

The Association of Psychological Flexibility and Coach Support with Athlete Burnout: The Mediating Role of Sports Self-Efficacy: A Structural Equation Modeling Analysis Among Male Athletes

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Abstract

Background: Athlete burnout is a critical psychological syndrome influenced by both individual capabilities and environmental factors. This study aimed to investigate the association of psychological flexibility and coach support with athlete burnout, specifically focusing on the mediating role of sports self-efficacy.

Methods: A descriptive-correlational research design was employed, utilizing Structural Equation Modeling. The statistical population comprised male athletes in Ahvaz, Iran, in 2025. Using a multi-stage cluster random sampling method, a sample of 300 athletes was selected. Data were collected using the Athlete Burnout Questionnaire, the Acceptance and Action Questionnaire-II, the Coach-Athlete Relationship Questionnaire, and the Sport Self-Efficacy Questionnaire.

Results: The findings indicated that psychological flexibility ($\beta = -0.18$, $p = 0.001$) and coach support ($\beta = -0.19$, $p = 0.001$) had significant negative direct effects on athlete burnout, while demonstrating significant positive direct effects on sports self-efficacy (psychological flexibility:

$\beta = 0.31, p = 0.001$; coach support: $\beta = 0.43, p = 0.001$). Sports self-efficacy directly and negatively predicted athlete burnout ($\beta = -0.20, p = 0.001$). The structural model showed excellent fit ($\chi^2/df = 1.58, CFI = 0.97, RMSEA = 0.027$) and confirmed that sports self-efficacy significantly mediated the relationships (psychological flexibility $\rightarrow$ sports self-efficacy $\rightarrow$ burnout: $\beta = -0.06, p = 0.032$; coach support $\rightarrow$ sports self-efficacy $\rightarrow$ burnout: $\beta = -0.09, p = 0.015$).

Conclusion: Fostering psychological flexibility and enhancing perceived coach support can significantly increase athletes' self-efficacy, which in turn serves as a protective mechanism against burnout. Implementing psychological interventions and supportive coaching strategies is highly recommended to sustain athletes' mental health and performance.

Keywords: Athletes, Burnout, Self Efficacy, Social Support

INTRODUCTION

Competitive sports demand not only peak physical conditioning but also immense psychological resilience. Athletes, particularly those in their prime competitive years ranging from 18 to 35, are routinely exposed to a myriad of stressors. These include grueling training schedules, the relentless pressure to perform, intense competition, and the constant scrutiny of coaches, peers, and spectators (1). While sports participation generally promotes well-being, the high-stakes environment of competitive athletics can transform these stressors into chronic psychological burdens. When the demands of the sport consistently outweigh an athlete's coping resources, they become highly susceptible to maladaptive psychological states (2). Male athletes may be particularly vulnerable due to socialization patterns that encourage emotional suppression and perseverance through pain, as evidenced by comparative studies showing higher internalization of performance pressures in male samples (3). Over time, the inability to effectively navigate the physical and emotional exhaustion inherent in competitive sports can lead to severe performance decrements and a profound deterioration of mental health. Consequently, understanding the psychological landscape of these athletes and identifying the specific vulnerabilities that lead to severe psychological syndromes has become a paramount concern in modern sports psychology (4).

Among the most debilitating psychological outcomes in competitive sports is athlete burnout. Athlete burnout is a multidimensional syndrome characterized by three core dimensions: physical

and emotional exhaustion, a reduced sense of athletic accomplishment, and sport devaluation (5). Exhaustion refers to the depletion of physical and emotional resources due to intense training and competition. Reduced accomplishment manifests as a perceived lack of athletic progress or ability, while sport devaluation involves a growing loss of interest and a negative, cynical attitude toward the sport (6). Burnout not only impairs athletic performance but also significantly compromises the athlete's overall well-being, often resulting in premature dropout from the sport and long-term mental health challenges (7). Given its severe consequences, identifying protective factors that can mitigate the onset of burnout is crucial for sustaining athletes' careers (8).

