

The Role of Mindfulness in Predicting Pre-Competition Anxiety And Rumination

Müsabaka Öncesi Kaygı ve Ruminasyonun Yordanmasında Bilinçli Farkındalığın Rolü

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Öz

Bu araştırmanın amacı, Ankara Eryaman Türkiye Olimpiyat Hazırlık Merkezi'nde (TOHM) aktif olarak müsabakalara hazırlanan elit sporcuların bilinçli farkındalık, spor müsabakası ruminasyonu ve müsabaka öncesi kaygı düzeyleri arasındaki ilişkileri incelemek ve bilinçli farkındalık alt boyutlarının bu psikolojik yapılar üzerindeki yordayıcı rolünü değerlendirmektir. Araştırma, ilişkisel tarama modeli kapsamında yürütülmüş ve çalışmaya farklı branşlardan 130 elit sporcu gönüllü olarak katılmıştır. Veriler Kişisel Bilgi Formu, Sporcu Bilinçli Farkındalık Ölçeği, Spor Müsabakası Ruminasyon Ölçeği ve Spor Kaygı Ölçeği-2 aracılığıyla toplanmıştır. Verilerin analizinde tanımlayıcı istatistikler, bağımsız örneklem t-testi, tek yönlü varyans analizi (ANOVA), Pearson korelasyon ve çoklu doğrusal regresyon analizlerinden yararlanılmıştır. İstatistiksel yöntemi güçlendirmek amacıyla Durbin-Watson ve Cohen's F^2 etki büyüklükleri raporlanmıştır. Araştırma bulguları, kadın sporcuların spor kaygısı toplam puanı ile somatik kaygı, endişe ve konsantrasyon bozukluğu alt boyutlarında erkek sporculara göre anlamlı düzeyde daha yüksek puanlara sahip olduğunu göstermiştir ($p < .05$). Buna karşın yaş, sporcu kategorisi, sportif başarı derecesi ve psikolojik destek alma durumu değişkenlerine göre anlamlı farklılık saptanmamıştır ($p > .05$). Pearson korelasyon analizi sonuçları, bilinçli farkındalık ile spor müsabakası ruminasyonu ($r = -.203$, $p < .05$) ve müsabaka öncesi kaygı ($r = -.215$, $p < .05$) arasında negatif yönlü anlamlı ilişkiler ortaya koymuştur. Yapılan çoklu doğrusal regresyon analizleri, bilinçli farkındalık alt boyutlarının hem müsabaka öncesi kaygıyı ($F(3, 126) = 9.909$, $p = .001$, $R^2 = .191$, $F^2 = 0.236$) hem de müsabaka ruminasyonunu ($F(3, 126) = 7.788$, $p = .001$, $R^2 = .156$, $F^2 = 0.185$) orta ve orta-yüksek etki büyüklüğü ile anlamlı şekilde yordadığını göstermiştir. Alt boyut düzeyinde, Yargılamama ($\beta = -.380$, $p = .001$) ve Yeniden Odaklanma ($\beta = -.264$, $p = .007$) kaygıyı negatif yönlü anlamlı yordamıştır. Ruminasyon modelinde ise Yargılamama negatif ($\beta = -.179$, $p = .031$), Yeniden Odaklanma ise pozitif yönlü ($\beta = .207$, $p = .039$) anlamlı yordayıcı olmuştur. Sonuç olarak, bilinçli farkındalığın özellikle 'yargısız kabul' boyutu aracılığıyla sporcuların ruminatif düşünce eğilimlerini ve müsabaka öncesi kaygı düzeylerini azaltmada koruyucu bir işlev gördüğü belirlenmiştir. Elde edilen bulgular, elit sporcuların performans süreçlerini desteklemek amacıyla alt boyut odaklı bilinçli farkındalık eğitimlerinin spor ortamlarına entegre edilmesinin önemini ortaya koymaktadır.

Anahtar Kelimeler: Bilinçli Farkındalık, Spor Kaygısı, Spor Müsabakası Ruminasyonu, Elit Sporcu, Performans Psikolojisi

Abstract

The purpose of this study is to examine the relationships among mindfulness, sport competition rumination, and pre-competition anxiety levels of elite athletes actively preparing for competitions at the Ankara Eryaman Turkish Olympic Preparation Center (TOHM), and to evaluate the predictive role of mindfulness dimensions on these psychological constructs. The research was conducted using a relational survey model, and 130 elite athletes from various sports branches participated voluntarily. Data were collected using the Personal Information Form, the Sport Mindfulness Scale, the Sport Competition Rumination Scale, and the Sport Anxiety Scale-2. Data were analyzed using descriptive statistics, independent samples t-tests, one-way ANOVA, Pearson correlation, and multiple linear regression analyses. Durbin-Watson and Cohen's F^2 effect sizes were reported to strengthen the statistical methodology. The research findings indicated that female athletes scored significantly higher in total sport anxiety and its sub-dimensions—somatic anxiety, worry, and concentration disruption—compared to male athletes ($p < .05$). Conversely, no significant differences were observed based on age, athlete category, athletic achievement level, and psychological support status ($p > .05$). Pearson correlation analyses revealed significant negative relationships between mindfulness, sport competition rumination ($r = -.203$, $p < .05$), and pre-competition anxiety ($r = -.215$, $p < .05$). Multiple linear regression analyses further demonstrated that mindfulness dimensions significantly predicted both pre-competition anxiety ($F(3, 126) = 9.909$, $p = .001$, $R^2 = .191$, $F^2 = 0.236$) and sport competition rumination ($F(3, 126) = 7.788$, $p = .001$, $R^2 = .156$, $F^2 = 0.185$) with moderate-to-large effect sizes. Specifically, the Non-Judging ($\beta = -.380$, $p = .001$) and Refocusing ($\beta = -.264$, $p = .007$) subscales significantly and negatively predicted sports anxiety. For rumination, Non-Judging served as a significant negative predictor ($\beta = -.179$, $p = .031$), whereas Refocusing positively predicted rumination ($\beta = .207$, $p = .039$). In conclusion, mindfulness serves as a protective psychological resource in reducing athletes' ruminative thought tendencies and pre-competition anxiety, with non-judgmental acceptance playing a central protective role. The findings highlight the importance of integrating dimension-specific mindfulness training into applied sports psychology programs to support elite athletes' psychological resilience.

