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Examining the Self-Efficacy Levels of Tennis Officials

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Abstract

Referees are considered the third most important part of competitive sports after players and coaches. Psychological, sociological, and physiological factors may affect the performance of referees. The aim of the study is to examine the self-efficacy levels of tennis officials on selected dimensions. This is a descriptive study that reveals the self-efficacy levels of tennis officials. The research participants comprised 43 female (35%) and 80 male (65%) officials working in international tennis tournaments in 2022 and 2023. "Personal Information Form" which includes demographic information of the officials, and the "Self-efficacy Scale" developed by Myers et al. (33) are the data collection tools for the study. For the data analysis of paired groups, a t-test was used. A one-way analysis of variance (ANOVA) and Tukey's post hoc test were employed for more than two groups. In accordance with the analysis result, no statistically significant difference was found in the self-efficacy levels of the officials based on gender, age, and position in the tournament. It was seen that the mean scores of international officials in the sub-dimensions of game knowledge and communication significantly exceeded those of the national officials. Additionally, it was noted that the scores of the officials in these sub-dimensions improved as the number of years they worked increased. As a result, the increase in the time spent officiating increases the officials' self-efficacy level.

Keywords: Self-efficacy, tennis official, referee self-efficacy.

Özet

Tenis Hakemlerinin Öz-Yeterlik Düzeylerinin İncelenmesi

Hakemler, rekabetçi sporların oyuncular ve antrenörlerden sonra üçüncü en önemli parçası olarak kabul edilir. Psikolojik, sosyolojik ve fizyolojik faktörler hakemlerin performansını etkileyebilmektedir. Araştırma, tenis hakemlerinin öz-yeterlik düzeylerini seçilen boyutlarda incelemeyi amaçlayan tanımlayıcı bir çalışmadır. Araştırmanın katılımcılarını 2022 ve 2023 yıllarında uluslararası tenis turnuvalarında görev yapan 43 kadın (%35) ve 80 erkek (%65) hakemler oluşturmuştur. Veri toplama araçları olarak hakemlerin demografik bilgilerini içeren "Kişisel Bilgi Formu" ve Myers vd. (33) tarafından geliştirilen "Öz-yeterlik Ölçeği" kullanılmıştır. Veri analizinde ikili gruplar için t-testi, ikiden fazla gruplar için ise tek yönlü varyans analizi (ANOVA) ve Tukey (post hoc) testi kullanılmıştır. Yapılan analiz sonuçlarına göre hakemlerin cinsiyet, yaş ve turnuvadaki pozisyonuna göre öz yeterlilik düzeylerinde istatistiksel olarak anlamlı farklılık bulunamamıştır. Uluslararası hakemlerin oyun bilgisi ve iletişim alt boyutlarındaki ortalama puanlarının ulusal hakemlerin puan ortalamalarını önemli ölçüde aştığı

görülmüştür. Ayrıca hakemlerin çalıştıkları yıl arttıkça alt boyutlardaki puanlarının da arttığı gözlemlenmiştir. Sonuç olarak hakemlikte geçirilen sürenin artması, hakemin öz-yeterlik düzeyininin artmasını da sağlar denilebilir.

Anahtar Kelimeler: Öz yeterlilik, tenis hakemi, hakem öz yeterliliği.

INTRODUCTION

Referees are considered the third most important part of competitive sports after players and coaches (9). Sports participants expect high-quality sports refereeing, including players, coaches, and spectators. The cognitive and physical demands required for effective refereeing are challenging (2). It is difficult to measure the performance of referees when comparing athletes and coaches, where wins and losses may significantly influence the assessment (38). Psychological, sociological, and physiological factors may affect the performance of referees. It is crucial to conduct studies on the psychological well-being of referees, who play a significant role in sports competitions, to address the limited number of existing studies (26, 35). One of the determinants affecting referee performance is self-efficacy. There are several studies which were about how self-efficacy affects the referees on different dimensions, such as the relationship between performance and self-efficacy (20), job satisfaction (40), teamwork (12), and team adaptation (13). Referees must perform many duties to avoid making mistakes and succeed under pressure in the matches they officiate (41). Leveaux (29) emphasized the significance of the refereeing profession by stating that referees must make decisions by quickly filtering information from multiple sources. In certain instances, these decisions made by referees can significantly alter the outcome of the competition. Therefore, referees must be alert and highly concentrated at every game moment.

