International Journal of Applied Sports Sciences
2016, Vol. 28, No. 1, 31-41.

ISSN 2233-7946 (Online)
ISSN 1598-2939 (Print)
http://pms.sports.re.kr/ijass.jsp

Training, mental preparation and unmediated practice among soccer referees: An analysis of elite and sub-elite referees' reported practice

Rune Giske[1,2]*, Tommy Haugen[2], & Bjørn Tore Johansen[2]
[1]University of Stavanger, Stavanger, Norway
[2]University of Agder, Kristiansand, Norway

Abstract

It has been suggested that highly motivated and passionate referees are more inclined to pursue higher league levels and, thereby, invest more hours in performance preparations and more general soccer activity. However, limited knowledge is available about practice and mental preparation among elite soccer referees. Our study aim was to investigate referees' practice and involvement in unmediated soccer activity. We further sought to examine possible preparation differences between elite and sub-elite referees. Comparing elite with sub-elite referees practice may reveal underlying performance principles that may form a basis for trainings methods facilitating referee performance. The following hypotheses were tested: a) elite referees will report higher frequency of physical and mental training compared with sub-elite referees and b) elite referees will report higher involvement in unmediated relevant soccer activity compared with sub-elite referees. Among the 98 top-class referees in Norway, 83 (84.7% response rate, 73 men and ten women, aged 20–46 years) completed a survey about their training volume and content, mental training and involvement in unmediated soccer activity. Reported training volume and content are consistent with referees' physical demands. Elite referees report significantly greater use of mental training compared with sub-elite referees, while there were no group differences on physical training volume and content or unmediated soccer activity. The results confirm only one of the hypotheses and support the assumption that mental training requires more motivation than physical training even though the latter has quantifiable results that are more regularly measured.

Key words: Soccer, referee, elite, sub-elite, training, unmediated activity

Introduction

Sports science has produced a relatively vast literature on athletes' training and mental preparations for competition. Scientific knowledge related to soccer (football) referees has been sporadic prior to the current millennium and has increased slowly over the last decade (Catteeuw, Helsen, Gilis, & Wagemans, 2009). This general lack of knowledge could be considered odd given that coaches, players, supporters and the media often discuss the referees' performance, sometimes with high emotion. Following a tied home game against Sunderland in October 2009, the famous Manchester United manager Sir Alex Ferguson told the press that 49-year-old referee Alan Wiley "was not fit enough for a game of that standard and that is an indictment of our game" (Johansen, 2015). ProZone analyses revealed

Submitted : 20 August 2015, revised : 02 May 2016
accepted : 31 May 2016
Correspondence : rune.giske@uis.no

that during that game, Wiley actually covered a total distance of 11.039 km (slightly above the average for the players) and maintained an average distance of 17.7 m from the ball; well within the 20 m limit required by the Football Association in the United Kingdom (Szczepanik, 2009).

In recent years, several studies have focused on the activity profile and physical demands of soccer refereeing (Caballero et al., 2011; Helsen & Bultynck, 2004; Krustrup & Bangsbo, 2001; Krustrup, Mohr, & Bangsbo, 2002, 2005; Krustrup et al., 2009; MacMahon, Helsen, Starkes, & Weston, 2007; Mohr, Krustrup, & Bangsbo, 2005; Weston, Bird, Helsen, Nevill, & Castagna, 2006). One study showed that the mean distance covered during international matches of the Union of European Football Associations (UEFA) Champion League and UEFA cup games was 10.3 km by International Federation of Association Football (FIFA) licensed referees and 6.8 km for FIFA licensed assistant referees (Krustrup et al., 2009). There is, of course, a difference between the activity profiles and physiologic demands for referees and assistant referees. Krustrup et al. (2002) found that mean heart rates for referees and assistant referees was 162 (85% of maximal heart rate) and 137 (73% of maximal heart rate) beats/min–1, respectively. This difference is consistent with findings by Helsen and Bultynck (2004) among top-class UEFA referees and assistant referees. Based on these investigators' physical demand categories, referees appear to spend most of their match time in the maximum effort and high-intensity categories, while assistant referees perform predominantly in the high- and low-intensity categories (Helsen & Bultynck, 2004).

