Examining the Relationship between Referee Performance and Self-Efficacy

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Abstract: The aim of the study was to examine the relationship between basketball referees' performance scores gained during a season and their self-efficacy levels. The study was conducted in correlational design and the accessible sampling method was used for the sample selection. The sample of the study consisted of 64 Class-B referees (2% (n=3) were females and 98% (n=61) were males) who actively served in the 2016-2017 season within Turkish Basketball Federation. A demographic information form, "The Referee Self-Efficacy Scale" developed by Karacam and Pulur, and performance scores calculated by the Central Arbitration Committee of Turkish Basketball Federation were used as data collection tools. Data analysis was conducted using SPSS 21 and AMOS programs. The Pearson-Product Moments Correlation Coefficient was used to determine the relationships between the variables. As a result, a positive significant relationship was found between basketball referees' physical fitness, game knowledge, decision-making, pressure, communication, REFS total score, and their performance scores and the variables age and the number of matches refereed. Moreover, a positive significant relationship was found between basketball referees' physical fitness, game knowledge, decision-making, pressure, communication, and REFS total score and their performance scores.

Keywords: *Basketball referees, referee self-efficacy, self-efficacy, referee performance, referees.*

Introduction

Referees should perform and accomplish more than one task during the competition under pressure to accomplish their duty and avoid any possible mistakes. For example, referees have to analyze and judge the events in a match, make quick decisions, referee the match, consider more than one aspect of a match, maintain the order, and settle the disagreements under adverse conditions and pressure (Tuero et al., 2002; Karacam & Pulur, 2016). Inefficacy, carelessness, wrong decisions, delayed responses in these tasks may result in ultimate stress and burnout (Guillén & Feltz, 2011; Ekmekci, 2008; Ekmekci, 2016). In addition, referees are exposed to pressure from spectators, players, and the club before, during and after a competition, especially in popular sports branches. Therefore, the work of referees is quite difficult and abrasive. Referees have to have a strong character and successful performance despite all these adverse factors.

Measuring referee performance is quite difficult and complex. Evaluation of referee performance should be carried out by the experts in the field. It is critical to determine referee performance and know the variables affecting it (Spencer, 2015). Therefore, determining referee performance and considering the variables affecting it shall contribute to planning of training programs of referees and the improvement for referee performance. In some studies, it was concluded that some positive beliefs of referees will have positive effects on their performance (Guillén & Feltz 2011; Myers et al. 2012; Karacam & Pulur 2018; Karacam & Pulur 2017b; Karacam & Pulur 2016). Thus, in this study, self-efficacy, which is one of the positive psychology terms that are thought to affect referee performance, was discussed. Nevertheless, it was observed that the number of studies examining the relationship between referee performance and self-efficacy was quite low in the literature. In his study on volleyball referees, Spencer (2015) did not find a relationship between self-efficacy and referee performance and stated that further studies are needed. It is thought that further studies are needed to close such a gap in the literature.

Referee self-efficacy was conceptualized within self-efficacy theory of Bandura (Bandura, 1997), and specifically self-efficacy in sports (Feltz, Short, & Sullivan, 2008). When certain situational demands are considered, self-efficacy can be defined as one's belief to accomplish behaviors resulting in desired consequences in a certain condition and ability to

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perform various levels of a task successfully (Bandura, 1977, 1986). The term referee self-efficacy is defined as the level of belief that referees have a successful performance capacity in their job (Guillén & Feltz, 2011). Guillén & Feltz (2011), Myers et al., (2012) and Karacam & Pulur (2017a) stated that referee self-efficacy areas were game knowledge and strategic skills, decision-making skills, psychological skills, in-game communication and control, and physical fitness. In addition, based on self-sufficiency theory and self-efficacy theory in sports, Guillén & Feltz (2011) stated that the referees with high self-efficacy make better judges and show more effective performance. In addition, it was indicated that they are more respected than coaches, managers, and other officials and experience less stress than the ones with low self-efficacy. Guillén & Feltz (2011) and Farshad et al. (2013) stated that the referees with high-efficacy are more dependent on their profession, which positively affects referee performance. Hepler & Feltz (2012) stated that self-efficacy level has a significant effect on decision-making, which has a positive effect on referee performance. In addition, Myers et al., (2012), Karacam & Pulur (2017a) Karacam & Pulur (2017b) and Karacam & Pulur (2017c) found a positive relationship between referees' self-efficacy levels and their ages and refereeing experience. Spencer (2015) stated that experience is the most important predictor of referee performance.

Based on the above-mentioned studies, it is considered that the variables affecting referee self-efficacy and performance and the relationships between these variables are critical in planning referee training programs, successful management of the competitions and increasing referee performance. Therefore, this study aims to examine the relationship between basketball referees' performance and self-efficacy levels with some demographic variables.

