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Emotional Intelligence and Mental Toughness Among Iranian Taekwondo Champions: The Mediating Role of Coping Strategies

Fariborz Askari [a] ✉, Mohialdin Bahari [a], Nemat Khalifeh [a]

a Department of Physical Education and Sports Science, Karaj Branch, Islamic Azad University, Karaj, Iran.
✉ Corresponding author: Fariborz Askari, Department of Physical Education and Sports Science, Karaj Branch, Islamic Azad University, Karaj, Iran.
E-mail addresses: Fariborzaskari28@gmail.com

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ABSTRACT

Background: Competitive taekwondo places substantial demands on emotional regulation and stress management. However, the role of specific coping strategies in the relationship between emotional intelligence and mental toughness remains insufficiently understood.

Purpose: This study examined the association between emotional intelligence and mental toughness among Iranian taekwondo champions, considering the mediating role of coping strategies.

Methods: A cross-sectional correlational study was conducted among 227 Iranian international medal-winning taekwondo athletes recruited through convenience sampling. Participants completed the Schutte Self-Report Emotional Intelligence Test, Sports Mental Toughness Questionnaire, and Coping Inventory for Stressful Situations. Data were analyzed using SPSS 26 and partial least squares structural equation modeling in SmartPLS 4.

Results: Emotional intelligence was positively associated with mental toughness ($\beta = .363$, $p < .001$) and task-oriented coping ($\beta = .438$, $p < .001$), but negatively associated with emotion-oriented coping ($\beta = -.328$, $p < .001$). Task-oriented and emotion-oriented coping were positively ($\beta = .305$, $p < .001$) and negatively ($\beta = -.243$, $p < .001$) associated with mental toughness, respectively. Both specific indirect associations were significant ($\beta = .134$, $p < .001$; $\beta = .080$, $p = .003$). The model explained 51.9% of the variance in mental toughness ($R^2 = .519$; SRMR = .059).

Conclusion: Emotional intelligence was associated with mental toughness both directly and indirectly through distinct coping patterns. The findings may inform psychological preparation research in elite taekwondo, although causal interpretations are not warranted.

WHAT IS ALREADY KNOWN ON THIS TOPIC	WHAT THIS STUDY ADDS	HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY
Emotional intelligence, mental toughness, and coping are associated with psychological functioning in sport. However, the contribution of specific coping dimensions remains insufficiently understood among elite taekwondo athletes.	This study identifies distinct indirect associations linking emotional intelligence with mental toughness through task-oriented and emotion-oriented coping among Iranian international medal-winning taekwondo athletes.	The findings may guide future psychological skills research and inform the development of coping-focused preparation programs for elite taekwondo athletes, subject to experimental evaluation.

1. Introduction

Taekwondo is a psychologically demanding combat sport in which athletes must maintain attentional control, regulate emotional responses, and make rapid tactical decisions under competitive pressure. The dynamic nature of competition, together with the consequences of momentary errors, highlights the importance of psychological resources alongside technical and physical preparation. Recent studies have emphasized the relevance of mental performance skills and self-regulatory processes in combat sports, suggesting that athletes' psychological functioning cannot be adequately understood through performance-related characteristics alone (Duyan et al., 2026; Liu et al., 2026). Within this context, understanding how emotional intelligence relates to mental toughness, and whether coping strategies contribute to this relationship, represents an important issue in sport psychology.

Emotional intelligence refers to the ability to perceive, understand, and regulate emotional information in oneself and others (Salovey & Mayer, 1990). In competitive sport, these capacities may facilitate the interpretation of stressful situations and the maintenance of goal-directed responses. A systematic review by Laborde et al. (2016) identified associations between emotional intelligence and sport-related psychological outcomes, including emotional experiences, stress responses, and psychological skill use. More recently, Levillain et al. (2025), in a longitudinal investigation involving 453 athletes, demonstrated that emotional intelligence moderated relationships among cognitive appraisals, coping strategies, emotions, and perceived performance. These findings indicate that emotional intelligence may be particularly relevant when examined in connection with athletes' responses to competitive demands.

Mental toughness represents another important psychological construct associated with confidence, persistence, and effective functioning under challenging circumstances. Sheard et al. (2009) conceptualized sport mental toughness through three dimensions: confidence, constancy, and control. A meta-analysis by Hsieh et al. (2024) demonstrated a positive association between mental toughness and athletic performance, although the strength of this relationship varied across sports and assessment methods. Nevertheless, Dziuba et al. (2025) reported that mental toughness did not consistently moderate the relationship between stress and performance. These findings suggest that mental toughness should not be considered an unconditional protective characteristic and underscore the need to examine psychological processes potentially associated with its expression.

