

Investigation of The Levels of The Football Referees Coping With Stress and Aerobic Toughness

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Abstract

The aim of this study was to investigate the stress coping levels and aerobic toughness of soccer referees. In the study, descriptive model from quantitative research approaches was used. The population of the study consisted of football referees working in Turkey and the sample consisted of 58 referees working in Trabzon province. In the study, the scale of "individual, environmental and organizational stress sources of football referees" prepared by Çakmak (2011) was used to collect data and aerobic toughness data were obtained from Trabzon Provincial Referee Board as a result of the Cooper test administered by TFF to referees before each season. IBM SPSS Statistics for Windows, Version 22.0. was used for statistical analysis and calculations. According to the findings of the study, there was no statistically significant difference between the individual, environmental and organizational factors in terms of coping with stress in terms of age, gender, marital status, classification groups, refereeing period, profession other than refereeing and aerobic toughness ($p>0.05$). The difference between the educational level groups in the distribution of individual factors among the levels of coping with stress was found statistically significant ($p<0.05$). There was no statistically significant difference between the referees' stress coping levels and aerobic toughness ($p>0.05$). A positive, moderate and statistically significant relationship was found between individual, environmental and organizational factors in terms of coping with stress levels ($p<0.05$). As a result, it is thought that football referees with different age, gender, marital status, classification groups, refereeing time, occupation other than refereeing and aerobic toughness have similar levels of coping with stress.

Keywords: Football Referee, Stress, Aerobic Toughness

Introduction

Football has evolved from a traditional game into a commercial activity characterized by national and international competition, where sponsors and sports markets are highly active. This change is linked to the widespread interest in football by a large audience and the formation of a passionate fan base. During this process, the phenomenon of fanaticism has emerged, leading some individuals to disregard the principles of fair play and show respect for authority due to their desire to win. Fanaticism arises from an intense interest and loyalty to football. The love and attachment to football teams can make fans feel like part of their teams, having profound emotional effects. This emotional interaction can sometimes lead to fanatical behaviors and mindsets (Güleç, Koç, & Cenger, 2024). As the commercial dimension of football has strengthened, clubs and organizations engage in advertising, sponsorships, and commercial agreements to generate more revenue. This has contributed to football becoming a more significant marketing tool. However, such commercial activities may provoke exaggerated emotional responses from some fans in their defense and support of their teams. The desire to win is a normal aspect of football's competitive nature. However, in some cases, this passion can arise in ways that overlook sportsmanship and violate rules. Fans may forget to respect authority due to their willingness to do everything possible to ensure their teams win. Aggressive behaviors and negative attitudes towards referee decisions or opposing players during matches can result from this kind of fanaticism (Sen, 2013). The stress and pressures faced by football referees are among the challenges that have arisen with the rapid development and change in football. As individuals who enforce the rules of the game and make decisions during matches, referees impact the expectations of entire audiences with their decisions. Even if referees make correct decisions, there is always one dissatisfied party. The fact that mistakes can occur in football is often overlooked, and it is forgotten that referees are human beings too. During competitions, referee decisions can sometimes overshadow the match and lead to controversies. Referees can be discussed and harshly criticized by audiences before, during, and after matches. This situation increases the pressure on referees and induces stress. While all these expectations amplify the existing stress factors on referees, considering individual, environmental, and organizational stress factors, it becomes inevitable that referees work under significant stress (Şirin, 2021). Identifying the sources of stress for football referees and creating suitable conditions is crucial for maximizing their performance. In this context, taking steps to reduce stress and anxiety is essential. Research conducted in this area can provide fundamental insights into assessing referees' coping levels with stress and their aerobic endurance, supporting their ability to work in a healthy environment and enhancing their performance (Çakmak, 2011). Although football involves high-intensity activities taking place in a short period during matches, referees must possess adequate aerobic capacity to recover after these high-intensity activities and to prepare for the next unexpected event (Krustrup et al., 2006). From this perspective, football requires a developed level of aerobic endurance. Advanced aerobic endurance demonstrates that referees can recover quickly from fatigue and high-intensity activities (Mohr, Krustrup & Bangsbo, 2003).