A critical individual-level factor that may serve as a protective mechanism against burnout is psychological flexibility. Rooted in Acceptance and Commitment Therapy (ACT), psychological flexibility is defined as the ability to contact the present moment fully as a conscious human being, and, based on what the situation affords, changing or persisting in behavior in the service of chosen values (9). In the context of sports, athletes with high psychological flexibility do not expend excessive energy trying to suppress or avoid negative thoughts, performance anxiety, or physical discomfort. Instead, they accept these internal experiences without judgment and remain focused on their athletic goals (10). Literature suggests that psychological flexibility enhances emotional regulation and resilience under pressure (11). Research has demonstrated that athletes who exhibit greater psychological flexibility are less prone to emotional exhaustion and sport devaluation, as they can adaptively process the stressors of their competitive environment (12).

While internal psychological skills are vital, the external athletic environment, predominantly shaped by the coach, plays an equally pivotal role. Coach support is a multidimensional construct encompassing emotional, informational, and tangible assistance provided by the coach to the athlete (13). The coach-athlete relationship is arguably the most influential interpersonal dynamic in sports. A supportive coach creates a motivational climate that emphasizes learning, effort, and personal improvement over mere competitive outcomes (14). When athletes perceive high levels of support from their coaches, they experience lower levels of performance anxiety and competitive stress (15). Supportive coaching fosters a sense of belonging and psychological safety, empowering athletes to navigate challenges effectively. Previous studies have consistently highlighted that perceived coach support acts as a robust buffer against stress, significantly reducing the likelihood of athlete burnout (16).

The protective effects of psychological flexibility and coach support on athlete burnout may be better understood through the mediating role of sports self-efficacy. Sports self-efficacy is defined as an athlete's belief in their capability to organize and execute the courses of action required to produce successful athletic performances (17). It is a domain-specific manifestation of self-efficacy that profoundly influences motivation, effort expenditure, and perseverance in the face of difficulties (18). Athletes with high psychological flexibility are likely to develop stronger self-efficacy because their adaptive coping allows them to learn from failures rather than being defeated by them (19). Similarly, a supportive coach provides verbal persuasion, constructive feedback, and emotional encouragement, which are primary sources of self-efficacy (20). Consequently, athletes equipped with strong self-efficacy are more resilient to stress; they view challenging situations as tasks to be mastered rather than threats, which directly curtails the development of burnout symptoms (21).

Despite extensive research on the individual contributions of psychological flexibility, coach support, and self-efficacy to athlete well-being, the combined impact of these factors and the mediating mechanism of sports self-efficacy in a single integrated model remain underexplored, particularly among male athletes facing intense regional competition in non-Western contexts (22). This gap is noteworthy because, although separate studies have examined these variables, few have tested their simultaneous interplay through advanced modeling techniques such as SEM. Clarifying these pathways can provide valuable empirical evidence for designing targeted psychological interventions and coach education programs aimed at fostering resilient, efficacious athletes. By addressing this gap, the current study sought to offer a comprehensive model of burnout prevention. Therefore, the present study tested the following hypotheses: H1: Psychological flexibility is negatively associated with athlete burnout. H2: Coach support is negatively associated with athlete burnout. H3: Psychological flexibility is positively associated with sports self-efficacy. H4: Coach support is positively associated with sports self-efficacy. H5: Sports self-efficacy is negatively associated with athlete burnout. H6: Sports self-efficacy mediates the relationship between psychological flexibility and athlete burnout. H7: Sports self-efficacy mediates the relationship between coach support and athlete burnout.

MATERIALS AND METHODS

Design and Participants

This research employed a descriptive-correlational design using structural equation modeling (SEM) to examine the hypothesized relationships. It is important to note that, given the cross-sectional nature of the data, the analysis examines associations and potential mediation effects concurrently; therefore, no causal inferences can be drawn from the results. The statistical population comprised all active male athletes affiliated with various sports clubs and athletic associations in Ahvaz, Iran, during the year 2025. A total of 300 participants were recruited for this study using a multi-stage cluster random sampling technique. In the first stage, sports clubs were clustered by district and sport type; in the second stage, a random selection of clubs was made within each cluster (approximately 15–20 clubs across major districts); and in the final stage, eligible athletes were randomly invited from the selected clubs. To ensure the homogeneity and suitability of the sample, specific inclusion criteria were established: participants had to be between 18 and 35 years of age, possess at least one year of continuous athletic activity, maintain regular training schedules, and report generally sound physical and psychological health. Conversely, athletes were excluded if they submitted incomplete questionnaires, displayed inconsistent or illogical response patterns (identified through Mahalanobis distance for multivariate outliers at $p < 0.001$), had a history of severe injuries or chronic illnesses impairing athletic performance, or exhibited irregular training attendance over the preceding three months. A priori power analysis using G*Power (version 3.1) for SEM with 4 latent variables, medium effect size ($f^2 = 0.15$), $\alpha = 0.05$, and power = 0.80 indicated that a minimum sample of 200–250 participants was required; thus, the final sample of 300 provided adequate statistical power. Regarding ethical considerations, written informed consent was meticulously obtained from all participants prior to data collection, emphasizing the voluntary nature of their involvement. Furthermore, athletes were explicitly assured of the strict confidentiality and absolute anonymity of their personal information and survey responses throughout the entire research process. The overall response rate was 78%, with non-respondents primarily citing time constraints.