Coping strategies may constitute one such process. Within the transactional perspective of stress and coping, individuals' responses to demanding situations depend on their appraisal of situational demands and available resources (Lazarus & Folkman, 1984). Endler and Parker (1994) distinguished three principal coping dimensions: task-oriented, emotion-oriented, and avoidance-oriented coping. Task-oriented coping involves purposeful efforts to manage stressful demands, whereas emotion-oriented coping, as operationalized by the Coping Inventory for Stressful Situations, primarily reflects self-focused emotional responses to distress. Avoidance-oriented coping involves disengagement or distraction. Importantly, these dimensions should not be interpreted as universally adaptive or maladaptive, because their psychological implications may depend on the characteristics and controllability of stressful situations.

The relationship between emotional intelligence and coping has received increasing attention in contemporary sport psychology. Zajonz et al. (2025), examining two athlete samples, identified indirect relationships between trait emotional intelligence and burnout involving coping strategies. Similarly, Levillain et al. (2025) demonstrated the relevance of emotional intelligence to the broader relationships among appraisal, coping, emotions, and perceived performance during competition. These findings provide a conceptual basis for considering coping as a potential explanatory pathway between emotional characteristics and sport-related psychological outcomes. However, evidence concerning burnout or perceived performance cannot be directly generalized to mental toughness, which represents a distinct psychological construct.

Previous research has also examined relationships among emotional intelligence, coping, and mental toughness, although the proposed structural pathways have differed. Cowden (2016), studying high-performing adolescent male athletes, found that mental toughness mediated the relationship between emotional intelligence and coping effectiveness. More recently, Duyan et al. (2026) examined mental toughness as a mediator between mental performance skills and athletic performance among combat-sport athletes. These studies highlight the relevance of mediation models but also demonstrate that the theoretical positioning of mental toughness and coping varies according to the constructs and outcomes investigated. Consequently, the specific indirect associations linking emotional intelligence to mental toughness through distinct coping dimensions remain insufficiently clarified among adult international-level taekwondo champions.

From a theoretical perspective, higher emotional intelligence may be associated with greater use of task-oriented coping because recognizing emotional demands could facilitate attention to manageable aspects of competitive situations. Task-oriented coping may, in turn, be positively associated with mental toughness through continued engagement with challenging demands. Conversely, greater reliance on distress-focused emotion-oriented coping may be negatively related to mental toughness. The role of avoidance-oriented coping remains less predictable, particularly because disengagement may serve different functions across competitive circumstances. Examining these coping dimensions separately may therefore provide a more differentiated understanding of the association between emotional intelligence and mental toughness.

Accordingly, the present study aimed to investigate the structural association between emotional intelligence and mental toughness among Iranian international medal-winning taekwondo athletes, considering task-oriented, emotion-oriented, and avoidance-oriented coping as potential mediators. By examining direct and specific indirect associations within a parallel mediation model, this study seeks to extend existing evidence concerning psychological functioning in combat sports. Given its cross-sectional design,

the proposed pathways are interpreted as theoretically informed statistical associations rather than causal mechanisms.

2. Methods

2.1. Study design

This study employed a cross-sectional correlational design to examine the associations among emotional intelligence, coping strategies, and mental toughness in Iranian taekwondo champions. Data were obtained through a single online self-report assessment. The hypothesized parallel mediation model specified emotional intelligence as the predictor, mental toughness as the outcome, and three coping dimensions as potential mediators. Partial least squares structural equation modeling was used to estimate the proposed relationships. Given the observational design, the pathways were interpreted as statistical associations rather than causal effects.

2.2. Participants

The target population comprised Iranian taekwondo athletes over 18 years of age with a history of medal-winning performances in international competitions recognized by the Iranian Taekwondo Federation. Participants were recruited through convenience sampling based on their competitive achievements and willingness to participate. Of the 250 questionnaires distributed, 23 were excluded during data screening because of incomplete demographic information, missing responses, or inadequately completed questionnaires, yielding a final analytical sample of 227 athletes (90.8%). The sample included approximately 62% male and 38% female athletes, with a mean age of 25 years. Most participants were younger than 30 years (70.9%), and a bachelor's degree was the most frequently reported educational qualification. Participation was voluntary, and electronic informed consent was obtained before questionnaire administration. The research proposal was reviewed and approved by the Sports Sciences Committee of Islamic Azad University, Karaj Branch, Iran.

