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THE EFFECT OF REFEREEING AND PLAYING EXPERIENCE ON THE LEVEL OF SELF-EFFICACY FOR HANDBALL REFEREES: NATIONAL AND INTERNATIONAL REFEREES

Khaled E. Alsharji, Mohammed F. Alkatan, Abdullah A. Akbar, Hasan A. Ahmad

Department of Physical Education, College of Basic Education, Public Authority for Applied Education & Training (PAAET)

Kuwait



Abstract: Few studies have examined referee self-efficacy in a competitive situation such as team handball. The aim of this study was to examine the relationships between handball playing and refereeing experience and referee self-efficacy as well as to investigate the differences in self-efficacy between international and national handball referees. Handball referees were conveniently selected during the 18th Asian Men's Handball Championship 2018 and the 2017-2018 Kuwaiti Handball League. Participants completed an in person demographic information questionnaire as well as the 13-item Referee Self-Efficacy Scale (REFS) ([Myers, Feltz, Guillén, & Dithurbide, 2012](#)) which assesses Game Knowledge (GK), Decision making (DM), Pressure (PR), and Communication (CM). There were significant positive correlations for all Referee Self-Efficacy Scale dimensions with years of refereeing experience. Past playing experience was correlated with DM. Number of officiated matches in the last 12 months were significantly correlated with DM and CM. International referees were significantly more confident in their decision making; in dealing with pressure; and in their

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communication abilities. Expertise as an effective factor for enhancing self-efficacy was confirmed and referees should focus on developing technical, physical, and psychological skills in order to achieve superiority in refereeing. Self-efficacy can be used to differentiate expert from less-experienced handball referees.

Keywords: Self-efficacy; Handball refereeing experience, Handball playing experience.

Introduction

Referees make important decisions influencing the direction of the game ([Lirgg, Feltz, & Merrie, 2016](#)). They are a critical part of competitive sports not only because of their impact on players' behaviors and the outcome of games, but also because they ensure that competitions are conducted safely and according to specific rules ([Philippe, Vallerand, Andrianarisoa, & Brunel, 2009](#); [Warner, Tingle, & Kellett, 2013](#)). In team sports, referees make multiple, crucial, quick decisions under pressure. One of the most difficult and onerous roles in organized sports, referees must pay attention to multiple tasks within the game, resolve disputes, and accept critiques from players, coaches, managers, and fans all while maintaining their confidence and behavior under socially evaluated conditions ([Myers et al., 2012](#)).

Given the complexity of techniques and the high speed of the game, team handball is considered a difficult team sport to officiate ([Tsorbatzoudis, Kaissidis-Rodafinos, Partemian, & Grouios, 2005](#)). It is a fast-based, dynamic, complex, high impact sport played by a team of seven players on an indoor 40 X 20-meter court. Under high pressure, handball referees must manage a physical game that is played

in a narrow area while keeping themselves as close as possible to the players, coaches, and team officials' actions. Handball referees must make precise, quick decisions to determine whether the team members actions respect team handball rules.

To make accurate decisions and easily cope with pressure, handball referees must possess certain physiological ([da Silva et al., 2010](#)) and psychological characteristics ([Macra-Osorhean, Lupu, & Bud, 2012](#)). Experienced referees believe there is a series of psychological characteristics that distinguish the most successful referees from their colleagues and that these characteristics account for 50 - 70% of a referee's performance ([Weinberg & Richardson, 1990](#)). Thus, handball referees make quick, accurate decisions on a series of rapid events; to make successful decisions and reach the highest level of refereeing demands a specific set of skills and characteristics.

Having confidence in one's ability within the handball arena is not restricted to players and coaches, but certainly applies to referees as well. Positive self-efficacy can improve referees' confidence in performing their tasks ([Nazarudin et al., 2014](#)). Referee self-efficacy, which was conceptualized within the self-efficacy theory, seems to influence referees' behavior, satisfaction, stress, and performance which, in turn, affects athlete rule violations and coach behaviors ([Diotaiuti, Falese, Mancone, & Purromuto, 2017](#)). Referee self-efficacy is defined as the perception the referee has of his own capacity to perform tasks related to his/her job requirements ([Guillén & Feltz, 2011](#)). Based on self-efficacy theory and self-efficacy research in sport, researchers proposed that highly successful referees are more accurate in their decisions, effective in their performance, committed to their career, and respected by coaches, administrators, and other officials while also experiencing less stress from

officiating than less successful referees ([Guillén & Feltz, 2011](#)). On the other hand, they proposed that a lack of efficacy can bring about a loss of attention which can elicit more mistakes, slower reactions, higher stress and increased burnout.

