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The Effectiveness of Cognitive-Behavioral Therapy on Emotional Self-Regulation and Psychological Capital among Professional Athletes

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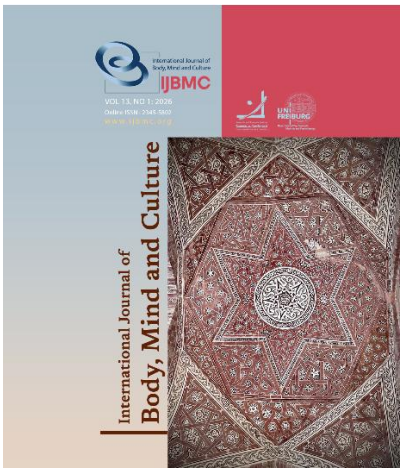

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ABSTRACT

Objective: The present study aimed to examine the effectiveness of Cognitive-Behavioral Therapy on emotional self-regulation and psychological capital among professional athletes

Methods and Materials: This quasi-experimental study used a pretest–posttest control group design. The statistical population consisted of professional athletes living in Tehran, Iran, in 2025. Thirty athletes were selected through convenience sampling and randomly assigned to an experimental group and a control group, with 15 participants in each group. The experimental group received eight weekly 90-minute group sessions of Cognitive-Behavioral Therapy, while the control group received no psychological intervention. Data were collected using the Emotional Self-Regulation Questionnaire and the Psychological Capital Questionnaire. Data were analyzed using multivariate analysis of covariance and univariate ANCOVA in SPSS version 27.

Findings: After controlling for pretest scores, the multivariate effect of group was statistically significant, Wilks' Lambda = .241, $F(2, 25) = 39.36$, $p < .001$, partial $\eta^2 = .759$. The univariate results showed that Cognitive-Behavioral Therapy had a significant effect on emotional self-regulation, $F(1, 27) = 54.31$, $p < .001$, partial $\eta^2 = .668$, and psychological capital, $F(1, 27) = 60.99$, $p < .001$, partial $\eta^2 = .693$. The intervention also significantly improved self-efficacy, hope, resilience, and optimism.

Conclusion: Cognitive-Behavioral Therapy appears to be an effective intervention for improving emotional self-regulation and psychological capital among professional athletes. This intervention may help athletes manage emotional pressure more effectively and strengthen psychological resources essential for coping and performance.

Keywords: Cognitive-Behavioral Therapy, Emotional Self-regulation, Psychological Capital, Professional Athletes, Sport Psychology.

Introduction

Professional sport is a highly demanding context in which athletes are required to perform under persistent physical, psychological, interpersonal, and environmental pressure. Unlike recreational sport, professional athletic performance is evaluated continuously through competition outcomes, ranking systems, public judgment, media attention, coach expectations, injury risk, and career instability. Although physical conditioning, technical skill, and tactical knowledge remain essential components of success, contemporary sport psychology increasingly emphasizes that psychological functioning is also fundamental to sustainable performance and well-being. The International Society of Sport Psychology has highlighted that athletes' mental health, performance, and development should be considered interrelated rather than separate domains, because psychological distress can interfere with training, recovery, motivation, interpersonal functioning, and performance consistency (Schinke et al., 2018). This is particularly important for professional athletes, who often face repeated exposure to stressors such as failure, injury, selection pressure, uncertainty about contracts, and public criticism.

Mental health concerns among athletes have received growing scientific attention in recent years. Although athletes are often perceived as psychologically strong and resilient, research indicates that competitive athletes may experience anxiety, depression, stress, burnout, emotional dysregulation, and performance-related concerns at clinically relevant levels. A recent study of competitive athletes showed that emotion dysregulation was associated with performance concerns and symptoms of depression and anxiety, suggesting that difficulties in managing emotional experiences may influence both mental health and sport functioning (Tamminen et al., 2025). A systematic review also emphasized that elite athletes are not immune to serious mental health problems and may require structured psychological support comparable to other high-pressure professional groups (Gill et al., 2024). Therefore, psychological interventions designed for athletes should target not only symptom reduction, but also psychological capacities that support emotional stability, resilience, motivation, and adaptive performance under pressure.

One of the most important psychological capacities in professional sport is emotional self-regulation. Emotional self-regulation refers to the processes through which individuals monitor, evaluate, modify, and express their emotional responses in accordance with situational demands and personal goals. In sport, emotions are not incidental experiences; they are central to performance, motivation, decision-making, attention, and interpersonal coordination. Athletes frequently experience intense positive and negative emotions before, during, and after competition. Joy, pride, confidence, anger, frustration, shame, fear, and disappointment can each influence the athlete's physiological activation, attentional focus, risk-taking, communication, and tactical choices. Gross's process model of emotion regulation emphasizes that individuals regulate emotions through strategies such as situation selection, attentional deployment, cognitive change, and response modulation (Gross, 1998, 2015). In athletic contexts, the ability to use such strategies flexibly may determine whether emotional arousal facilitates or disrupts performance.