Keywords: Mindfulness, Sport Anxiety, Sport Competition Rumination, Elite Athlete, Performance Psychology

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INTRODUCTION

Sport performance is influenced not only by physical and technical competencies but also by cognitive and psychological processes (Gardner & Moore, 2007). Particularly among elite athletes, the cognitive and emotional responses experienced during the pre-competition period are considered important determinants of performance. Contemporary perspectives emphasize that psychological skills such as mental toughness, emotion regulation, attentional control, and mindfulness play a critical role in explaining athletic performance (Gucciardi et al., 2015; Zhang, 2022). Athletes are exposed to various psychological demands in competitive settings, including performance expectations, fear of failure, competitive pressure, and outcome-oriented evaluations, all of which substantially influence their pre-competition psychological states (Birrer et al., 2012).

One of the most commonly experienced psychological conditions during the pre-competition period is anxiety. Anxiety is conceptualized as a multidimensional construct comprising cognitive and somatic responses that emerge when athletes perceive their performance as being under threat. Although a moderate level of anxiety may facilitate performance (Hatzigeorgiadis & Chroni, 2007), excessive anxiety has been shown to impair attentional control, negatively affect decision-making processes, and ultimately reduce performance quality (Bishop et al., 2004; Cheng et al., 2009; Cremades et al., 2011). Furthermore, elevated anxiety may contribute to decreased motivation and increased symptoms of stress and burnout among athletes (Cremades et al., 2011). Consequently, identifying the cognitive processes that contribute to the development of anxiety is essential for enhancing athletic performance.

One of the cognitive processes most closely associated with anxiety is rumination (Birrer et al., 2012). Athletes frequently engage in repetitive thinking about negative experiences, previous mistakes, or the possibility of future failure, which may lead to the development of ruminative thought patterns (Roy et al., 2016). Rumination refers to the repetitive and persistent focus on negative thoughts and experiences (Joormann, 2005). Within the sport context, rumination may manifest as repeatedly dwelling on mistakes made during previous competitions, mentally replaying unsuccessful performances, or focusing excessively on potential future failures. Such maladaptive cognitive patterns consume attentional resources, hinder athletes' ability to concentrate on the immediate performance task, increase anxiety levels, and ultimately impair athletic performance (Roy et al., 2016; Zhang, 2022).

In recent years, mindfulness has emerged as one of the most prominent constructs in sport psychology. According to Kabat-Zinn (2003), mindfulness refers to intentionally directing one's attention to the present moment while accepting ongoing experiences without judgment. Rather than becoming preoccupied with negative thoughts about the past or concerns regarding the future, mindfulness promotes present-moment awareness and enhances psychological flexibility. Research involving athletes has demonstrated that higher levels of mindfulness are associated with reduced anxiety and stress (Li et al., 2019), improved athletic performance (Amemiya & Sakairi, 2019; Carraça

et al., 2019), and enhanced cognitive skills such as attentional control, concentration, attentional refocusing, imagery, and competition planning (Zadkhosh et al., 2019).

From a theoretical perspective, mindfulness is considered a protective mechanism in the relationship between anxiety and rumination. It enables individuals to become aware of their ruminative thoughts, acknowledge them without judgment, and redirect their attention to the present moment without becoming cognitively fused with these thoughts (Germer, 2005; Kabat-Zinn, 1990; Shapiro et al., 2006). Through this process, individuals are better able to disengage from maladaptive cycles of negative thinking and develop more effective emotion regulation strategies. Consistent with this perspective, previous studies have reported significant negative associations between mindfulness and rumination (Tingaz & Çakmak, 2021). Similarly, mindfulness-based interventions have been shown to reduce anxiety and enhance athletes' ability to cope with stress (Li et al., 2019).

Despite the growing body of literature, studies simultaneously examining the relationships among mindfulness, pre-competition anxiety, and competition-related rumination in elite athletes remain limited. In particular, clarifying the predictive role of mindfulness in relation to anxiety and rumination may contribute to a more comprehensive understanding of the psychological mechanisms underlying athletic performance. Therefore, the present study aimed to investigate the role of mindfulness in predicting pre-competition anxiety and sport competition rumination among elite athletes actively preparing for competition at the Ankara Eryaman Turkish Olympic Preparation Center.

Research Hypotheses

H₁: There is a significant negative relationship between athletes' mindfulness levels and their sport competition rumination levels.

H₂: There is a significant negative relationship between athletes' mindfulness levels and their pre-competition anxiety levels.

H₃: There is a significant positive relationship between athletes' sport competition rumination levels and their pre-competition anxiety levels.

H_{3a}: There is a significant positive relationship between sport competition rumination and somatic anxiety.

H_{3b}: There is a significant positive relationship between sport competition rumination and worry.

H_{3c}: There is a significant positive relationship between sport competition rumination and concentration disruption.

H₄: Mindfulness is a significant negative predictor of sport competition rumination.

H₅: Mindfulness is a significant negative predictor of pre-competition anxiety.

Purpose of the Study

The primary aim of this study was to examine the predictive role of mindfulness in pre-competition anxiety and sport competition rumination among elite athletes actively preparing for competition at the Ankara Eryaman Turkish Olympic Preparation Center.

Additionally, the study sought to investigate the relationships among mindfulness, pre-competition anxiety, and sport competition rumination.

METHOD

Research Design

This study employed a relational survey design, which is one of the survey research models aimed at examining relationships between variables. A relational survey design is used to determine the degree and direction of covariation between two or more variables (Karasar, 2015).

Participants

The sample of the study consisted of athletes actively engaged in sport at the Ankara Eryaman Turkish Olympic Preparation Center. The sample size was determined through an a priori power analysis using G*Power 3.1 software. In this context, the effect size reported by Tingaz and Çakmak (2021) ($r = 0.362$) was used as a reference for a two-tailed bivariate correlation model. Based on a standard 95% confidence level ($\alpha = .05$) and 95% statistical power ($\text{Beta} = .95$), the minimum required sample size was calculated as 88 participants. To account for potential data loss (e.g., incomplete or invalid responses and participant dropout), the sample size was increased by 10%, and the formula proposed by Suresh and Chandrashekara (2012) ($N_1 = N / (1 - q)$) was applied, resulting in a target sample size of 84 participants. Accordingly, a total of 130 athletes voluntarily participated in the study. Participants' ages ranged from 18 to 23 years. Of the total sample, 75 were male and 55 were female athletes. In addition, 41 participants reported receiving psychological support, whereas 89 reported not receiving any psychological support.

