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The relationship between sport competition rumination and sport-specific achievement motivation levels among professional athletes in Turkey

Mesut Bulut^{1*} , Metin Yildiz² , Mustafa Kizilkoca³ , Gürkan Tokgöz⁴ and Buğra Can⁵

Abstract

Objective Rumination is a cognitive process characterized by the development of repetitive and difficult-to-control thoughts regarding negative experiences. The aim of this study is to examine the cross-sectional association between sports competition rumination and sport-specific achievement motivation levels among professional athletes actively competing in team sports in Turkey, and to investigate whether these levels differ according to gender, age, sport discipline and sports experience.

Method A total of 657 professional athletes (289 women, 368 men) with a mean age of 21.88 ± 5.53 years participated in the study. Data collection tools included a demographic information form, the “Sports Competition Rumination Scale,” and the “Sport-Specific Achievement Motivation Scale.” Data analysis involved the Independent Samples t-test for pairwise comparisons, ANOVA for multi-group comparisons, and the Tukey post-hoc test. Relationships between the scales were assessed using Pearson correlation analysis, while the statistical association between rumination and achievement motivation was evaluated using regression analysis.

Findings It was determined that levels of sports competition rumination showed significant differences according to the variables of gender, age, sport discipline, and years of participation in sports. Significant differences in sport-specific achievement motivation levels were also identified based on age and sport discipline. Correlation analysis results indicated a positive and low-level significant relationship between sports competition rumination and sport-specific achievement motivation ($r = 0.105$; $p < 0.01$). According to the results of the regression analysis, it was determined that sports competition rumination shows a low-level and positive association with achievement motivation ($R^2 = 0.011$; $p < 0.01$).

Conclusion The research findings reveal a low-level yet significant positive relationship between sports competition rumination and sport-specific achievement motivation. This result suggests that athletes’ post-competition cognitive processes may have a limited but significant relationship with their success orientations.

Keywords Achievement Motivation, Soccer Players, Performance, Professional Athletes, Rumination

*Correspondence:
Mesut Bulut
mstblt1984@gmail.com

Full list of author information is available at the end of the article



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Introduction

Competitive athletes are characterized by their capacity for deliberate and sustained performance under highly stressful conditions, which are inherent to the demanding nature of athletic competitions and the immediate impact of their actions. Managing these high-pressure scenarios effectively necessitates an exceptional degree of both immediate and long-term self-regulatory skills. Consequently, elite performance is consistently associated with the utilization of proactive, problem-focused, and resilient coping [1]. Within the realm of competitive sports, these cognitive interferences heavily dictate psychological outcomes; mainly, emotion-focused and meaning-seeking ruminative tendencies may actively hinder problem-solving-oriented coping and instead promote emotion-focused coping strategies, thereby negatively affecting overall athletic performance [2]. In a sports context, rumination manifests as repetitive thought cycles regarding errors, poor performance, and missed opportunities, and can negatively impact athletes' psychological readiness. The literature reports that ruminative thoughts reduce cognitive flexibility and lower the level of cognitive efficiency in performance-demanding tasks [3]. In their study, Özcan et al. emphasize the critical role of training load, recovery, and individualized support in maintaining the psychological responses and motivation of young athletes. Training-induced fatigue and adaptation stress can only be overcome through proper load management and structured recovery strategies. Indeed, the relationship between the competition perceptions and sport-specific achievement motivation levels of professional athletes in Turkey also shows that sustainable achievement motivation and high performance are only possible through the integration of these balanced load management and psychological support processes [4]. Additionally, it is noted that ruminative thoughts divert athletes' attention away from the current performance task, thereby increasing the likelihood of making errors [5]. However, the effects of rumination are not limited to cognitive and performance outcomes. It is noted that repetitive negative thoughts can weaken an individual's self-efficacy perception and disrupt goal-directed behaviors [6]. It is believed that this situation may also exert significant effects on athletes' motivational processes. Indeed, studies conducted with athletes have shown that there are significant relationships between ruminative thoughts and competitive motivation, and that this relationship may indirectly affect athletes' psychological adaptation [7]. Furthermore, research in the context of goal orientation reveals that athletes who fail to achieve their goals exhibit higher levels of rumination [8].

Athletic success is a multidimensional structure shaped by the interaction of physical capacity as well as cognitive and psychological processes. Studies in the field of

sport psychology indicate that psychological variables such as attention control, emotion regulation, and motivation are significant determinants of athletes' psychological well-being and success orientations [9, 10]. In this context, achievement motivation is considered a key psychological construct associated with an individual's desire to achieve goals, level of effort, and tendency to improve their goal-directed outcomes [11]. It is particularly noted that achievement motivation is one of the fundamental determinants of psychological sustainability in competitive sports environments. Research indicates that athletes with high achievement motivation demonstrate greater effort, cope more effectively with challenges, and achieve higher levels of psychological resilience [12, 13]. However, it is noted that athletes' motivation levels may be influenced not only by internal factors but also by the cognitive processes they experience. In particular, it is suggested that ruminative thoughts may influence athletes' motivation and coping processes through emotion regulation and awareness mechanisms [14]. Similarly, it is reported that athletes' cognitive responses to failure and feedback are associated with ruminative thoughts, and this situation exerts decisive effects on anxiety and motivation [15].