A review of the literature reveals that most studies on football referees focus on their physiological performance. The aim of our study is to investigate the relationship between the coping levels of referees with stress and their aerobic endurance across different classifications.

Material and Method

Ethics committee permission: The Ethics Committee review required for my study was conducted by the Trabzon University Social and Human Sciences Scientific Research and Publication Ethics Committee.

Research Model

This research is a descriptive study aimed at identifying the stress sources of football referees. Descriptive research aims to describe events, situations, or phenomena and to understand the current state. In this study, a quantitative research approach was utilized. Quantitative research is an approach where numerical data is collected and analyzed (Akbaş & Koğar, 2020). This type of approach allows for statistical analysis by gathering data from a large group of participants.

Population and Sample

The population and sample of the research consists of 58 football referees working in from Trabzon province: 6 candidates, 33 provincial, 5 regional, 6 Class C, 2 Class B, 4 Class A, and 2 Super League referees, including 51 males and 7 females. The sample group includes 28 referees aged 18-24, 12 aged 25-29, 6 aged 30-34, and 12 aged 35 and older. The referees participated in our study voluntarily.

Data Collection

The data collection for the study utilized the "Sources of individual, Environmental, and Organizational Stress for Football Referees" scale developed by Çakmak (2011). Additionally, aerobic endurance data were obtained from the results of the Cooper test administered to referees by the Turkish Football Federation before each season on the athletics field (test results were obtained from the Trabzon Provincial Referee Board).

The data collection tool consists of three sections.

1. The first section includes the "Identification Form," which contains the personal and professional information of the football referees.
2. The second section contains the scale developed to determine the individual, environmental, and organizational stress sources of football referees. The responses to each item in the scale are shown using a five-point Likert scale. The options and their scores are set as:
 - "Strongly Disagree" (1 Point),
 - "Disagree" (2 Points),
 - "Neutral" (3 Points),
 - "Agree" (4 Points),
 - "Strongly Agree" (5 Points).

The range coefficient ($4/5=0.80$) is calculated for the range in the five-point scale ($5-1=4$), and the option ranges are specified as:

- "Strongly Disagree" (1.00-1.79),
- "Disagree" (1.80-2.59),
- "Neutral" (2.60-3.39),

- "Agree" (3.40-4.19),
 - "Strongly Agree" (4.20-5.00).
3. The third section measures aerobic endurance through the Cooper test, which aims to assess the distance covered in 12 minutes. A marker is placed every 100 meters along the course where the test is conducted to determine the distance. The nearest 100 meters to the endpoint of the test is marked, and the total distance is calculated (Tamer, 2000).

Data Analysis

Frequency and percentage values for the variables related to the age, gender, marital status, education level, classification, duration of refereeing, occupation outside refereeing, and Cooper test running results of the referees participating in the study are provided.

For the individual, environmental, and organizational factor dimensions, mean and standard deviation, as well as median and interquartile range values, have been provided. Reliability analysis has been conducted for the questions related to individual, environmental, and organizational factors.

Table 1. Normality Test

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	Df	P	Statistic	df	P
Individual Factors	0.081	58	0.200	0.975	58	0.276
Environmental Factors	0.092	58	0.200	0.952	58	0.022
Organizational Factors	0.063	58	0.200	0.987	58	0.780

The distributions of individual, environmental, and organizational factors were examined for normality using the Kolmogorov-Smirnov and Shapiro-Wilk tests. It was found that the distributions of individual, environmental, and organizational factors showed normal distribution according to the Kolmogorov-Smirnov test, while the Shapiro-Wilk test indicated that the distributions of individual and organizational factors were normal, and the distribution of environmental factors was not normal. Although the variables exhibited normal distribution, non-parametric tests were used due to the imbalance in the number of participants across the levels of demographic variables.

The comparison of the distributions of individual, environmental, and organizational factors by gender and marital status was conducted using the Mann-Whitney test, while comparisons concerning age, education level, classification, duration of refereeing, occupation outside of refereeing, and Cooper test running results were made using the Kruskal-Wallis test. Spearman's Rho correlation coefficient was used to determine the relationship between individual, environmental, and organizational factors. Statistical analyses and calculations were performed using IBM SPSS Statistics for Windows, Version 22.0.

Findings

The table below presents the demographic characteristics of the participants in this study.

