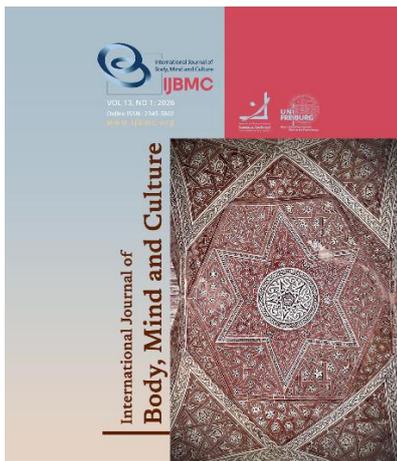


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- 1 Ph.D Candidate in the Faculty of Sports Science, Burapha University, Chonburi Province 20131, Thailand; Lecturer in the College of Physical Education and Health, Chuxiong Normal University, 675000, China.
- 2 Assistant Professor of the Faculty of Sports Science, Burapha University, Chonburi Province, 20131, Thailand.
- 3 Assistant Professor of the Faculty of Education, Burapha University, Chonburi Province, 20131, Thailand.
- 4 Assistant Professor of the Department of Health and Sport Science, Faculty of Education, Mahasarakham University, Mahasarakham Province, 44000, Thailand.
- 5 Associate Professor of the Faculty of Sports Science, Burapha University, Chonburi Province 20131, Thailand.

Corresponding author email address:
tanida@buu.ac.th



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The Mediating Effect Model and Analysis of Sport Emotion on Wushu Routine Sport Performance: Self-Confidence as a Mediating Variable

Mingjun. Zhang¹ , Chatkamon. Singnoy² , Warakorn. Supwirapakorn³ , Chairat. Choosakul⁴ , Tanida. Julvanichpong^{5*} 

ABSTRACT

Objective: This study tested whether self-confidence mediates the relationship between sport emotion and Wushu routine (Taolu) performance, and whether the mediation pattern differs across competition levels.

Methods and Materials: A cross-sectional design was used. Participants were 491 Chinese collegiate Wushu Taolu athletes from 21 universities in Yunnan Province (mean age = 20.7 ± 1.3), recruited via stratified quota sampling. Sport emotion was assessed using the Sports Emotional Intelligence Scale (SEIS, 14 items). Self-confidence was measured via the self-confidence subscale of the Competitive State Anxiety Inventory-2 (CSAI-2, 9 items). Performance was derived from official competition rankings converted into point scores across five competition levels (university to international). Analyses were conducted in SPSS 27, PROCESS v4.1 (5,000 bootstraps), and AMOS 28, including correlations, regression, SEM, and mediation tests; detailed mediation results were reported for the provincial level (P3), where model validity was supported.

Findings: At the provincial level (P3; n=91), sport emotion correlated with self-confidence ($r=.516, p<.01$) and performance ($r=.408, p<.01$), while self-confidence correlated with performance ($r=.445, p<.01$). Sport emotion significantly predicted performance ($\beta=.408, R^2=.166, p<.001$). Mediation analysis indicated a significant indirect effect of sport emotion on performance through self-confidence (bootstrap 95% CI did not include zero), with a reduced but still significant direct effect, consistent with partial mediation. No robust mediation was supported at the non-provincial level.

Conclusion: Self-confidence partially mediates the effect of sport emotion on Wushu Taolu performance, particularly at the provincial competition level. Interventions that strengthen athletes' self-confidence and emotion-related skills may enhance competitive performance.

Keywords: mediating effect, sport emotion, self-confidence, Wushu routine, competition performance.

Introduction

Sports competitions, especially high-level ones, are not only tests of physical fitness and skills but also of sports emotions. Sports psychology can help optimize athletes' emotions and training, enhance psychological resilience, and enable them to adapt quickly to their environment and perform better. Coaches and training organizers can evaluate how athletes perceive, regulate, and use emotions to enhance performance using scales such as the SEIS. Cultivating sport-related emotions, such as strong willpower, is crucial for achieving good performance in competitive and training environments.