A review of the current literature reveals that, within the sports context, rumination is primarily associated with anxiety, stress, and various psychological variables; however, the relationship between post-competition rumination and achievement motivation in professional team athletes has been addressed in only a limited number of studies. There is a need for a more comprehensive examination of the effects of post-competition cognitive processes on motivational structures, particularly among professional athletes. In this regard, determining the post-competition rumination processes and levels of achievement motivation among professional athletes is considered important. It is believed that such studies will not only contribute to the development of athletes' cognitive awareness and mental preparation processes but will also provide important insights for coaches, sports psychologists, and related academic research.

This study aims to examine the relationship between sports competition rumination and levels of achievement motivation among professional athletes actively competing in team sports. Additionally, the study aims to determine the linear relationship between rumination and achievement motivation, while also investigating whether athletes' levels of rumination and achievement motivation differ according to variables such as gender, age, sport discipline and sports experience. Furthermore, it is hypothesized that there is a significant relationship between sports competition rumination and achievement motivation, with rumination accounting for a limited portion of the variance.

Materials and methods

Research model

In this study, the correlational survey model, one of the quantitative research methods, was applied. The correlational survey model is an approach used to determine the existence of a relationship between two or more variables.

Study population and sample

The study population consists of approximately 6,700 licensed athletes competing in professional leagues in the sports of soccer, handball, basketball, and volleyball in Turkey. The population size was calculated based on official data from the relevant federations and the number of teams in the professional leagues. The research sample was formed using convenience sampling from 657 professional athletes actively participating in these sports who were reached via online data collection tools (Google Forms). The inclusion criteria for the participants required being actively licensed and competing in the respective professional leagues (ranging from the Super League to the 3rd Division) during the study period, being aged 13 or older, and participating voluntarily.

To determine the statistical adequacy of the sample size, a prior power analysis was conducted using the G*Power (v3.1.9.7) program; the effect size was set at $r=0.20$ (moderate), the significance level at $\alpha=0.05$, and the test power ($1-\beta$) at 0.95. As a result of the analysis, the required minimum sample size was calculated as $n=430$; it was confirmed that the current sample of 657 participants more than met the targeted statistical power and that the study possesses high representativeness.

Data collection tools

The Personal Information Form, along with the Sports Competition Rumination and Sport-Specific Achievement motivation scales, were used to collect data. During the data collection process, which was conducted on a voluntary basis, participants were reached via both paper forms (face-to-face) and digital surveys (Google Forms) broadly during the active competitive season, rather than immediately following a specific match.

Personal information form

A personal information form prepared by the researcher, containing questions regarding gender, age, sport discipline, and years of participation, was used in the study to identify participants' personal information.

Sports Competition Rumination Scale (SMRÖ)

To determine participants' levels of sports competition rumination, the "Sports Competition Rumination Scale" was used. This scale was developed by Michel-Kröhler, Kryss, and Berti [16] and adapted into Turkish by Karafil and Pehlivan [17]. The "Sports Competition Rumination Scale" consists of 6 items and has a unifactorial structure. The items on the scale are presented as a "5-point Likert-type scale." The Likert options are ranked from 1 to 5 as follows: "Strongly Disagree (1)," "Somewhat Disagree (2)," "Disagree (3)," "Somewhat Agree (4)," and "Strongly Agree (5)," and scoring is based on this scale. The total score on the scale ranges from a minimum of 5 to a maximum of 30 points. The Cronbach's Alpha (Cronbach- α) internal consistency coefficient for the scale was calculated as 0.87. In this study, the Cronbach's Alpha (Cronbach- α) internal consistency coefficient for the collected data was found to be $\alpha=0.85$.