Table 2. Frequency and Percentage Values for Demographic Variables

		n	%
Age	18-24 Years	28	48.3
	25-29 Years	12	20.7
	30-34 Years	6	10.3
	35 Years and above	12	20.7
	Total	58	100
Gender	Male	51	87.9
	Female	7	12.1
	Total	58	100
Marital Status	Married	17	29.3
	Single	41	70.7
	Total	58	100
Education Level	Highschool	24	41.4
	Associate	8	13.8
	Bachelor's	21	36.2
	Doctorate	5	8.6
	Total	58	100
Classification	Candidate	6	10.3
	City	33	56.9
	Regional	5	8.6
	C Classification	6	10.3
	B Classification	2	3.4
	A Classification	4	6.9
	Super League	2	3.4
	Total	58	100
Duration of Refreeing	0-5 years	30	51.7
	6-10 years	12	20.7
	11-15 years	9	15.5

	16-20 years	5	8.6
	20 years and above	2	3.4
	Total	58	100
Occupation outside Refreeing	Educator	8	13.8
	Govermental Person	13	22.4
	Private Sector	7	12.1
	Self Employed	8	13.8
	Student	22	37.9
	Total	58	100
Cooper Test Running Results	2400 and below	5	8.6
	2401-2600	8	13.8
	2601-2800	18	31
	2801-3000	17	29.3
	3001-3200	4	6.9
	3201 and above	6	10.3
	Total	58	100

Table 2 indicates that 48.3% of the participants in the study are aged 18-24, 87.9% are male, 70.7% are single, 41.4% have a high school education, 56.9% are classified as local referees, 51.7% have 0-5 years of refereeing experience, 22.4% are public employees, and 29.3% have Cooper test results ranging from 2801 to 3000 meters.

Table 3. Descriptive Statistics of the Total and Sub-Dimensions of the Coping with Stress Scale

	N	\bar{X}	Ss	Min.	Max.
Coping with Stress in Total	58	8.8048	2.06458	4.72	14.78
Individual Factors	58	3.4320	.69021	1.78	4.78
Environmental Factors	58	2.3330	.92550	1.00	5.00
Organizational Factors	58	3.0399	.87787	1.19	5.00

Table 3 presents the scores obtained by the participants on the Coping with Stress Scale in both total and sub-dimensions. As a result of this analysis, it was found that the average total score for the coping with stress scale among the participants included in the study is Mean = 8.80, which is below the moderate level. For the sub-dimensions of the coping with stress

scale, the average score for the individual Factors sub-dimension is Mean = 3.43, which is above the moderate level; the average score for the Environmental Factors sub-dimension is Mean = 2.33, which is below the moderate level; and the average score for the Organizational Factors sub-dimension is Mean = 3.04, which is at the moderate level.

Table 4. Comparison of Coping with Stress Levels by Age

Scale Dimensions	Age	N	Median (IQR)	Group Comparison
Individual Factors	18-24 Years	28	3.25 (0.86)	$\chi^2=5.301$; $p=0.151$
	25-29 Years	12	3.22 (1.04)	
	30-34 Years	6	3.69 (1.08)	
	35 Years and above	12	3.83 (1.03)	
Environmental Factors	18-24 Years	28	2.28 (1.36)	$\chi^2=4.893$; $p=0.180$
	25-29 Years	12	1.84 (1.19)	
	30-34 Years	6	2.09 (1.52)	
	35 Years and above	12	2.69 (1.38)	
Scale Dimensions	Age	N	Medyan (IQR)	Group Comparison
Organizational Factors	18-24 Age	28	3.09 (1.20)	$\chi^2=4.072$; $p=0.254$
	25-29 Age	12	2.75 (1.03)	
	30-34 Age	6	3.09 (1.25)	
	35 Age and above	12	3.66 (2.11)	

Table 4 examined whether the distributions of individual, environmental, and organizational factors vary by age using the Kruskal-Wallis test. The test results indicated that there were no statistically significant differences in the distributions of individual, environmental, and organizational factors among the age groups ($p > 0.05$). According to this finding, it was observed that referees in different age groups have similar levels of individual, environmental, and organizational factors.