Understanding how athletes regulate their emotions and cope with unpleasant/undesired feelings may be determinative for their performance during fights and crucial for winning the championship (Partikova, 2019; Seghatoleslami et al., 2024; Faro et al., 2020; Pensgaard & Ursin, 1998). La Fratta et al. (2021) investigated the psychophysiological stress response in 56 young male soccer players, 96 and 24 h before a tournament match. They found differences in cortisol (C) and Oxytocin (OT) levels and in expressions of competitive state anxiety subcomponents. They found that winners had significantly lower Cognitive anxiety and higher Self-confidence scores than losers. Fernández et al. (2020) reported that women in combat sports exhibited higher levels of Cognitive Anxiety, which could negatively impact performance in high-pressure situations. Kim & Cruz (2021) conducted a meta-analysis of the psychosocial effects of Taekwondo training, reporting positive impacts on athletes' social skills, character development, etiquette, and school adjustment. The study provided valuable insights into psychological factors influencing Taekwondo athletes, although it did not specifically examine a mediating model of self-confidence. Stanger et al. (2018) showed that their findings underscore the role of pre-performance and in-game emotions in athletes' thought processing during sport performance. Lyu & Zhang (2020) showed that self-confidence is one of the most important factors for athletes' success. Kim & Cruz (2021) conducted a meta-analysis about the relationship between self-management and exercise self-confidence, satisfaction,

and commitment in both modern and traditional martial arts among Korean practitioners. 22 studies yielded 299 individual effect sizes. The study found that the mental dimension significantly affected exercise self-confidence.

The above is related research on martial arts and similar projects, such as combat sports, soccer players, Taekwondo, etc. There are also many studies on Chinese martial arts (Wushu), both similar to and different from one another.

In the field of competitive sports, sport emotions are particularly important for Wushu, which is a traditional Chinese martial art (Wushu), one of the definitions of which is the following: "Wushu is a traditional Chinese sport which regards Chinese culture as its theoretical basis, takes offensive and defensive techniques as its basic contents, and includes Taolu (compiled routine), Gedou (free combat) and Gongfa (basic prowess) as its main forms of movement (Zhao & Li, 2021), authors' translation)" (Dai & Lu, 2019). Ritonga et al. (2020) studied Wushu Sanda athletes who participated in the 2017 North Sumatra Regional Championship. They used the achievement motivation scale and the self-confidence scale. The results showed that the model was acceptable, with a Hosmer and Lemeshow Test statistic of 0.920 (> 0.05). They advised that other psychological aspects may affect the match situation, such as emotional regulation, strategy in dealing with opponents, concentration, and others.

Related research on Chinese martial arts includes: the influence of positive emotion in Chinese Martial Arts Players (Yang et al., 2020), Wushu Nanquan training (Cha & Jee, 2018), analysis on the effect of Wushu project propagation (Li et al., 2022), effect of Chinese Traditional Wushu on cancer-related fatigue, sleep quality and upper limb dysfunction of breast Cancer survivors (Ren et al., 2022), and so on.

However, research on sport emotion is relatively scarce compared to studies on collegiate Wushu Routine (Taolu) student-athletes. By integrating various aspects and combining sports emotion, self-confidence, and sports performance, a structural equation model is established to assign quantitative values to achieve excellent performance in Wushu routines. The conceptual framework diagram is presented in Figure 1.