Emotional self-regulation is especially important because professional athletes often need to perform effectively while experiencing high levels of pressure and uncertainty. Poor emotional regulation may lead to impulsive reactions, attentional disruption, aggressive responses, avoidance, loss of motivation, or excessive physiological arousal. By contrast, adaptive regulation allows athletes to recognize emotions, interpret them accurately, recover from mistakes, maintain concentration, and respond constructively to competitive challenges. Research on athletes suggests that self- and interpersonal emotion regulation can influence anxiety and performance outcomes, highlighting that athletes' own regulation strategies and the emotional support they receive from teammates can both shape competitive functioning (Tamminen et al., 2021). Accordingly, improving emotional self-regulation may be a central target for psychological interventions in professional sport.

Another key construct in the psychological functioning of athletes is psychological capital. Psychological capital is a positive psychological state composed of four interrelated components: self-efficacy,

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hope, resilience, and optimism (Luthans et al., 2007). Self-efficacy refers to confidence in one's ability to mobilize motivation, cognitive resources, and action to perform specific tasks successfully. Hope involves goal-directed energy and the perceived ability to generate pathways toward desired outcomes. Resilience refers to the capacity to recover from adversity, failure, injury, or pressure. Optimism reflects a positive explanatory style and the expectation that favorable outcomes are possible. Together, these components form a psychological resource system that can help individuals cope with stress, sustain motivation, and persist in the face of challenge.

In sport, psychological capital may be particularly relevant because athletes repeatedly encounter situations that test confidence, hope, resilience, and optimism. A professional athlete may lose an important competition, suffer injury, experience criticism from coaches or media, or face uncertainty about future selection. In such situations, athletes with stronger psychological capital may be more likely to interpret setbacks as temporary and manageable, maintain confidence in their abilities, identify alternative routes to improvement, and recover psychologically after failure. Research in sport contexts has shown that psychological capital is associated with positive mental health among student-athletes and may function as a synergistic psychological resource rather than merely a sum of separate traits (Sood & Puri, 2023). Recent evidence also indicates that dimensions of psychological capital, including optimism, self-efficacy, hope, and resilience, can predict athletic performance outcomes (Yu et al., 2025). These findings suggest that strengthening psychological capital may be beneficial not only for athletes' well-being, but also for their long-term performance development.

Emotional self-regulation and psychological capital are conceptually related. Athletes who can regulate emotions effectively may be more capable of sustaining hope after setbacks, maintaining self-efficacy under pressure, recovering resiliently from failure, and adopting optimistic interpretations of challenging events. Conversely, athletes with higher psychological capital may regulate emotions more effectively because they possess stronger internal resources for coping with stress. For example, an athlete with high self-efficacy may interpret pre-competition anxiety as manageable rather than threatening; an athlete with high optimism may view mistakes as opportunities for learning rather than evidence of failure; and an athlete with high resilience may recover more quickly after emotional disappointment. Thus, interventions that target both emotional self-regulation and psychological capital may offer a comprehensive pathway for improving athletes' psychological functioning.

Cognitive-Behavioral Therapy (CBT) is one of the most widely supported psychological interventions for modifying maladaptive thoughts, emotional responses, and behavioral patterns. CBT is based on the assumption that cognition, emotion, physiology, and behavior interact reciprocally, and that dysfunctional thinking patterns can intensify emotional distress and maladaptive behavior (Beck, 2020). In athletic settings, CBT-based approaches can help athletes identify negative automatic thoughts, challenge irrational performance beliefs, develop adaptive self-talk, regulate arousal, manage anxiety, improve coping strategies, and build goal-directed behavior. CBT is especially compatible with sport psychology because athletic performance often depends on how athletes interpret pressure, mistakes, competition, feedback, and failure.

Empirical findings support the use of CBT-based interventions in sport and performance contexts. For example, a CBT intervention with rowers of the junior Spanish national team showed that cognitive-behavioral approaches can be applied to athletes by addressing the interaction among thoughts, behaviors, and feelings in response to performance-related stimuli (Isorna-Folgar et al., 2022). More broadly, a recent meta-analysis of psychological interventions for athletes found that psychological interventions significantly reduced state anxiety among athletes, with a large overall effect, suggesting that structured psychological methods can improve emotional outcomes in competitive sport (Li et al., 2025). Although not all psychological interventions are identical, CBT remains one of the most influential evidence-based models because it provides structured techniques for changing maladaptive cognitions and building adaptive behavioral responses.

Accordingly, the present study aims to investigate the effectiveness of Cognitive-Behavioral Therapy on emotional self-regulation and psychological capital among professional athletes. By targeting maladaptive cognitions, emotional responses, coping strategies, and

values-consistent behavior, CBT may help athletes manage emotional pressure more effectively and strengthen positive psychological resources such as hope, self-efficacy, resilience, and optimism. It is expected that athletes who receive CBT will show greater improvement in emotional self-regulation and psychological capital compared with athletes in the control group. The findings may contribute to sport psychology by providing evidence for a structured psychological intervention that can support both mental health and performance-related psychological capacities in professional athletes.

