and MacMahon (2013) presented a categorisation of officials, distinguishing between interactors, monitors, and reactors. This classification considers differences in the amount of movement about the performance space, as well as the number of different perceptual cues that are used during decision making and assessment. Thus, the physical movement, management, communication, and perceptual processing are all accounted for as key demands that differ between the different types of officials such as the soccer referee, gymnastics judge, and tennis line judge. The distinction between different types of officials is helpful in understanding the different demands, which drive training, performance, and assessment (e.g., Hancock & Ste-Marie, 2012). When considering the development of officials, however, MacMahon, Mascarenhas, Plessner, Pizzera, Oudejans, and Raab (2014) have recently acknowledged a further need to distinguish between the different stages of development and participation of sports officials and the associated motives, demands (facilitators and barriers) and needs specific to each stage. For example, some officials who are involved in competition at a regional level are content to remain at this level, whereas others are motivated to move ‘up the ladder’ to an elite level of officiating. The acknowledgment of these different motivations is a key driver for sports which want to meet the goals of both developmental progression and retention. At the same level of participation, for example, some officials may need and desire regular testing and training, while the prime concern for others is removal of barriers to participation, given a lack of available time. To this end, a recent model centred on athlete development, the FTEM (Foundation, Talent, Elite, Mastery) framework (Gulbin, Croser, Morley & Weissensteiner, 2013) was adapted to officiating. The adaptation of the framework to officiating is used to help describe the common ‘routes’ in and out of the officiating development pathway, the types of officials, and the associated demands and developmental requirements at different stages. These stages and categories consider the multidimensionality of the demands and requirements, acknowledging physicality, psychological skills and characteristics, as well as key skills such as decision making. The framework also considers that motivations, salary, and abuse are perceived and negotiated differently depending on the stage or level of officiating. Using characteristics from the foundation (F1-F3), talent (T1-T3), elite (E1-E2), and mastery (M) microstages, four different categories of officials were proposed: Casual/potential (F1, F2); Bread and Butter (F3, T1, T2; Elite Pathway (T3, E1, E2), and Peak (M). Though there is much less formal research on the development of officials compared to that of athletes, the FTEM–Officials framework provides a tool that can be considered in sport- and system-level strategic planning and programming for officials at all levels. This talk will discuss the considerations and present the proposed FTEM-Officials framework in greater detail.

References


Generic Standards for Sports Officials

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**Key-words:** Sports officials, standards, education, training, referees

Sports Officials UK Limited (SOUK), a company guaranteed by the member National Governing Bodies (NGBs) of sports in Britain, has as its main focus the education of sports officials in the generic areas of officiating which are often overlooked particularly by the smaller sports who focus upon sport-specific training. The generic skills are those transferrable between sports, such as managing conflict, ensuring the safety of participants, presenting decisions and so on.

Definition of these generic areas was undertaken by SOUK in conjunction with a British governmental organisation, the Sector Skills Council, which operates under the name SkillsActive. This body has been responsible for defining the skill requirements in many areas of occupation, and its expertise is widely recognised by educators, qualification awarding bodies and employers. Representing SOUK in this development were sports officials and sports officials educators from a wide range of NGBs, so input was received from varieties of sports including Association Football, Rugby Football and Rugby League, Athletics, Swimming, Table Tennis, Badminton, Cycling, Basketball, Tennis, Cricket, Motor Sports, American Football and others. It will be seen that many styles of officiating were represented, but it was agreed that much of the skill set for one were transferrable to any other type of officiating.

This wide grouping was initially responsible for defining the non-sport-specific skills required at the entry level of officiating and for the higher, Regional or National level. It was agreed that although it might be suggested that the National sports official does the same as the entry level official only better, in reality there are some factors which apply to the higher level which would not be expected at the entry level. Thus, the number of headings of standards rose from five at the entry level to eleven at the higher level.

Subsequently, SOUK and SkillsActive were tasked with developing National Occupational Standards for international level officials. It was generally accepted that the demands are not fully understood by those who have not officiated at this level, so the group from SOUK was selected to include only those who had worked at the highest levels within their individual sports. Thus the group creating these NOS comprised Referees, Umpires and Judges who were current or past Olympic or World Championship (or equivalent) officials. The NOS did not simply offer the skill sets previously defined; it seemed clear that anyone officiating at the international level would already be secure in the basic skills. Instead, the definition of what was described as “Officiating at the Elite Level in Sport” addressed only those skills likely to be unique to this level.