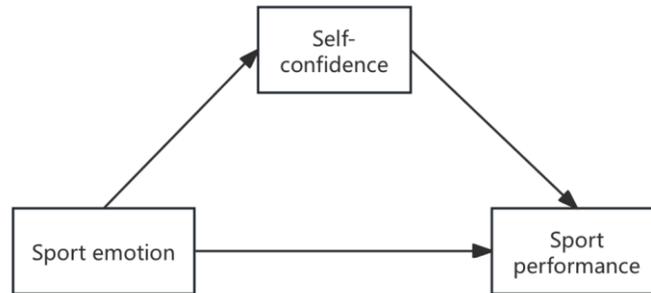


Figure 1

The conceptual framework diagram

Therefore, this study proposes the following research objectives and hypotheses: (H1) Sport emotion will be positively associated with performance outcomes in Wushu routine competitions; and (H2) self-confidence will mediate the relationship between sport emotion and Wushu routine performance, such that higher self-confidence enhances the positive impact of sport emotion on performance.

Methods and Materials

Participants

This study employed a cross-sectional quantitative research design to examine the mediating role of self-confidence in the relationship between sport emotion and Wushu routine (Taolu) performance among collegiate Wushu athletes in Yunnan Province, China. A total of 491 collegiate Wushu routine athletes (mean age = 20.7 ± 1.3 years) were recruited through stratified quota sampling from 21 universities and colleges. Encrypt and store data, announced informed consent through teachers or coaches, provided informed consent, and voluntarily completed the questionnaire independently.

To ensure the sample was representative and allowed for generalization of the findings, a stratified quota sampling method was employed. Given the varying numbers of registered Wushu routine athletes across institutions and the specific characteristics of this population, the sampling strategy aimed to enhance coverage, accuracy, and representativeness. Following the Rule of Thumb and established sampling guidelines, each university was limited to 40 participants. If an institution had more than 40 eligible athletes, a random

sample of 40 was selected; if the number was 40 or fewer, all eligible athletes were included in the study.

Participants per observed variable are recommended to ensure stability and consistency of estimated parameters. Using a larger sample size improves parameter-estimation accuracy; a 20:1 ratio yields approximately 70% accuracy for each factor.

Given the study includes 44 observed variables (from the questionnaire), the minimum required sample size is a 10:1 ratio: 440 participants. To balance feasibility and precision, the sample size was set at approximately 11:1, yielding 484 participants. This includes a 10% increase to account for potential data loss due to incomplete responses.

Instruments

Data were collected using standardized self-report questionnaires administered online, with assistance from team coaches and student leaders. The Sports Emotional Intelligence Scale (SEIS) will assess athletes' emotional responses and their influence on performance. Sports emotion was evaluated using the Sports Emotional Intelligence Scale (SEIS) (Nam, 2015). This 14-item instrument measures dimensions of emotional intelligence, including the evaluation of others' emotions, self-emotion management, emotional utilization, and social skills. The Chinese version validated by Zhang et al. (2022) was used. The SEIS demonstrated excellent reliability in this study (Cronbach's alpha = 0.951).

Self-confidence was measured using the Self-Confidence subscale of the Competitive State Anxiety Inventory-2 (CSAI-2) (Vealey, 1990), which consists of 9 items assessing athletes' belief in their abilities and confidence in their performance. As a specialized scale for measuring Competitive Sport Anxiety Inventory-2,

the CSAI-2 offers unique advantages and applicability, and clearly identifies self-confidence items in sports. The subscale showed high internal consistency (Cronbach's alpha = 0.947).

Wushu routine performance was evaluated based on official competition rankings, following guidelines set by the International Wushu Federation and the 2024 Yunnan Student Wushu Taolu Championship. According to the "World Wushu Competition Rules" and the "Yunnan Province Student Wushu Taolu (Routine) Competition Rules", the ranking is converted into scores to obtain sports performance scores, and the standards are reliable." The performance of athletes was evaluated by assigning scores according to their ranking in competitions, using a point-based scoring system awarding 9, 7, 6, 5, 4, 3, 2, and 1 points for 1st to 8th place finishes, respectively, across five competition levels: university, prefectural, provincial, national, and international levels. Content validity was confirmed by three experts in sports science and physical education, and a pilot test was conducted with 34 students from Chuxiong Normal University. The performance measure showed high reliability. (The total Cronbach's alpha = 0.958).