Procedure

The data collection phase was systematically executed within the familiar training environments of the selected sports clubs to maximize participant comfort. Following preliminary coordination with club administrators and head coaches, the research team approached the athletes either before or after their standard training sessions. Participants were verbally briefed regarding the

fundamental objectives of the study, the importance of their honest responses, and the ethical safeguards in place. Subsequently, the standardized questionnaire packets were distributed among the willing athletes. Adequate time was allocated for the participants to complete the self-report measures in a quiet, undisturbed setting, and the researchers remained consistently available on-site to clarify any ambiguities regarding the questionnaire instructions or specific items. Missing data were minimal ($< 2\%$) and handled using full information maximum likelihood (FIML) estimation in AMOS.

Instruments

Athlete Burnout Questionnaire: The Athlete Burnout Questionnaire, originally developed by Raedeke and Smith (23), was administered to evaluate the participants' burnout severity. This widely recognized instrument consists of 15 items designed to measure three distinct subscales: physical and emotional exhaustion, a reduced sense of athletic accomplishment, and sport devaluation. Respondents rate their subjective experiences on a five-point Likert scale ranging from 1 (almost never) to 5 (almost always). Consequently, the total scores can range between 15 and 75, where elevated cumulative scores represent a higher severity of burnout symptoms among athletes. In the context of Iranian athletic populations, previous research has consistently confirmed the robust psychometric properties of this scale (Cronbach's $\alpha = 0.82$) (24). For the current investigation, the reliability of the instrument was highly satisfactory, yielding a Cronbach's alpha coefficient of 0.86.

Acceptance and Action Questionnaire-II (AAQ-II): To assess the athletes' psychological flexibility and experiential avoidance, the study utilized a 10-item version of the Acceptance and Action Questionnaire-II. Participants indicate their level of agreement with various psychological statements using a seven-point Likert scale, anchored from 1 (completely disagree) to 7 (completely agree). Therefore, the potential score range for this tool spans from 10 to 70. Based on this specific scoring format, higher cumulative scores are directly indicative of superior psychological flexibility and enhanced emotional-behavioral adjustment in stressful situations (9). The Persian iteration of this psychological tool has been extensively validated in numerous prior domestic studies, demonstrating excellent internal consistency (Cronbach's $\alpha = 0.80$) (25). Within the present sample, the AAQ-II maintained strong reliability, evidenced by a Cronbach's alpha coefficient of 0.87.

Coach-Athlete Relationship Questionnaire (CART-Q): Perceived coach support and the quality of the coach-athlete relationship were assessed using the Coach-Athlete Relationship Questionnaire (CART-Q), developed by Jowett and Ntoumanis (26). This multidimensional instrument (measuring closeness, commitment, and complementarity) was used here as an indicator of perceived coach support, consistent with prior studies that operationalize total CART-Q scores as a global index of supportive coach-athlete interactions (13, 27). This multidimensional instrument consists of 11 items that evaluate three key aspects of the coach-athlete relationship: closeness, commitment, and complementarity. Items are rated on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree), yielding a total score range of 11 to 77. Higher scores indicate a more supportive, positive, and higher-quality relationship with the coach. Previous Persian adaptations of the CART-Q have demonstrated strong psychometric properties (Cronbach's $\alpha = 0.88$) (27). In the present study, the scale showed good internal consistency, with a Cronbach's α of 0.89.

Sport Self-Efficacy Questionnaire (Athletic Self-Efficacy Questionnaire): Athletes' domain-specific self-efficacy was measured with the Sport Self-Efficacy Questionnaire developed by Sahraian et al. (28). This 22-item scale assesses athletes' confidence in performing essential sport skills and overcoming competitive challenges. Responses are provided on a 5-point Likert scale, producing a total score range of 22 to 110. Higher scores reflect greater levels of perceived sport self-efficacy. As a domestically developed tool, it has shown excellent validity and reliability in Iranian athletic samples (28). Consistent with prior research, the questionnaire demonstrated strong internal consistency in the current study (Cronbach's $\alpha = 0.91$).