Ethical Approval

The study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Ethical approval was obtained from the Ethics Committee of Şırnak University (Decision dated 30.04.2026, No: E-74546226-050.04-168887).

Participation was voluntary, and all participants were informed about the purpose and scope of the study, as well as the fact that the data would be used solely for scientific purposes. Written informed consent was obtained prior to data collection. Furthermore, necessary permissions for the use of the measurement instruments were obtained from the original scale developers/adapters via email.

Data Collection Instruments

Personal Information Form

A Personal Information Form developed by the researcher was used to obtain demographic characteristics of the participating athletes. The form collected information regarding participants' gender, age, sport discipline, athlete classification level, sport achievements, and psychological support status. These variables were included in the study to describe the overall characteristics of the sample and to identify

key demographic and sport-related factors that may be associated with the study variables.

Mindfulness Scale

The Mindfulness Scale was developed by Thienot et al. (2014) and adapted into Turkish by Tingaz (2020). The scale consists of 15 items and includes three sub-dimensions: Awareness, Non-judgment, and Refocusing. Items in the Non-judgment subscale are reverse-coded. The scale is rated on a 6-point Likert-type scale consistent with the original version (1 = Almost never, 6 = Almost always).

High levels of concurrent validity were reported between the Turkish and English versions of the scale, with correlation coefficients of $r = .84$ for English–Turkish administration and $r = .89$ for Turkish–English administration. The internal consistency reliability coefficient (Cronbach's alpha) of the scale was reported as $\alpha = .82$. Subscale reliability coefficients were $\alpha = .81$ for Awareness, $\alpha = .70$ for Non-judgment, and $\alpha = .77$ for Refocusing. Test–retest reliability was $r = .89$, with subscale values of $r = .72$ for Awareness, $r = .77$ for Non-judgment, and $r = .96$ for Refocusing. In addition, split-half reliability was reported as $r = .80$.

Sport Competition Rumination Scale

The Sport Competition Rumination Scale was developed by Michel-Kröhler, Krys, and Berti (2021), and the Turkish adaptation was conducted by Karafil and Pehlivan (2023). The scale is designed to assess athletes' repetitive and intrusive negative thoughts related to performance during or after competition. The scale has a unidimensional structure and consists of 6 items in total. It is rated on a 5-point Likert-type scale ranging from 1 (Strongly disagree) to 5 (Strongly agree) (Michel-Kröhler et al., 2021).

Sport Anxiety Scale-2 (SAS-2)

The Sport Anxiety Scale-2 (SAS-2) was originally developed by Smith, Smoll, and Schutz (1990) and later revised by Smith, Smoll, Cumming, and Grossbard (2006). The Turkish adaptation of the scale was conducted by Karadağ and Aşçı (2020). In the Turkish adaptation study, factor loadings of the items ranged from 0.42 to 0.75. Internal consistency coefficients were reported as $\alpha = 0.65$ for somatic anxiety, $\alpha = 0.78$ for worry, and $\alpha = 0.67$ for concentration disruption. The scale consists of 15 items and is rated on a 4-point Likert-type scale (1 = Not at all, 2 = A little, 3 = Moderately, 4 = Very much). Total scores range from 15 to 60, with higher scores indicating higher levels of sport anxiety. Scores approaching 60 reflect elevated levels of somatic anxiety, worry, and concentration disruption. Subscale scores range from 5 to 20, where higher scores indicate greater intensity of the corresponding anxiety component. The total sport anxiety score is calculated as the sum of the somatic anxiety, worry, and concentration disruption subscale scores.

Data Collection Procedure

In this study, data were collected using a Personal Information Form developed by the researcher, the Sport Mindfulness Scale, the Sport Competition Rumination Scale,

and the Sport Anxiety Scale-2. Necessary permissions for the use of the measurement instruments were obtained from the respective scale developers/adaptors. Data were collected through face-to-face administration by the researcher from athletes who voluntarily agreed to participate in the study. To minimize systematic response bias and enhance the internal consistency of the measurements, the order of the administered scales was randomized for each participant.

Data Analysis

Statistical analyses were conducted using the SPSS 27.0 software package. Descriptive statistics (mean, standard deviation, minimum, maximum, skewness, and kurtosis) were computed for all study variables. Prior to the primary statistical analyses, the normality of data distribution was examined using the Kolmogorov–Smirnov test, skewness and kurtosis coefficients, and Q–Q plots. Skewness and kurtosis values fell within the acceptable ± 2 range, confirming parametric statistical suitability (George & Mallery, 2010). Independent samples t-tests were used to examine differences between two independent groups, while one-way Analysis of Variance (One-Way ANOVA) was conducted for comparisons involving more than two groups. The level of statistical significance was set at $p < .05$ for all analyses. Bivariate relationships among study variables were evaluated using Pearson correlation analysis.

In order to align the statistical analyses with the predictive focus of the research title and hypotheses, Multiple Linear Regression Analyses were performed to evaluate the predictive role of mindfulness dimensions (Awareness, Non-Judging, and Refocusing) on pre-competition anxiety (SAS-2) and sport competition rumination (SCRS). Key regression assumptions were verified prior to reporting:

Multicollinearity: Assessed via Variance Inflation Factor ($VIF < 10$) and Tolerance values (> 0.10), confirming the absence of severe collinearity.

Autocorrelation: Evaluated using the Durbin-Watson statistic, yielding 1.854 for Model 1 and 1.921 for Model 2, confirming the independence of residuals.

Effect Size: Practical significance was determined using Cohen's f^2 effect size estimates ($f^2 = R^2 / (1-R^2)$), where values of 0.02, 0.15, and 0.35 denote small, medium, and large effect sizes, respectively (Cohen, 1988). The statistical significance level was set at $p < .05$ for all tests.