Analysis

We used IBM® SPSS® Statistics 27.0, PROCESS v4.1 (Hayes, 2012), and AMOS 28.0 to analyze the data, with a significance level of $p < 0.05$. Descriptive statistics, including the mean and standard deviation, were calculated to assess the normality of the data. Model fit indices, correlation analysis, and regression analysis were performed to examine relationships among variables. The mediating effect of self-confidence on the relationship between sport emotion and Wushu routine performance was tested using PROCESS v4.1 and AMOS 28.0.

Due to the verification of the five levels separately, that is, University level, Prefectural level, Provincial level, National level, and International level, only the mediation effect at the provincial level was found to be

valid. Therefore, the descriptive analysis, the relevant analysis, regression analysis, and mediation effect analysis will be elaborated only for the Provincial level P3 (n=91, males=48, females=43); the rest will not be elaborated.

Findings and Results

The total sample is 491, and model validation was conducted across 21 selected universities in Yunnan province to ensure its accuracy, including all top eight award-winning and non-award-winning students. The performance of students across various competition levels was analyzed: University level (P1), Prefectural level (P2), Provincial level (P3), National level (P4), and International level (P5). Only the provincial-level award-winning students showed significant validation.

1. Test of Mediation Effect

Sport Emotion, Self-Confidence, and Sport Performance Modeling

The structural validity of the Sport emotion–Self-confidence–Sport performance modeling was examined using exploratory factor and validation factor analyses, and the KMO value of the Sport emotion–Self-confidence–Sport performance modeling was 0.957 ($p < .001$), which was higher than the critical value of 0.6 and passed the Bartlett's spherical test, and the cumulative variance explained rate of the scale reached 72.905%, which was higher than the critical value of 50%, indicating that the scale had a good level of structural validity.

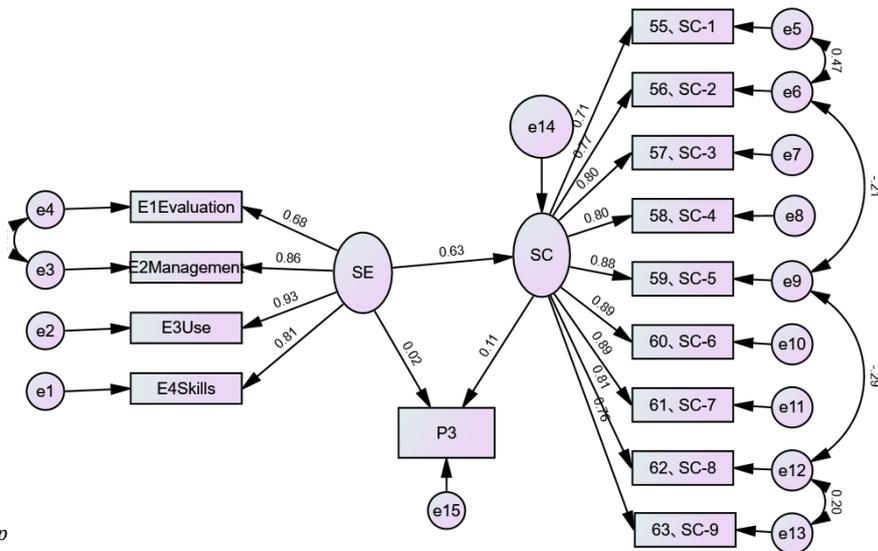
The results of the validation factor analysis are shown in Table 1 and Figure 2. The results of the overall fit coefficient table show that CMIN = 230.605, DF = 70, CMIN/DF = 3.294 < 5, GFI = 0.939, NFI = 0.958, IFI = 0.970, TLI = 0.961, CFI = 0.970, and RMSEA = 0.068, which shows an ideal fit of the model. Therefore, the entries of the Sport emotion–Self-confidence–Sport performance modeling meet the model fit criteria, and the subscale has good structural validity.