Referees' physical capabilities are one of several important predictors of their match performance. The core of referees' performance is the decisions they make, and their capacities for endurance and sprinting are their only means of obtaining sufficient information to make those decisions. Positioning during the game is an important antecedent to making reliable decisions, which they must do continuously throughout the game. However, there are other predictors of a more psychological nature that might be detrimental to their decision process. These may include emotional factors such as stress (Jones, Meijen, McCarthy, & Sheffield, 2007) and self-confidence (Wolfson & Neave, 2007) as well as cognitive elements that may negatively impact the decision process such as heuristics, framing, and anchoring (Tversky & Kahneman, 1973).

Heuristics refers to a decision-making strategy that reduces cognitive load. For example, if a referee is in doubt about whether to show a red or yellow card and uses a rule of thumb to decide on a red card, then both framing and anchoring will be important elements in the decision-making processes and the establishment of perceived justice between the opponents. The specific rules of the game, which can be considered the referees' declarative knowledge, also form the background that the referee must consider in order to achieve errorless enforcement (Poolton, Siu, & Masters, (2011). Kruger, Emekci, Strydom and Ellis (2012) investigated selected predictors of the stress experienced by South African soccer officials and found that concerns about their fitness were rated as the highest contributor, followed by role-culture conflicts.

Mental training refers to systematic and consistent psychological skills practice for the purpose of enhancing performance. Weinberger and Gould (2011) suggest that mental training may include exercises that influence concentration, regulate arousal levels, enhance confidence and maintain motivation. Among elite athletes, mental training such as imagery is used to some extent by at least 90% of Olympic competitors (Murphy, Jowdy, & Durtschi, 1990; Orlick & Partington, 1988). Any form of training towards acquiring self-knowledge involves time and definite goals. Time spent on mental training and trust in these methods requires a certain level of motivation and, according to Behncke (2004), even more motivation than physical-based training that has more quantifiable results that are more regularly measured. There may not be immediate results from mental training, which requires

patience and persistence (Strean & Roberts, 1992). According to Mathers and Brodie (2011), mental skill training is particularly relevant to elite soccer referees. These investigators developed a mental skills programme (which includes development of imagery, positive self-talk and relaxation training as part of a pre-match routine) that has been associated with improvements in refereeing performance.

Mental training is generally considered a performance enhancement procedure but soccer referees' decision-making may also be influenced by other, unmediated practice. Informal discussions with other referees are regarded as a core activity towards establishing a professional identity and practice community (Lave & Wenger, 1991). Playing and watching soccer in combination with causal conversations with coaches are considered potentially productive activities. According to Engström (1987), we will always learn something but the learning might be productive, reproductive, unproductive or even unwanted. Werthner and Trudel (2006) suggest that elite coaches' learning can be understood in terms of mediated, unmediated and internal processes. Applying these concepts to a refereeing context, mediated learning is directed by an instructor or coach whereas there is no instructor present in unmediated learning. Thus, in unmediated learning situations the referee must take the initiative and responsibility for choosing what to absorb. To the best of our knowledge, the extent of such unmediated practice (as opposed to goal-oriented education) has not been dealt with in the soccer referee literature. However, Philippe, Vallerand, Andrianariosa, & Brunel (2009) suggest that soccer referees are highly motivated and passionate about officiating, and their findings shows that league level is related to the strength of this passion. Furthermore, Phillippe with colleagues (2009) argue that this passion to pursue higher league levels leads to investment of more hours in training and preparations, which also seems to be in line with Ericsson's (2006) theory of deliberate practice and expert performance. Following this reasoning, it should be expected that elite referees are exposed for more unmediated learning situations in the same manner as extended physical and mental training.