2.3. Measures

2.3.1. Schutte Self-Report Emotional Intelligence Test (SSEIT)

Emotional intelligence was assessed using the 33-item SSEIT developed by Schutte et al. (1998). Items are rated on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree), with items 5, 28, and 33 reverse-scored. Total scores range from 33 to 165, with higher scores indicating greater emotional intelligence. The instrument has been used in Iranian athletic populations (Angoorani et al., 2020), although this does not establish independent validation of the specific Persian version.

2.3.2. Sports Mental Toughness Questionnaire (SMTQ)

Mental toughness was assessed using the 14-item SMTQ developed by Sheard et al. (2009), comprising Confidence (6 items), Constancy (4 items), and Control (4 items). Responses are rated on a four-point scale, with total scores ranging from 14 to 56. The Persian version was psychometrically evaluated by Kashani et al. (2015) among 197 Iranian athletes, supporting its factorial validity and reliability (overall $\alpha = .76$; test–retest reliability = .83).

2.3.3. Coping Inventory for Stressful Situations (CISS)

Coping strategies were assessed using the 48-item CISS developed by Endler and Parker (1990), comprising Task-Oriented, Emotion-Oriented, and Avoidance-Oriented Coping (16 items each). Responses are scored on a five-point scale, yielding subscale scores from 16 to 80. The Persian version was examined by Shokri et al. (2009) among 419 Iranian students, providing evidence of construct validity and reliability.

2.4. Procedure

The online questionnaire was distributed through Telegram, WhatsApp, Instagram, and email. Participants received information about the study objectives and provided electronic informed consent before completing the survey. The questionnaire included demographic items and standardized measures of emotional intelligence, mental toughness, and coping strategies. Completed responses were subsequently reviewed for missing information and response completeness before statistical analysis.

2.5. Statistical analysis

Data were analyzed using IBM SPSS Statistics version 26 and SmartPLS version 4. Descriptive statistics, including frequencies, percentages, and means, were computed to summarize participants' characteristics and study variables. Partial least squares structural equation modeling (PLS-SEM) was employed to examine the hypothesized direct and indirect associations among emotional intelligence, coping strategies, and mental toughness. Following established methodological guidelines (Hair et al., 2019), the measurement model was evaluated using Cronbach's alpha (α), composite reliability (CR), and average variance extracted (AVE) to assess internal consistency and convergent validity. The structural model was examined using standardized path coefficients (β), coefficients of determination (R^2), and the standardized root mean square residual (SRMR). Statistical inference for direct and specific indirect associations was based on the reported standard errors, t-statistics, and p-values, with statistical significance set at $p < .05$. The goodness-of-fit (GoF) index was considered supplementary and was not used as definitive evidence of overall model validity (Henseler & Sarstedt, 2013).

3. Results

3.1. Descriptive Statistics

Data from 227 taekwondo champions were included in the analyses (62.3% men; 37.7% women; mean age = 25 years). Most participants were younger than 30 years (70.9%), and a bachelor's degree was the most commonly reported educational qualification (42.5%). Mean scores were 127.77 for emotional intelligence, 48.74 for mental toughness, 55.14

for task-oriented coping, 38.77 for emotion-oriented coping, and 39.45 for avoidance-oriented coping.

3.2. Measurement Model Assessment

The measurement model was examined using Cronbach's alpha (α), composite reliability (CR), and average variance extracted (AVE). As presented in Table 1, Cronbach's alpha coefficients ranged from .77 to .93, indicating acceptable to high internal consistency across the study constructs. Composite reliability coefficients ranged from .77 to .93, exceeding the commonly recommended minimum threshold of .70. The AVE values ranged from .49 to .83. Emotional intelligence (AVE = .68), mental toughness (AVE = .83), task-oriented coping (AVE = .50), and emotion-oriented coping (AVE = .56) met the conventional criterion for convergent validity. Avoidance-oriented coping exhibited a marginally lower AVE (.49), suggesting that its convergent validity requires cautious interpretation.

Table 1. Internal Consistency and Convergent Validity of the Study Constructs

Construct	α	CR	AVE
Emotional intelligence	.77	.77	.68
Mental toughness	.90	.91	.83
Task-oriented coping	.93	.93	.50
Emotion-oriented coping	.91	.92	.56
Avoidance-oriented coping	.90	.82	.49

Note. α = Cronbach's alpha; CR = composite reliability; AVE = average variance extracted.