Table 1

Fit Index of SE-SC-SP Model (SE-SC-P3)

Model index	CMIN/DF	GFI	NFI	IFI	TLI	CFI	RMSEA
Standard	<5.00	>.90	>.90	>.90	>.90	>.90	<.10
Index result	3.294	.939	.958	.970	.961	.970	.068

Note. CMIN: Chi-square Statistics; DF: Degrees of Freedom; GFI: Goodness of Fit Index; NFI: Normed Fit Index; IFI: Incremental Fit Index; TLI: Tucker-Lewis Index; CFI: Comparative Fit Index; RMSEA: Root Mean Square Error of Approximation.



Note. SE: Sp

Figure 2

Fit Index of Sport Emotion, Self-confidence, and Sport Performance Modeling (n = 491)

2. Descriptive and Correlation Analyses

1. Correlation Test of Variables Between Sport Emotion, Self-Confidence, and Sport Performance (P3)

Including descriptive and correlational analyses, regression analyses, and mediation effect analyses.

Because the mediating effect is established only among students participating in provincial-level competitions, further elaboration will not be provided for other levels.

Table 2

Pearson Correlations Analysis of SE-SC-P3 (n = 91)

Correlations	Mean	S.D.	SE	SC	P3
SE	32.275	7.149	1		
SC	22.725	5.843	.516**	1	
P3	18.297	18.831	.408**	.445**	1

Note. **p < .01. Correlation is significant at the 0.01 level (2-tailed). SE: Sport Emotion, SC: Self-Confidence, P3: Sport Performance Provincial Level.

Table 2 presents the Pearson correlation coefficients for the variables in each dimension. The correlation

coefficient reflects the degree of linear correlation among the variables sport emotion, self-confidence, and

sport performance at the provincial level (P3), which determines the correlation between the dependent and independent variables in the correlation hypothesis and serves as the basis for model testing. From the table, among the top eight athletes (n = 91) who have won awards at all provincial levels, it can be seen that there is a significant positive correlation (p < .01) between sport emotion, self-confidence and sport performance provincial level, with correlation coefficients of 0.516, 0.408 and 0.445, respectively, and the correlation coefficient between sport emotion and self-confidence is r = 0.516, the correlation coefficient between self-confidence and sport performance is r = 0.445, and the correlation coefficient between sport emotion and sport

performance correlation coefficient is r = 0.408, in summary, there is a significant positive correlation between the variables in this study (p < .01), and there is a significant positive correlation between sport emotion and self-confidence and college students' Wushu Taolu provincial performance (P3). There is a significant positive correlation between self-confidence and college students' provincial Wushu Taolu performance in this study (p < .01). This correlation provides a sound basis for subsequent analyses.