Purpose

The aims of this investigation of elite Norwegian soccer referees were to assess training volume and content, the application of mental training, and involvement in unmediated soccer practice. We also sought to examine possible differences in these training measures between elite and sub-elite referees, with a view to developing reasonable explanations for the factors that may differentiate top-ranked officials. As such, the following hypotheses were tested: a) elite referees will report higher frequency of physical and mental training compared with sub-elite referees and b) elite referees will report higher involvement in unmediated, relevant soccer activity compared with sub-elite referees.

Methods

Participants

This cross-sectional study was conducted as part of the Norwegian Elite Referees in Soccer study (Johansen & Haugen, 2013). Participants were referees (i.e., referees who are part of the officiating team, including head referees or assistant referees, also known as 'linesmen') from the premier "Tippeliga" league, the second-ranked "Adeccoliga" league for men, and the premier "Toppserien" league for women. Of the 98 top-class referees in Norway, 83 (84.7%) completed the survey. Participants were 73 men and ten women aged 20–46 (mean (sd) = 33.2 (7.2) years). Among the respondents, 32 (out of 40 possible) referees and assistant referees represented the "Tippeliga", 41 (out of 45 possible) represented the "Adeccoliga" and ten (out of 13 possible) represented the "Toppserien". Of these

83 referees, 28 were licensed by FIFA at the time of the study.

Procedure

The Norwegian Social Science Data Services approved the study. Data were collected using SurveyXact (Rambøll Management Consulting A/S Copenhagen, Denmark), a web-based program for electronic survey administration. Links to the questionnaire, which were active for 30 days, were distributed via email to all elite referees ranked and listed by the Norwegian Football Federation (NFF) before the start of the league season. The emails were sent by the NFF chief of the elite referees, who encouraged the referees to take part in the study. The first page of the questionnaire informed the referees of the study's purpose and emphasized that participation was voluntary and anonymous. Responses were managed and made available for scientific use by the researchers at our university.

Instruments

Referee level. Referees were divided into two groups according to their current status: group 1 "Tippeliga"/ "Toppserien" (i.e., elite level) and group 2 "Adeccoliga" (i.e., sub-elite level).

Preparation for officiating. Referees were asked to provide information about their preparation for officiating. This section included questions regarding physical training, mental training and the amount of other soccer-related activities (unmediated learning situations).

Physical training. The total amount of physical training was assessed using a single item ("How often do you do (all kinds of) physical training?") with six response categories (more than once a day; daily; 6 days a week; 4–5 days a week; 2–3 days a week; less than twice a week). Referees were also asked to estimate the duration (in hours per week) of endurance training (e.g., running, cycling, skiing) and sprint-related training (e.g., interval training, strength fitness, playing soccer).

Mental training. Mental training was assessed using a single item ("Are you doing any mental training?") with four response categories (0 – never; 1 – less than once a week; 2 – once a week; 3 – twice a week or more). Referees were also asked, using an open-ended question, to describe what kind of mental training they were doing (if any). The data from the open-ended question regarding mental training were analyzed using a well-specified phenomenological procedure for qualitative research, and results were obtained by bracketing, intuiting, and describing the different types of mental training reported and organized into categories of description (Johansen, 2015). The different categories of description that emerged were studied and regrouped by two colleagues. Out of a total 55 mental training methods reported, three main categories of description emerged; Visualization, Concentration training and Self-talk.

Involvement in unmediated learning soccer activities. In order to investigate the amount of unmediated soccer-related activities, the following five questions were asked: 1) Frequency of football playing ("How often do you play football?"); 2) Officiating at training sessions at senior elite level ("How often do you officiate at football teams' training sessions at senior elite level?"); 3) Contact with football coaches at senior elite level for discussions concerning officiating ("How often do you have interactions with football coaches at senior elite level for discussions concerning officiating football?"); 4) Informal contact with other referees for discussions concerning officiating ("How often do you have informal contact with other referees for discussions concerning officiating football?"); 5) Watching football ("How often do you watch football live, on television, and/or internet?"). All of these items were answered on a four-point scale (0 – never; 1 – hardly ever; 2 – once a week; 3 – twice a week or more). The sum of all five questions was used as a measure of involvement in unmediated learning situations (scale from 0 – 15), with a higher score indicating higher amount of involvement in informal soccer-related activities.