Following the conceptual framework for referee self-efficacy ([Guillén & Feltz, 2011](#)), Myers and colleagues created the Referee Self-Efficacy Scale (REFS) consisting of 13 items assessing four factors: Game Knowledge (GK, confidence in knowledge of the sport), Decision making (DM, confidence to make decisions), Pressure (PR, confidence to be uninfluenced by pressure), and Communication (CM, confidence to communicate effectively) ([Myers et al., 2012](#)). They validated the scale using referees from five team sports (i.e., basketball, volleyball, soccer, roller hockey, and football) including those from youth to professional sports. The dynamic and speed of the game, size of the court, and the competitive interaction between teams in basketball is, to a large extent, similar to team handball. Thus, REFS (i.e., GK, DM, PR, and CM) used in previous studies is applicable for handball referees. For instance, during competitions a referee must be confident of their ability to understand the tactical and technical aspects of the game (GK); to make quick, precise decision (DM); to cope with multiple forms of pressure (PR); and to communicate (CM) properly with players, coaches and team officials. In addition, REFS's dimensions are similar to those dimensions of the handball referee post-game evaluation includes dimensions such as communication, personality, and managing behavior.

Referees' expertise is central to their self-efficacy. Consistent with self-efficacy theory and Sources of Sport Confidence Questionnaire (SSCQ) ([Vealey, Garner-Holman, Hayashi, & Giacobbi,](#)

[1998](#)): researchers proposed that sources of referee self-efficacy include mastery experience (e.g., years of referee experience, highest level refereed), significant others, mental and physical preparation, and vicarious experience (e.g., years of handball playing experience)([Myers et al., 2012](#)). They suggested that mastery of experience would be the most influential in referee self-efficacy. However, perceptions of efficacy are influenced not only by referring experience, but also by past-experience, verbal persuasion, vicarious and imagined experiences, as well as physiological and affective states([Lirgg et al., 2016](#)).

Despite the increase in literature describing sport referees, very few studies have examined referee activity in a competitive situation such as team handball. To our knowledge, assessing referees' self-efficacy during high level competitions has not yet been investigated. In addition, a comparison between expert and less-experienced referees in terms of self-efficacy is warranted. Therefore, the aim of this study is twofold:

- (1) To examine the relationships between referee self-efficacy and handball past-playing and refereeing experience.
- (2) To investigate the differences in self-efficacy between international (experts) and national (less-experienced) handball referees.

Materials and Method

Participants

Forty handball referees were conveniently selected during the 18th Asian Men's Handball Championship 2018 in South Korea, and during the 2017-2018 Kuwaiti Handball League. Twenty

international (from Iran, Bahrain, China, South Korea, Japan, Germany, Serbia, Jordan and Iraq) referees (16 males and 4 females) who had been certified by the International Handball Federation (IHF) were included as International Referees. The remaining 20 referees were male National Referees from Kuwait Handball Federation. All referees read and speak proper English, as all promotion tests for handball referees are in English. Ethical approval was attained from the Asian Handball Federation (AHF), and the Kuwait Handball Federation (KHF). Informed written consent was obtained from all participants. Written informed consent was obtained prior to subject participation.

Materials

Participants completed an in person demographic information questionnaire as well as the Referee Self-Efficacy Scale (REFS) ([Myers et al., 2012](#)). The scale includes four dimensions, each of which includes three items except for the last dimension which includes four items. The four dimensions are:

- Game knowledge (GK): the confidence that a referee has in his/her knowledge of his/her sport.
- Decision making (DM): the confidence that a referee has in his/her ability to make decisions.
- Pressure (PR): the confidence that a referee has in his/her ability to be uninfluenced by pressure.
- Communication (CM): the confidence that a referee has in his/her ability to communicate effectively.

Prior to completing the questionnaire and scale, a full explanation about the aim of the study and clarifications about any dimension/item in the scale were provided for all referees.