Sport-Specific Achievement Motivation Scale (SSAMS)

The "Sport-Specific Achievement Motivation Scale," developed by Willis [18] and adapted into Turkish by Tiryaki and Gödelek [19], was administered to the participants in this study. The "Sport-Specific Achievement Motivation Scale" consists of 40 items and 3 subdimensions. It is structured using a 5-point Likert-type rating scale. The 12 items in the scale fall under "Power-Oriented Motivation," 17 items under "Approach Motivation," and 11 items under "Avoidance Motivation." Accordingly, high scores on the scale's "Power Display" and "Approach to Success" dimensions indicate that the athlete has high motivation in those specific areas, while low scores indicate the opposite. A high score on the "Avoidance of Failure" dimension indicates that the athlete experiences greater fear of failure and stress. The scale is applicable to athletes in both individual and team sports, across all disciplines and at every level of competition. In the reliability study of the scale conducted by Tiryaki and Gödelek [19], Cronbach's Alpha (Cronbach- α) values were found to be 0.81 for the power-display motivation, 0.82 for the approach-to-success dimension, and 0.80 for the avoidance-of-failure dimension; and the scale's overall internal consistency coefficient was determined to be 0.86. In this study, however, the Cronbach's Alpha (Cronbach- α) internal consistency coefficient for the collected data was found to be $\alpha=0.85$.

Data analysis

Prior to the statistical analysis, the dataset was screened for missing data and outliers; since the online survey items were set as mandatory fields and paper forms were cross-checked upon collection, no questionnaires were

Table 1 Table of Independent Variables for Professional Athletes

Variables		n	%
Gender	Female	289	44.0
	Male	368	56.0
Marital Status	Married	89	13.5
	Single	568	86.5
Age	Ages 13–20	333	50.7
	Ages 21–30	236	35.9
	31 and older	88	13.4
Sport	Soccer	258	39.3
	Volleyball	148	22.5
	Basketball	122	18.6
	Handball	129	19.6
League You Play In	Super League	81	12.3
	First League	87	13.2
	2nd Division	312	47.5
	3rd Division	177	26.9
Sports Year	0–5 Years	69	10.5
	6–10 Years	249	37.9
	11–15 years	204	31.1
	16 Years and Older	135	20.5
How Many Years Have You Been Playing Professional Sports?	0–5 Years	317	48.2
	6–10 years	208	31.7
	11–15 years	93	14.2
	16 Years and Older	39	5.9

excluded due to missing responses, and all 657 participant responses were included in the final analysis. The SPSS 26.0 program was used for the statistical analysis of the data obtained in the study. The Independent Samples t-test was applied for the data analysis of two-group variables, while the One-Way ANOVA test was applied for the statistical analysis of multi-group variables. Tukey's test results were examined to determine differences within groups. Before conducting these parametric comparison tests, the homogeneity of variances was verified using Levene's test ($p > 0.05$). In cases where the assumption of homogeneity of variances was violated, appropriate adjusted degrees of freedom via Welch's correction were utilized and reported. The Pearson correlation test was used to examine the relationship between the results of the two scales, and linear regression analysis was used to evaluate the shared variance between the variables. In the study, the significance level was set at $p < 0.05$.

Findings

In this study conducted with professional athletes actively competing in various sports, the relationship between participants' levels of sports competition rumination and sport-specific achievement motivation was identified. The data were analyzed in terms of independent variables, and the findings obtained in line with the research questions are presented under the relevant headings.

More than half (56.0%) of the professional athletes participating in the study were male; those aged 13–20 were more numerous than athletes in other age groups (333); and there was a high participation of 258 athletes in the soccer category, there was a higher concentration of professional athletes playing in the 2nd Division, and the number of athletes who had been involved in sports for 6–10 years was higher (249); when looking at the number of years they had continued in professional sports, those with 0–5 years of experience (317) were again more numerous than those with other durations of professional athletic careers (Table 1).

In the normality analysis of the obtained data, the Skewness and Kurtosis values were examined. It was determined that the values fell between -1.5 and $+1.5$, indicating a normal distribution [20]. Since the data exhibited a normal distribution, the use of parametric tests was deemed appropriate for the study.

When examining the average rumination scores of professional athletes regarding sports competitions, it was observed that the average score was 21.88, which is above the mean; the average score for the “desire to demonstrate strength” subscale of sport-specific achievement motivation was 44.95, which is above the mean; the average score for the “approach to success” subscale was 65.78, which is above the average; the average score for the “avoidance of failure” subscale was 44.83, which is above the average; and finally, when examining the overall average scores for sport-specific achievement motivation, it was found to be 155.58, which is above the average. Accordingly, we can conclude that the average scores for sports competition rumination and sport-specific achievement motivation among the professional athletes participating in the study are above average (Table 2).