Clearly, any discussion addressing the development of excellence in officiating terms needs to have cognisance of these occupational standards as the starting point for any analysis of educational needs. Defining what is actually happening when top referees operate is a valuable exercise; however, it is a mistake to assume that this is therefore the correct way of working. National Occupational Standards start from the attempt to define what should underly the actions of the referee, and should therefore precede any analysis of what the referee does.
Developing and supporting officiating talent in Australia

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Key-words: Profiling, development, intervention, multi-dimensional, mentoring

Studies on expertise and talent development in officiating have identified the importance of ‘deliberate practice’¹², yet there still remains limited practice-based research on which to support development pathways of officials. Further, officiating studies do not often address links between performance topics³ and tend to focus on one or two sports at a time. Future evidence-based research into officiating practice and development should aim to test and evaluate the efficacy of particular approaches and strategies that account for similarities in the demands placed on officials from different sports. The National Officiating Scholarship Program (NOS), instituted and managed by the Australian Sports Commission, represents one case example of a professional development program for officiating talent that connects officials from different sports, and provides individualised mentorship opportunities and specialised, professional education/training. The Australian Sports Commission’s NOS is an accelerated professional development program providing contemporary servicing and improvement on multi-dimensional needs basis for high performance officiating.

This presentation will detail all aspects of the NOS and evolution of the program to the future. It will include details of the demand from sports on targeted officiating programs, profiling and intervention strategies, program review and periodic refinement (that draw on action research principles), the benefits of concurrent mentoring training, tracking and recommendations for sports in development of sport specific programs.

Method

Background- The NOS, first piloted in 2003, was one of the initiatives of the Australian “Year of the Official” campaign. The NOS is a world first professional development program for elite officials which was developed adopting the principles of action research (i.e., plan, act, observe, reflect) to understand, design, assess and adapt the high-performance development culture for officials. The program assists National Sporting Organisations (NSOs) in the development of sustainable high performance pathways, programs, academies and talent pools for officials. NOS scholarships provide professional development for officials identified through these pathways by NSOs with the aim of transitioning them to national or international officiating panels. To date, more than 200 individuals from Australian sports including, but not limited to, Australian Football League, Archery, Cricket, Football, Gymnastics, Hockey, Netball, Rowing, Rugby League, Rugby Union, Swimming, Tennis and Volleyball, have graduated through the NOS. More than 70% of scholars have subsequently been appointed to elite national and international officiating panels. Less than 10% have retired from officiating with 20% still progressing.

Program-The NOS stands apart from other officiating development programs with the philosophy of treating officials as elite athletes, and indeed the program borrows from elite athlete preparation programs. An integral part of the official’s development is a robust mentor education program to support the mentors in their own development, which in turn will benefit the mentees. NSOs identify appropriate mentors with previous or current national/international experience to support development. The role of the mentor is to assist each mentee with their holistic growth⁴. This is achieved by using the skills and experiences of the mentor. Other research supports a holistic approach (accounting for task, individual and environment
constraints) to understand officiating development processes\(^2\) and the especial benefits of mentorship opportunities to officiating development\(^5\).

The NOS is refined continuously and focuses on integration of officials from a broad range of sports. Each successful official undertakes a number of ‘pre-induction’ questionnaires, and assessments. Findings of these screenings assist the intervention and integration strategies of the professional learning. The program provides individual and group learning from officiating/industry specialists on psychology, behavioural profiling, nutrition, recovery, vision, self-regulation, mentoring, media, professionalism, conflict resolution and decision making. Individually, officials attend appointments with the specialists, who follow up with programs, advice and identified individualised professional development. Additional sessions include individual professional development and multi-sport group learnings, exposure to several high profile guest speakers and officiating conversations. Officials attend numerous workshops/professional development sessions throughout the year; these sessions include additional appointments with the program specialists, exposure to live events and intervention discussions with topic experts. Mentors are treated to a separate workshop where they have the opportunity to debrief and discuss their relationships, challenges and successes with the other mentors. The program concludes with a workshop held at the Australian Institute of Sport where officials and mentors share learnings, achievements, challenges and successes. Finalising the workshop the officials are put through a series of testing from lessons learned.

**Results & Discussion**

This presentation discusses an evolved program structure and approach used by Australian Sports Commission to develop and support high-performance officiating talent. It outlines a progressively refined and specialised, professional development program that involves officials from across sports and is mentorship-driven. It shares industry perspective and reflections to help facilitate the design and formal testing of new or similar strategies and challenges sports to re-examine assumptions about officiating development cultures and pathways. Recommendations are made for emphasising an integrated and holistic approach to high-performance officiating development and future opportunities in practice-led research in officiating.