Statistical analyses. Statistical analyses were performed using SPSS software (IBM SPSS Statistics version 19.0 Armonk, NY: IBM Corp.). Descriptive data are presented as median (iqr), mean (sd) or frequency (percentage), according to measurement level and distributional properties. Because the sample also included ten female referees, preliminary analyses were performed to investigate potential differences in the main study variables between the men and women. No such differences were identified. Therefore, all analyses were performed using the complete sample of male and female referees. Categorical data (nominal or ordinal) were hypothesis tested using a chi-square contingency table (Pearson's chi-square). In the cases where expected cell counts were < 5, subsequent hypothesis testing was not performed. An independent sample t-test was used to investigate possible differences in amount of informal soccer-related activities. A p-value of < .05 was considered statistically significant.

Results

As shown in Table 1, one out of ten elite and sub-elite referees engaged in physical training 6 days per week or more. The majority reported physical training for 4–5 days per week (elite 84% and sub-elite 70%, respectively). None of the referees trained fewer than 2 days per week. Moreover, the median (iqr) amount of weekly endurance training was 5 (2) h for elite referees and 4 (3) h for sub-elite referees. The median (iqr) amount of sprint (speed) training was 1 (1) h for elite referees, and 2 (2) h for sub-elite referees.

Table 2 shows the difference between elite and sub-elite referees regarding mental training. There was a statistically significant difference in the prevalence of mental training between groups, with elite referees engaging in mental training more often than sub-elite referees. The data from the open-ended question regarding mental training reveal that visualization was the most used mental training method (32) followed by concentration training (8) and self talk (7). The remaining eight statements were categorized as "other" mental training methods.

Table 3 shows the distribution of responses for the five questions labelled "involvement in unmediated learning situations". When combining the questions into one sumscore representing a total amount of involvement in unmediated learning situations, an independent samples t-test indicated no statistically significant difference between elite and sub-elite referees (Cohen's d = 0.17).

Table 1. *Weekly training frequency according to refereeing level*

		Sub-elite	*Elite	Total
6 days per week or more	n (n_{exp})	5 (4.9)	3 (3.1)	8 (8)
	%	10	10	10
4–5 days per week	n (n_{exp})	35 (37.7)	26 (23.3)	61 (61)
	%	70	84	75
2–3 days per week	n (n_{exp})	10 (7.4)	2 (4.6)	12 (12)
	%	20	6	15

Note. n(n_{exp}) = observed (expected). Potential group difference not tested, because three cells have expected count less than 5.

Table 2. *Prevalence of mental training according to refereeing level*

		Sub-elite	*Elite	Total
Weekly or more often	n (n_{exp})	17 (18.8)	13 (11.3)	30 (30)
	%	34	44	38
Less than weekly	n (n_{exp})	12 (15.6)	13 (9.4)	25 (25)
	%	24	43	31
Never	n (n_{exp})	21 (15.6)	4 (9.4)	25 (25)
	%	42	13	31

Note. n (n_{exp}) = observed (expected), *statistically significant difference between elite and sub-elite; Chi-square (*df*) = 7.61 (2), p = 0.02

Table 3. Descriptive characteristics of involvement in unmediated learning situations according to refereeing level

		2 / week or more	1 / week	Rarely	Never	M (SD)
Playing soccer	Sub-elite	3	7	26	14	
	Elite	1	4	19	7	
Officiating at training	Sub-elite	0	8	18	24	
	Elite	0	1	16	14	
Interaction with coaches	Sub-elite	0	3	33	14	
	Elite	0	1	18	12	
Informal contact with referees	Sub-elite	9	28	13	0	
	Elite	9	13	9	0	
Watching soccer	Sub-elite	24	22	4	0	
	Elite	12	14	5	0	
Sumscore[¥]	Sub-elite					6.8(2.08)
	Elite					6.4(1.99)