Table 5. Comparison of Coping with Stress Levels by Gender

Scale Dimensions	Gender	N	Median (IQR)	Group Comparison
Individual Factors	Male	51	3.39 (1.00)	$Z=0.597$; $p=0.559$
	Female	7	3.28 (1.67)	
Environmental Factors	Male	51	2.25 (1.44)	$Z=0.096$; $p=0.926$
	Female	7	2.06 (1.75)	
Organizational Factors	Male	51	3.13 (1.63)	$Z=0.382$; $p=0.709$

	Female	7	3.06 (0.50)
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Table 5 examined whether the distributions of individual, environmental, and organizational factors vary by gender using the Mann-Whitney test. The test results indicated that there were no statistically significant differences in the distributions of individual, environmental, and organizational factors between female and male referees ($p > 0.05$). According to this finding, it was observed that female and male referees have similar levels of individual, environmental, and organizational factors.

Table 6. Comparison of Coping with Stress Levels by Marital Statu

Scale Dimensions	Groups	N	Avg.	Ss	Shg	T Test		
						T	Sd	P
Individual Factors	Married	17	3.6993	.63891	.15496	1.945	56	.057
	Single	41	3.3211	.68747	.10736			
Environmental Factors	Married	17	2.5551	.94809	.22994	1.181	56	.242
	Single	41	2.2409	.91179	.14240			
Organizational Factors	Married	17	3.1250	1.03903	.25200	.472	56	.673
	Single	41	3.0046	.81363	.12707			

Table 6 presents the results of an independent samples t-test conducted to determine whether there is a significant difference in the sub-dimension scores of the coping with stress scale based on the marital status of the participants in the sample. The results showed that there was no statistically significant difference between the arithmetic means of the groups ($t = 1.945 / 1.181 / 0.472$; $p > 0.05$).

Table 7. Comparison of Coping with Stress Levels by Educational Level

Scale Dimensions	Education Level	N	Median (IQR)	Group Comparison
Individual Factors	Highschool	24	3.22 (0.93)	$\chi^2=12.688$; $p=0.005$
	Associate	8	2.92 (0.72)	
	Bachelor's	21	3.83 (0.83)	
	Doctorate	5	3.28 (0.64)	
Environmental Factors	Highschool	24	2.13 (1.45)	$\chi^2=3.730$; $p=0.292$
	Associate	8	1.94 (1.11)	
	Bachelor's	21	2.50 (1.34)	
	Doctorate	5	2.19 (1.56)	
Organizational Factors	Highschool	24	3.09 (1.77)	$\chi^2=2.079$; $p=0.556$

	Associate	8	2.78 (0.95)
	Bachelor's	21	3.19 (1.19)
	Doctorate	5	3.13 (1.63)

Table 7 examined whether the distributions of individual, environmental, and organizational factors varied by educational level using the Kruskal-Wallis test. The results indicated that there was a statistically significant difference in the distributions of individual factors among the educational level groups ($\chi^2 = 12.688$; $p = 0.005 < 0.05$). According to this finding, it was observed that the level of individual factors among bachelor's degree holders is higher than that of high school and associate degree graduates. However, the differences in the distributions of environmental and organizational factors among the educational level groups were not statistically significant ($p > 0.05$). This indicates that referees across different educational levels have similar levels of environmental and organizational factors.

Table 8. Comparison of Coping with Stress Levels by Class Ranking

Scale Dimensions	Classification	N	Median (IQR)	Group Comparison
Individual Factors	Candidate	6	3.14 (1.00)	$\chi^2=7.890$; $p=0.246$
	City	33	3.28 (1.08)	
	Regional	5	3.22 (1.08)	
	C Classification	6	3.72 (0.96)	
	B Classification	2	3.78 (0.00)	
Scale Dimensions	Classification	N	Median (IQR)	Group Comparison
Individual Factors	A Classification	4	4.11 (1.37)	
	Super League	2	4.00 (0.00)	
Environmental Factors	Candidate	6	2.34 (1.36)	$\chi^2=7.859$; $p=0.249$
	City	33	2.06 (1.50)	
	Regional	5	1.38 (1.09)	
	C Classification	6	2.38 (1.66)	
	B Classification	2	2.84 (0.00)	
	A Classification	4	2.78 (1.89)	
Organizational Factors	Super League	2	2.97 (0.00)	
	Candidate	6	2.97 (1.09)	
Organizational Factors	City	33	3.06 (1.47)	$\chi^2=7.602$; $p=0.269$