3.3. Structural Model Assessment

The model accounted for 51.9% of the variance in mental toughness (R^2 = .519), indicating that emotional intelligence and the included coping dimensions jointly explained a substantial proportion of variation in this construct. Emotional intelligence explained 19.2% of the variance in task-oriented coping (R^2 = .192) and 10.8% of the variance in emotion-oriented coping (R^2 = .108). The reported SRMR value was .059. The supplementary goodness-of-fit index (GoF = .41) was also documented.

3.3. Direct and Specific Indirect Effects

The analysis identified five statistically significant direct associations in the reported structural model (Table 2). Emotional intelligence was positively associated with mental toughness (β = .363, t = 4.79, p < .001) and task-oriented coping (β = .438, t = 7.86, p < .001). In contrast, emotional intelligence was negatively associated with emotion-oriented coping (β = −.328, t = 4.92, p < .001).

Regarding the associations between coping strategies and mental toughness, task-oriented coping demonstrated a significant positive relationship (β = .305, t = 4.69, p < .001), whereas emotion-oriented coping exhibited a significant negative relationship (β = −.243, t = 3.78, p < .001).

Both reported specific indirect associations were statistically significant. The indirect association between emotional intelligence and mental toughness through task-oriented coping was positive (β = .134, t = 4.28, p < .001). Similarly, the indirect association through emotion-oriented coping was positive (β = .080, t = 2.97, p = .003). The positive coefficient of the latter pathway reflects the multiplication of two negative component coefficients and should not be interpreted as a positive direct relationship between emotion-oriented coping and mental toughness.

Table 2. Direct and Specific Indirect Associations in the Structural Model

Pathway	β	SE	t	p
EI → MT	.363	.076	4.79	< .001
EI → Task coping	.438	.056	7.86	< .001
EI → Emotion coping	−.328	.067	4.92	< .001
Task coping → MT	.305	.065	4.69	< .001
Emotion coping → MT	−.243	.064	3.78	< .001
EI → Task coping → MT	.134	.031	4.28	< .001
EI → Emotion coping → MT	.080	.027	2.97	.003

Note. EI = emotional intelligence; MT = mental toughness; β = standardized path coefficient; SE = standard error. The final two rows represent specific indirect effects.

Together, these findings indicate that emotional intelligence was associated with mental toughness both directly and through distinct coping-related pathways. The standardized direct associations and explained variances are illustrated in Figure 1.

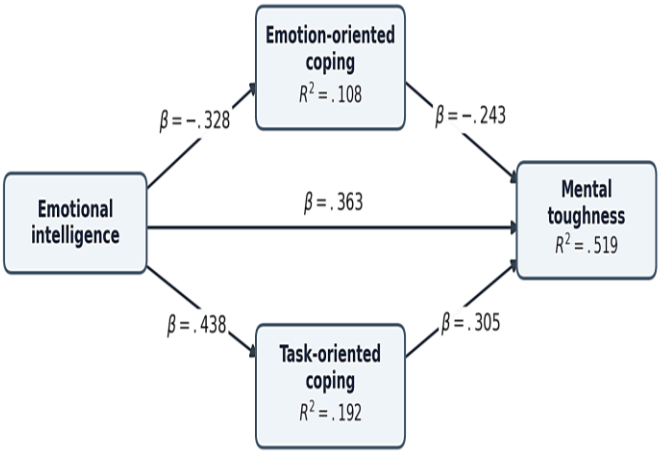


Figure 1. Structural Model with Standardized Path Coefficients

Note. Values inside endogenous constructs are R^2 statistics. Solid arrows represent the five direct associations of the final structural model; all p < .001.

4. Discussion

The present study examined the association between emotional intelligence and mental toughness among Iranian international-level taekwondo champions, with particular attention to the statistical mediating role of coping strategies. Emotional intelligence was positively associated with mental toughness, both directly (β = .363) and indirectly through task-

oriented (β = .134) and emotion-oriented coping (β = .080). Task-oriented coping showed a positive association with mental toughness, whereas emotion-oriented coping was negatively associated with this construct. The model explained 51.9% of the variance in mental toughness. These findings suggest that distinct coping patterns may help explain how emotional intelligence and mental toughness are interconnected in high-level competitive taekwondo.