In the statistical analysis of the data regarding the gender variable, it was found that female athletes' levels of

Table 2 Mean Values of the Sports Competition Rumination Scale and the Sport-Specific Achievement Motivation Scale for Professional Athletes

Sports Competition Rumination Total	N	Min.	Max.	Mean	Std. Dev.	Skewness	Kurtosis
	657	6.00	30.00	21.88	5.534	-0.982	1.024
Power-Oriented Motivation	657	21.00	60.00	44.95	5.041	-0.162	1.114
Approach Motivation	657	38.00	85.00	65.78	6.158	0.625	0.567
Motivation to Avoid Failure	657	24.00	55.00	44.83	4.158	0.202	-0.011
Sport-Specific Achievement Motivation	657	127.00	200.00	155.58	12.318	0.616	1.489

sports competition rumination ($M = 22.63$, $SD = 5.08$) were significantly higher than those of male athletes ($M = 21.28$, $SD = 5.80$; $t(655) = 3.121$, $p = 0.002$) ($p < 0.05$). This difference demonstrated a small effect size (Cohen's $d = 0.247$). In the statistical analysis conducted according to the gender variable regarding the subscales of sport-specific achievement motivation—power-oriented motivation, approach motivation, and motivation to avoid failure—and the scale's total scores, no significant difference was found ($p > 0.05$), all yielding negligible or small effect sizes (ranging from Cohen's $d = 0.014$ to 0.146) (Table 3).

When the levels of competition rumination among professional athletes were examined in terms of the age variable, a significant difference was observed. Upon examining the Tukey test results, it was found that the mean scale scores of participants aged 21–30 (21.05) were significantly lower than those of the 13–20 age group (22.24) and the 31 and older group (22.72) ($p < 0.05$), demonstrating a small effect size ($\eta_p^2 = 0.013$). A significant difference was found regarding the age variable in the subscales of sport-specific achievement motivation—power-oriented motivation, approach motivation, and motivation to avoid failure—as well as in the overall scale scores ($p < 0.05$). In the power-display subscale, athletes aged 31 and older (46.82) were found to have a significantly higher mean score than athletes aged 21–30 (45.32) and those aged 13–20 (44.20), with a small effect size ($\eta_p^2 = 0.032$). In the analysis of the achievement motivation subscale, athletes aged 13–20 (66.87) were found to have significantly higher scores than those aged 21–30 (64.31) and those aged 31 and older (65.60), showing a small effect size ($\eta_p^2 = 0.037$). In the analysis of the avoidance of failure subscale, it was found that athletes aged 13–20 (45.72) scored significantly higher than those aged 21–30 (43.76) and those aged 31 and older (44.35), yielding a small-to-medium effect size ($\eta_p^2 = 0.049$). In the analysis of the total score on the Sport-Specific Achievement motivation Scale, it was found that athletes aged 13–20 (156.81) had significantly higher scores than

those aged 21–30 (153.39), with a small effect size ($\eta_p^2 = 0.018$) (Table 4).

When professional athletes' ruminations on sports competitions are examined by sport, a significant difference is observed ($p < 0.05$). It was found that athletes in soccer (22.48) and basketball (23.34) had significantly higher levels of sports competition rumination compared to athletes in volleyball (20.79) and handball (20.53), showing a small effect size ($\eta_p^2 = 0.038$). A significant difference was observed in the sport-specific achievement motivation subscales—power-oriented motivation, approach motivation, and to avoid failure-motivation—as well as in the total scores, when analyzed by sport type ($p < 0.05$). In the power-seeking subscale, soccer players (44.41) had significantly lower scores compared to handball players (45.93), yielding a small effect size ($\eta_p^2 = 0.014$); in the achievement-approach subscale, basketball players (63.62) had significantly lower scores compared to handball players (66.90), and soccer players (66.61), demonstrating a small effect size ($\eta_p^2 = 0.039$); and in the avoidance of failure subscale, handball players (46.04) had significantly higher scores compared to basketball (43.63) and soccer players (44.68), demonstrating a small effect size ($\eta_p^2 = 0.033$). In the analysis of the scale's total score, it was found that basketball players' sport-specific achievement motivation (151.90) was significantly lower than that of soccer players (155.72) and handball players (158.88), showing a small effect size ($\eta_p^2 = 0.031$) (Table 5).

When examining the levels of competition rumination among professional athletes in terms of how many years they have been participating in sports, a significant difference is observed ($p < 0.05$). It was found that the rumination levels of participants who have been participating in sports for 6–10 years (22.54) were significantly higher than those of participants who have been participating for 11–15 years (21.08), demonstrating a small effect size ($\eta_p^2 = 0.015$). A significant difference was observed in the sport-specific achievement motivation

Table 3 T-Test for Sports Competition Rumination and Sport-Specific Achievement Motivation by Gender Among Professional Athletes

	Gender	N	Mean	df	Cohen's d	Std. Dev.	t	p
Sports Competition Rumination Total	Women	289	22.63	655	0.247	5.08	3.121	0.002
	Male	368	21.28					
Power-Oriented Motivation	Female	289	45.03	655	0.028	4.60	0.341	0.733
	Male	368	44.89					
Approach Motivation	Women	289	65.83	655	0.014	5.54	0.197	0.844
	Male	368	65.74					
Motivation to Avoid Failure	Female	289	45.17	655	0.146	3.74	1.870	0.062
	Male	368	44.57					
Sport-Specific Achievement Motivation	Women	289	156.05	655	0.069	10.27	0.867	0.386
	Male	368	155.21					