Note. Values are reported as N (frequency) and Mean (Standard Deviation). Total number of elite referees = 31, total number sub-elite referees = 50. [¥] No significant difference between sub-elite and elite referees (independent samples t-test; $t(df)$ = -0.73(79), p = .47

Discussion

The aim of this study was to investigate elite soccer referees' training volume and content, application of mental training, and involvement in unmediated soccer practice. Beside the description of practice, a comparison of elite and sub-elite referees might reveal underlying performance principals that may form a basis for trainings methods facilitating improvement. Among our sample, 85% of referees report that they practice more than 3 days per week and 77% report that they engage in more than 3 h of endurance training per week. Furthermore, sprint training seems to be prioritized, since only two out of 82 respondents reported that they did not prioritize that kind of training. When exposed to physical tests measuring both their endurance and speed, the referees' general reported training volume and content seem to be coherent with the requirements (Caballero et al., 2011; Helsen & Bultynck, 2004; Krustrup & Bangsbo, 2001; Krustrup et al., 2002, 2005; Krustrup et al., 2009). Compared with premier league Norwegian soccer players who report a daily average of 2.5 h of football practice (Toering & Jordet, in press) it can be argued that the referees' training volume is too small. However, it must be considered that endurance and sprint capacity are the only prerequisites for referee performance and that these give the referee an opportunity to gather relevant knowledge in the referee situation.

In general, most of the referees reported training volume and content considered sufficient to accomplish the Norwegian Football Association requirements and small variations in key variables such as training volume and content should be expected. However, recent research shows that self-reported physical activity compared with results from accelerometry differs, and that these differences increase with higher activity and intensity level (Dyrstad, Hansen, Holme, & Anderssen, 2014). Thus, there is a question about the validity of self-reported training volume and content. Although it can be argued that a more nuanced measurement may have greater potential to identify variation between the groups, it is still only considered as a prerequisite performance variable that is unlikely to have the potential to discriminate between elite and sub-elite proficiency. Observations of referees have shown that running backwards is common, while assistant referees

mainly sprint sideways (Krustrup et al., 2009) suggesting that future testing and training surveys should include these movement patterns.

Orlick and Partington (1988) showed that of the three major readiness factors—mental, physical and technical—only mental readiness was significantly related to final Olympic ranking. Mental training, such as imagery, is used to some extent by at least 90% of Olympic competitors (Murphy et al., 1990), while 69% of the referees in the present study report that they practice mental training. The open-ended question about the content of mental training revealed that visualization emerges as the most frequent used method among the referees (approximately 60% of the statements). Our results show a significant difference between elite and sub-elite referees, with 13% of elite referees reporting that they never practice mental training compared with 42% in the sub-elite group. These findings are consistent with those of Slack, Maynard, Butt and Olusoga (2013), who interviewed English Premier League referees and found that motivation or dedication among elite referees emerged as an important element underpinning football officiating excellence. Compared with 90% of Olympic competitors who use mental training (Murphy et al., 1990) a similar proportion (87%) of our elite referee group reported doing so. This finding supports Behncke's (2004) assumption that a certain level of motivation and trust in these methods are required to spend time on mental training. In the elite group, more referees have a higher motivation compared with the sub-elite group and they may overcome the fact that the effects of mental training are not immediate and instead require patience and persistence (Strean & Roberts, 1992). Behncke (2004) has also suggested that mental training requires more motivation than physical training, for which quantifiable results are more frequently measured.