Data Analysis

The collected data were systematically analyzed employing both descriptive and inferential statistical methods. Descriptive statistics, including means, standard deviations, and frequency distributions, were calculated to summarize the demographic profiles and primary variables. Prior to SEM, data were screened for normality, multicollinearity, and multivariate outliers. Assumptions of multivariate normality were largely met, and multicollinearity was not a concern ($VIF < 4$). For the inferential analysis, structural equation modeling was meticulously conducted using SPSS and AMOS software. Maximum likelihood estimation was used, and model fit was

evaluated using multiple indices. No adjustments for multiple testing were applied as the analyses were theory-driven and focused on a single structural model.

RESULTS

The sample comprised active male athletes aged 18 to 35 ($M = 24.64$, $SD = 4.23$). In terms of education, the majority (58%) possessed university degrees (associate or bachelor's), while the remaining 42% were high school graduates.

Table 1 presents the means, standard deviations, skewness, and kurtosis values for the main study variables, along with their intercorrelations and multicollinearity statistics. Psychological flexibility ($M = 43.98$, $SD = 10.09$), coach support ($M = 50.44$, $SD = 9.61$), and sports self-efficacy ($M = 77.98$, $SD = 15.35$) showed moderate to high average levels, while athletic burnout ($M = 36.68$, $SD = 10.09$) was in the moderate range. All variables exhibited acceptable skewness and kurtosis values (within ± 1), indicating relatively normal distributions suitable for parametric analyses. Bivariate correlations revealed strong negative associations between athletic burnout and the predictor variables (psychological flexibility: $r = -0.69$, $p < 0.001$; coach support: $r = -0.72$, $p < 0.001$; sports self-efficacy: $r = -0.74$, $p < 0.001$), and strong positive associations among psychological flexibility, coach support, and sports self-efficacy. Variance Inflation Factor (VIF) values were all below 4 and tolerance statistics were acceptable, indicating no serious multicollinearity concerns among the predictors.

Table 1. Descriptive statistics, normality indices, correlations, and multicollinearity diagnostics for study variables

Variables	Mean	SD	Skewness	Kurtosis	1	2	3	4	VIF	Tolerance
1- Psychological flexibility	43.98	10.09	-0.64	-0.39	1				2.36	0.42
2- Coach support	50.44	9.61	-0.85	-0.02	0.66**	1			2.86	0.35
3- Sports self-efficacy	77.98	15.35	-0.71	-0.22	0.73**	0.78**	1		3.51	0.29
4- Athletic burnout	36.68	10.09	0.81	-0.58	-0.69**	-0.72**	-0.74**	1	2.08	0.41

Note. SD: standard deviation; VIF: variance inflation factor; **: $P < 0.01$

Table 2 summarizes the fit indices for the hypothesized structural equation model. The model demonstrated excellent fit to the data: $\chi^2 = 9.52$, $\chi^2/df = 1.58$, $NFI = 0.97$, $CFI = 0.97$, $RFI = 0.96$, $GFI = 0.95$, $AGFI = 0.92$, and $RMSEA = 0.027$. All indices comfortably met or exceeded the

recommended thresholds for good model fit, supporting the adequacy of the proposed theoretical model in explaining the relationships among psychological flexibility, coach support, sports self-efficacy, and athletic burnout.

Table 2. Goodness-of-fit indices for the final structural model

Fit indicators	χ^2	df	(χ^2 /df)	NFI	CFI	RFI	GFI	AGFI	RMSEA
Model	9.52	6	1.58	0.97	0.97	0.96	0.95	0.92	0.027
Acceptable range	-	-	<3	>0.95	>0.95	>0.95	>0.95	>0.90	<0.08

Note. χ^2 : chi-square; NFI: Normed Fit Index; CFI: Comparative Fit Index; RFI: Relative Fit Index; GFI: Goodness of Fit Index; AGFI: Adjusted Goodness of Fit Index; RMSEA: Root Mean Square Error of Approximation