Table 4 ANOVA Test for Sports Competition Rumination and Sport-Specific Achievement Motivation According to Age Among Professional Athletes

	<i>Ages</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>df</i>	η_p^2	<i>f</i>	<i>p</i>	<i>Differences</i>
Sports Competition Rumination Total	Ages 13–20 ^A	333	22.24	5.66	2	0.013	4.415	0.012	B < A, C
	21–30 Years ^B	236	21.05	5.94	654				
	31 and older ^C	88	22.72	3.18	656				
	Total	657	21.88	5.53					
Power-Oriented Motivation	Ages 13–20 ^A	333	44.20	5.62	2	0.032	10.676	0.000	C > B > A
	21–30 Years ^B	236	45.32	4.10	654				
	31 and older ^C	88	46.82	4.39	656				
	Total	657	44.95	5.04					
Approach Motivation	Ages 13–20 ^A	333	66.87	6.22	2	0.037	12.395	0.000	A > B, C
	21–30 Years ^B	236	64.31	6.05	654				
	31 and older ^C	88	65.60	5.33	656				
	Total	657	65.78	6.15					
Motivation to Avoid Failure	Ages 13–20 ^A	333	45.72	3.96	2	0.049	16.976	0.000	A > B, C
	21–30 Years ^B	236	43.76	4.24	654				
	31 and older ^C	88	44.35	3.88	656				
	Total	657	44.83	4.15					
Sport-Specific Achievement Motivation	Ages 13–20 ^A	333	156.81	13.10	2	0.018	5.870	0.003	A > B
	21–30 Years ^B	236	153.39	11.40	654				
	31 and older ^C	88	156.78	10.82	656				
	Total	657	155.58	12.31					

Table 5 ANOVA Test for Sports Competition Rumination and Sport-Specific Achievement Motivation by Professional Athletes' Disciplines

	<i>Sport</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>df</i>	η_p^2	<i>f</i>	<i>p</i>	<i>Differences</i>
Sports Competition Rumination Total	Soccer ^A	258	22.48	5.89	3	0.038	8.627	0.000	A, C > B, D
	Volleyball ^B	148	20.79	5.75	653				
	Basketball ^C	122	23.34	3.74	656				
	Handball ^D	129	20.53	5.47					
	Total	657	21.88	5.53					
Power-Oriented Motivation	Soccer ^A	258	44.41	5.06	3	0.014	3.024	0.029	D > A
	Volleyball ^B	148	45.31	3.75	653				
	Basketball ^C	122	44.63	4.14	656				
	Handball ^D	129	45.93	6.67					
	Total	657	44.95	5.04					
Approach Motivation	Soccer ^A	258	66.61	6.35	3	0.039	8.862	0.000	A, D > C
	Volleyball ^B	148	65.13	5.21	653				
	Basketball ^C	122	63.62	4.46	656				
	Handball ^D	129	66.90	7.46					
	Total	657	65.78	6.15					
Motivation to Avoid Failure	Soccer ^A	258	44.68	4.35	3	0.033	7.476	0.000	D > A; B, D > C
	Volleyball ^B	148	45.04	3.89	653				
	Basketball ^C	122	43.63	3.02	656				
	Handball ^D	129	46.04	4.61					
	Total	657	44.83	4.15					
Sport-Specific Achievement Motivation	Soccer ^A	258	155.72	12.57	3	0.031	6.915	0.000	A, D > C
	Volleyball ^B	148	155.49	8.65	653				
	Basketball ^C	122	151.90	8.59	656				
	Handball ^D	129	158.88	16.74					
	Total	657	155.58	12.31					

subscales—power-oriented motivation, approach motivation, and motivation to avoid failure—based on the variable of how many years participants have been involved in sports ($p < 0.05$). In the power-seeking subscale, participants who had been participating in sports for 0–5 years (43.60) and 6–10 years (44.19) were found to have significantly lower mean scores than those who had been participating for 11–15 years (45.76) and 16 years or more (45.84), showing a small effect size ($\eta_p^2 = 0.031$). In the “approach to success” subscale, it was found that the average score of participants who had been engaged in sports for 0–5 years (68.34) was significantly higher than that of participants who had been engaged in sports for 6–10 years (66.21), 11–15 years (65.08), and 16 years or more (64.72) yielding a small effect size ($\eta_p^2 = 0.030$). In the sub-dimension of the motivation to avoid failure, it was found that the average score of participants who had been involved in sports for 16 years or more (43.59) was significantly lower than that of participants who had been involved for 0–5 years (45.34) and 6–10 years (45.73) with a small effect size ($\eta_p^2 = 0.041$). No significant differences were found in the analysis of the total score of the sport-specific achievement motivation scale (Table 6).