Anthropometrics data (age, height, weight) were obtained from all referees. Refereeing, playing

experience, educational level, and number of matches officiated in the last 12 months were self-reported by referees.

Data Analysis

The relationships between variables were determined by Pearson Product-Moment Correlation Coefficients. Two-tailed Independent samples T-tests were used to analyze the differences in self-efficacy (i.e., Game Knowledge, Decision Making, Pressure, and Communication) between international and national referees. Analysis of the data was completed via SPSS 25.0 software (Armonk, NY). Data are reported as mean and standard deviation. Statistical significance was set at $p < 0.05$

Results

The participants (N = 40) had a self-reported mean age of 33.6 ± 4.8 years, height of 1.75 ± 4.8 m, and body mass of $77.2 \text{ kg} \pm 8.6 \text{ kg}$. They had an average of 9.4 ± 4.3 years and 10.3 ± 3.5 years of handball officiating and playing experience, respectively. The participants officiated an average of 33.1 ± 11.3 games in the last 12 months (Table 1).

Table 1

Descriptive statistics for international and national handball referees

	National	International
% smokers	55%	15%
Age	32.9 ± 5.7	34.4 ± 3.9
Height (m)	$1.74 \pm .07$	$1.76 \pm .09$

Weight (kg)	78.6 ± 6.9	76 ± 6.5
BMI (kg/m ²)	26.1 ± 3.3	22 ± 1.7
Refereeing experience	6.7 ± 3.5	12.1 ± 3.2
Playing experience	8.9 ± 3.4	11.8 ± 3.1
Local matches	22.7 ± 2.5	26.6 ± 2.3
International matches	N	**17 ± 3.9
Total matches	22.7 ± 2.5	43.6 ± 5.1

Note: local matches = local matches officiated in the last 12 months, international matches = international matches officiated in the last 12 months, total matches = local matches + international matches

A Pearson's product-moment correlation assessed the relationship between Referee Self-Efficacy Scale's dimensions (i.e., Game Knowledge, Decision Making, Pressure, and Communication) and years of refereeing experience, number of officiated handball games in the last 12 months, years of playing experience, educational level and age. There were no significant relationships between any dimension of the self-efficacy scale and educational level or age ($p > 0.05$).

Years of Referring Experience

There were significant positive correlations for all Referee Self-Efficacy Scale dimensions with years of refereeing experience, as seen in Table 2. There was a moderate correlation between years of referring experience and GK. In addition, there was a strong correlation between years of referring experience and DM. Years of refereeing experience was significantly correlated with PR and with CM.

Years of Playing Experience

Past playing experience of current referees weakly correlated with game GK and PR. However, there was a significant moderate relationship with DM and CM (Table 2).

Officiated Matches in the Last 12 Months

Number of officiated matches in the last 12 months was significantly correlated with DM and CM, but not with GK and PR. There was a moderate positive correlation with DM. Likewise, a strong significant correlation was found between number of officiated matches and CM (Table 2).

Table 2

Pearson correlations for main study variables

	Game Knowledge (GK)	Decision Making (DM)	Pressure (PR)	Communication (CM)
Referring Experience	.339*	.564**	.519**	.494**
Playing Experience	.109	.372*	.146	.416**
Game Officiated in the last 12 months	.152	.544**	.280	.590**

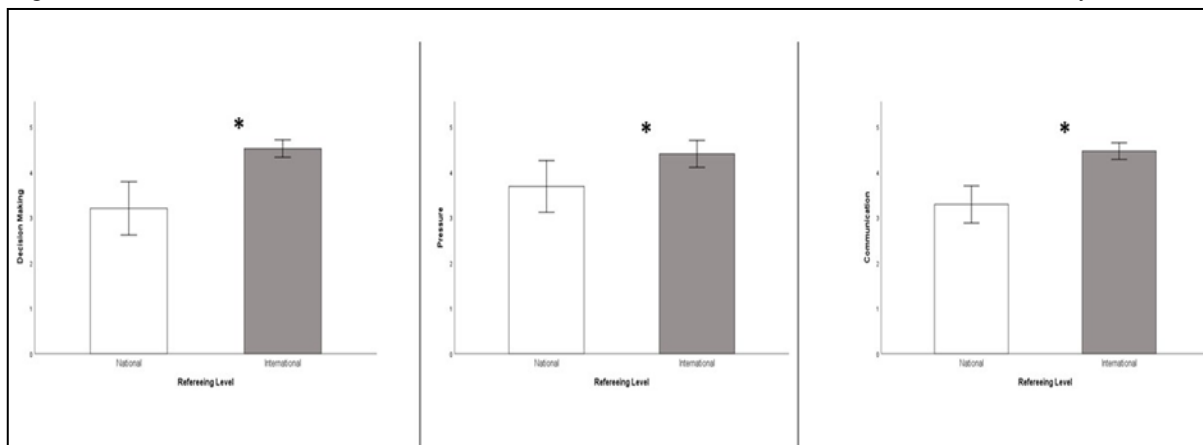
* Correlation is significant ($p < 0.05$)