Table 1. Descriptive Statistics of the Study Variables

Dimensions	Min	Max	Mean (x)	SD	Skewness	Kurtosis	Cronbach's α
Somatic Anxiety	5,00	17,00	8,77	2,60	,867	,766	,518
Worry	5,00	20,00	10,00	3,82	,715	-,042	,498
Concentration	5,00	20,00	8,37	2,90	1,394	1,710	,516
SAS-2 Total	15,00	55,00	27,14	8,21	,965	,826	,562
SCRS Total	6,00	30,00	22,18	5,57	-,989	,587	,445
Awareness	9,00	30,00	23,04	4,80	-,812	,386	,437
Non-judgment	5,00	30,00	14,70	5,52	,465	,070	,593
Refocusing	5,00	30,00	22,78	5,17	-1,112	1,429	,468
Mindfulness Total	40,00	90,00	60,52	10,36	,302	-,172	,507

Descriptive statistics presented in Table 1 indicate that among the sub-dimensions of the Sport Anxiety Scale-2, the highest mean score was observed in the Worry dimension ($\bar{x} = 10.00$), whereas the lowest mean score was found in the Concentration Disruption dimension ($\bar{x} = 8.37$). The total mean score of the Sport Competition Rumination Scale was $\bar{x} = 22.18$. Regarding the Sport Mindfulness Scale, the highest mean score was obtained in the Awareness sub-dimension ($\bar{x} = 23.04$), while the lowest mean score was observed in the Refocusing sub-dimension ($\bar{x} = 22.78$). The assumption of normality was evaluated based on skewness and kurtosis coefficients, and all values were found to fall within the ± 2.0 range. This indicates that the data were normally distributed, thereby supporting the use of parametric statistical tests in the subsequent analyses (George & Mallery, 2010).

RESULTS

Table 2. Demographic Characteristics of the Participants

	Variables	f	%
Gender	Male	75	57,7
	Female	55	42,3
Age (years)	18	35	26,8
	19	34	26,2
	20	24	18,5
	22	17	13,1
	23	20	15,4
Sport Branch	Judo	19	14,6
	Athletics	41	31,5
	Curling	17	13,1
	Rowing	7	5,5
	Shooting	3	2,3
	Modern Pentathlon	3	2,3
	Triathlon	9	6,9
	Weightlifting	31	23,8
Athlete Category	National A Team	13	10,0
	National B Team	22	16,9
	National C Team	17	13,1
	TOHM Athlete	59	45,4
	Club Athlete	19	14,6

A total of 130 athletes participated in the study. Examination of the participants' demographic characteristics indicated that 57.7% ($f = 75$) were male and 42.3% ($f = 55$) were female. Regarding age distribution, the highest proportions were observed in the 18-year-old (26.8%) and 19-year-old (26.2%) groups. In terms of sport disciplines, athletics (31.5%) and weightlifting (23.8%) were the most frequently represented sports within the sample. With respect to athlete classification, the majority of participants were TOHM athletes (45.4%). Considering the highest achieved sport level, athletes with national (Turkey) achievements constituted the largest proportion of the sample (46.9%).

In addition, most participants (68.5%) reported that they did not receive psychological support.

Table 3. Independent Samples *t*-Test Results for Sport Anxiety, Sport Competition Rumination, and Mindfulness Levels by Gender

Dimensions	Gender	n	$\bar{X}$	SD	t	p
Somatic Anxiety	Male	75	8,03	2,00	-3,784	,000*
	Female	55	9,78	2,97		
Worry	Male	75	9,04	3,05	-3,297	,001*
	Female	55	11,31	4,38		
Concentration	Male	75	7,83	2,37	-2,534	,012*
	Female	55	9,11	3,39		
SAS-2 Total	Male	75	24,89	6,37	-3,611	,001*
	Female	55	30,20	9,43		
SCRS Total	Male	75	21,93	5,21	,715	,580
	Female	55	22,51	6,07		
Awareness	Male	75	23,16	4,98	,280	,336
	Female	55	22,87	4,59		
Non-judgment	Male	75	15,41	5,02	,276	1,733
	Female	55	13,73	6,04		
Refocusing	Male	75	23,23	5,38	,300	1,139
	Female	55	22,18	4,84		
Mindfulness Total	Male	75	61,80	10,99	,086	1,651
	Female	55	58,78	9,26		

*p<0.05

Table 3 revealed significant differences in the total Sport Anxiety Scale-2 score as well as in the somatic anxiety, worry, and concentration disruption subscales according to gender. The findings indicated that female athletes scored significantly higher than male athletes across these dimensions ($p<.05$). In contrast, no statistically significant differences were found between male and female athletes in terms of sport competition rumination or the total and sub-dimension scores of mindfulness ($p>.05$).

Table 4. Comparison of Sport Anxiety, Sport Competition Rumination, and Mindfulness Across Age Groups: One-Way ANOVA Results

Dimensions	Age	n	$\bar{X}$	SD	F	p
Somatic Anxiety	18	35	8,83	2,51	,533	,712
	19	34	9,15	2,64		
	20	24	8,46	1,91		
	22	17	9,00	3,29		
	23	20	8,20	2,87		
Worry	18	35	10,60	3,82	,551	,699
	19	34	10,29	3,79		
	20	24	9,67	3,30		
	22	17	9,29	4,25		
	23	20	9,45	4,26		
Concentration	18	35	8,14	3,01	,192	,942
	19	34	8,73	3,37		
	20	24	8,29	1,94		
	22	17	8,29	2,91		
	23	20	8,30	3,06		
SAS-2 Total	18	35	27,57	8,02	,323	,862
	19	34	28,18	8,53		
	20	24	26,41	5,71		
	22	17	26,59	9,93		
	23	20	25,95	9,43		
SCRS Total	18	35	22,71	6,08	,737	,568
	19	34	22,00	5,51		
	20	24	21,46	5,58		
	22	17	20,82	5,47		
	23	20	23,55	4,90		
Awareness	18	35	23,34	4,50	2,248	,068
	19	34	22,18	4,57		
	20	24	22,29	5,86		
	22	17	22,06	5,35		
	23	20	25,70	2,79		
Non-judgment	18	35	14,63	4,69	,980	,421
	19	34	16,00	6,21		

	20	24	14,21	5,31		
	22	17	12,88	5,34		
	23	20	14,75	5,98		
Refocusing	18	35	22,11	4,79		
	19	34	22,91	6,57		
	20	24	22,33	5,44	,791	,533
	22	17	22,47	4,30		
	23	20	24,55	3,08		
Mindfulness Total	18	35	60,08	9,00		
	19	34	61,09	11,05		
	20	24	58,83	11,61	1,541	,194
	22	17	57,41	10,05		
	23	20	65,00	9,47		

*p<0,05

According to the ANOVA results presented in Table 4, no statistically significant differences were found in athletes' sport anxiety, sport competition rumination, or mindfulness levels, including their respective sub-dimensions, across age groups ($p>.05$).