The rapid development of modern amateur and professional sports places a crucial responsibility on referees working in competitions. A referee must make fair decisions and act without prejudice (36). To be a good referee, numerous tasks must be performed under pressure to fulfill the roles successfully in the competition and avoid making mistakes in decision-making (33). Every sport has its categories of referees. In tennis, the referee/supervisor, chief umpire, chair umpire, and line umpire are the officials who help the game run smoothly at any level. The umpires are responsible for upholding the rules of tennis and ensuring that a match is played with fairness and sportsmanship (16). There are two types of certifications for umpires: one is given by national associations, and the other is given by the International Tennis Federation (ITF). Every country has a system to certify umpires, known as "National Umpires," internationally. The ITF administers three certifications to umpires: green, white, and international badges. International badges with bronze, silver, and gold levels are awarded to umpires. As in all other branches, high performance is expected from umpires in tennis.

One factor that plays a crucial role in meeting high-performance expectations and fulfilling referees' duties is self-efficacy (11). Bandura (3) defined self-efficacy as "the belief in one's capabilities to organize and execute the actions necessary to achieve specific goals." Gilson and Feltz (14) interpreted this definition as self-efficacy being not about one's abilities but rather about one's belief in realizing the skills one already possesses. On the other hand, Myers et al. (33) defined self-efficacy as individuals' beliefs about their ability to manage their performance levels in specific situations successfully. Additionally, Spencer (38) stated that this belief reflects an individual's expected performance. Self-efficacy is the belief that one can accomplish a specific task. This belief affects whether or not the person attempts the task-related behaviour, their persistence in that behaviour, their motivation for the behaviour, and ultimately their performance (28). According to self-efficacy theory, perceived self-efficacy influences stress and anxiety through belief that one has personal control of behaviors, thoughts, and emotions. Thus, different people with analogous abilities or the same person under different stipulations may perform poorly, adequately, or exceptionally depending on fluctuations in personal efficacy beliefs (3). From the theoretical perspective, referees' self-perception is an vital decision-making mechanism in terms of their good or bad performance. Therefore, among other things, keeping high self-efficacy levels will help them to perform well. A lack of self-efficacy can lead to inattentiveness, evaluation errors, delayed reactions, and ultimately, stress and burnout (15). Referee self-efficacy is the degree to which an umpire believes they can officiate the match well (33). Another definition of

referee self-efficacy is the belief that referees can perform well in their roles (15). Myers et al. (33) indicated that referee self-efficacy comprises four dimensions: game knowledge, decision-making, pressure, and communication. "Game knowledge (GK) is defined as the referee's confidence in their knowledge of the sport." Decision-making (DM) is defined as a referee having confidence in their decision-making ability. Pressure (PR) is defined as a referee's confidence in their ability to remain uninfluenced by pressure. Communication (CM) is the referee's confidence in communicating effectively.

Referees are actors from whom high performance is always expected. Referees can only perform well by combining many factors, such as knowledge of the rules, communication with players, self-confidence, and self-efficacy. Tennis is among the top five most-watched sports (42, 43). Despite this popularity, there are only a few studies in the literature about tennis officials, specifically about their self-efficacy. The purpose of the study is to examine the self-efficacy levels of tennis officials on selected dimensions. In this respect, answers are sought to the following questions:

a) Is there a difference in the self-efficacy levels of tennis referees in terms of gender?

b) Is there a difference in the self-efficacy levels of tennis referees in terms of age?

c) Is there a difference in the self-efficacy levels of tennis referees in terms of the ITF badge?

d) Is there a difference in the self-efficacy levels of tennis referees in terms of experience?

e) Is there a difference in the self-efficacy levels of tennis referees in terms of position in the tournament?