Methods and Materials

Study Design

The present study employed a quasi-experimental design with a pretest–posttest control group to examine the effectiveness of Cognitive-Behavioral Therapy on emotional self-regulation and psychological capital among professional athletes. The independent variable was participation in a structured Cognitive-Behavioral Therapy intervention, and the dependent variables were emotional self-regulation and psychological capital. The study included two groups, an experimental group and a control group, and both groups were assessed before and after the intervention. The quasi-experimental design was selected because the study was conducted in a natural sport setting, where complete random sampling from the entire population of professional athletes was not practically feasible. However, after eligible participants were identified, they were randomly assigned to the experimental and control groups to increase internal validity and reduce selection bias.

Participants

The statistical population consisted of professional athletes living in Tehran, Iran, in 2025. Participants were recruited from professional and semi-professional sport clubs in Tehran, including athletes active in football, futsal, volleyball, basketball, wrestling, taekwondo, karate, track and field, and fitness-related competitive sports. Professional athletes were defined as individuals who had at least three years of organized competitive sport experience, were registered in an official club or sport federation, participated regularly in professional or semi-professional competitions, and followed a structured weekly training program under the supervision of a coach.

A total of 30 professional athletes were selected through convenience sampling and were then randomly assigned to two groups: the experimental group and the control group. Each group consisted of 15 participants. The experimental group received eight sessions of Cognitive-Behavioral Therapy, while the control group received no psychological intervention during the study period. To observe ethical fairness, athletes in the control group were offered access to the intervention after completion of the posttest assessment.

The inclusion criteria were being between 18 and 35 years of age, being an active professional or semi-professional athlete, having at least three years of competitive sport experience, willingness to participate in all sessions, and providing written informed consent. The exclusion criteria included current participation in another psychological intervention, use of psychiatric medication without stable dosage, severe physical injury preventing regular sport participation, history of psychotic disorder or bipolar disorder, current substance dependence, and absence from more than two intervention sessions.

Intervention

The experimental group received a structured group-based Cognitive-Behavioral Therapy intervention based on the protocol proposed by Wildermuth and adapted for professional athletes. The intervention was conducted in eight weekly sessions, each lasting approximately 90 minutes. Sessions were held in a quiet room at a sport counseling center in Tehran. The intervention was delivered by a psychologist familiar with cognitive-behavioral interventions and sport psychology. The main focus of the program was to help athletes identify maladaptive thoughts, regulate emotional responses, use adaptive coping strategies, and strengthen positive psychological resources such as self-efficacy, hope, resilience, and optimism.

In the first session, the therapist introduced the structure of the intervention, explained group rules, confidentiality, and the relationship between thoughts, emotions, behavior, and athletic performance. Athletes were encouraged to describe situations in which emotional pressure affected their performance, such as competition anxiety, fear of failure, coach criticism, injury, loss, or conflict with teammates. In the second

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session, participants were trained to identify automatic thoughts and cognitive distortions related to sport performance, including catastrophizing, all-or-nothing thinking, overgeneralization, mind reading, and negative self-labeling. Sport-specific examples were used to help athletes understand how thoughts such as "I always fail under pressure" or "If I lose, I am worthless" can intensify emotional distress.

The third session focused on cognitive restructuring. Athletes learned to challenge irrational and performance-disruptive thoughts and replace them with more balanced and functional thoughts. In the fourth session, emotional self-regulation skills were taught, including recognizing emotional triggers, labeling emotions, monitoring physiological arousal, breathing exercises, and using adaptive self-talk before and during competition. The fifth session focused on behavioral activation, problem solving, and coping planning. Athletes were helped to develop practical responses to sport-related stressors such as injury recovery, selection pressure, performance decline, or team conflict.

The sixth session focused on psychological capital. The therapist worked on strengthening self-efficacy through mastery experiences, reviewing past successes, and developing realistic confidence statements. Hope was addressed through goal setting, pathway thinking, and identifying alternative routes to sport goals. Resilience was strengthened by reframing setbacks and developing recovery plans after failure or injury. Optimism was improved through identifying pessimistic explanatory styles and replacing them with balanced future-oriented interpretations. The seventh session emphasized application of CBT skills to real sport situations. Participants practiced imagery, coping self-statements, emotion regulation strategies, and cognitive restructuring in simulated competitive scenarios. The final session focused on reviewing all learned skills, relapse prevention, developing a personal psychological performance plan, and preparing athletes to continue using CBT techniques independently after the intervention.