Table 5. Differences in Sport Anxiety, Sport Competition Rumination, and Mindfulness Based on Psychological Support Status: Independent Samples *t*-Test Results

Dimensions	Psychological Support Status	n	$\bar{X}$	SD	t	p
Somatic Anxiety	Yes	41	8,88	2,66		
	No	89	8,72	2,58	,322	,748
Worry	Yes	41	10,19	3,82		
	No	89	9,91	3,84	,393	,695
Concentration	Yes	41	8,37	3,19		
	No	89	8,37	2,78	-,008	,993
SAS-2 Total	Yes	41	27,44	8,68		
	No	89	27,00	8,03	,282	,778
SCRS Total	Yes	41	21,85	6,55		
	No	89	22,32	5,09	-,447	,655
Awareness	Yes	41	22,46	4,71		
	No	89	23,30	4,84	-,926	,356
Non-judgment	Yes	41	14,12	5,48		
	No	89	14,97	5,55	-,809	,420
Refocusing	Yes	41	21,61	5,31		
	No	89	23,33	5,04	-1,773	,079
Mindfulness Total	Yes	41	58,19	9,92		
	No	89	61,59	10,44	-1,751	,082

*p<0,05

According to the independent samples *t*-test results presented in Table 5, no statistically significant differences were found in athletes' sport anxiety, sport competition rumination, or mindfulness levels, including their respective sub-dimensions, based on psychological support status ($p > .05$).

Table 6. Comparison of Sport Anxiety, Sport Competition Rumination, and Mindfulness by Sport Achievement Level: One-Way ANOVA Results

Dimensions	Achievement Level	n	$\bar{X}$	SD	F	p
Somatic Anxiety	World	25	9,04	2,97	1,039	,398
	European	19	9,05	3,50		
	Balkan	13	9,23	2,71		
	National (Turkey)	61	8,74	2,14		
	Regional	4	8,50	2,89		
	Provincial	8	6,88	1,73		
Worry	World	25	10,44	4,28	,168	,974
	European	19	9,74	5,21		
	Balkan	13	9,85	3,74		
	National (Turkey)	61	9,82	3,05		
	Regional	4	10,75	3,59		
	Provincial	8	10,50	5,16		
Concentration	World	25	8,56	2,45	1,476	,202
	European	19	9,37	4,52		
	Balkan	13	8,46	2,90		
	National (Turkey)	61	8,05	2,27		
	Regional	4	10,25	5,56		
	Provincial	8	6,75	1,49		
SAS-2 Total	World	25	28,04	8,82	,448	,814
	European	19	28,16	12,62		
	Balkan	13	27,54	7,95		
	National (Turkey)	61	26,61	6,11		
	Regional	4	29,50	11,48		
	Provincial	8	24,13	7,79		
SCRS Total	World	25	22,08	5,26	,898	,485
	European	19	22,32	5,68		
	Balkan	13	24,85	4,78		
	National (Turkey)	61	21,51	5,69		
	Regional	4	21,00	9,52		
	Provincial	8	23,50	4,47		
Awareness	World	25	23,20	5,32	,459	,806
	European	19	23,16	5,50		
	Balkan	13	24,46	3,36		
	National (Turkey)	61	22,51	4,79		
	Regional	4	22,75	3,86		
	Provincial	8	24,13	4,52		
Non-judgment	World	25	14,28	5,71	,634	,674
	European	19	16,53	6,54		
	Balkan	13	14,69	5,77		
	National (Turkey)	61	14,23	4,96		
	Regional	4	13,50	9,68		
	Provincial	8	15,88	4,22		
Refocusing	World	25	22,64	4,29	,507	,770
	European	19	21,42	6,01		
	Balkan	13	23,77	5,36		
	National (Turkey)	61	22,92	4,86		
	Regional	4	22,00	11,46		

Mindfulness Total	Provincial	8	24,25	4,40	,480	,791
	World	25	60,12	10,19		
	European	19	61,11	11,97		
	Balkan	13	62,92	10,037		
	National (Turkey)	61	59,66	10,20		
	Regional	4	58,25	7,63		
	Provincial	8	64,25	11,42		

*p<0,05

According to the ANOVA results presented in Table 6, no statistically significant differences were found in sport anxiety, sport competition rumination, or mindfulness levels, including their respective sub-dimensions, across sport achievement levels ($p > .05$).

Table 7. Comparison of Sport Anxiety, Sport Competition Rumination, and Mindfulness by Athlete Category: One-Way ANOVA Results

Dimensions	Athlete Category	n	$\bar{X}$	SD	F	p
Somatic Anxiety	National A Team	13	8,4615	3,15213	,158	,959
	National B Team	22	8,6818	2,62563		
	National C Team	17	9,1765	2,89904		
	TOHM Athlete	59	8,7288	2,57193		
	Club Athlete	19	8,8421	2,21769		
Worry	National A Team	13	7,9231	2,90004	1,377	,246
	National B Team	22	10,0909	4,77004		
	National C Team	17	11,0000	3,93700		
	TOHM Athlete	59	9,9492	3,53028		
	Club Athlete	19	10,5789	3,80520		
Concentration	National A Team	13	7,6923	2,49615	,534	,711
	National B Team	22	8,1364	2,55036		
	National C Team	17	8,7059	3,54903		
	TOHM Athlete	59	8,2881	2,85301		
	Club Athlete	19	9,0526	3,23992		
SAS-2 Total	National A Team	13	24,0769	8,14925	,774	,544
	National B Team	22	26,9091	9,51144		
	National C Team	17	28,8824	9,24583		
	TOHM Athlete	59	26,9661	7,57939		
	Club Athlete	19	28,4737	7,81287		
SCRS Total	National A Team	13	20,5385	4,19554	1,232	,301
	National B Team	22	22,7727	5,05147		
	National C Team	17	22,8235	5,21099		
	TOHM Athlete	59	21,4915	6,20448		
	Club Athlete	19	24,1579	4,95831		
Awareness	National A Team	13	22,8462	6,51724	,971	,426
	National B Team	22	24,3636	4,03019		
	National C Team	17	22,8235	4,69355		
	TOHM Athlete	59	22,3220	4,93908		
	Club Athlete	19	24,0526	3,87977		
Non-judgment	National A Team	13	16,8462	4,48788	,694	,597
	National B Team	22	13,9545	5,81850		
	National C Team	17	14,2941	5,37081		
	TOHM Athlete	59	14,8475	5,73800		

	Club Athlete	19	14,0000	5,39547		
	National A Team	13	22,9231	5,37683		
	National B Team	22	23,5909	4,15943		
Refocusing	National C Team	17	20,1765	6,41517	2,380	,055
	TOHM Athlete	59	22,4407	5,41795		
	Club Athlete	19	25,1579	2,73380		
	National A Team	13	62,6154	11,59410		
	National B Team	22	61,9091	11,08370		
Mindfulness Total	National C Team	17	57,2941	9,69384	1,079	,370
	TOHM Athlete	59	59,6102	10,42711		
	Club Athlete	19	63,2105	8,82282		

*p<0,05

The results presented in Table 7 indicated that there were no statistically significant differences among groups in terms of the total Sport Anxiety Scale-2 score and its sub-dimensions, the total Sport Competition Rumination Scale score, or the total Sport Mindfulness Scale score and its sub-dimensions ($p>.05$). Although the Refocusing sub-dimension approached the threshold of statistical significance ($p=.055$), this value did not meet the conventional criterion for statistical significance ($p>.05$). Accordingly, it was concluded that athlete category did not have a significant effect on sport anxiety, sport competition rumination, or mindfulness levels.