When the comprehensive correlation matrix spanning all subdimensions was examined, sports competition rumination demonstrated distinct relational patterns with achievement motivation structures. Specifically, competition rumination showed a non-significant, negligible negative correlation with Power-Oriented Motivation ($r = -0.037$, $p > 0.05$). Conversely, statistically significant, low-level positive linear associations were observed between competition rumination and both the Approach Motivation ($r = 0.147$, $p < 0.01$) and the motivation to avoid failure ($r = 0.138$, $p < 0.01$). Finally, a statistically significant but practically limited low-level positive relationship was confirmed between the overall scores of sports competition rumination and sport-specific achievement motivation ($r = 0.105$, $p < 0.01$). These findings structurally align with the study’s correlational framework, demonstrating that higher ruminative tendencies are minimally linked to elevated task-approach and evaluation-anxiety structures without establishing any directional or causal inference (Table 7).

A statistical association was found between the levels of competition rumination and sport-specific achievement motivation among the professional athletes participating in the study ($R = 0.105$, $R^2 = 0.011$). It was found

Table 6 ANOVA Test for Sport Competition Rumination and Sport-Specific Achievement Motivation Among Professional Athletes by Years of Sport

	<i>Sports Year</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>df</i>	η_p^2	<i>f</i>	<i>p</i>	<i>Differences</i>
Sports Competition Rumination Total	0–5 Years ^A	69	21.08	7.69	3	0.015	3.306	0.020	B > C
	6–10 Years ^B	249	22.54	5.21	653				
	11–15 Years ^C	204	21.08	6.14	656				
	16 Years and Over ^D	135	22.26	3.16					
	Total	657	21.88	5.53					
Power-Oriented Motivation	0–5 Years ^A	69	43.60	6.62	3	0.031	6.871	0.000	C, D > A, B
	6–10 Years ^B	249	44.19	5.29	653				
	11–15 Years ^C	204	45.76	4.44	656				
	16 Years and Over ^D	135	45.84	4.07					
	Total	657	44.95	5.04					
Approach Motivation	0–5 Years ^A	69	68.34	6.01	3	0.030	6.765	0.000	A > B, C, D
	6–10 Years ^B	249	66.21	6.65	653				
	11–15 Years ^C	204	65.08	5.86	656				
	16 Years and Over ^D	135	64.72	5.26					
	Total	657	65.78	6.15					
Motivation to Avoid Failure	0–5 Years ^A	69	45.34	4.23	3	0.041	9.377	0.000	A > D; B > C, D
	6–10 Years ^B	249	45.73	4.26	653				
	11–15 Years ^C	204	44.39	4.25	656				
	16 Years and Over ^D	135	43.59	3.28					
	Total	657	44.83	4.15					
Sport-Specific Achievement Motivation	0–5 Years ^A	69	157.30	13.32	3	0.006	1.271	0.283	-
	6–10 Years ^B	249	156.14	14.03	653				
	11–15 Years ^C	204	155.25	10.83	656				
	16 Years and Over ^D	135	154.16	10.29					
	Total	657	155.58	12.31					

Note: A: 0–5 years, B: 6–10 years, C: 11–15 years, D: 16 years and older. The “>” symbol indicates that the difference between the means is statistically significant at the $p < 0.05$ level in favor of the group on the left

Table 7 Correlation Test Results for Sports Competition Rumination and Sport-Specific Achievement Motivation Among Professional Athletes

Correlations		<i>Sports Competition Rumination Total</i>	<i>Power-Oriented Motivation</i>	<i>Approach Motivation</i>	<i>Motivation to Avoid Failure</i>	<i>Sport-Specific Achievement Motivation</i>
Sports Competition Rumination Total	Pearson Correlation	1	-0.037	0.147**	0.138**	0.105**
	Sig. (2-tailed)		0.347	0.000	0.000	0.007
	N	657	657	657	657	657
Power-Oriented Motivation	Pearson Correlation	-0.037	1	0.357**	0.347**	0.705**
	Sig. (2-tailed)	0.347		0.000	0.000	0.000
	N	657	657	657	657	657
Approach Motivation	Pearson Correlation	0.147**	0.357**	1	0.673**	0.873**
	Sig. (2-tailed)	0.000	0.000		0.000	0.000
	N	657	657	657	657	657
Motivation to Avoid Failure	Pearson Correlation	0.138**	0.347**	0.673**	1	0.816**
	Sig. (2-tailed)	0.000	0.000	0.000		0.000
	N	657	657	657	657	657
Sport-Specific Achievement Motivation	Pearson Correlation	0.105**	0.705**	0.873**	0.816**	1
	Sig. (2-tailed)	0.007	0.000	0.000	0.000	
	N	657	657	657	657	657