**References**


POSTERS
The legal protection of rugby referees

Introduction

As a real actor in the game the referee is responsible for conducting the meeting. As a result of increasing professionalism the economic stakes have increased and it seems referees are coming under ever closer scrutiny. Their performances and their decisions are analyzed, and are sometimes the object of stringent criticisms. No matter what the level of the game the referee is generally regarded as a figure of authority of which the contestation is an undeniable social fact. An up-to-date assessment is needed of the legal cases in which a referee is verbally or physically assaulted.

Questioning

What are the limits to the contestation referees are subjected to? How can they be managed? What legal regime assures them a protection against infringements?

Method

In France, the referees are supported by the « Union Nationale des Arbitres de Rugby ». This association, created in 1998, can « go to court in order to insure its members’ interests are defended in cases concerning refereeing. »

Since its creation the « UNAR » has brought 120 cases before the courts.

All the cases don’t succeed, either because the facts are not serious enough, or because the case isn’t strong enough to lead to a condemnation.

The law number 2006-1294 of October 23rd clarifies the public utility mission of referees, judges and officials. The State gives all the unions affiliated with the ministry of Sports the task of organizing various competitions. This law assures all match referees and officials the same protection as a sworn official.

But the effects of this law should be analyzed more closely. Indeed, for the studied cases we notice that the sports penalty is more effective than disciplinary measures or fines. In spite of the law the sport commissions take responsibility for defending referees. The courts do not seem to apply this law. So, it would be interesting to assess the relative weights of the sport sanction and the legal penalty.

Statutory aspect: law of July 24th, 1881 relative to the freedom of the media.

Article 29 2nd paragraph: “Any offensive expression, terms of contempt or rail which contains the imputation of no fact is an insult.”

Judicial penalty: $5,000 of damages interests.

Sport penalty: Access forbidden to the stadium for 130 days.

In this case, it would the sports penalty is the most effective punishment. The judicial penalty has no deterrent effect.

The objective is to realize a more complete inventory of all the actions in which rugby referees are involved. To finalize this synthetic collection, it should be known how the archives are organized and make the necessary steps in the courts. Certain obligations such as anonymity or confidentiality will obviously have to be respected. When the judicial decisions have been collected, it will be necessary to note the elements of the prosecution case and those on which the sport tribunals and commissions base their decisions.

Beyond the problem of the legal protection of the rugby referee it is the latter’s legal status that is worthy of examination. Indeed, the referee can be held liable. May the referee be declared at fault? On what grounds?
Nutritional adaptations in referees: a pilot study
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Introduction: Although nutrition is fundamental in sport performance, few data are available regarding the potential relationships and implications between nutritional habits and refereeing performance. DaSilva and collaborators have shown that the energetic demand of refereeing could reach about 800 kilocalories (daSilva et al. 2008) which could represent 25% of total daily energy expenditure. Only one study has investigated the nutritional intake of soccer referees (Teixeira et al. 2014) and shown that their carbohydrate intake was under the recommended values. More information is today needed on nutritional habits of referees to optimize their game performance.

Aim of the study: Our goal was to investigate if refereeing could impact nutritional habits.

Methods: Dietary intake was assessed using a 24h adapted food-frequency questionnaire in 6 soccer referees of different ages and refereeing levels. The evaluation was done during one control day (without match) and during a day with a match. Nutritional intake was analyzed using the Biliut4.0 software. Hunger and stress levels before each meal were assessed thanks to visual analogue scale.

Preliminary results/discussion: Total daily energy intake did not differ significantly between the two conditions but it appears that the referees tended to modify the repartition of the energy consumed between meals (figure 1). Those results are in accordance with those of Teixeira et al. who have also shown the non-adequacy with recommended values.
Appetite feelings were not different between conditions. However we found an increase in stress feelings before the pre-match meal which may explain the observed nutritional adaptations between the two days. This pilot study allows us to better understand how refereeing could impact nutritional intake but we need to increase number of subjects under study to confirm and specify our results.