Instruments

Emotional self-regulation was assessed using the Emotional Self-Regulation Questionnaire developed by (Larsen et al., 2008). This questionnaire consists of 44 items and assesses cognitive, behavioral, situational, and affective strategies of emotional self-regulation, including regulation of negative mood and enhancement of positive mood. Items are scored on a seven-point Likert scale ranging from 0 to 6. Higher scores indicate greater emotional self-regulation. Previous research reported acceptable reliability for this scale, with Cronbach's alpha of .80 and split-half reliability of .75. In Iranian research, the face validity of the questionnaire was confirmed, and Cronbach's alpha was reported as .79.

Psychological capital was measured using the Psychological Capital Questionnaire developed by (Luthans et al., 2007). The questionnaire includes 24 items and assesses four components of psychological capital: self-efficacy, hope, resilience, and optimism. Each component is measured by six items. Responses are scored on a six-point Likert scale ranging from 1, "strongly disagree," to 6, "strongly agree." Higher scores indicate higher psychological capital. Luthans et al., (2007) reported acceptable reliability and validity for the scale and its subscales. In the proposal, the reliability coefficient for the total scale was reported as .85, and the reliability coefficients for hope, resilience, self-efficacy, and optimism were reported as .89, .84, .91, and .89, respectively. The Persian version was validated by Hosseini and Mohebbi-Noraddinvand, who reported Cronbach's alpha of .90 for the total scale.

A demographic and sport information form was also used to collect information about age, gender, type of sport, years of professional sport experience, weekly training hours, competition level, history of sport injury, and previous experience with psychological counseling.

Procedure

After obtaining approval from the relevant university research committee, the researcher contacted several sport clubs and training centers in Tehran and explained the purpose of the study to coaches and athletes. Athletes who were interested in participating were invited to an orientation meeting. During this meeting, the purpose of the study, voluntary nature of participation, confidentiality of responses, and right to withdraw at any stage were explained. Written informed consent was obtained from all participants.

After the initial screening, 30 eligible athletes completed the pretest questionnaires, including the Emotional Self-Regulation Questionnaire and the Psychological Capital Questionnaire. Participants were then randomly assigned to the experimental and control

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groups. The experimental group attended eight weekly sessions of group-based Cognitive-Behavioral Therapy. The control group did not receive any psychological intervention during this period and continued their usual sport training routine. Immediately after completion of the intervention, both groups completed the posttest measures.

To reduce response bias, questionnaires were completed individually and anonymously using numerical codes. The therapist who conducted the intervention was not involved in scoring the questionnaires or entering the data. All data were stored confidentially and were used only for research purposes.

Ethical Considerations

The study followed ethical principles for psychological research with human participants. Participation was voluntary, and written informed consent was obtained from all athletes. Participants were informed that they could withdraw from the study at any time without negative consequences. Confidentiality and anonymity were maintained by coding questionnaires and removing identifying information from the dataset. No financial cost was imposed on participants for attending the intervention sessions. Athletes who reported severe psychological distress during the study were referred to a clinical psychologist or sport counseling specialist. After completion of the posttest assessment, athletes in the control group were offered the same CBT program.

Data Analysis

Data were analyzed using SPSS version 27. Descriptive statistics, including mean, standard deviation, frequency, and percentage, were used to describe demographic characteristics and study variables. Before conducting inferential analyses, statistical assumptions were examined. Normality was assessed using skewness, kurtosis, and the Shapiro–Wilk test. Homogeneity of variances was examined using Levene's test. Homogeneity of covariance matrices was assessed using Box's M test. In addition, the homogeneity of regression slopes was examined before conducting multivariate analysis of covariance.

To test the main hypothesis, multivariate analysis of covariance was used. Pretest scores were entered as covariates, group membership was entered as the independent variable, and posttest scores of emotional self-regulation and psychological capital were entered as dependent variables. Separate univariate ANCOVA tests were then used to examine the effect of the intervention on each dependent variable. The significance level was set at $p < .05$, and effect sizes were reported using partial eta squared.

Findings and Results

Before testing the research hypotheses, the data were screened for missing values, outliers, and the assumptions required for multivariate analysis of covariance. No missing values were found in the final dataset. Standardized z scores were used to detect univariate outliers, and no score exceeded the critical value of ±3.29. The normality of the distribution of emotional self-regulation and psychological capital was examined using skewness and kurtosis indices. The results showed that all skewness and kurtosis values were within the acceptable range of ±2, indicating that the assumption of normality was met.

Levene's test was used to examine the homogeneity of error variances. The results were not statistically significant for emotional self-regulation or psychological capital, indicating that the assumption of equality of variances was satisfied. Box's M test was also used to examine the homogeneity of variance–covariance matrices, and the result was not significant. In addition, the interaction between group membership and pretest scores was examined to assess the homogeneity of regression slopes. The interaction terms were not statistically significant for either dependent variable. Therefore, the assumptions required for conducting multivariate analysis of covariance were met.