** Correlation is significant ($p < 0.01$)

International vs. National Handball Referees

For game knowledge (GK), there were no significant differences between participants in the national and international groups ($M_n = 4.42, SD_n = .388; M_i = 4.58, SD_n = .340$). However, as indicated in Figure 1, international participants ($M_i = 4.52, SD_i = .411$) were significantly more confident in their decision making (DM) than national participants ($M_n = 3.20, SD_n = 1.25$), $M = 1.31, 95\% \text{ CI} [0.72, 1.91], t(38) = 4.462, p = < .001$.

Fig.1 Mean differences between National and International handball referees in terms of self-efficacy's dimensions



In addition, the international participants' confidence in dealing with pressure ($M_i = 4.40$, $SD_i = .636$) was significantly greater than national referees ($M_n = 3.68$, $SD_n = 1.21$), $M = .717$, 95% CI [.095, 1.34], $t(38) = 2.36$, $p = .025$. Finally, the confidence that international participants have in their abilities to communicate effectively was significantly greater ($M_i = 4.46$, $SD_i = .391$) compared with the confidence of national handball referees ($M_n = 3.29$, $SD_n = .875$), $M = 1.18$, 95% CI [.741, 1.61], $t(38) = 5.48$, $p < .001$.

Discussion

To the best of our knowledge, this is the first study to investigate the relationship between referee self-efficacy and experience during competitive championships. The purpose of the study was to examine the relationships between referee self-efficacy and handball past-playing and refereeing experience as well as to investigate the differences in self-efficacy between international (experts) and national (less-experienced) handball referees. The present study confirmed that years of refereeing experience are significantly associated with referee self-efficacy (i.e., game knowledge, decision making, pressure, and communication). However, past-playing experience and number of games officiated in the past 12 months were only associated with Decision Making and Communication. Expertise as an effective factor for enhancing self-efficacy was confirmed by comparing national and international handball referees. International, or expert, referees report greater confidence in Decision Making, Pressure, and Communication compared with national referees. (Figure 1).

It is unsurprising that years of experience is associated with all dimensions of the referee self-efficacy scale; however, based on previous literature ([Lirgg et al., 2016](#)), past-playing experience was

not expected to be significantly correlated with self-efficacy. Practically, however, since handball games are dynamic and complex, making critical judgments on a range of rapid events that occur within a short time frame is very difficult for handball referees and these decisions may largely influence the nature and frequency of transgressive behaviors ([Souchon, Coulomb-Cabagno, Traclet, & Rasclé, 2004](#)). Therefore, relying exclusively on physiological characteristics ([da Silva et al., 2010](#)), psychological characteristics ([Macra-Orsorhean et al., 2012](#); [Tsorbatzoudis et al., 2005](#)), and/or typical refereeing experience are not the only ways to enhance referee self-efficacy. The results indicate that referees must officiate high-level competitions continuously, in addition to their regular routines (e.g., local games, lectures, and practice). Similar to decision making, communication is critical for referees. Effective communication with players, coaches and other officials during handball games is essential for successful refereeing ([Guillén & Feltz, 2011](#)).