	Regional	5	2.50 (0.88)
	C Classification	6	3.66 (1.75)
	B Classification	2	3.69 (0.00)
	A Classification	4	3.59 (2.06)
	Super League	2	3.72 (0.00)

In Table 8, the differences in the distributions of individual, environmental, and organizational factors by class ranking were tested using the Kruskal-Wallis test. The results indicated that there were no statistically significant differences in the distributions of individual, environmental, and organizational factors among the class ranking groups ($p > 0.05$). This suggests that referees in different class ranking groups have similar levels of individual, environmental, and organizational factors.

Table 9. Comparison of Coping with Stress Levels by Duration of Refereeing

	Duration of Refreeing	N	Median (IQR)	Group Comparison
Individual Factors	0-5 years	30	3.22 (0.76)	$\chi^2=8.587$; $p=0.072$
	6-10 years	12	3.50 (0.96)	
	11-15 years	9	3.83 (1.17)	
	16-20 years	5	3.94 (0.89)	
	20 years and above	2	2.83 (0.00)	
Environmental Factors	0-5 years	30	1.72 (1.48)	$\chi^2=3.340$; $p=0.503$
	6-10 years	12	2.50 (1.16)	
	11-15 years	9	2.50 (1.88)	
	16-20 years	5	2.47 (0.00)	
	20 years and above	2	3.06 (1.25)	
Organizational Factors	0-5 years	30	3.13 (1.91)	$\chi^2=2.810$; $p=0.590$
	6-10 years	12	3.44 (1.94)	
	11-15 years	9	2.44 (0.00)	
	16-20 years	5	3.24 (1.19)	
	20 years and above	2	2.44 (0.62)	

Table 9 examined whether the distributions of individual, environmental, and organizational factors varied according to refereeing duration using the Kruskal-Wallis test. The results indicated that there were no statistically significant differences in the distributions of

individual, environmental, and organizational factors among different duration groups of refereeing ($p > 0.05$). This finding suggests that referees across different durations of refereeing exhibited similar levels of individual, environmental, and organizational factors.

Table 10. Comparison of Coping with Stress Levels by Profession Outside of Refereeing

Scale Dimensions	Occupation outside Refreeing	N	Median (IQR)	Group Comparison
Individual Factors	Educator	8	3.25 (1.07)	$c^2=2.676$; $p=0.613$
	Govermental Person	13	3.56 (1.06)	
	Private Sector	7	3.11 (1.11)	
	Self Employed	8	3.14 (0.93)	
	Student	22	3.44 (1.25)	
Environmental Factors	Educator	8	2.28 (1.20)	$c^2=0.721$; $p=0.949$
	Govermental Person	13	2.00 (1.66)	
	Private Sector	7	2.25 (0.44)	
	Self Employed	8	2.53 (2.39)	
	Student	22	2.44 (1.36)	
Organizational Factors	Educator	8	2.88 (1.08)	$c^2=5.076$; $p=0.280$
	Govermental Person	13	2.81 (1.94)	
	Private Sector	7	2.25 (1.88)	
	Self Employed	8	3.38 (0.97)	
	Student	22	3.28 (1.16)	

In Table 10, the differences in the distributions of individual, environmental, and organizational factors according to professions outside of refereeing were analyzed using the Kruskal-Wallis test. The results indicated that there were no statistically significant differences in the distributions of individual, environmental, and organizational factors among the profession groups outside of refereeing ($p > 0.05$). This suggests that referees in different professions exhibited similar levels of individual, environmental, and organizational factors.