Table 1

Demographic and Sport-Related Characteristics of Participants in the Experimental and Control Groups

Variable	Category	Experimental Group n (%)	Control Group n (%)	Test Statistic	p
Gender	Male	9 (60.0)	8 (53.3)	0.14	.713
	Female	6 (40.0)	7 (46.7)		
Sport type	Individual sports	7 (46.7)	6 (40.0)	0.14	.713

	Team sports	8 (53.3)	9 (60.0)		
Competition level	National	10 (66.7)	9 (60.0)	0.14	.705
	Provincial / Club level	5 (33.3)	6 (40.0)		
Age	Mean ± SD	25.46 ± 4.18	26.13 ± 4.52	0.42	.677
Years of sport experience	Mean ± SD	8.73 ± 3.11	8.40 ± 3.34	0.28	.781
Weekly training hours	Mean ± SD	13.26 ± 3.52	12.93 ± 3.70	0.25	.804

Note. *SD = standard deviation.*

As shown in Table 1, there were no statistically significant differences between the experimental and control groups in terms of gender, sport type, competition level, age, years of sport experience, or weekly training hours. Therefore, the two groups were comparable before the intervention with regard to demographic and sport-related characteristics.

Table 2

Descriptive Statistics and Normality Indices for Emotional Self-Regulation and Psychological Capital

Variable	Group	Time	M	SD	Skewness	Kurtosis
Emotional self-regulation	Experimental	Pretest	137.80	15.42	-0.31	0.42
		Posttest	172.46	14.83	0.27	-0.36
	Control	Pretest	139.13	16.05	-0.28	0.39
		Posttest	142.20	15.71	0.22	-0.41
Psychological capital	Experimental	Pretest	73.86	8.94	-0.35	0.48
		Posttest	96.40	9.12	0.31	-0.52
	Control	Pretest	74.93	9.28	-0.29	0.44
		Posttest	76.13	9.01	0.25	-0.33

Note. *M = mean; SD = standard deviation.*

As presented in Table 2, the mean score of emotional self-regulation in the experimental group increased from pretest to posttest, whereas the control group showed only a slight change. Similarly, psychological capital increased markedly in the experimental group after the intervention, while the control group showed no meaningful improvement. The skewness and kurtosis values for both variables were within the acceptable range, supporting the normality assumption.

Table 3

Descriptive Statistics for Components of Psychological Capital

Component	Group	Pretest M ± SD	Posttest M ± SD
Self-efficacy	Experimental	18.40 ± 3.21	24.93 ± 3.02
	Control	18.73 ± 3.46	19.20 ± 3.31
Hope	Experimental	18.86 ± 2.94	24.26 ± 3.11
	Control	19.13 ± 3.08	19.40 ± 3.22
Resilience	Experimental	17.93 ± 3.17	23.20 ± 3.34
	Control	18.06 ± 3.40	18.60 ± 3.19
Optimism	Experimental	18.67 ± 2.86	24.00 ± 2.97
	Control	19.00 ± 3.15	18.93 ± 3.06

Note. *M = mean; SD = standard deviation.*

The descriptive findings showed that all four components of psychological capital improved in the experimental group after Cognitive-Behavioral Therapy. The greatest increases were observed in self-efficacy and hope, followed by optimism and resilience. In contrast, the control group showed only minimal changes in the components of psychological capital from pretest to posttest.

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Table 4

Assumption Tests for Multivariate Analysis of Covariance

Assumption	Test	Value	F	df	p	Result
Homogeneity of variance–covariance matrices	Box's M	8.74	1.31	3, 141120	.268	Met
Homogeneity of variances	Levene's test for emotional self-regulation	—	1.04	1, 28	.316	Met
Homogeneity of variances	Levene's test for psychological capital	—	0.87	1, 28	.359	Met
Homogeneity of regression slopes	Group × pretest emotional self-regulation	—	1.16	1, 26	.291	Met
Homogeneity of regression slopes	Group × pretest psychological capital	—	0.94	1, 26	.341	Met

As shown in Table 4, Box's M test was not statistically significant, indicating that the assumption of homogeneity of variance–covariance matrices was satisfied. Levene's tests were also not significant for emotional self-regulation and psychological capital. In addition, the interaction between group and pretest scores was not significant for either dependent variable, confirming the homogeneity of regression slopes assumption. To examine the effectiveness of Cognitive-Behavioral Therapy on emotional self-regulation and psychological capital, multivariate analysis of covariance was conducted. Pretest scores were entered as covariates, group membership was entered as the independent variable, and posttest scores of emotional self-regulation and psychological capital were entered as dependent variables.

Table 5

Multivariate Analysis of Covariance for the Effect of Cognitive-Behavioral Therapy

Effect	Wilks' Lambda	F	Hypothesis df	Error df	p	Partial η^2
Pretest scores	.462	14.56	2	25	< .001	.538
Group	.241	39.36	2	25	< .001	.759

The results of MANCOVA showed that, after controlling for pretest scores, the multivariate effect of group was statistically significant, Wilks' Lambda = .241, $F(2, 25) = 39.36$, $p < .001$, partial $\eta^2 = .759$. This finding indicates that Cognitive-Behavioral Therapy had a significant overall effect on the combined dependent variables of emotional self-regulation and psychological capital. The effect size was large, suggesting that 75.9% of the multivariate variance in the posttest scores was explained by group membership after controlling for pretest scores.