Methodology

Design

This study, which aims to examine the relationship between performance scores and basketball referees' self-efficacy levels with some demographic variables, is a descriptive survey in correlational design. Although correlational studies do not prove the existence of a real causality, it can be possible to make inferences about the cause-effect relationship with the help of correlational studies by using some advanced statistical techniques (Fraenkel & Wallen, 2009).

Population and sample

Population of the study was composed of Class-A (Men's Super League, n=32), Class-B (Women's Super League and Men's First League, n=64) and Class-C (Women's First League, Men's Second League, and Regional League, n=220) referees who actively served in 2016-2017 basketball season within the Turkish Basketball Federation (TBF). A performance scoring is administered to only Class-A and Class-B referees by the end of each season. Since the Central Arbitration Committee (CAC) only authorizes the use of the year-end performance scores of Class-B referees, the sample of the study was formed by using accessible sampling method. Therefore, the sample of the study consisted of a total of 64 Class-B referees (2% (n=3) were females and 92% (n=61) were males). The mean age of the participants was 30, and the mean experience of them was 11 years. In the 2016-2017 season, the maximum and minimum numbers of matches that the participants refereed are 43 and 14, respectively. The referees refereed an average of 25 competitions in a season. The scales were administered face to face at the end of the regular season and at a time when there was no competition.

Data Collection Tools

The Referee Self-Efficacy Scale (REFS) was utilized to determine referees' self-efficacy levels. Referees' performance scores were received from the TBF Central Arbitration Committee (CAC).

The Referee Self-Efficacy Scale (REFS)

The Referee Self-Efficacy Scale (REFS) was developed by Karacam & Pulur (2017a). There are 18 five-point Likert type items in the scale. The scale consists of a total of 4 subscales, which are physical fitness consisting of 5 items (sample item: My physical structure is suitable to be a referee.), game knowledge consisting of 3 items (sample item: I can understand the basic game strategies of the branch I referee), decision-making consisting of 3 items (sample item: I am able to make decisions in critical conditions), pressure consisting of 3 items (sample item: I am not influenced by pressure from players), and communication consisting of 4 items (sample item: I am able to communicate with coaches effectively). Grading options for the items are indicated as "Strongly disagree = 1" and "Strongly agree = 5". There is no reversely scored item in the scale. High scores obtained from each factor of the scale indicate that self-efficacy in that factor is high. In the analyzes conducted by Karacam & Pulur (2017a), the variance explained for the scale was 72.27%. A five-component construct whose eigenvalue was greater than 1 was obtained. It was observed that alpha internal consistency coefficients for the scale components were found to be .88 for physical fitness factor, .71 for game knowledge factor, .85 for decision-making factor, .88 for pressure factor, .81 for communication factor, and .90 for the whole scale. KMO value was found to be .86. As a result of CFA, χ^2/sd = 1.842 RMSEA = .06, CFI = .94, GFI = .88, RMR = .01.

In the analyzes conducted for this study, it was found out that the variance explained for the whole scale was 74.09%. A five-component construct whose eigenvalue was greater than 1 was obtained. The alpha internal consistency

coefficients of the scale components were found to be .87 for physical fitness factor, .73 for game knowledge factor, .85 for decision-making factor, .84 for pressure factor, .80 for communication factor and .91 for the whole scale. The KMO value was found to be .88. As a result of CFA analysis, χ^2/sd = 1.961 RMSEA = .06, CFI = .95, GFI = .95, RMR = .01. The data revealed that the REFS was suitable for the study group.

Referees' Performance Scores

There was a total of 316 Class-A (Men's Super League, n=32), Class-B (Women's Super League and Men's First League, n=64) and Class-C (Women's First League, Men's Second league, and Regional League, n=220) referees who actively served in the 2016-2017 basketball season within the Turkish Basketball Federation (TBF). A performance scoring is administered to only Class-A and Class-B referees by the end of each season and the Central Arbitration Committee (CAC) only authorizes the use of the year-end performance scores of Class-B referees. Referee performance scores in this study are the average scores calculated by the CAC at the end of the 2016-2017 season. These scores were taken with the permission of the CAC and used in the study.

Measuring referee performance is quite difficult and complex. Evaluation of referee performance should be carried out by the experts in the field (Spencer, 2015). Since the 2016-2017 season, TBF has set a referee rater group of 20 persons for the evaluation of Class-B referees. These raters were chosen by the CAC among experienced referees. The rating criteria which should be considered by the referee rater group were released in the pre-season training sessions. While determining these criteria, a referee evaluation form which is based on referee competencies is used. This form includes several sections such as the degree of difficulty of the competition, pre-preparation of the referees, physical fitness, mechanical and team training, foul assessment, violation assessment, the application of the rules at the same standard throughout the competition, game control, discipline practices, and general performance. In addition, there are sections related to personal evaluation and video notes. All matches played in the 2016-2017 season were assigned referee raters. Referee raters watch the competition live and fill out the sections in the form within 12 hours and rate the referees out of 100 points.