METHOD

The research population comprises 1.517 officials registered in the ITF Officiating Portal in 2023. The sample of the research comprises 43 (35.0%) female and 80 (65.0%) male tennis officials determined by the stratified sampling methodology in which the elements of a heterogeneous population are classified into mutually exclusive and exhaustive subgroups (strata) based on one or more important characteristics (10). As a stratification criterion, referees were required to have worked in at least three tournaments in the last year. According to Table 1, the highest participation was seen in the age category of 40-49, with 35 (28.5%) officials. Albeit the participation levels of officials are close to each other, White Badge umpires had the highest participation with 54 (43.9%). In terms of experience, the highest participation was seen in 50 (40.7%) officials who had worked for ten years or more. Of the participants, 28 (22.8%) work as line umpires, 73 (59.3%) work as chair umpires, and 22 (17.9%) work as referees/supervisors.

Table 1. Demographic Characteristics of Participants

Variables	Groups	f	%
Gender	Female	43	35,0
	Male	80	65,0
	Total	**123**	**100,0**
Age	20-29	28	22,8
	30-39	33	26,8
	40-49	35	22,5
	50 and above	27	22,0
	Total	**123**	**100,0**
ITF Badge	National	43	35,0
	White	54	43,9
	International	26	21,1
	Total	**123**	**100,0**
Experience	0-3 years	21	17,1
	4-6 years	26	21,1
	7-9 years	26	21,1
	10 years and above	50	50,0
	Total	**123**	**100,0**
Position	Line Umpire	28	22,8
	Chair Umpire	73	59,3
	Referee/Supervisor	22	17,9
	Total	**123**	**100,0**

Research Design

This research is a descriptive study that reveals the self-efficacy levels of tennis officials. Descriptive research is a model used to analyze a situation, make evaluations based on standards, and uncover potential relationships between events (25).

Statistical Analysis

The SPSS 21 software package was used for statistical analysis. A total of 217 referees completed the scale, but 94 data were excluded from the study because they did not meet the stratified sampling criteria. First, whether the data was normally distributed was checked. If the skewness and kurtosis values are between -1.5 and +1.5, the data is considered to have a normal distribution (39). While the skewness and kurtosis values of the scale itself are -0.629 and -0.331, the values of the sub-dimensions are as follows: game knowledge (-0.646 and -0.773), decision making (-0.880 and -0.380), pressure (-0.915 and -0.151), and communication (-0.701 and 0.271). Since the skewness and kurtosis values of the scales remained within acceptable limits, it was assumed that the data were normally distributed. Therefore, a t test was used for the gender variable. Since the variables age, ITF badge, experience, and position in the tournament were more than two groups, the ANOVA test was used. Tukey (post-hoc) was also used to find differences between groups.

Data Collection Tool

One of the data collection tools is the "Personal Information Form," which consists of five demographic questions, including age, gender, ITF badge, experience, and position in the tournament. The other data collection tool is the "Referee Self-Efficacy Scale," developed by Myers et al. (33). The data was collected between May 5, 2023, and June 20, 2023, by physically distributing the scales and filling out the online form. The suitability of the number of samples was tested with G power software (version 3.1.9.7). It was determined that 112 referees for the ANOVA with a maximum of 4 groups with an effect size of 0.4 (medium) and for the t-test with a 0.6 effect (medium) size to be applied to pairs, 122 referees would be sufficient (19). The scale measures the referees' confidence level, which refers to the extent to which referees believe they can perform successfully. The scale comprises 13 items and four sub-dimensions, namely, game knowledge (GK), decision-making (DM), pressure (PR), and communication (CM). These are the sub-dimensions. The scale is a 5-point Likert Type. A score of 1 indicates low confidence, while a score of 5 indicates high confidence. The Referee Self-Efficacy Scale was developed for referees in team sports. Since tennis is a sport played in three formats - singles, doubles, and mixed doubles - it was deemed appropriate to apply this measurement tool to tennis officials. The Cronbach's Alpha value of the scale was found to be 0.851. The fact that this coefficient is above 0.70 indicates that the scale is reliable (5).