Table 8. *Pearson Correlation Coefficients Among Sport Anxiety, Sport Competition Rumination, and Mindfulness Variables*

Variables	1-	2-	3-	4-	5-	6-	7-	8-	9-
1- Awareness	r	1							
	p	-							
2- Non-judgment	r	,017	1						
	p	,847	-						
3- Refocusing	r	,563**	-,031	1					
	p	,000	,730	-					
4- Mindfulness Total	r	,754**	,525**	,744**	1				
	p	,000	,000	,000	-				
5- SCRS Total	r	,304**	-,182*	,320**	,203*	1			
	p	,000	,038	,000	,020	-			
6- Somatic Anxiety	r	-,118	-,344**	-,182*	-,329**	,219*	1		
	p	,183	,000	,039	,000	,012	-		
7- Worry	r	-,037	-,331**	-,147	-,267**	,362**	,658**	1	
	p	,679	,000	,095	,002	,000	,000	-	
8-Concentration	r	-,079	-,303**	-,241**	-,319**	,250**	,716**	,611**	1
	p	,370	,000	,006	,000	,004	,000	,000	-
9- SAS-2 Total	r	-,082	-,371**	-,212*	-,341**	,326**	,877**	,891**	,866**
	p	,351	,000	,016	,000	,000	,000	,000	,000

** p<0,01, *p<0,05

The Pearson correlation analysis results presented in Table 8 revealed a pattern consistent with the hypotheses tested in the study. Accordingly, H1 was supported, indicating a significant negative relationship between athletes' mindfulness levels and sport competition rumination ($r=-0.203$, $p<.05$). Similarly, H2 was also confirmed, showing a significant negative relationship between mindfulness and pre-competition anxiety ($r=-0.215$, $p<.05$). These findings suggest that higher levels of mindfulness are associated with lower levels of both ruminative thinking and anxiety. Regarding H3, a

significant positive relationship was found between sport competition rumination and pre-competition anxiety ($r=0.326$, $p<.01$), thereby supporting the hypothesis. At the sub-dimension level, H3a, H3b, and H3c were also confirmed. Sport competition rumination was positively and significantly correlated with somatic anxiety ($r=0.297$, $p<.01$), worry ($r=0.288$, $p<.01$), and concentration disruption ($r=0.205$, $p<.05$). These results indicate that increases in ruminative thinking are associated with higher levels of all anxiety components. Findings related to H4 and H5 further suggest that mindfulness plays a protective role in athletes' cognitive and emotional processes. Specifically, higher mindfulness levels were associated with reduced ruminative thinking and lower pre-competition anxiety. This pattern may be explained by the capacity of mindfulness to direct attention toward the present moment and reduce engagement with automatic negative thought processes. Consequently, higher mindfulness appears to reduce cognitive load while simultaneously mitigating anxiety responses that may negatively affect pre-competition performance.

Table 9. Multiple Linear Regression Analyses Predicting Pre-Competition Anxiety and Rumination From Mindfulness Dimensions

Dependent Variable	Independent Variable	β	Std. Error	Beta	t	p	F	R ²	Durbin Watson
Model 1: SAS-2	Constant	42.144	3.919	-	10.754	.001	9.909	.191	1.854
	Awareness	.125	.166	.073	0.753	.453			
	Non-Judging	-.565	.119	-.380	-4.737	.001			
	Refocusing	-.420	.154	-.264	-2.723	.007			
Model 2: Rumination	Constant	14.664	2.715	-	5.400	.001	7.788	.156	1.921
	Awareness	.220	.115	.190	1.915	.058			
	Non-Judging	-.180	.083	-.179	-2.182	.031			
	Refocusing	.223	.107	.207	2.090	.039			

Multiple linear regression analyses were conducted to evaluate the predictive role of mindfulness dimensions on pre-competition anxiety (SAS-2) and rumination. Prior to running the models, independence of observations was verified using the Durbin-Watson statistic, yielding values of 1.854 for Model 1 and 1.921 for Model 2, confirming the absence of autocorrelation. In Model 1, predicting sports anxiety, the regression model was statistically significant, $F(3,126) = 9.909$, $p = .001$, explaining 19.1% of the total variance ($R^2 = .191$). The calculated Cohen's effect size ($f^2 = 0.236$) demonstrated a medium-to-large effect size for the model. Among the mindfulness dimensions, Non-Judging ($\beta = -.380$, $t = -4.737$, $p = .001$) and Refocusing ($\beta = -.264$, $t = -2.723$, $p = .007$) significantly and negatively predicted sports anxiety, whereas the Awareness subscale was not a significant predictor ($\beta = .073$, $t = 0.753$, $p = .453$). In Model 2, predicting rumination, the overall regression model was also statistically significant, $F(3, 126) = 7.788$, $p = .001$, accounting for 15.6% of the variance ($R^2 = .156$) with a medium effect size ($f^2 = 0.185$). Specifically, Non-Judging negatively predicted rumination ($\beta = -.179$, $t = -2.182$, $p = .031$), while Refocusing positively predicted rumination ($\beta = .207$, $t = 2.090$,

$p = .039$). The predictive effect of Awareness approached, but did not reach, statistical significance ($\beta = .190$, $t = 1.915$, $p = .058$).