3. Regression Analysis

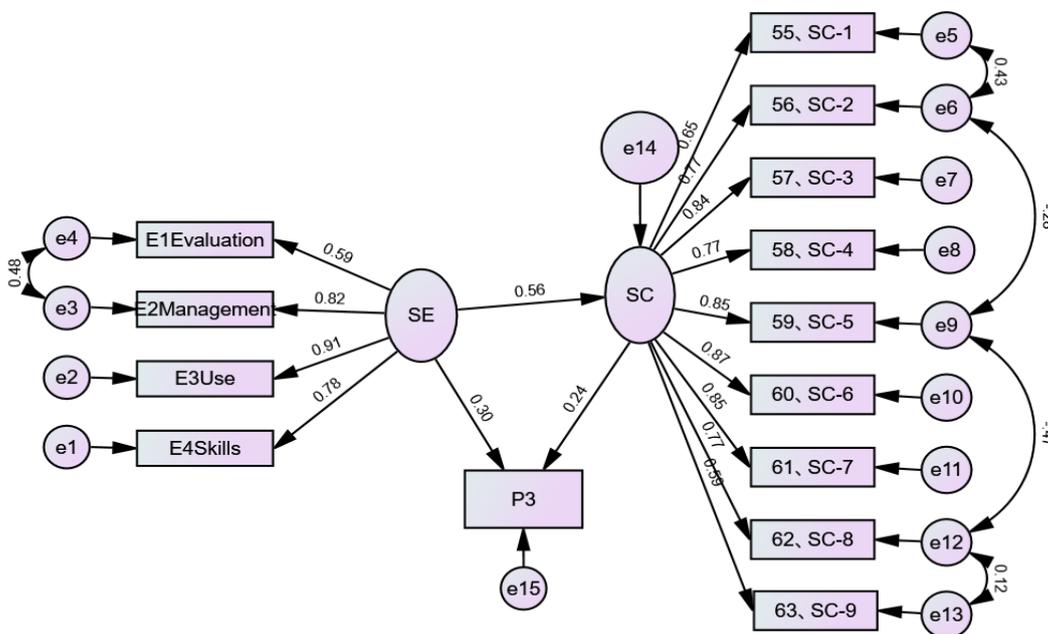
1. Test of the Direct Predictive Effect of Sport Emotion on Sport Performance

Table 3

Simple Linear Regression on Sport Performance P3

Predictor	Sport performance P3 (Provincial Level)					
	B	SE	β	T	F	R ²
Sport Emotion	1.074	.255	.408	4.212	17.741***	.166

Note. B: Unstandardized Coefficients; SE: Standard Error; β : Standardized Coefficients; T: t-Statistic; F: F Change; R²: R Square. ***p < .001.



Note. SE: Sport Emotion. SC: Self-confidence. P3: Wushu Taolu Provincial Level Sport Performance

Figure 3

Path Relatedness Between Sport Emotion, Self-confidence, and Sport Performance P3 (n = 91)

To verify the main effect of sport emotion on college students' sport performance, this study conducted a regression analysis with sport performance as the dependent variable and sport emotion as the independent variable, using the forced entry method (Table 3 and Figure 2). The results showed that sport emotion ($F(1, 89) = 17.741, SE = 0.255, \beta = 0.408, p$

$< .001$) had a significant predictive effect on provincial-level sport performance P3. The above findings supported hypothesis H1: Sport emotion will be positively associated with performance outcomes in Wushu routine competitions. The path relationships among sport emotion, Self-confidence, and sport performance are presented in Figure 3.

2. Mediation Effect Test of Self-confidence Between Sport Emotion and Sport Performance

Table 4

Simple Linear Regression on Sport Performance

Predictor variable		Model 1	Model 2	Model 3
		Mediator variable Self-confidence	Dependent variable Sport performance P3	
Independent variable	Sport emotion	.516***		243*
Mediator variable	Self-confidence		.445***	.319**
	R^2	.266	.198	.241
	F	32.299***	21.929***	13.970***

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. T: t-Statistic; F: F Change; R^2 : R Square.

The mediation test used a sequential method to conduct regression analyses of self-confidence and sport performance (P3). The results are shown in Table 4 and Figure 2, with Model 1 using Self-confidence as the dependent variable and Models 2 and 3 using Sport performance as the dependent variable. The results of Model 1 showed that Sport emotion was a significant positive predictor of Self-confidence ($\beta = 0.516, p < .001$). The results of Model 2 showed that Self-confidence had a significant positive predictive effect on Sport performance ($\beta = 0.445, p < .001$). The results of model 3

showed that, after adding the mediator variable, the regression coefficient for Self-confidence remained significant ($\beta = 0.319, p < .01$), but the effect of the independent variable, sport emotion, was weakened. The regression coefficient decreased from 0.408 to 0.243. It was reduced to a significant level ($p < .05$), indicating that Self-confidence played a partial mediating role and that Sport emotion had a positive predictive effect on sport performance P3 through self-confidence. According to the analysis and Cohen's criteria, it has a positive impact and a moderate or greater impact.