Ethical approval and institutional permission

The ethics committee approval of the study was acquired with the decision of the Ethics Committee of Mehmet Akif Ersoy University, dated 03/05/2023, and numbered 2023/05.

FINDINGS

In this part of the study, the data regarding the sub-dimensions of the "Referee Self-Efficacy Scale" were analyzed according to the research questions, and the results were tabulated and evaluated.

Table 2. Analysis of Tennis Umpires' Views on Self-Efficacy by Gender Variable

Variables	Groups	N	X	Sd	t	df	p	Cohen's d
Game Knowledge	Female	43	4,54	,37	-,569	121	,570	
	Male	80	4,59	,38				
Decision Making	Female	43	4,20	,68	-2,061	121	,068	
	Male	80	4,42	,47				
Pressure	Female	43	4,01	,84	-2,259	121	,042*	,41
	Male	80	4,32	,63				
Communication	Female	43	4,33	,51	-1,104	121	,272	
	Male	80	4,43	,45				

p<0,05

As shown in Table 2, when analyzing the referee self-efficacy scale based on gender, there were no significant differences found in the mean scores of the officials' opinions regarding game knowledge, decision-making, and communication sub-dimensions. However, a significant difference was found in the pressure dimension, indicating that male tennis referees had higher self-efficacy related to handling pressure than their female counterparts. Cohen's d value indicates that the significant difference between male and female officials is a medium effect size, which means a research finding has moderate significance (6).

Table 3. Analysis of Tennis Umpires' Views on Self-Efficacy by Age Variable

Variables	Groups	N	X	F	p
Game Knowledge	20-29 years	28	4,47	1,12	0,344
	30-39 years	33	4,59		
	40-49 years	35	4,65		
	50 and above	27	4,55		
	Total	123	4,57		
Decision Making	20-29 years	28	4,16	2,401	0,071
	30-39 years	33	4,4		
	40-49 years	35	4,29		
	50 and above	27	4,55		
	Total	123	4,35		
Pressure	20-29 years	28	4,07	2,49	0,064
	30-39 years	33	4,32		
	40-49 years	35	4,04		
	50 and above	27	4,47		
	Total	123	4,21		
Communication	20-29 years	28	4,2	2,043	0,112
	30-39 years	33	4,45		
	40-49 years	35	4,42		
	50 and above	27	4,49		
	Total	123	4,39		

$p<0,05$

According to Table 3, the one-way analysis of variance showed no significant difference among the mean scores of game knowledge, decision making, pressure, and communication based on the age variable of tennis umpires, as observed from the sub-dimensions of the referee self-efficacy scale.

Table 4. Analysis of Tennis Umpires' Views on Self-Efficacy by ITF Certification Variable

Variables	Groups	N	X	F	p	Difference (Tukey)	Eta² (n^2)
Game Knowledge	National[a]	43	4,44	4,419	,014*	C>A	0,06
	White[b]	54	4,63				
	International[c]	26	4,67				
	Total	123	4,57				
Decision Making	National[a]	43	4,19	2,484	0,088		
	White[b]	54	4,43				
	International[c]	26	4,44				
	Total	123	4,35				
Pressure	National[a]	43	4,08	1,151	0,32		
	White[b]	54	4,3				

	International[c]	26	4,26				
	Total	123	4,21				
Communication	National[a]	43	4,21	5,309	,006*	C>A	0,08
	White[b]	54	4,48				
	International[c]	26	4,52				
	Total	123	4,39				

p<0,05

According to Table 4, based on the ITF badge level of tennis umpires, the analysis reveals that there is no significant difference in the sub-dimensions of decision-making and pressure. However, there is a significant difference in the sub-dimensions of game knowledge and communication sub-dimensions. Post-hoc analysis demonstrates a significant difference between the international umpires and national umpires, favouring the international umpires. For game knowledge and communication sub-dimensions, the Eta Squared (n2) values indicate that the significant difference between International and National referees is a medium effect size, which means a research finding has moderate significance (6).