Table 3 displays the unstandardized (B) and standardized (β) path coefficients for the direct and indirect effects in the final model. Psychological flexibility ($B = -0.18$, $\beta = -0.18$, $p = 0.001$) and coach support ($B = -0.20$, $\beta = -0.19$, $p = 0.001$) exerted significant negative direct effects on athletic burnout. Both variables also showed significant positive direct effects on sports self-efficacy (psychological flexibility: $B = 0.47$, $\beta = 0.31$, $p = 0.001$; coach support: $B = 0.69$, $\beta = 0.43$, $p = 0.001$). In turn, sports self-efficacy had a significant negative direct effect on athletic burnout ($B = -0.13$, $\beta = -0.20$, $p = 0.001$). The indirect effects through sports self-efficacy were also significant (psychological flexibility $\rightarrow$ sports self-efficacy $\rightarrow$ athletic burnout: $B = -0.05$, $\beta = -0.06$, $p = 0.032$; coach support $\rightarrow$ sports self-efficacy $\rightarrow$ athletic burnout: $B = -0.09$, $\beta = -0.09$, $p = 0.015$), confirming the mediating role of sports self-efficacy in the relationships between psychological flexibility and coach support with athletic burnout.

Table 3. Direct and indirect (mediation) paths in the final structural model

Path	B	β	p
Psychological flexibility $\rightarrow$ Athletic burnout	-0.18	-0.18	0.001
Coach support $\rightarrow$ Athletic burnout	-0.20	-0.19	0.001
Psychological flexibility $\rightarrow$ Sports self-efficacy	0.47	0.31	0.001
Coach support $\rightarrow$ Sports self-efficacy	0.69	0.43	0.001
Sports self-efficacy $\rightarrow$ Athletic burnout	-0.13	-0.20	0.001
Psychological flexibility $\rightarrow$ Athletic burnout through the Sports self-efficacy	-0.05	-0.06	0.032
Coach support $\rightarrow$ Athletic burnout through the Sports self-efficacy	-0.09	-0.09	0.015

Note. B: unstandardized path coefficient; β : standardized path coefficient

Figure 1 illustrates the final structural model, depicting the direct paths from psychological flexibility and coach support to both sports self-efficacy and athletic burnout, as well as the mediating pathways through sports self-efficacy.

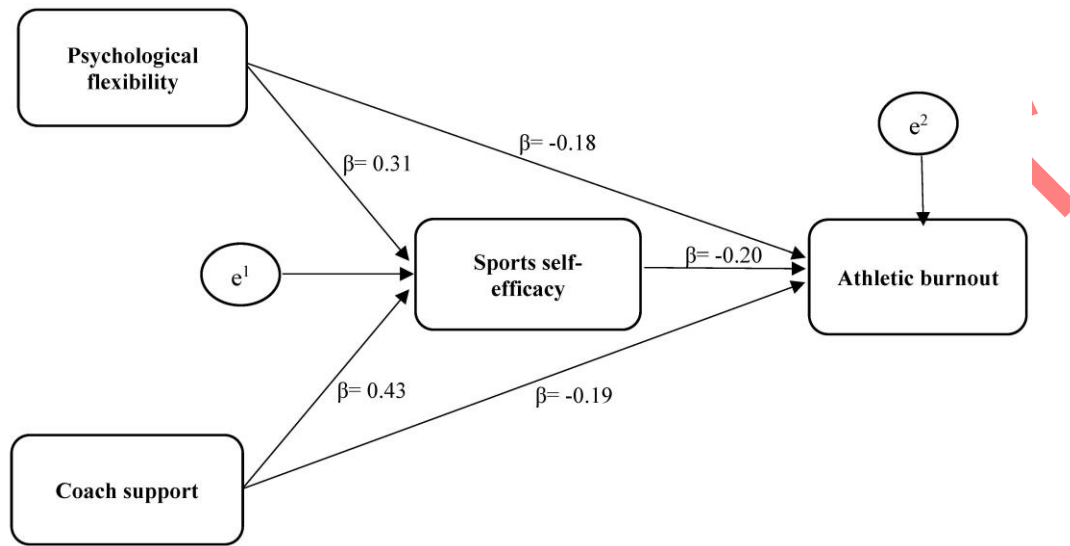


Figure 1. Final structural model of the relationships among study variables

DISCUSSION

The present study aimed to explore the intricate dynamics between psychological flexibility, coach support, and athlete burnout, with a specific focus on the mediating role of sports self-efficacy. The findings offer valuable insights into the cognitive and social mechanisms that protect athletes from the debilitating effects of burnout, extending the current literature on sports psychology.