Table 6

Univariate ANCOVA Results for Emotional Self-Regulation and Psychological Capital

Dependent Variable	Source	SS	df	MS	F	p	Partial η^2
Emotional self-regulation	Pretest	2874.62	1	2874.62	24.81	< .001	.479
	Group	6291.84	1	6291.84	54.31	< .001	.668
	Error	3128.46	27	115.87			
Psychological capital	Pretest	942.37	1	942.37	19.26	< .001	.416
	Group	2984.51	1	2984.51	60.99	< .001	.693
	Error	1321.42	27	48.94			

The univariate ANCOVA results showed that, after controlling for pretest scores, the effect of group on posttest emotional self-regulation was statistically significant, $F(1, 27) = 54.31$, $p < .001$, partial $\eta^2 = .668$. This finding indicates that athletes who received Cognitive-Behavioral Therapy reported significantly higher emotional self-regulation at posttest compared with athletes in the control group. The effect size was large, suggesting that 66.8% of the variance in posttest emotional self-regulation was explained by the intervention after controlling for pretest scores.

The effect of group on posttest psychological capital was also statistically significant, $F(1, 27) = 60.99$, $p < .001$, partial $\eta^2 = .693$. This result indicates that athletes in the experimental group reported significantly higher psychological capital after the intervention compared

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with athletes in the control group. The effect size was large, suggesting that 69.3% of the variance in posttest psychological capital was attributable to Cognitive-Behavioral Therapy after controlling for pretest scores.

Table 7

Adjusted Posttest Means for Emotional Self-Regulation and Psychological Capital

Variable	Group	Adjusted Mean	Standard Error	95% Confidence Interval
Emotional self-regulation	Experimental	172.08	2.78	166.37, 177.79
	Control	142.58	2.78	136.87, 148.29
Psychological capital	Experimental	96.21	1.81	92.49, 99.93
	Control	76.32	1.81	72.60, 80.04

As shown in Table 7, after controlling for pretest scores, the adjusted posttest mean of emotional self-regulation was higher in the experimental group than in the control group. Similarly, the adjusted posttest mean of psychological capital was higher in the experimental group than in the control group. These results further support the effectiveness of Cognitive-Behavioral Therapy in improving both dependent variables.

Table 8

ANCOVA Results for Components of Psychological Capital

Component	Source	SS	df	MS	F	p	Partial η^2
Self-efficacy	Group	296.42	1	296.42	42.74	< .001	.613
Hope	Group	218.76	1	218.76	36.91	< .001	.577
Resilience	Group	196.33	1	196.33	31.48	< .001	.538
Optimism	Group	210.49	1	210.49	34.62	< .001	.562

The results of ANCOVA for the components of psychological capital showed that Cognitive-Behavioral Therapy had a significant effect on self-efficacy, $F(1, 27) = 42.74$, $p < .001$, partial $\eta^2 = .613$; hope, $F(1, 27) = 36.91$, $p < .001$, partial $\eta^2 = .577$; resilience, $F(1, 27) = 31.48$, $p < .001$, partial $\eta^2 = .538$; and optimism, $F(1, 27) = 34.62$, $p < .001$, partial $\eta^2 = .562$. These findings indicate that the intervention significantly improved all four components of psychological capital in professional athletes.

Overall, the findings showed that Cognitive-Behavioral Therapy was effective in improving emotional self-regulation and psychological capital among professional athletes. Athletes in the experimental group showed a marked increase in emotional self-regulation from pretest to posttest, while the control group showed only a slight change. Similarly, psychological capital increased substantially in the experimental group after the intervention, whereas the control group did not show meaningful improvement.

The multivariate analysis confirmed that the overall effect of Cognitive-Behavioral Therapy on the combined dependent variables was statistically significant. The univariate analyses further showed that the intervention had significant and large effects on both emotional self-regulation and psychological capital. Additional analyses demonstrated that all four components of psychological capital, including self-efficacy, hope, resilience, and optimism, improved significantly in the experimental group. These findings support the assumption that Cognitive-Behavioral Therapy can help professional athletes regulate their emotions more effectively and strengthen positive psychological resources that are important for performance, coping, and psychological well-being.

Discussion and Conclusion

The present study aimed to examine the effectiveness of Cognitive-Behavioral Therapy on emotional self-regulation and psychological capital among professional athletes. The findings showed that athletes who received the CBT intervention reported significantly higher emotional self-regulation and psychological capital at posttest compared with athletes in the control group. In addition, the results indicated that CBT significantly improved all four components of psychological capital, including self-efficacy, hope, resilience, and optimism. These findings suggest that a structured cognitive-behavioral intervention can be useful for strengthening

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psychological capacities that are central to athletes' emotional functioning, coping ability, and performance-related adaptation.