Table 5. Analysis of Tennis Umpires' Views on Self-Efficacy by Experience Variable

Variables	Groups	N	X	F	p	Difference (Tukey)	Eta² (n²)
Game Knowledge	0-3 years[a]	21	4,32	6,08	,001*	D>A	0,13
	4-6 years[b]	26	4,51				
	7-9 years[c]	26	4,57				
	10 years and above[d]	50	4,71				
	Total	123	4,57				
Decision Making	0-3 years[a]	21	3,77	19,969	,000*	D>A, B and C	0,33
	4-6 years[b]	26	4,23				
	7-9 years[c]	26	4,28				
	10 years and above[d]	50	4,69				
	Total	123	4,35				
Pressure	0-3 years[a]	21	3,5	16,057	,000*	D>A, B and C	0,28
	4-6 years[b]	26	4,11				
	7-9 years[c]	26	4,14				
	10 years and above[d]	50	4,6				
	Total	123	4,21				
Communication	0-3 years[a]	21	3,98	13,3	,000*	D>A, B and C	0,25
	4-6 years[b]	26	4,27				
	7-9 years[c]	26	4,37				
	10 years and above[d]	50	4,64				
	Total	123	4,39				

p<0,05

According to Table 5, the analysis reveals significant differences in self-efficacy across all four dimensions based on the experience levels of tennis umpires. Umpires with 10 years and above experience have significantly higher self-efficacy in game knowledge, decision-making, pressure, and communication compared to those with less experience. For decision-making, pressure, and communication, there is a progressive increase in self-efficacy from those with 0-3 years to those with 4-6 years and 7-9 years of experience. Umpires with 7-9 years of experience also have significantly higher self-efficacy than those with 0-3 years, as do those with 4-6 years of experience when compared to those with 0-3 years. The Eta Squared (n2) values indicate that the difference between groups is a large effect size, which means a research finding has practical significance (6). This suggests that experience may be a contributing factor to increased self-efficacy among tennis umpires.

Table 6. Analysis of Tennis Umpires' Views on Self-Efficacy by Position Variable

Variables	Groups	N	X	F	p
Game Knowledge	Line Umpire	23	4,51	0,645	0,527
	Chair Umpire	78	4,58		
	Referee/Supervisor	22	4,63		
	Total	123	4,57		
Decision Making	Line Umpire	23	4,22	1,322	0,271
	Chair Umpire	78	4,41		
	Referee/Supervisor	22	4,29		
	Total	123	4,35		
Pressure	Line Umpire	23	4,17	0,416	0,661
	Chair Umpire	78	4,26		
	Referee/Supervisor	22	4,11		
	Total	123	4,21		
Communication	Line Umpire	23	4,27	1,652	0,196
	Chair Umpire	78	4,4		
	Referee/Supervisor	22	4,51		
	Total	123	4,39		

$p<0,05$

According to Table 6, the one-way analysis of variance showed no significant difference among the mean scores of game knowledge, decision making, pressure, and communication based on the position variable of tennis umpires. This indicates that there was no significant variation in these sub-dimensions of the referee self-efficacy scale.

DISCUSSION AND CONCLUSION

The purpose of this study is to examine the self-efficacy levels of tennis officials in various variables. There was no significant difference between genders in terms of self-efficacy. Unlike many other popular sports, it has been a long time since women umpired men's matches and officiated final matches in major tournaments in tennis. Sandra De Janken broke new ground in sports history by officiating the 2001 Roland Garros Men's Singles final (44). The fact that women have been taking part in men's matches for a very long time may have caused them to score high in self-efficacy. When the self-efficacy level was analyzed according to the gender variable, different results were found in the literature. While some studies (11, 24, 27, 37) have stated that the self-efficacy levels of male referees exceed those of female referees in certain aspects, on the other hand, other studies (1, 4, 21) have stated that there is no difference in self-efficacy levels based on gender.