Table 5

Result of the Mediation Effect Test

Model	Path	B	SE	β	t	p
Model	c (total effect)	1.074	.255	.408	4.212	< .001
Model 1	a	.422	.074	.516	5.683	< .001
Model 2	d (not controlling X)	1.433	.306	.445	4.683	< .001
Model 3	b	1.029	.349	.319	2.945	.004
	c' (direct effect)	.640	.286	.243	2.241	.028
Model 4	ab (indirect effect)	Effect	SE	β		95% CI
(Mediation Analysis using PROCESS V4.1)		.434	.1977	.165	.1019	.8669

Note. Indirect effect from PROCESS V4.1 by Andrew F.Hayes, confidence intervals 95%, Number of bootstrap samples 5000.

To further assess the robustness of the mediating effect, the Bootstrap method was used to test whether self-confidence mediates the relationship between sport

emotion and sport performance. As shown in Table 5 (From SPSS and PROCESSOR V4.1), Table 6 (From AMOS 28.0), sport emotion was a significant positive predictor

of provincial-level sport performance through self-confidence (Indirect Effect = 1.917, SE = 1.165, LB = 0.111, UB = 4.689). After controlling for self-confidence,

sport emotion was also a significant predictor of sport performance (P3; Direct Effect 4.334, SE = 1.785, LB = 0.650, UB = 10.490).

Table 6

Bootstrap Test Result Self-confidence Between Sport Emotion and Sport Performance P3

	<i>Effect</i>	<i>SE</i>	<i>C.R.</i>	<i>P</i>	<i>LB</i>	<i>UB</i>
Direct effect	4.334	1.785	2.428	.015	.650	10.490
Indirect Effect	1.917	1.165			.111	4.689

Note. Estimates; SE: Standard Errors; C.R.: Critical Ratio; P: P-value; LB: Lower Bounds; UB: Upper Bounds

From the above results, it can be seen that sport emotion provided by Wushu athletes positively predicts college Wushu athletes' self-confidence; college students' self-confidence positively predicts their Wushu routine performance P3; and self-confidence partially mediates the relationship between sport emotion and Wushu routine performance P3. The above results supported hypothesis H2 (From AMOS or PROCESSOR V4.1): Self-confidence will mediate the relationship between sport emotion and Wushu routine performance, with higher self-confidence enhancing the positive impact of sport emotion on performance.

Discussion and Conclusion

1. Analysis of the Direct Predictive Effect of Sport Emotion on College Wushu Taolu Students' Sport Performance

The study identified a significant positive relationship between sport emotion and Wushu routine at the provincial-level sport performances, with a regression coefficient of $\beta = 0.408$ ($p < .001$), and sport emotion explaining 16.6% of the variance in performance. The Structural Equation Modeling (SEM) analysis provided quantitative validation for the conceptual model, demonstrating the predictive power of sport emotion on performance with high model fit indices: CMIN = 230.605, DF = 70, CMIN/DF = 3.294 (acceptable if < 5), Goodness of Fit Index (GFI) = 0.939, Normed Fit Index (NFI) = 0.958, Incremental Fit Index (IFI) = 0.970, Tucker-Lewis Index (TLI) = 0.961, Comparative Fit Index (CFI) = 0.970, Root Mean Square Error of Approximation (RMSEA) = 0.068 (acceptable if < 0.08).

The high values of GFI, NFI, IFI, TLI, and CFI (all above 0.9) indicate a strong fit between the observed data and

the hypothesized model. The RMSEA value of 0.068 is within the acceptable range, suggesting that the model's structure effectively captures the relationship between sport emotion and Wushu Taolu performance. The model's predictive power (16.6% of the variance in performance) underscores the significant role of sport emotion in athletic success, particularly in sports requiring mental focus, such as Wushu routines.