The present findings support this contention since there were no significant differences between elite and sub-elite referees' reported physical training, while elite referees reported more extensive use of mental training than sub-elite referees did. Comparing the results of both mental and physical training between these groups reveals that the elite referees are more homogeneous; in other words, there are fewer individuals who self-reported on the lower levels of the scale. This finding is expected because they are ranked as the most skilled referees and less physical and mental practice may impair their performance and exclude them from the elite group. Hence, Johansen and Haugen (2013) found in their study of the same elite soccer referees that this group reported higher anxiety scores than did sub-elite referees. One may conclude that the mental training conducted by the elite referees is not only required for their performance level but also to maintain their status as top-class referees. Moreover, Tables I and II display that many (n = 17) of the referees in the sub-elite group practice mentally and physically just as much as the referees in the elite group, possibly indicating that they may become members of the elite group. However, as displayed in Table II, 42% of this group never practice mentally, and this might be an expression of their satisfaction with their performance level and that they are unwilling to invest greater effort to become an elite referee.

Gould, Giannini, Krane and Hodge (1990) have shown that experience with and observation of other successful coaches is among the most important ways that coaches develop their coaching style. Such practice can be conceptualized as unmediated and internal learning processes using Werthner and Trudel's (2006) terminology, and may indicate that unmediated learning processes are important in sports science. The results in Table III show that 73% of the referees play soccer to some extent, while 89% watch soccer matches weekly or more often. All of the respondents reported that they participated in some level of informal discussion with other referees and 73% reported doing so weekly or more often. These activities are regarded as important and as contributing towards establishing a professional identity and community of practice (Lave & Wenger, 1991). The relationship between elite coaches and

referees can be tense at times during matches but the tendency displayed in Table III suggests a small extent of connection between them after the matches. The findings in Table III show that this connection occurs occasionally and only four of the 82 referees reported that it occurred weekly. More frequent connections between elite coaches and elite referees might be problematic in that it could generate suspicion about a lack of integrity; our results indicate that the referees make a point of balancing this. Engström (1987) argues that we will always learn something, but the learning direction might be productive, reproductive, unproductive or even unwanted. In general, our findings revealed that referees are involved in a number of unmediated processes by which they may be influenced. As far as we know, the extent of this unmediated practice (non-goal-oriented education) has not been dealt with in soccer referee literature. It appears from our findings that it is important for referees to take the initiative and the responsibility for choosing what to learn in unmediated learning situations and to ensure that these are productive activities.

Limitations and strengths

One of the major study strengths was the participation rate. The entire population was invited and approximately 85% of all Norwegian elite referees participated. Although the sample size may be considered moderate (n = 83), the high percentage of the total population who participated is impressive. Whether answers are biased because of social desirability, and the tendency of respondents to answer questions in a favourable manner (King & Bruner, 2000), are aspects that remain unknown. Although participation was voluntary and responses were anonymous, we should note that respondents received an email from the chief referee in Norway encouraging them to participate. This may have affected the response rate. Even though the variables in the present study were based on self-reporting, there are several procedures that can be used to reduce methodological bias from social desirability (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). First, one can assure respondents that their answers are completely anonymous. Second, it can be made clear that there are no right or wrong answers and that respondents should answer the questions as honestly as possible. Both of these recommendations were followed in this study.

The validity of the measure “unmediated learning situations” can be question because there might exist other activities that might be relevant, but which is not included in the index. The cross-sectional design of the study limits interpretation of causality, so future research should use longitudinal designs. However, access, predictability, and the number of elite referees available are major obstacles to such a design.

Conclusion and directions for future research

The findings from the present study show that referees report training volumes and content consistent with the physical requirements for refereeing. Elite referees report significantly greater use of mental training than do sub-elite referees. There was no difference between groups’ reported physical training volume and content or the extent of their participation in unmediated soccer activity. These results confirm only one of the proposed hypotheses and support the assumption that mental training requires more motivation than physical-based training, which has quantifiable results that are measured on a more regular basis.

Additional research is warranted to replicate these findings among other referees (e.g., in other countries) and to more firmly establish the roles that physical fitness and mental readiness play in refereeing soccer and other sports. Involvement in unmediated learning may provide referees with a better understanding of soccer in general and of their role as referees during vital sequences of a soccer game in particular. Slack et al. (2013) argue that self-analysis or performance

reflections were a factor in achieving refereeing excellence. Schön (1983) describes two types of reflections: reflections in action and reflection on action. Based on this, referees should be encouraged to reflect on their game decisions and on mediated and unmediated learning processes that affect their decision-making process.