The positive association between emotional intelligence and mental toughness is consistent with previous research identifying emotional competencies as relevant psychological resources in competitive sport. Cowden (2016) reported significant interrelationships among emotional intelligence, mental toughness, and coping effectiveness in high-performing adolescent athletes. Similarly, Laborde et al. (2016) emphasized the relevance of emotional intelligence to athletes' emotional responses and psychological skill use. However, evidence concerning the relationship between emotional intelligence and competitive outcomes remains heterogeneous. Kopp and Jekauc (2018) identified a small overall association between emotional intelligence and sport performance, while Kopp et al. (2021) highlighted important conceptual and measurement differences between trait and ability emotional intelligence. Accordingly, the present findings may reflect the relevance of emotional competencies to psychological functioning, but they do not establish that emotional intelligence improves competitive performance.

The findings also contribute to the growing literature on psychological functioning in combat sports. Nam et al. (2022) identified confidence, concentration, goal setting, imagery, self-talk, and fighting spirit as relevant psychological skills among international-level taekwondo athletes. In a smaller study of elite Iranian taekwondo athletes, Nabilpour et al. (2023) examined associations between psychological characteristics and physical fitness indicators, underscoring the value of investigating psychological factors in this sporting population. More recently, Liu et al. (2026) reported relationships among mindfulness, stress self-management, brooding, and psychological distress in Chinese taekwondo athletes. Although these investigations addressed different outcomes, they collectively support the importance of studying psychological self-regulation in taekwondo. Nevertheless, a systematic review by Ciaccioni et al. (2024) found that evidence concerning several mental health and self-related outcomes in martial arts and combat sports remains inconsistent, indicating that sport-specific interpretations should be made cautiously.

A central finding of the present study was the positive association between task-oriented coping and mental toughness. Emotional intelligence was also positively associated with task-oriented coping, resulting in a significant positive indirect pathway. Within the transactional framework of stress and coping, task-oriented responses involve directing cognitive and behavioral resources toward managing perceived demands. Athletes who recognize challenging situations and identify controllable aspects of competition may be more inclined to engage in purposeful problem-solving and maintain task engagement. Kaiseler et al. (2009) previously demonstrated relationships among mental toughness, stress appraisal, coping, and coping effectiveness in athletes. Moreover, Nuetzel's (2023) systematic review emphasized the importance of context-sensitive coping skills in elite sport. These findings provide a theoretical basis for interpreting task-oriented coping as a potentially relevant component of athletes' psychological responses to demanding competitive situations.

The indirect association through task-oriented coping is also consistent with research emphasizing the dynamic relationship between emotional characteristics and coping processes. Levillain et al. (2025) demonstrated that emotional intelligence moderated relationships among emotional processes across repeated competitive assessments, while Zajonz et al. (2025) identified coping-related indirect associations involving trait emotional intelligence and athlete burnout. However, coping effectiveness is not determined solely by whether a strategy is classified as task-oriented. Nicholls et al. (2009) demonstrated that coping and perceived coping effectiveness can vary across athlete characteristics, while Woodhead et al. (2024) highlighted the interpersonal dimensions of coping in sport. Consequently, the present association should be understood within the broader context of athletes' appraisals, competitive demands, and available psychological and social resources.

Emotion-oriented coping demonstrated a contrasting pattern. Emotional intelligence was negatively associated with emotion-oriented coping, which was itself negatively associated with mental toughness. Nevertheless, the specific indirect coefficient was positive because the two component pathways were negative. This result should not be interpreted as evidence that emotion-oriented coping enhances mental toughness. Rather, athletes reporting greater emotional intelligence also tended to report less reliance on the distress-focused emotional responses assessed by the Coping Inventory for Stressful Situations, which were negatively related to mental toughness. Importantly, this operationalization of emotion-oriented coping differs from adaptive emotional awareness, emotional acceptance, and emotion regulation (Endler & Parker, 1994). Therefore, the findings do not suggest that experiencing or expressing emotions is detrimental to competitive functioning.

The interpretation of these associations should also consider the multidimensional and context-dependent nature of mental toughness. Gucciardi et al. (2015) demonstrated that mental toughness can exhibit both enduring and situationally variable properties, while Sarkar and Fletcher (2014) emphasized the interaction between psychological resources and environmental stressors in sport-related resilience. Similarly, Hsieh et al. (2024) identified an overall positive relationship between mental toughness and athletic performance, although effect estimates varied across studies. More importantly, Dziuba et al. (2025) found that mental toughness did not consistently moderate experimentally induced stress effects on athletic and cognitive performance. These findings caution against assuming that higher self-reported mental toughness necessarily translates into superior performance under every competitive condition.