Table 11. Comparison of Coping with Stress Levels Based on Cooper Test Results

Scale Dimensions	Cooper Test Result	N	Median (IQR)	Group Comparison
Individual Factors	2400 and below	5	3.39 (1.69)	$c^2=6.169$; $p=0.290$
	2401-2600	8	3.00 (0.76)	
	2601-2800	18	3.69 (0.92)	

	2801-3000	17	3.28 (0.64)	
	3001-3200	4	3.69 (1.58)	
	3201 and above	6	3.92 (1.90)	
Scale Dimensions	Cooper Test Result	N	Median (IQR)	Group Comparison
Environmental Factors	2400 and below	5	2.69 (1.44)	$c^2=4.274$; $p=0.511$
	2401-2600	8	1.88 (0.67)	
	2601-2800	18	2.31 (1.22)	
	2801-3000	17	2.25 (1.34)	
	3001-3200	4	2.97 (1.50)	
	3201 and above	6	2.25 (1.95)	
Organizational Factors	2400 and below	5	3.13 (0.34)	$c^2=4.079$; $p=0.538$
	2401-2600	8	2.56 (1.58)	
	2601-2800	18	3.56 (1.64)	
	2801-3000	17	3.06 (0.78)	
	3001-3200	4	3.47 (2.03)	
	3201 and above	6	2.78 (1.84)	

In Table 11, the variations in the distributions of individual, environmental, and organizational factors according to the results of the Cooper test were examined using the Kruskal-Wallis test. The test results indicated that there were no statistically significant differences in the distributions of individual, environmental, and organizational factors among the groups based on Cooper test results ($p > 0.05$). This finding suggests that referees exhibited similar levels of individual, environmental, and organizational factors across different test results.

Table 12. The Relationship Between the Cooper Test and Sub-Dimensions of the Coping with Stress Scale

The Relationship Between the Cooper Test and Sub-Dimensions of the Coping with Stress	N	R	P
Coping with Stress in Total	58	.035	.792**
Individual Factors	58	.080	.551**
Environmental Factors	58	.023	.861**
Organizational Factors	58	-.005	.973**

**. Correlation is significant at the 0.01 level (2-tailed).

In Table 12, a Spearman Rank-Order Correlation analysis was conducted to determine the relationship between the Cooper test scores and the total coping with stress scores. The analysis revealed that there is a statistically non-significant, low positive relationship between the Cooper Test scores and the total coping with stress scores ($r = 0.035$; $p < 0.01$). Furthermore, there was also a statistically non-significant, low positive relationship between the Cooper Test scores and individual factors ($r = 0.080$; $p < 0.01$), a statistically non-significant, low positive relationship between the Cooper Test scores and environmental factors ($r = 0.023$; $p < 0.01$), and a statistically non-significant, low negative relationship between the Cooper Test scores and organizational factors ($r = -0.005$; $p < 0.01$).

Discussion

According to the results of the study, no statistically significant differences were found in coping with stress levels regarding individual, environmental, and organizational factors across different age groups. A review of the relevant literature indicates that, as reported by Erkmen and Çetin (2008) and Kara (2010), there was no statistically significant difference among the age groups of the participants concerning the sub-dimensions of coping with stress methods. However, Şirin (2021), in a study examining the stress sources perceived by referees and their life satisfaction, found significant differences in the perceptions of football referees aged 16-21 regarding external sources, social resources, and general perceptions of stress sources compared to other age groups. Furthermore, in Düğenci's (2018) study, a significant difference was identified in the biochemical sub-dimension of escape between participants aged 18-22 and those aged 23-27. The findings of Erkmen et al. and Kara align with our study, whereas Şirin and Düğenci's findings do not. These results suggest that understanding the impact of age on coping with stress levels is important. However, conducting studies with larger sample sizes and different age ranges may help elucidate this relationship further.

Based on the results of our study, a statistically significant difference was found in the individual factors sub-dimension of coping with stress levels among educational level groups. Specifically, it was observed that referees with a bachelor's degree exhibited higher levels of individual factors compared to those with a high school diploma and associate's degree. In the related literature, findings from Çakmak (2011) indicate that football referees with an associate's degree reported higher opinions regarding individual, environmental, and organizational stress factors than referees with high school, bachelor's, and postgraduate education. Üzüm (2010) did not find a significant difference in organizational stress levels in athletes based on educational levels. Comparing the literature results, the findings of Çakmak (2011) align with ours, while those of Üzüm (2010) do not. It is thought that the disparity may stem from the differences in the scales applied to measure stress levels in referees.