No significant difference was found between the sub-dimensions when examining the self-efficacy level based on the age variable. Diotaiuti et al. (12) 's interpretation that experience is a better predictor of self-efficacy than age is consistent with the study's findings. Despite numerous studies in the literature demonstrating that self-efficacy increases with age (11, 21, 22, 24, 33), the absence of this difference in the current study may be attributed to the fact that while there is an age limit for starting refereeing in other sports, there is no such restriction in tennis.

The results demonstrated that the self-efficacy levels of international officials in terms of in-game knowledge and communication dimensions are higher than those of national officials. In tennis, as in all sports, international referees officiate a large number of higher-profile matches. As a natural result of this, it is thought that international referees' scores in rule knowledge and communication dimensions are higher than national referees. This situation can be interpreted as the background in refereeing and working in high-level tournaments positively influencing the self-efficacy of the officials. In the literature, there are studies supporting the findings of this study (1, 12, 23, 33, 37).

The self-efficacy levels of tennis officials with ten or more years of experience are higher than those of officials with 0-3 years of experience in all sub-dimensions. Furthermore, the self-efficacy levels of tennis officials with ten or more years of experience surpass those of referees with 4-6 years and 7-9 years of experience in decision-making, pressure, and communication. Besides, the self-efficacy levels of tennis officials with 4-6 and 7-9 years of experience surpass those with 0-3 years of experience in decision-making, handling pressure, and communication dimensions. Tennis officials must do a certain number of matches in a year to keep their bagde, for example, a silver badge must officiate 75 matches in a year (38). This means a silver badge must do at least 750 matches in ten years and thus makes the difference. This situation can be interpreted as the time spent refereeing positively affecting the level of referee self-efficacy. In the literature, there are studies supporting the findings of this study (1, 12, 18,21, 30, 31, 33, 37).

When examining the self-efficacy level based on the position variable, no significant difference was found between line umpires, chair umpires, and referees/supervisors. While reviewing the literature, analysis has yet to be found regarding the position of the referees in the competition, such as line umpire or main referee. This study revealed that there was no difference in the self-efficacy levels of tennis officials in different positions of refereeing. This variable can be tested again in different sports, such as assistant referees and main referees in football, main referees and line judges in volleyball, by studying with a larger sample group.

Self-efficacy is one of the most crucial topics when discussing the characteristics of a good referee. In the study, the researchers examined the self-efficacy levels of tennis officials in relation to various variables. The results showed no statistically significant difference in the sub-dimensions of gender, age, and position of the tennis officials in the tournament. However, it was observed that the self-efficacy levels of international officials were significantly higher than those of national officials in terms of experience. This result shows that the longer the officiating period, the higher the level of self-efficacy will be.

The study revealed that rule knowledge and communication skills have a positive effect on the self-efficacy level. From this point of view, referees' development in rule knowledge and communication will help them a lot in becoming good referees. In addition, it has been observed that serving as a referee for many years has a positive impact on the referee's self-efficacy level. In line with this result, it is thought that instilling in new referees the idea that their self-efficacy levels will increase with experience over the years will help them in their development.

Although it provides descriptive information about the officials participating in the research, it is thought that it is not sufficient to generalize to all tennis referees since the sample group is less than 10% of the total officials registered in the ITF portal. In order to generalize the results to all tennis officials, it is recommended that future studies be conducted with a larger sample group.

The fact that the research was conducted in a single sport branch and with a small sample group are to be considered as a limitations of the research. Variables like whether there is an athletic background in that branch and foreign language skills may also be added to the research. Conducting studies with a larger sample group covering different sports branches and variables may provide more descriptive information about the self-efficacy levels of referees.

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