Key words: refereeing, nutrition, performance, stress

RÉféRENCES

Inquiry on deviance in amateur football: the place of referees in the incidents that marked the matches of the Auvergne Football League (2012-2013)

Theoretical framework
The studies on deviance in football in France and elsewhere are quite numerous. In the field of elite football the phenomenon of hooliganism has produced several publications. In the field of amateur football the studies are more recent and more concerned with those actively taking part. For our inquiry we were inspired by the Atelier Sherpas’ work on violence and incivilities in the Nord-Pas-de-Calais, Champagne Ardenne, and Picardie leagues. But we also made use of the constructivist approach to deviance as theorised by Howard S. Becker in Outsiders (1963). Howard S. Becker proposes an original model analysis (symbolic interactionism) in which the element constituting the deviance is no longer the supposed deviant individual’s behaviour in itself but the fact that society qualifies it as such. The social groups create the deviance by instituting norms of which the transgression constitutes the deviance. Thus, for the purposes of this inquiry we understand by “deviance” everything done that does not comply with the fundamental rules and that are institutionally recognised as such. For the institutions of football five types of incident (verbal violence, physical violence, incivilities, damage to property, acts of a racist nature) correspond to the acts that, owing to their gravity, go beyond the normal framework of the game and according to their precise definition are sanctioned by serious penalties.

Framework of the inquiry and methodological procedures
Our inquiry is centred on verbal violence, physical violence and incivilities, damage to property, and acts of a racist nature. It is confined to the Ligue de Football d’Auvergne (Auvergne Football League) and young categories (U13 to U19). While we have conformed to the types of incidents proposed by the institutions of football, we have not used the automatic recordings that input the data of the FPF’s (French Football Federation) Observatoire des comportements (Behaviour Monitoring Institute). We have quantified and qualified the facts using the match sheets and referees’ reports drafted after the incidents. The incidents were distributed between player categories and broken down according to the number of matches played.

Results
48 incidents are recorded for the 2012-2013 season, all player categories being taken into account. Accordingly, 5% of the matches disputed were troubled by an incident during the season (48/876×100=5.4). The U13, U14, and U15 were noticeably less concerned. 11 incidents were recorded in these 3 categories. In other words, 3% of the U13, U14, and U15 matches were marked by an incident during the season (11/391×100=3). The proportion of incidents is highest among the U17 and U19 years (without distinction between the top two regional divisions [DH and FH]). 37 incidents were recorded in these categories. So 7% of the U17 and U19 matches were marked by an incident during the season (37/485×100=7). The category U17 was most concerned: 19 incidents against 18 with the U19.

Table 1. Offenders and victims of incidents during the season 2012-2013.

<table>
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<tr>
<th>Protagonists of the deviance</th>
<th>Players</th>
<th>Spectators</th>
<th>Managers</th>
<th>Referees</th>
<th>Others</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Offenders</strong></td>
<td>38</td>
<td>3</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>48</td>
</tr>
<tr>
<td>% 876 matches played</td>
<td>4.3%</td>
<td>0.3%</td>
<td>0.8%</td>
<td>0%</td>
<td>0%</td>
<td>5.6%</td>
</tr>
<tr>
<td><strong>Victims</strong></td>
<td>30</td>
<td>0</td>
<td>0</td>
<td>14</td>
<td>2</td>
<td>48</td>
</tr>
<tr>
<td>% 876 matches played</td>
<td>3%</td>
<td>0%</td>
<td>0.2%</td>
<td>2%</td>
<td>0.2%</td>
<td>5.4%</td>
</tr>
</tbody>
</table>

Concerning the offenders and the victims the inquiry shows the players are the main offenders. They are involved in 38 incidents, all categories of players included. In other words, a player is an incident perpetrator in 4.3% of the matches. The players are also the main victims: 30 incidents involve a player as victim. Moreover, 14 cases are listed in which a referee is the victim, i.e. in 1.5% of the matches played, all categories of players included. We find the same configuration in U17 and U19. The players are the main perpetrators and the main victims of the incidents. As for the situations in which the victim is a referee 2 cases are recorded for U19, as against 8 for U17.

Conclusion
This exploratory inquiry shows that deviant acts are residual in the Auvergne Football League (48 incidents). The categories U17 and U19 were most affected. This finding corroborates the statistics developed by the Observatoire des comportements for the 2012-2013 season. Physical and verbal violence are the most common types of incidents. The players are the incidents’ main perpetrators and victims. The referees have a place apart as victims in U17. In this category the incidents against referees do not match the Observatoire des comportements’ finding that the category of the U19s is most concerned. This inquiry shows the advantage of using a method to quantify and qualify the incidents other than that used by the institutions of football and the Observatoire des comportements in particular. It also shows the advantage of developing tools for regulating and preventing incidents that take the results of these analyses into account. However, we are not able to draw up an exhaustive analysis of the incidents marking the Auvergne League junior categories as our inquiry essentially relies on reported evidence.

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