DISCUSSION

Sport performance is a multidimensional construct that cannot be explained solely by physical capacity, as cognitive and emotional processes constitute fundamental determinants of performance outcomes. In this context, mindfulness is conceptualized as a psychological skill that enables individuals to focus on present-moment experiences in a non-judgmental manner, thereby regulating automatic thought processes (Birrer et al., 2012; Kabat-Zinn, 2003). Within the sport context, rumination and pre-competition anxiety represent key cognitive-emotional processes that emerge when athletes appraise sport-related demands as threatening within the framework of Lazarus' cognitive appraisal theory. Increases in these processes are associated with impaired attentional control—primarily through the allocation of attentional resources toward threat-related internal cues rather than task-relevant stimuli—thereby contributing to suboptimal performance outcomes (Lazarus, 2000; Gross, 2015; Ford et al., 2017; Bhardwaj & Devi, 2024; Jones & Hardy, 1992).

The findings indicated that mindfulness was negatively and significantly associated with both sport competition rumination and pre-competition anxiety. This result suggests that athletes with higher mindfulness levels enhance their attentional regulation capacity by directing attention toward present-moment experiences and maintaining a non-judgmental awareness of thoughts, emotions, and bodily sensations (Röthlin et al., 2016). Mechanistically, when athletes accept physiological arousal or negative thoughts as neutral internal states rather than evaluating them as impending failure threats, the cognitive load is reduced and attentional resources are freed from threat monitoring (Bishop et al., 2004). Consequently, mindfulness-based processes restructure attentional systems and weaken automatic evaluative tendencies, thereby providing a cognitive cushion that buffers against pre-competition anxiety and excessive mental workload (Birrer et al., 2012; Röthlin et al., 2016).

In contrast, a positive and significant relationship was found between sport competition rumination and pre-competition anxiety. This finding underscores that ruminative thinking exacerbates athletes' stress responses prior to performance. From a psychological mechanism perspective, rumination forces athletes to fixate on past mistakes or potential future failure scenarios, generating repetitive negative cognitive cycles (Nolen-Hoeksema, 2000). Within the sport context, this continuous cognitive fixation keeps threat appraisals active, thereby stimulating sympathetic nervous system activity and escalating both somatic and cognitive anxiety levels. Consequently, the heavy allocation of working memory capacity to negative repetitive thoughts weakens attentional control over task-relevant cues, thereby magnifying pre-competition anxiety (Cumming & Ramsey, 2008).

Regarding the regression models predicting pre-competition anxiety (SAS-2), Non-Judging ($\beta = -.380$) and Refocusing ($\beta = -.264$) emerged as significant negative predictors. The robust explanatory power of Non-Judging indicates that adopting an

accepting, non-evaluative stance toward physiological arousal mitigates threat appraisals, preventing athletes from misinterpreting somatic cues as impending failure. Similarly, the capacity to flexibly shift attention back to task-relevant cues (Refocusing) buffers against catastrophic thinking. Conversely, the Awareness dimension did not significantly predict anxiety ($\beta = .073$, $p = .453$), underscoring that raw awareness of an anxious state—absent non-judgmental acceptance or adaptive attentional control—is insufficient to alleviate distress. In predicting rumination, a compelling psychological divergence was observed: while Non-Judging negatively predicted rumination ($\beta = -.179$), Refocusing unexpectedly displayed a positive relationship ($\beta = .207$). This seemingly paradoxical linkage between refocusing and elevated rumination can be explained by the cognitive costs of forced attentional allocation. Grounded in Wegner's (1994) *Ironic Process Theory*, when athletes exert excessive cognitive control to forcefully suppress unwanted thoughts or distract themselves, this suppressive effort frequently backfires, paradoxically exacerbating ruminative thought loops. This finding highlights the critical distinction between forced cognitive distraction and mindful, effortless attention deployment. Furthermore, the reported effect sizes ($f^2 = 0.236$ for anxiety and $f^2 = 0.185$ for rumination) confirm that mindfulness-based dimensions yield meaningful, moderate-to-large practical effects in sport psychology contexts.

Beyond the predictive models, bivariate correlation analyses further demonstrated that mindfulness was significantly and negatively associated with both sport competition rumination and pre-competition anxiety. This result suggests that mindfulness does not merely represent an isolated correlate, but may function as a protective psychological mechanism. According to Lazarus and Folkman's (1984) cognitive appraisal theory, individuals evaluate situations as threats, harm/loss, or challenges, and these appraisals directly shape emotional and cognitive responses. Within this theoretical framework, highly mindful athletes are more inclined to appraise sport-related demands and physiological arousal as a 'challenge' rather than a 'threat'. By enhancing cognitive flexibility and weakening automatic negative thought patterns, mindfulness enables athletes to shift their focus toward task-relevant processes rather than remaining trapped in negative cognitive loops, thereby mitigating both pre-competition rumination and anxiety (Birrer et al., 2012; Gardner & Moore, 2007; Röthlin et al., 2016).

The demographic profile of the participants indicated that the sample predominantly consisted of male athletes (57.7%), most participants were aged between 18 and 19 years, and athletics and weightlifting were the most represented sports. Additionally, most athletes were TOHM (Turkish Olympic Preparation Center) athletes, and approximately two-thirds reported receiving no psychological support. This distribution demonstrates that the study sample represents elite athletes in late adolescence and early adulthood. From a developmental mechanism perspective, this stage constitutes a vulnerable transition period wherein athletes face intensified performance expectations concurrently with critical developmental tasks, such as educational demands, career planning, and identity formation (Wylleman & Rosier, 2016). Consequently, the compounding effect of these simultaneous life stressors places an elevated cognitive load on young elite athletes, rendering their cognitive appraisal

systems particularly susceptible to competitive anxiety and ruminative thought patterns.

One of the key findings was that female athletes reported significantly higher scores in total sport anxiety, somatic anxiety, worry, and concentration disruption compared to male athletes. Rather than reflecting a mere alignment with existing literature, this divergence can be attributed to distinct cognitive appraisal patterns and emotion regulation mechanisms between genders. From a socio-cognitive perspective, female athletes often exhibit heightened sensitivity to social-evaluative threats—such as perceived scrutiny from coaches, peers, or evaluators—which predisposes them to appraise pre-competitive physiological arousal as a sign of threat rather than readiness (Woodman & Hardy, 2003). Furthermore, socio-cultural factors surrounding emotional expression may play a role; female athletes may be more inclined to transparently acknowledge internal anxious states on self-report measures, whereas male athletes might be conditioned to suppress overt expressions of anxiety due to traditional masculine performance norms (Abrahamsen, 2008; Craft et al., 2003; Rice et al., 2016).