At the end of the season, the rankings of the referees are announced by considering the averages of the scores given to each referee. The year-end mean scores for each Class-B were used in the study.

Data Analysis

The data were analyzed using SPSS 21 and AMOS programs. In the analysis of the data, the data set was first examined in terms of erroneous value, outlier, normality, and multiple correlations. It was observed that there were no erroneous data. Shapiro Wilk Test was used to determine the normality of the distribution and the data showed a normal distribution (p> .05). Pearson Product-Moment Correlation Coefficient was used to determine the relationships between the variables. Significance level was taken as p <.05.

Findings

Descriptive statistics of the participants are given in Table 1.

Table 1. Descriptive statistics

Variables	N	Lowest	Highest	$\overline{X}$	S.D.
Age	64	22.00	48.00	30.68	5.50
Refereeing Experience	64	5.00	24.00	11.51	5.70
The Number of Matches Refereed	64	14.00	43.00	25.78	6.06
Referee Performance Score	64	61.61	83.01	72.56	5.43
REFS Total	64	69.00	90.00	80.64	7.48

Table 2. The Correlations between Basketball Referees' Performance Scores, REFS Total Score, and Subscales of The REFS and The Variables Age, Refereeing Experience and The Number of Matches Refereed (Throughout A Season)

Variables	N	Age	Refereeing experience	The number of matches refereed
Performance	64	.58**	.62**	.94**
REFS total	64	.51**	.50**	.83**
Game Knowledge	64	.45**	.40**	.70**
Decision-Making	64	.44**	.43**	.79**
Physical Fitness	64	.44**	.33**	.68**
Pressure	64	.37**	.39**	.46**
Communication	64	.35**	.36**	.67**

** p < .01

Table 2 shows the correlations between basketball referees' performance scores, REFS total score, and subscales of the REFS and the variables age, refereeing experience and the number of matches refereed. According to the results, there is a positive significant relationship between referees' performance scores and the variables age ($r = .58$, $p < .01$), refereeing experience ($r = .62$, $p < .01$), and the number of matches refereed throughout a season ($r = .94$, $p < .01$). In addition, there is a positive significant relationship between REFS total score ($r = .51$, $p < .01$), and subscales of the REFS and the variable age. It can be seen in the table that game knowledge shows the highest ($r = .45$, $p < .01$), but communication shows the lowest relationship with the variable age ($r = .35$, $p < .01$). Moreover, there is a positive significant relationship between REFS total score ($r = .50$, $p < .01$), and subscales of the REFS and the variable refereeing experience. It can be seen in the table that decision-making shows the highest ($r = .43$, $p < .01$), but physical fitness shows the lowest relationship with the variable refereeing experience ($r = .33$, $p < .01$). Finally, there is a positive significant relationship between REFS total score ($r = .83$, $p < .01$), and subscales of the REFS and the variable the number of matches refereed throughout a season. It can be seen in the table that decision-making shows the highest ($r = .79$, $p < .01$), but pressure shows the lowest relationship with the variable the number of matches refereed throughout a season ($r = .46$, $p < .01$).

Table 3. The Correlations of Basketball Referees' Performance Scores and REFS Total Score and Subscales of The REFS.

Variables	1	2	3	4	5	6	7
1. Performance	1.00	.88**	.72**	.72**	.83**	.49**	.73**
2. REFS Total		1.00	.77**	.79**	.90**	.66**	.86**
3. Physical Fitness			1.00	.69**	.53**	.24**	.55**
4. Game Knowledge				1.00	.73**	.36**	.45**
5.Decision-Making					1.00	.57**	.81**
6. Pressure						1.00	.56
7. Communication							1.00

** $p < .01$

Table 3 shows the correlations between basketball referees' performance scores and REFS total score, and subscales of the REFS. According to the table, it can be seen that all the variables are positively correlated with each other. In terms of the relationship between basketball referees' performance scores and REFS total score, and subscales of the REFS, REFS total score shows the highest relationship (r = .88, p <.01), but physical fitness shows the lowest relationship (r = .24, p < .01). In terms of the relationship between REFS total score and subscales of the REFS, the highest relationship is between REFS total score and decision-making (r = .90, p <.01), but the lowest relationship is between physical fitness and pressure (r = .24, p <.01).

Discussion and Conclusion

In this study, it is aimed to examine the relationship between basketball referees' performance scores and self-efficacy levels with some demographic variables. A positive significant relationship was found between referees' performance scores and their ages, which can be interpreted as referees' ages increase, their performance increases as well. In spite of a detailed literature review, there is no study examining the relationship between referee performance and age. It is thought that this study will contribute to the literature in this aspect.