Another contribution of the present study concerns the theoretical positioning of coping strategies within the proposed mediation model. Cowden (2016) examined mental toughness as a mediator linking emotional intelligence and coping effectiveness, whereas the present investigation specified coping dimensions as statistical mediators between

emotional intelligence and mental toughness. Duyan et al. (2026) examined a different structural pathway in which mental toughness mediated the association between mental performance skills and athletic performance in combat-sport athletes. Such differences highlight the possibility of alternative theoretical explanations rather than establishing a single causal sequence. The significant direct association observed in the present study suggests that the two reported coping dimensions accounted for only part of the modeled relationship. Nevertheless, as Maxwell and Cole (2007) demonstrated, cross-sectional mediation estimates may not accurately represent longitudinal processes. Accordingly, the present indirect associations should not be interpreted as evidence of temporal or causal mediation.

From an applied perspective, the findings suggest several promising directions for psychological preparation in elite taekwondo. Emotional-awareness exercises, task-focused coping practice, simulated competitive pressure, and tactical problem-solving may warrant further evaluation as components of structured psychological skills programs. Systematic reviews by Stamatis et al. (2020) and Lan et al. (2025) provide evidence that mental toughness can be targeted through intervention programs, although methodological limitations and variations in intervention effectiveness remain important considerations. Wang et al. (2025) similarly reported potentially beneficial effects of psychological interventions on elite athletes' mental well-being while emphasizing the need for stronger experimental evidence. Therefore, the present findings offer a rationale for future intervention development rather than direct evidence that any particular training program improves mental toughness or competitive performance.

Several limitations should be acknowledged. First, the cross-sectional design prevents conclusions about causal direction or temporal mediation. Second, the exclusive use of self-report instruments may introduce common-method variance and socially desirable responding (Podsakoff et al., 2003). Third, convenience sampling and the restriction to Iranian international medal-winning taekwondo athletes limit the generalizability of the findings. Fourth, potentially relevant characteristics, including competitive experience, weight category, training history, and recent competitive stress exposure, were not incorporated into the reported structural model. In addition, the final structural results did not clarify the contribution of avoidance-oriented coping, despite its inclusion in the initial theoretical model. The marginally lower average variance extracted for avoidance-oriented coping further warrants attention. Comprehensive evaluation of construct distinctiveness would also benefit from discriminant validity testing, as recommended by Henseler et al. (2015). Finally, the absence of reported bootstrap confidence intervals limits the completeness of the indirect-effect assessment. Future research should incorporate longitudinal measurements, objective competitive indicators, repeated assessments during competition, and experimentally evaluated psychological interventions.

Overall, the findings extend existing sport psychology research by identifying distinct direct and indirect associations between emotional intelligence and mental toughness in international-level taekwondo athletes. The positive task-oriented coping pathway and the contrasting pattern of emotion-oriented coping suggest that coping dimensions should be considered separately rather than treated as interchangeable responses to competitive stress. This differentiated perspective may contribute to more precise theoretical models of psychological functioning in combat sports, while requiring further confirmation through methodologically rigorous research.

5. Conclusions

The present study identified a positive association between emotional intelligence and mental toughness among Iranian international-level taekwondo champions, with task-oriented and emotion-oriented coping contributing to distinct indirect pathways. Task-oriented coping was positively associated with mental toughness, whereas emotion-oriented coping showed a negative association. These findings suggest that coping patterns are relevant to understanding the psychological characteristics of high-level combat-sport athletes and highlight the importance of distinguishing between coping dimensions. The results may inform future research on emotional competencies and psychological preparation in taekwondo. However, the cross-sectional and self-reported nature of the data prevents causal conclusions. Longitudinal investigations and controlled interventions are needed to determine whether changes in emotional intelligence or coping strategies are accompanied by subsequent changes in mental toughness and competitive functioning.

CRediT Authorship Contribution Statement

F.A.: Conceptualization, Methodology, Investigation, Data curation, Formal analysis, Writing – original draft.
M.B.: Project administration, Supervision, Writing – review & editing.
N.K.: Conceptualization, Resources, Validation, Writing – review & editing.

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Declaration of competing interests

The authors declare no conflicts of interest.

Declaration of generative AI in scientific writing

During the preparation of this manuscript, the authors used ChatGPT (OpenAI) to assist with English language editing and manuscript formatting. The authors reviewed and edited the AI-assisted content and take full responsibility for the final manuscript.

Data availability

The data are not publicly available due to ethical restrictions involving participant confidentiality.

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