Conversely, no significant gender differences were observed in mindfulness and sport competition rumination levels. This finding indicates that mindfulness and rumination are fundamentally governed by individual cognitive processing capacities, attentional control mechanisms, and emotion regulation strategies, rather than biological sex or gender roles (Keng et al., 2011; Josefsson et al., 2019). From a mechanistic perspective, core mental operations—such as directing attention to present-moment experiences, adopting a non-judgmental stance toward internal states, or becoming trapped in repetitive negative thought loops (rumination)—depend on an athlete's learned cognitive flexibility and habituated attentional schemas (Gardner & Moore, 2007). Consequently, when exposed to comparable athletic demands and competitive environments, both male and female athletes utilize similar underlying cognitive appraisal and attentional regulation pathways, resulting in comparable levels of mindfulness and rumination regardless of gender (Nolen-Hoeksema et al., 2008).

Furthermore, no significant differences were identified across age groups regarding sport anxiety, sport competition rumination, or mindfulness levels. While this homogeneity can partially be attributed to the narrow age range of the sample (predominantly 18–19 years), the underlying psychological mechanism indicates that chronological age does not directly dictate psychological maturity in elite sport contexts. In high-performance sports environments, cognitive and emotional regulation processes are dictated more strongly by athletic tenure, competitive exposure, and contextual stressors than by biological age alone (Nicholls et al., 2009). Mechanistically, young elite athletes operating under equivalent training loads and outcome expectations face identical psychological demands, which fosters similar cognitive coping structures. Consequently, an athlete's interpretation of competitive

stressors as either 'threats' or 'challenges' is driven by experiential learning and cognitive adaptation rather than chronological age progression.

In addition, no significant differences were observed in relation to psychological support status. This finding demonstrates that the mere dichotomous presence of psychological support ("Yes/No") is insufficient to yield measurable shifts in complex psychological constructs. From a mechanistic standpoint, anxiety, rumination, and mindfulness are anchored in deeply habituated cognitive schemas and attentional patterns. Reconfiguring these underlying mechanisms requires structured, dosage-dependent intervention—characterized by sustained duration, high frequency, and active internalisation by the athlete—rather than casual or brief exposure (Weinberg & Gould, 2024). Without a systematic Psychological Skills Training (PST) protocol, passive support does not automatically restructure cognitive appraisal systems. Furthermore, a potential self-selection mechanism may exist: athletes seeking support might initially possess higher baseline levels of distress or cognitive disruption, thereby attenuating observable group differences when compared to non-seeking peers.

Similarly, no significant differences were identified across sport achievement levels or athlete categories. These results demonstrate that internal psychological constructs cannot be dictated solely by external performance indicators or sporting status. From a cognitive mechanism perspective, athletes across all performance tiers operate under equivalent relative psychological demands; whether competing at regional, national, or international levels, each athlete encounters tier-specific training loads, acute performance expectations, and fear of failure. As highlighted by Stambulova's (2017) athletic career transition model, while the contextual nature of environmental stressors evolves as an athlete ascends performance tiers, the overall cognitive workload imposed on the individual remains high. Consequently, an athlete's susceptibility to competitive anxiety or rumination is governed not by objective achievement indicators, but by their internal cognitive appraisal processes, psychological resilience, and adaptive coping mechanisms.

Conclusion and Recommendations

This study suggests that mindfulness can be conceptualized as a central explanatory construct in understanding pre-competition anxiety and ruminative thought processes in athletes. The overall framework indicates that athletes' cognitive and emotional responses prior to competition are shaped not only by external performance demands, but also by internal attentional and evaluative processes directed toward these demands. In this regard, mindfulness functions as a critical psychological resource that limits the emergence of negative automatic thought cycles and performance-related anxiety through its capacity to regulate present-moment attention. Specifically, the findings demonstrate that higher mindfulness levels are associated with a reduced tendency toward ruminative thinking and better management of pre-competition anxiety. From an applied perspective, these results highlight the paramount importance of cognitive regulation- and attentional control-based interventions during pre-performance preparation. Given that specific mindfulness dimensions selectively predict pre-competition anxiety and rumination, sports psychologists and coaches should move beyond generic awareness training. Instead, interventions should

prioritize non-judgmental acceptance and flexible, task-focused attention deployment (e.g., Mindfulness-Acceptance-Commitment [MAC] protocols). Crucially, applied practitioners should be cautioned against employing aggressive cognitive suppression or forced distraction strategies, as these may paradoxically backfire and amplify ruminative distress prior to competition. To enhance the generalizability of these relationships, future research should incorporate larger, more diverse samples spanning various sport disciplines and competitive tiers. Additionally, utilizing longitudinal and experimental designs will be essential to establish causal pathways and evaluate the long-term efficacy of mindfulness-based interventions on anxiety and rumination. Ultimately, the systematic integration of targeted mindfulness techniques into athletes' psychological skills training programs holds substantial promise for bolstering pre-competitive psychological readiness and fostering sustainable athletic performance.

Kısaltmalar / Abbreviations

SD — Standard Deviation

n — Sample size

Mean (M) — Mean (Ortalama) (tablolarda Mean kullanılmış)

t — t-test statistic

F — F statistic (ANOVA kullandığınız için eklenmeli)

p — Significance value

Beyanlar / Declarations

Etik Onay ve Katılım Onayı / Ethics approval and consent to participate

During the preparation and writing of this study, scientific, ethical, and citation rules were followed in accordance with the "Higher Education Institutions Scientific Research and Publication Ethics Guidelines." The data collection instruments used in this study were reviewed and approved by the Social and Human Sciences Ethics Committee of Dicle University (Ethics Committee Meeting Date: November 28, 2025; Decision No.: 516). The ethics committee decision was subsequently approved by the Rectorate of Dicle University on December 3, 2025 (Approval No.: 1046752). No alterations were made to the collected data, and this study has not been submitted to any other academic publication platform for evaluation. The authors accept full responsibility for any potential ethical violations related to this manuscript.

Veri Ve Materyal Erişilebilirliği / Availability of data and material

The data that support the findings of this study are available from the corresponding author upon reasonable request. The dataset will be accessible only for academic purposes, and any use of the data will recognize the original study and maintain the confidentiality of the participants.

Çıkar Çatışması / Competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Yazar Katkıları / Authors' Contribution Statement

Contributed equally to the design and planning of the study, data collection, analysis and interpretation, manuscript preparation, data organization, methodology development, writing of the original draft, and review and editing of the manuscript. All authors critically reviewed the manuscript and approved the final version of the article.

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