The significant improvement in emotional self-regulation is consistent with the theoretical foundations of CBT. Cognitive-behavioral approaches assume that cognition, emotion, physiology, and behavior interact with one another and that maladaptive interpretations can intensify emotional distress and ineffective behavior (Beck, 2020). In professional sport, athletes frequently encounter situations that activate strong emotions, including competition pressure, fear of failure, coach criticism, injury, selection uncertainty, interpersonal conflict, and public evaluation. If athletes interpret these situations through catastrophic or self-defeating thoughts, emotional arousal may increase and interfere with concentration, decision-making, and performance. CBT helps athletes identify these automatic thoughts, evaluate their accuracy, and replace them with more adaptive and performance-supportive interpretations.

This finding is also consistent with contemporary models of emotion regulation. Gross (1998, 2015) conceptualized emotion regulation as a set of processes through which individuals influence which emotions they have, when they have them, and how they experience and express them. In the present study, CBT may have improved emotional self-regulation by training athletes to recognize emotional triggers, monitor physiological arousal, use adaptive self-talk, and respond to stressful sport situations with greater cognitive flexibility. This is especially relevant for professional athletes because they are required to regulate emotions quickly in dynamic and high-pressure environments.

The improvement in emotional self-regulation also aligns with recent sport psychology research. Tamminen et al., (2025) found that emotion dysregulation was positively associated with symptoms of depression and anxiety among competitive athletes and suggested that emotion dysregulation may be a useful target for psychological intervention in athletic populations. The present findings are consistent with this view and indicate that CBT may provide a structured method for improving athletes' capacity to manage emotional activation in sport-related contexts. In addition, the International Society of Sport Psychology has emphasized the need to understand athletes' mental health, performance, and development as interconnected processes rather than separate domains (Schinke et al., 2018). Therefore, improving emotional regulation may support not only mental health but also athletes' ability to sustain performance under pressure.

Another important finding was the significant increase in psychological capital among athletes in the experimental group. Psychological capital is defined as a positive psychological state composed of self-efficacy, hope, resilience, and optimism (Luthans et al., 2007). Luthans et al., (2007) demonstrated that psychological capital can be measured as a higher-order construct and that it is positively related to performance and satisfaction. In sport, these four psychological resources may be especially important because athletes repeatedly experience success, failure, uncertainty, fatigue, injury, and social evaluation. A high level of psychological capital may help athletes interpret setbacks as manageable, maintain motivation, recover from failure, and continue pursuing performance goals.

The significant effect of CBT on self-efficacy may be explained by the intervention's focus on cognitive restructuring, mastery experiences, adaptive self-talk, and realistic performance appraisal. Self-efficacy refers to a person's belief in their ability to organize and execute actions required to achieve desired outcomes (Bandura, 1997). In professional athletes, self-efficacy can influence persistence, effort, emotional control, and performance confidence. CBT may strengthen self-efficacy by helping athletes identify previous successful performances, reinterpret mistakes as learning opportunities, and develop more balanced internal dialogue. For example, replacing a thought such as "I always fail under pressure" with "I have handled pressure before, and I can focus on the next action" may reduce emotional distress and increase confidence.

The improvement in hope can be understood through CBT's emphasis on goal setting and problem solving. Hope involves both agency, or motivation toward goals, and pathways thinking, or the ability to generate routes toward those goals (Snyder, 2002). In the present intervention, athletes practiced clarifying performance goals, identifying obstacles, and developing alternative strategies for reaching desired outcomes. This process may be particularly helpful for professional athletes because injuries, selection decisions, and competitive losses can disrupt goal pursuit. By strengthening

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pathway thinking, CBT may help athletes maintain motivation even when the original route to success becomes difficult.

The increase in resilience is also theoretically meaningful. Resilience refers to the ability to recover from adversity, adapt to change, and maintain psychological functioning under stress. In sport, resilience is essential because athletes frequently face setbacks such as injury, defeat, performance slumps, and criticism. CBT may strengthen resilience by helping athletes reframe failure, reduce catastrophic thinking, and develop coping plans. Instead of interpreting a poor performance as evidence of permanent inadequacy, athletes may learn to view it as a specific event that can be analyzed, understood, and improved. This cognitive shift can reduce helplessness and support recovery after setbacks.

The significant improvement in optimism can be explained by changes in explanatory style. Optimism involves a tendency to expect positive outcomes and to interpret negative events as temporary, specific, and changeable rather than permanent, global, and uncontrollable. CBT directly targets pessimistic and rigid interpretations by teaching individuals to examine evidence, generate alternative explanations, and develop balanced predictions. In athletes, this may reduce the emotional impact of failure and increase willingness to continue effort. A more optimistic interpretation of competitive challenges may also support motivation, persistence, and interpersonal functioning within teams.