Future studies should also investigate the sources of knowledge used by soccer referees when dealing with complicated match situations. Different real-life contextual experimental designs such as observation of referees and their decision-making process in game conditions are required. Experts in a domain are characterized by greater use of intuition in their decision-making compared with non-experts (Klein, 2009) and Giske, Benestad, Haraldstad and Høigaard (2013) showed that coaches with elite coaching experience seem to have a greater preference for intuitive and rational decision-making styles than do other coaches. Video stimuli-recall interviews, in which referees are exposed to their own decisions during the game, might also shed light on the decision-making process. Such next-step knowledge may clarify which aspects of physical and mental preparation are most effective in developing soccer refereeing skills.

References

Behncke, L. (2004). Mental skills training for sports: A brief review. Athletic Insight: The Online Journal of Sport Psychology, **6**(1), 1-19.

Caballero, J. A. R. et al. (2011). Physiological profile of national-level Spanish soccer referees. International SportMed Journal, **12**, 85–91.

Catteeuw, P., Helsen, W., Gilis, B., & Wagemans, J. (2009). Decision-making skills, role specificity, and deliberate practice in association football refereeing. Journal of Sports Sciences, **27**, 1125–1136.

Dyrstad, S. M., Hansen, B. H., Holme, I. M., & Anderssen, S. A. (2014). Comparison of self-reported versus accelerometer-measured physical activity. Medicine and Science in Sports and Exercise, **46**, 99–106

Engström, Y. (1987). Learning by expanding: An activity-theoretical approach to developmental research. Helsinki. Orienta-Konsultit.

Ericsson, K.A. (2006) The influence of experience and deliberate practice on the development of superior expert performance. In K.A. Ericsson, N..Chareness, R.R Hoffman, & P.J. Feltovich (Eds). The Cambridge handbook of expertise and expert performance. New York: Cambridge University Press.

Giske, R., Benestad, B., Haraldstad, K & Høigaard, R. (2013). Decision-making styles among Norwegian soccer coaches: An analysis of decision-making style in relation to elite and non-elite coaching and level of playing history. International Journal of Sport Science and Coaching, **8**, 689-701

Gould, D., Giannini, J., Krane, V., & Hodge, K. (1990). Educational needs of elite U.S. national team, Pan American, and Olympic coaches. Journal of Teaching in Physical Education, **9**, 332–344.

Helsen, W., & Bultynck, J. B. (2004). Physical and perceptual-cognitive demands of top-class refereeing in association football. Journal of Sports Sciences, **22**, 179–189.

Johansen, B. T., & Haugen, T. (2013). Anxiety level and decision-making among Norwegian top-class soccer referees. International Journal of Sport and Exercise Psychology, **11**, 215–226.

Johansen, B. T. (2015). Reasons for officiating soccer: The role of passion-based motivations among Norwegian elite and non-elite referees. Movement & Sport Sciences. doi: 10.1051/sm/2014012

Jones, M., Meijen, C., McCarthy, P. J., & Sheffield, D. (2009). A theory of challenge and threat states in athletes. International Review of Sport and Exercise Psychology, **2**, 161–180.

Klein, G.A. (2009). Streetlights and shadows. Searching for the keys to adaptive decision making. Cambridge: MIT Press.

Kruger, A., Emekci, R., Strydom, G., & Ellis, S. (2012). Stressors among South African soccer officials: A profile analysis. South African Journal for Research in Sport, Physical Education and Recreation, **34**, 53–62.

Krustrup, P., & Bangsbo, J. (2001). Physiological demands of top class soccer refereeing in relation to physical capacity: Effect of intense intermittent exercise training. Journal of Sports Sciences, **19**, 881–891.