**Note: Correlations are Pearson coefficients. * $p < 0.01$ (two-tailed)

Table 8 Regression Test Results for Competition Rumination and Sport-Specific Achievement Motivation Among Professional Athletes

(Independent)	B	Std. Error	β	t	p
(Constant)	150.478	1.952	-	77.094	0.000
<i>Sports Competition Rumination</i>	0.233	0.086	0.105	2.697	0.007

Note: $R = 0.105$; $R^2 = 0.011$; $F = 7.274$; $p = 0.007$. Dependent Variable: Sport-Specific Achievement Motivation

that professional athletes' ruminations on sports competitions had a positive, albeit very low, shared variance (1.1%) with sport-specific achievement motivation ($R^2 = 0.011$, $p < 0.05$). Given the cross-sectional and correlational nature of this research design, this observed statistical association does not imply definitive causality, and the association should be interpreted as statistically significant but practically limited due to the low variance explained (Table 8).

Discussion

This study examined the relationship between professional athletes' levels of competition rumination and their sport-specific achievement motivation, and also investigated whether these variables differed according to demographic characteristics. The findings were interpreted in comparison with the sports psychology literature, and recommendations were presented for practitioners.

The mean competition rumination scores and the total scores and subscales of sport-specific achievement motivation—namely, the drive to demonstrate power, the drive to approach success, and the drive to avoid failure—were above average. This suggests that professional athletes tend to exhibit high levels of both rumination

and achievement motivation. The literature indicates that elite sports environments increase cognitive load due to constant evaluation and performance pressure [5]. Therefore, high levels of rumination can be explained by intensive performance evaluation processes. Similarly, high achievement motivation can be viewed as a natural consequence of athletes' competitive nature [12, 21].

Sports competition rumination shows significant differences by gender. Female athletes' rumination scores (22.63) are higher than those of male athletes (21.28). This suggests that female athletes may experience more repetitive thoughts during the performance process. Additionally, it has been noted in the literature that performance pressure can impair attention control, which may consequently lead to a decrease in overall performance outcomes [5]. It is also emphasized that female athletes may experience social evaluation pressure more intensely [22]. However, no significant difference was found between genders regarding the subscales and total scores of sport-specific achievement motivation ($p > 0.05$). This suggests that motivation may possess a structure that is more goal- and task-oriented [12, 13, 21]. In the literature, this phenomenon is explained by elite athletes' high self-regulation skills; professional athletes have learned to focus their energy on long-term

goals and technical tasks rather than being influenced by external stimuli or temporary failures during competition. In this context, achievement motivation is considered to enhance cognitive focus by enabling the athlete to perceive competition stress not as a threat but as a potentially step to be overcome.

It is observed that rumination differs significantly by age. There is a particular difference between the 21–30 age group and other age groups. Young athletes' lack of experience and older athletes' career concerns may influence rumination. Additionally, the subscales of sport-specific achievement motivation and the total score also show significant differences by age ($p < 0.05$). It is suggested that young athletes may be more prone to task-irrelevant thoughts. It is emphasized that rumination is associated with performance pressure and evaluation processes [22, 23]. Therefore, it is suggested that age differences may actually be related to the stage of the athletic career and perceived pressure [24, 25]. Regarding motivation, it is stated that goal orientations change and become more balanced with age [12, 13, 21]. The basis for motivation becoming more balanced with age and experience lies in the cognitive flexibility and emotion regulation skills athletes develop as they advance through the career ladder. It is believed that young athletes tend to have a motivation structure focused on external validation and immediate success (ego-oriented), but as experience increases, this structure gives way to a more stable internal motivation and task-oriented focus. This cognitive maturation is conceptualized to assist professional athletes in utilizing ruminative thoughts following failure not as an obstacle, but potentially as a feedback mechanism that could support future performance outcomes.

Ruminative thinking regarding sports competitions shows significant differences by sport ($p < 0.05$). In particular, higher levels of rumination are observed among soccer and basketball athletes. Similarly, sport-specific achievement motivation also varies by sport. It has been noted that motivation levels tend to be higher in sports with high levels of competition [12, 13]. The higher social evaluation pressure in team sports may also function as a potential factor contributing to increased rumination [20, 26].

There are significant differences between athletes' years of participation in sports and the subdimensions of rumination and motivation ($p < 0.05$). In particular, differences were observed between athletes with 6–10 years and those with 11–15 years of experience. It has been reported that as experience increases, cognitive control develops and rumination changes [27, 28]. Regarding motivation, it is noted that as experience increases, intrinsic motivation strengthens and the tendency to avoid failure decreases [29, 30]. However, no significant difference was found in terms of overall motivation

scores ($p > 0.05$). This indicates that motivation is a multidimensional construct [31]. The critical importance of psychological skills for athletic development presents a significant opportunity to develop these skills during the early stages of a career. Thus, athletes may be able to utilize these skills more effectively once they reach career maturity [32].