In our study, no statistically significant differences were found in coping with stress levels regarding individual, environmental, and organizational factors among classification groups. Reviewing the relevant literature, Kılıç (2019) analyzed whether there were significant differences in stress sources among football referees' classifications, concluding that no significant differences were found in stress sources based on classification groups. Güven (2016) also reported no significant differences in the coping styles of referees based on their classifications. Additionally, Şirin (2021) found that trainee referees reported higher levels of stress in comparison to certified referees. This could be due to trainees being more aware of their responsibilities and the potential impact of their decisions on match outcomes, which may increase their stress and anxiety levels. Comparing the reviewed literature, the studies of Kılıç and Güven align with ours, whereas Şirin's findings do not. The absence of such a

difference in our study may be attributed to participants not sharing the same career goals as those in Şirin's study, leading to lower levels of stress.

According to the findings of our study, no statistically significant differences were found in the distributions of individual, environmental, and organizational factors related to the years of refereeing experience. When reviewing the relevant literature, Küçükylmaz (2019) observed variations in continuous anxiety levels among groups with 1-3, 4-7, and 8-11 years of refereeing experience, yet concluded that these differences were not statistically significant. Ekmekçi (2008), in a study on basketball referees, found no significant differences in the sub-dimensions of stress sources based on years of refereeing. However, Kılıç (2019) did find significant differences in the individual, environmental, and organizational sub-dimensions of stress sources based on years of refereeing experience. According to this study, referees with 15 years or more of experience reported lower individual stress scores than those with less than 1 year, 1-5 years, and 6-10 years of refereeing experience. Consequently, Küçükylmaz and Ekmekçi's findings are similar to ours, while Kılıç's findings are not. These results suggest that stress levels may not change significantly with years of refereeing experience, indicating that other factors (such as personal characteristics and management style) may influence stress perception. Developing stress management and support systems that consider these factors could enhance the coping skills of football referees.

In our research, no statistically significant differences were found in individual, environmental, and organizational factor levels among different professional groups outside refereeing.

In our study, according to the results of the aerobic endurance test (Cooper test) obtained from the TFF, it was observed that referees had similar levels of individual, environmental and organizational factors. In contrast, Lipowska, Sadowska, Bauchinger, and Koteja (2019) stated that performance in a challenging situation depends not only on physiological limitations such as aerobic exercise capacity, but also on behavioral characteristics such as adequate coping with stress. These findings suggest that soccer referees with different aerobic endurance have similar levels of individual, environmental and organizational stressors.

According to the results of the study, there were no statistically significant differences in coping with stress levels concerning individual, environmental, and organizational factors among age groups. These findings indicate that football referees across different age groups experience individual, environmental, and organizational factors at similar levels. Furthermore, no statistically significant differences were found in stress coping levels between male and female referees in terms of individual, environmental, and organizational factors. This suggests that both male and female referees experience these factors at similar levels. Similarly, there were no statistically significant differences between married and single referees regarding individual, environmental, and organizational factors related to coping with stress.

Conclusion

The study's findings indicate that there is a statistically significant difference in individual factors concerning education level groups with respect to coping with stress levels. Specifically, it appears that referees holding a bachelor's degree have higher levels of individual factors compared to those with a high school diploma and an associate degree. However, no statistically significant differences were found in environmental and organizational factors concerning education level groups. This suggests that referees from

different educational backgrounds experience environmental and organizational factors at similar levels.

In terms of coping with stress levels, there were also no statistically significant differences found in individual, environmental, and organizational factors among classification groups, refereeing duration, and referees from other professional groups. According to the results of the Cooper test, no statistically significant differences were identified among groups regarding individual, environmental, and organizational factors. These findings imply that referees experience individual, environmental, and organizational factors at similar levels, regardless of test results.

Additionally, the study found a positive, moderate, and statistically significant relationship between individual factors and environmental factors concerning coping with stress levels. This indicates that as individual factors increase, environmental factors also tend to increase. Moreover, a positive, moderate, and statistically significant relationship was identified between individual factors and organizational factors, suggesting that an increase in individual factors is associated with an increase in organizational factors as well. Similarly, a positive, moderate, and statistically significant relationship was observed between environmental factors and organizational factors, implying that as environmental factors increase, so do organizational factors. These results demonstrate that there is an interaction between individual factors, environmental factors, and organizational factors, and that these factors should be evaluated together.

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