Krustrup, P., Helsen, W., Randers, M. B., Christensen, J. F., MacDonald, C., Rebelo, A. N., & Bangsbo, J. (2009). Activity profile and physical demands of football referees and assistant referees in international games. Journal of Sports Sciences, **27**, 1167–1176.

Krustrup, P., Mohr, M., & Bangsbo, J. (2002). Activity profile and physiological demands of top-class soccer assistant refereeing in relation to training status. Journal of Sports Sciences, **20**, 861–871.

Krustrup, P., Mohr, M., & Bangsbo, J. (2005). Physical demands during an elite female soccer game: Importance of training status. Medicine & Science in Sports & Exercise, **37**, 1242–1248.

Lave, J., & Wenger, E. (1991). Situated learning. Legitimate peripheral participation. New York, NY: Cambridge University Press.

MacMahon, C., Helsen, W. F., Starkes, J. L., & Weston, M. (2007). Decision-making skills and deliberate practice in elite association football referees. Journal of Sport Sciences, **25**, 65–78.

Mathers, J. F., & Brodie, K. (2011). Elite refereeing in professional soccer: A case study of mental skills support. Journal of Sport Psychology in Action, **2**, 171–182.

Mohr, M., Krustrup, P., & Bangsbo, J. (2005). Fatigue in soccer – a brief review. Journal of Sports Sciences, **23**, 593–599.

Murphy, S., Jowdy, D., & Durtschi, S. (1990). Report on the US Olympic Committee survey on imagery use in sport. Colorado Springs, CO: US Olympic Training Center.

King, M. F., & Bruner, G. C. (2000). Social desirability bias: A neglected aspect of validity testing. Psychology and Marketing, **17**, 79–103.

Lave, J., & Wenger, E. (1991). Situated learning. Legitimate peripheral participation. New York, NY: Cambridge University Press.

Orlick, T., & Partington, J. (1988). Mental links to excellence. The Sport Psychologist, **2**, 105–130.

Philippe, F. L., Vallerand, R. J., Andrianarisoa, J., & Brunel, P. (2009). Passion in referees: Examining their affective and cognitive experiences in sport situations. Journal of Sport & Exercise Psychology, **31**, 77-96.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. Journal of Applied Sport Psychology, **88**, 879–903.

Poolton, J., Siu, C., & Masters, R. (2011). The home team advantage gives football referees something to ruminate about. International Journal of Sports Science and Coaching, **6**, 545–552.

Schön, D. A. (1983). The reflective practitioner: How professionals think in action. New York, NY: Basic Books.

Slack, L. A., Maynard, I. W., Butt, J., & Olusoga, P. (2013). Factors underpinning football officiating excellence: Perceptions of English premier league referees. Journal of Applied Sport Psychology, **25**, 298–315.

Strean, W. B., & Roberts, G. C. (1992). Future directions in applied sport psychology research. The Sport Psychologist, **6**, 55–65.

Szczepanik,N.(2009).http://www.timesonline.co.uk/tol/sport/football/article6862416.ece. (07.10.2009)

Toering, T., & Jordet, G. (2015) Self-control in professional football players. Journal of Applied Sport Psychology. doi: 10.1080/10413200.2015.1010047

Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. Cognitive Psychology, **5**, 207–232.

Weinberg, R. S., & Gould, D. (2011). Foundations of sport and exercise psychology. Champaign, IL: Human Kinetics.

Werthner, P. & Trudel, P. (2006). A new theoretical perspective for understanding how coaches learn to coach. The Sport Psychologist, **20**, 198–212.

Weston, M., Bird, S., Helsen, W., Nevill, A., & Castagna, C. (2006). The effect of match standard and referee experience on the objective and subjective match workload of English Premier League referees. Journal of Science and Medicine in Sport, **9**, 256–262.

Wolfson, S., & Neave, N. (2007). Coping under pressure: Cognitive strategies for maintaining confidence among soccer referees, Journal of Sport Behavior, **30**, 232–247.