A significant relationship was observed between sports competition rumination and sport-specific achievement motivation. The literature suggests that low rumination tends to be associated with more successful sports careers [6]. Additionally, the literature suggests that rumination may influence post-performance behaviors and cognitive appraisals [27]. It is also emphasized that ruminative thinking may indirectly affect motivation by negatively impacting attention resources [23, 24, 25]. Pepe et al. [33], in their study, found a significant positive relationship between kinesophobia and rumination. Roy et al. [34] noted in their study that there is a relationship between success in a sports career and a low rumination style. They reported a relationship between a successful sports career and a low reflective rumination style. This supports the conceptual notion that rumination may serve as a key mechanism in the relationship between mindfulness and sport-specific coping skills [14].

Ruminative thinking has a positive but very low-level shared variance with achievement motivation ($R^2 = 0.011$). This result indicates that ruminative thinking does not strongly explain motivation directly. The literature also suggests that rumination primarily exhibits indirect associations on various athletic dimensions [22]. It is noted that motivation arises from the interaction of multiple factors and cannot be conceptualized through a single variable alone [21]. Given this limited direct variance, competition rumination should be evaluated as a minor cognitive covariate rather than a primary driving force behind athletes' achievement motivation.

Conclusion

The research findings reveal that professional athletes' competition rumination levels vary widely across demographic and sports background variables (gender, age, sport discipline and experience), whereas their achievement motivation is shaped more specifically within the context of age, sport discipline. The study found a low-level positive linear relationship between competition rumination and achievement motivation; this suggests that athletes' post-competition mental processes share a limited statistical association with their success orientations.

Limitations of the study

This study has several limitations. First, the fact that the study group was limited to professional athletes

competing in team sports may restrict the generalizability of the findings to individual sports. Second, the data being collected via a questionnaire and based on athletes' self-reports may introduce a "social desirability" effect. Finally, the use of a correlational survey model in this study reflects the current state of affairs rather than providing a definitive explanation of the cause-and-effect relationship between variables. A limitation of the current study is that the variance explained by sports competition rumination on achievement motivation was relatively low ($R^2 = 0.011$). Although this direct path is statistically significant, future studies should employ multiple regression models or structural equation modeling (SEM) by integrating sociodemographic and athletic covariates—such as gender, age, sport discipline, and years of experience—to capture a more comprehensive portion of the variance. For future studies, it is recommended to use longitudinal designs and qualitative interview techniques to examine the effects of rumination on athletic outcomes and cognitive processes in greater depth.

Recommendations based on research findings

In light of the research findings, it is recommended that coaches support athletes through routine evaluations to guide athletes' post-competition rumination processes into constructive strategic analysis, and that informal guidance structures be encouraged in which experienced athletes guide younger athletes. Coaches personalizing their feedback methods according to athletes' demographic sensitivities, such as age and gender, will enhance the effectiveness of the process. Future studies designed with longitudinal designs incorporating qualitative interviews and indicators of athletic development to deepen current findings and better explain the unexplained variance will provide significant contributions to the academic literature.

Ethical approval and informed consent

This study was conducted in strict adherence to the ethical principles outlined in the World Medical Association's Declaration of Helsinki. The study protocol was reviewed and approved by the Munzur University Ethics Committee for Non-Interventional Research (Decision No: E-30603717-050.04-2500017577, Date: March 2025). This study is a screening-based study that does not involve any clinical intervention or experimental procedures; no direct clinical research was conducted on the participants. Prior to the data collection process, all participants were thoroughly informed about the purpose, scope, and voluntary nature of the study. For participants aged 18 and older, written informed consent was obtained directly from the individuals. For participants under the age of 18 (minors), written parental/

guardian consent along with the minor's own assent was strictly obtained prior to their participation, ensuring full compliance with ethical standards for research involving minors.

Supplementary Information

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Supplementary Material 1.

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Authors' contributions

MB, MY, MK, GT and BC conceived and designed the study, collected the data, performed the statistical analysis, and drafted the manuscript. All authors read and approved the final manuscript.

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Data Availability Statement: The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Author details

¹Pertek Sakine Genç Vocational School, Department of Motor Vehicles and Transportation Technologies, Underwater Technology Program, Munzur University, Tunceli, Turkey

²Faculty of Sports Sciences, Department of Sports Management, Division of Sports Management, Munzur University, Tunceli, Turkey

³Faculty of Sports Sciences, Department of Physical Education and Sports, Division of Physical Education and Sports, Munzur University, Tunceli, Turkey

⁴Faculty of Sports Sciences, Department of Coach Education, Division of Coach Education, Munzur University, Tunceli, Turkey

⁵Faculty of Medicine, Department of Orthopedics and Traumatology, Firat University, Elazığ, Turkey

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