It was observed that there was a positive significant relationship between referees' performance scores and their refereeing experiences, which can be interpreted as referees' experience increases, their performance increases as well. Spencer (2015) stated in his study that the most important predictor of referee performance is the experience. Some other studies also reached the similar results (Myers et al., 2012, Dosseville, 2011, Pizzera & Raab, 2012, Catteeuw et al., 2011, Guillén & Feltz, 2011). In this respect, the study is in parallel with other studies in the literature.

There was a positive significant relationship between referees' performance scores and the number of matches refereed throughout a season, which can be interpreted as the number of matches that is refereed increases, their performance increases as well, or vice versa. In spite of a detailed literature review, there is no study examining the relationship between referees' performance scores and the number of matches refereed. It is thought that this study will contribute to the literature in this aspect.

It was observed that there was a positive significant relationship between REFS total score, and subscales of the REFS and the variable age. In terms of the relationship between the variable age and subscales of the REFS, game knowledge shows the highest relationship, but communication shows the lowest. Myers et al., (2012), Karacam & Pulur (2017a) Karacam & Pulur (2017b) and Karacam & Pulur (2017c) found similar results between REFS total score, and subscales of the REFS and the variable age. In this respect, the study is in parallel with other studies in the literature.

It was observed that there was a positive significant relationship between REFS total score, and subscales of the REFS and the variable refereeing experience. In terms of the relationship between the variable refereeing experience and subscales of the REFS, it can be seen that decision-making shows the highest relationship, but physical fitness shows the lowest. Myers et al., (2012), Karacam & Pulur (2017a), Karacam & Pulur (2017b) and Karacam & Pulur (2017c) found similar results between REFS total score, and subscales of the REFS and the variable refereeing experience.

Guillén and Feltz (2011) stated in their study that a referees' refereeing experience has an impact on their self-efficacy. In this respect, the study is in parallel with other studies in the literature.

There was a positive significant relationship between REFS total score, and subscales of the REFS and the number of matches refereed throughout a season, which can be interpreted that the number of matches increases as referees' self-efficacy increases and their self-efficacy increases as the number of matches increases, as well. In terms of the relationship between the number of matches refereed throughout a season and subscales of the REFS, it can be seen that decision-making shows the highest relationship, but pressure shows the lowest. In spite of a detailed literature review, there is no study examining the relationship between referees' self-efficacy levels and the number of matches refereed.

There was a positive significant relationship between referees' performance scores and REFS total score and subscales of the REFS, which are physical fitness, game knowledge, decision-making, pressure, and communication. in terms of the relationship between referees' performance scores and REFS total score and subscales of the REFS, it can be seen that REFS total score shows the highest relationship, but physical fitness shows the lowest. Such a result can be interpreted as referees' self-efficacy scores increase, their performance increases as well. In parallel with the study, Guillén & Feltz (2011) and Farshad et al. (2013) stated that referees with high self-efficacy are more committed to the profession and this positively affects referee performance. However, Spencer (2015) found no significant correlation between self-efficacy and referee performance in his study on volleyball referees. It is thought that such a difference in the literature is due to the distinct characteristics of the referee groups or the differences in the measurement of referee performance.

When the relationship between subscales of the REFS and REFS total score is examined, it can be seen that the highest relationship is between REFS total score and decision-making, but the lowest relationship is between Physical Fitness and Pressure. Myers et al., (2012), Karacam & Pulur (2017a), Karacam & Pulur (2017b) and Karacam & Pulur (2017c) studied the relationship between basketball referees' physical fitness, game knowledge, decision-making, pressure, and communication and REFS total score. and stated that all the variables correlate each other significantly. In this respect, the study is in parallel with other studies in the literature.

As a result, it was proved that basketball age and the number of matches refereed are significant variables in physical fitness, game knowledge, decision-making, pressure, communication, REFS total, and performance scores. It was found that all variables were positively correlated with physical fitness, game knowledge, decision-making, pressure, communication, REFS total and performance scores. According to the results, an increase in referees' self-efficacy will affect their performance positively.

Recommendations

1. The present study elaborated on self-efficacy, which is one of the positive psychology variables that are thought to affect referee performance. Further studies may be conducted on other positive beliefs that might affect referee performance.

2. It may be important to conduct studies to determine the variables improving referee self-efficacy with regard to developing referee performance.

3. This study was limited to the Class B referees. In further studies, the inclusion of referees in other branches may contribute to the literature.

4. In this study, age, seniority and the number of matches refereed were correlated to referees' performance. In further studies, discussing demographic variables that may affect referee performance may contribute to the literature.

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