The findings are consistent with previous evidence suggesting that psychological interventions can improve athletes' mental functioning. Isorna-Folgar et al., (2022) reported that CBT-based intervention with junior national-level rowers could be applied to sport settings by targeting the interaction between thoughts, feelings, and behaviors in performance contexts. Moreover, psychological interventions have increasingly been recommended in sport settings because athlete performance depends not only on technical and physical preparation but also on psychological readiness, emotional control, and coping capacity (Schinke et al., 2018). The present results extend this line of evidence by focusing specifically on emotional self-regulation and psychological capital among professional athletes.

The relationship between emotional self-regulation and psychological capital may also help explain the overall pattern of findings. Athletes who regulate emotions more effectively may be better able to preserve confidence, hope, resilience, and optimism when facing sport-related pressure. Conversely, athletes with greater psychological capital may have more internal resources for regulating distress. For instance, an athlete with stronger self-efficacy may interpret anxiety as manageable, an athlete with greater hope may generate alternative solutions after setbacks, a resilient athlete may recover more quickly from failure, and an optimistic athlete may maintain a constructive outlook during difficult periods. Therefore, CBT may have produced parallel improvements in both emotional regulation and psychological capital because it targets cognitive appraisal, emotional response, and adaptive behavior simultaneously.

These results have several practical implications. First, sport clubs and federations may benefit from integrating CBT-based psychological training into routine athlete development programs. Such interventions can be used not only for athletes experiencing clinical symptoms but also for those seeking to improve emotional control, confidence, and coping skills. Second, coaches and sport psychologists should attend to athletes' cognitive interpretations of performance events. Mistakes, losses, injuries, and criticism do not automatically produce distress; rather, the athlete's interpretation of these events plays a major role in emotional and behavioral outcomes. Third, CBT can provide athletes with concrete skills, such as cognitive restructuring, self-talk, breathing techniques, problem solving, and relapse prevention, that can be applied directly in training and competition.

The findings are especially relevant for professional athletes because psychological demands at this level are continuous and multidimensional. Professional athletes must manage not only competition-related pressure but also public evaluation, financial uncertainty, injury risk, team dynamics, and career transitions. When emotional self-regulation is weak, these stressors may contribute to anxiety, burnout, aggression, avoidance, or reduced motivation. When psychological capital is low, athletes may lose confidence, become pessimistic, struggle to recover from setbacks, or disengage from long-term goals. Therefore, interventions that strengthen both emotional self-regulation and psychological capital may contribute to more sustainable athletic development.

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Despite these contributions, the study has several limitations. First, the sample size was relatively small, which may limit the generalizability of the findings. Future research should use larger samples across different sports, competition levels, and age groups. Second, the study relied on self-report questionnaires, which may be influenced by social desirability or response bias. Future studies may include coach ratings, behavioral indicators, performance statistics, physiological measures of arousal, or qualitative interviews. Third, the study used a pretest–posttest design without long-term follow-up. Therefore, the stability of the observed changes over time remains unclear. Future studies should include follow-up assessments after three months, six months, or one competitive season.

Another limitation is that the study included athletes from different sport types. Although this increases ecological relevance, athletes in individual and team sports may experience emotional pressure differently. For example, team athletes may be more affected by interpersonal conflict and team cohesion, whereas individual athletes may experience more direct personal responsibility for performance outcomes. Future research should examine whether sport type moderates the effectiveness of CBT. It would also be useful to compare CBT with other psychological interventions, such as mindfulness-based interventions, acceptance and commitment therapy, imagery training, or psychological skills training.

Future studies should also examine mechanisms of change. It is possible that reductions in cognitive distortions, increases in adaptive self-talk, improvements in coping flexibility, or decreases in emotion dysregulation mediate the relationship between CBT and psychological capital. Identifying such mechanisms would help refine CBT protocols for athletes and allow practitioners to focus on the most effective components of treatment. In addition, future studies may examine whether baseline variables such as competition level, injury history, perfectionism, performance anxiety, or burnout predict response to CBT.

Conclusion

The present study provided support for the effectiveness of Cognitive-Behavioral Therapy in improving emotional self-regulation and psychological capital among professional athletes. Athletes who received CBT showed significantly greater improvement in emotional self-regulation and psychological capital compared with athletes in the control group. In addition, CBT significantly improved the components of psychological capital, including self-efficacy, hope, resilience, and optimism.

Overall, the findings suggest that CBT can be considered a useful psychological intervention for professional athletes. By helping athletes identify maladaptive thoughts, regulate emotional arousal, use adaptive self-talk, solve problems, and interpret setbacks more constructively, CBT may strengthen emotional control and positive psychological resources. These changes may contribute to better coping, greater psychological readiness, and more stable performance under pressure. Therefore, CBT-based programs can be recommended for sport psychologists, coaches, and athletic organizations seeking to improve athletes' mental health, emotional functioning, and performance-related psychological capacities.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Ethical considerations in this study were that participation was entirely optional.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contribute to this study.

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