The results demonstrated a significant negative association between psychological flexibility and athlete burnout. Rather than merely suppressing negative emotions, psychologically flexible athletes appear better equipped to accept internal experiences without judgment, thereby reducing the accumulation of chronic stress. This adaptive cognitive style prevents the accumulation of chronic stress, thereby mitigating the risk of sport devaluation and reduced sense of accomplishment. These findings are congruent with previous research (29, 30), which highlighted that mindfulness and psychological flexibility interventions significantly reduce burnout symptoms in elite competitors.

Similarly, the results revealed a significant inverse relationship between coach support and athlete burnout. In the highly demanding context of competitive sports, the coach-athlete relationship serves as a critical buffer against chronic stress. When athletes perceive genuine emotional, informational, and tangible support from their coaches, their psychological needs for autonomy, competence, and relatedness are effectively met. This supportive environment diminishes the perception of threat during high-stakes training and competition, fostering a sense of psychological safety. This finding aligns with prior studies (13, 31). In the Iranian athletic context, where cultural emphasis on performance outcomes may intensify pressures, strong coach support appears particularly salient.

A key contribution of this study is the confirmation of sports self-efficacy as a significant mediator. Psychologically flexible athletes may accumulate more mastery experiences through adaptive coping, thereby enhancing domain-specific self-efficacy beliefs. When athletes strongly believe in their capabilities, they perceive competitive stressors as surmountable challenges. This mediating mechanism is supported by recent literature (32, 33). Likewise, coach support enhances self-efficacy through verbal persuasion and feedback, which in turn reduces burnout vulnerability (16, 34).

Taken together, these findings suggest an integrated process in which individual psychological resources and interpersonal support converge through self-efficacy. However, given the cross-sectional design, these relationships should be interpreted as associative rather than causal. Alternative explanations, such as common-method bias due to self-report measures, cannot be entirely ruled out.

Despite its contributions, this study has notable limitations. The cross-sectional design precludes definitive causal inferences regarding the examined relationships. Additionally, the sample was restricted to active male athletes aged 18 to 35 from a specific geographic region (Ahvaz), which limits the generalizability of the findings to female athletes, different age cohorts, or other cultural contexts. Finally, reliance on self-report questionnaires may introduce response biases such as social desirability. Future longitudinal and diverse studies are recommended.

CONCLUSION

In conclusion, the present findings underscore the importance of psychological flexibility and perceived coach support in reducing athlete burnout, with sports self-efficacy serving as a key mediating mechanism. These results highlight that adaptive cognitive strategies and supportive coaching environments can enhance athletes' belief in their capabilities, thereby buffering against burnout symptoms.

APPLICABLE REMARKS

The current results suggest several actionable strategies for coaches and sports psychologists:

- Implement Acceptance and Commitment Therapy-based workshops to enhance athletes' psychological flexibility, particularly focusing on acceptance of negative thoughts during high-pressure competitions.
- Coach education programs should emphasize autonomy-supportive behaviors measured by the CART-Q (e.g., fostering closeness through empathetic listening, commitment via consistent goal alignment, and complementarity through collaborative training decisions).
- Targeted interventions to build sports self-efficacy, such as mastery experiences and verbal persuasion, should be integrated into routine training.
- Regular monitoring of burnout symptoms combined with coach-athlete relationship assessments is recommended to identify at-risk athletes early.
- Ultimately, integrating these internal and external resources can help build resilient athletes capable of thriving under the rigorous demands of competitive sports.

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AUTHORS' CONTRIBUTIONS

YKF, ZDB, RH, and SS contributed equally to the conceptualization, methodology, investigation, formal analysis, writing – original draft preparation, and writing – review & editing of this manuscript. All authors have read and approved the final version of the manuscript.

ETHICAL CONSIDERATIONS

Ethical clearance was granted by the Ethics Committee of Islamic Azad University, Ahvaz Branch (Code IR.IAU.AHVAZ.REC.1404.613).

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

FUNDING

No funding was received for this study.

DATA AVAILABILITY

The dataset generated and analyzed during the current study is available from the corresponding author on reasonable request.

DECLARATION OF AI USE

The authors declare that no generative AI tools were used in the writing or data analysis of this manuscript.

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