Past-playing experience appears to play an important role in enhancing the confidence of referees while making critical decisions and communicating with team members. Referees who had more experience playing handball participated in more playing situations which translates to practical experience and knowledge as referees. Therefore, as current referees, when faced with similar situations, they are able to make quick, precise decisions with greater confidence by using this knowledge and experience from past play. Although, some researchers proposed that years of refereeing experience (i.e., mastery experience) would be the strongest predictor of referee self-efficacy ([Myers et al., 2012](#)), they noted that past playing experience is still an important source of self-efficacy. Our findings confirmed that years of referee experience has a positive association on all dimensions of

referee self-efficacy; however, referees' past playing experience had significant effects on only decision making and communication. Efficacy perceptions are influenced by past-experience, verbal persuasion, vicarious and imagined experiences, and physiological and affective states ([Lirgg et al., 2016](#)).

One of the most fascinating questions within the domain of sport science is whether scientists can differentiate abilities or traits between athletes and non-athletes, or between experts and less-experienced ([Kioumourtzoglou, Kourtessis, Michalopoulou, & Derri, 1998](#)). For many years, maturation or capacity limitations were thought to be the exclusive predictors of the differences between experts and less-experts. However, since the early 1970s, considerable research has strongly implied the importance of maturity suggesting that the role of capacity has been overestimated. The concept of deliberate practice ([Ericsson, Krampe, & Tesch-Römer, 1993](#)) explains the importance of both quantity and quality of practice for achieving superiority in sport or any other domain. Practically, referees should focus on developing technical, physical, and psychological skills in order to achieve superiority in refereeing. In this study, international referees (experts) with extensive refereeing and playing experience showed superiority in their self-efficacy abilities. It has been proposed that compared with less efficacious referees, highly efficacious referees (i.e., international or expert referees) are more accurate in their decisions, more effective in their performance, more committed to their profession, more respected by coaches, administrators, and other officials and experience less stress from officiating ([Guillén & Feltz, 2011](#)). On the other hand, less efficacious refereeing is associated with loss of attention (meaning more mistakes), slower reactions, higher stress and increased burnout. The findings of the current study confirmed that expert referees are superior in their efficacy

performance. The results showed that international handball referees who possess greater refereeing and playing experiences, and who have officiated a greater number of matches, report better self-efficacy.

International referees were more confident than national in their understanding of the basic strategy and rules of the game, and in their understanding of the mechanism of officiating handball (i.e., Game Knowledge). They were also more confident than national referees in making critical and quick decisions during competition, and they were firmer in their decisions than their counterparts. The amount of collective experience (i.e., refereeing and past playing experience) that international referees earned during their careers, and the experienced they gained from officiating high-level handball matches, allow them to communicate more effectively with coaches, partners, and players compared with national referees. The differences between national and international referees are unsurprising especially considering the suspension of Kuwait sport movement by the International Olympic Committee (IOC), and Kuwait Handball Federation by the International Handball Federation (IHF). For that suspension, Kuwaiti handball referees have not refereed any regional, continental, or international handball matches since 2015. Therefore, they were perfect example of less-experienced referees to compare with international-level referees who have been actively refereeing at international games for the past few years. The expertise of the international-level referees helped them to be uninfluenced by pressure from players, coaches, and spectators. Overall, the results showed that self-efficacy is a new psychological characteristic that should be added to the expertise literature and can be used to differentiate expert from novice and/or less-experienced handball referees. Experienced referees believe

there is a series of psychological characteristics that distinguish the most successful referees from their colleagues and that these characteristics account for 50 - 70% of a referee's performance ([Weinberg & Richardson, 1990](#)). Although this study included current international and national handball referees, and was conducted during two kinds of handball competition (i.e., continental and local) future studies should include more handball referees.

In conclusion, the findings of this study confirmed that experience (refereeing and playing) of handball referees plays an important role in self-efficacy, and in being a successful referee. Further, the findings confirm that self-efficacy of referees is like any psychological skills or characteristics: it is acquired via extensive practice, such as by officiating games and experiencing various situations. The findings of this study, that refereeing experience and playing experience is important for self-efficacy will contribute to the literature on sport psychology, and especially in psychology of team sports (e.g., handball). Practically, these findings suggest that during the recruitment of referees, attention should be given to both playing and refereeing experience. Also, the handball stakeholders (e.g., referee committees in local/international federations) must focus on enhancing refereeing experience by providing opportunities for referees to officiate more matches, and by providing continuous feedback to and evaluation of the referees. Future studies should investigate more handball referees, and add female to the male referees.

Conflict of Interests: None of the authors have any conflict of interests associated with this study.

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