The results support the hypothesis that sport emotion is a pivotal factor in enhancing athletic performance, particularly in skill-based sports such as Wushu routines. The Self-Efficacy Theory (Bandura, 1997) and Broaden-and-Build Theory (Fredrickson, 2001) provide insightful explanations for these findings. According to Bandura's theory, self-efficacy influences how athletes perceive and manage stress, transforming competitive anxiety into motivation. Emotional intelligence (EI) acts as a cognitive resource, allowing athletes to interpret challenges positively and maintain mental focus during Wushu routines, where precision and timing are critical. The Broaden-and-Build Theory complements this by suggesting that positive emotions broaden cognitive resources, enhancing creativity, resilience, and adaptive performance. Athletes with high sport emotion are more likely to recover quickly from setbacks during competitions and to maintain high performance levels even in dynamic, high-pressure environments.

The findings of this study are consistent with the research of Laborde et al. (2016), who demonstrated that athletes with high emotional intelligence effectively manage stress and utilize psychological skills, such as visualization and self-talk, to improve performance outcomes. These psychological skills are crucial in Wushu, where mental imagery of successful execution

can reduce anxiety and boost confidence. Additionally, Jones (2012) and Laborde et al. (2013) noted that emotions permeate successful sport performance. Their research indicated that positive emotions, such as excitement and confidence, enhance focus and performance, while negative emotions, such as fear and anxiety, hinder performance. This emphasizes the importance of fostering positive emotional states in athletes through targeted psychological interventions.

Furthermore, Montenegro-Bonilla et al. (2024) conducted a meta-analysis of 8,008 participants, demonstrating that emotional intelligence significantly influences sports performance by affecting cognitive processes. Athletes with high EI showed enhanced cognitive functioning, improved decision-making, and greater adaptability during competitions. These cognitive strengths are particularly advantageous in sports like Wushu, where split-second decisions are crucial. Terry (2004) provided additional support, emphasizing that emotions experienced before and during competition have a profound effect on performance quality. Athletes who regulate their emotions effectively maintain consistent performance, highlighting that emotional control is as essential as physical training.

The findings of this study underscore the critical need for psychological training programs that enhance athletes' sport emotion, particularly in sports requiring high levels of mental focus and resilience, such as Wushu routines. Developing athletes' sport emotion can improve performance by equipping them with tools to manage stress, maintain focus, and transform negative emotions into productive energy during competitions.

Coaches and sports psychologists play a pivotal role in implementing effective emotional regulation strategies. Mindfulness training, for example, enhances present-moment awareness and fosters emotional stability. Cognitive-behavioral techniques (CBT) are also effective, helping athletes reframe negative thoughts into positive affirmations, thereby boosting self-confidence. Another practical strategy is visualization, which involves athletes mentally rehearsing successful performances. This method is widely used in sports such as gymnastics, where athletes visualize flawless routines to reduce nerves and improve performance stability. Similarly, tennis players such as Novak Djokovic often employ emotional control techniques, including visualization

and breathing exercises, to maintain consistency under pressure, especially in critical tie-break situations.

In conclusion, this study, grounded in robust theoretical frameworks and supported by empirical evidence, highlights the significant influence of sport emotion on athletic performance, particularly in the context of Wushu routines. The SEM analysis further validates the conceptual model, demonstrating that sport emotion is a critical predictor of performance outcomes. The model's strong fit indices and the substantial variance explained by sport emotion (16.6%) provide a scientific basis for developing interventions to enhance athletes' emotional intelligence. Coaches and sports psychologists are encouraged to adopt holistic training approaches that integrate physical training with emotional development programs, ensuring athletes are mentally prepared to thrive in competitive sports environments.

2. Mediating Role of Self-Confidence in the Relationship Between Sport Emotion and Sport Performance

The mediation analysis of this study demonstrated that self-confidence significantly moderates the effects of sport emotion on Wushu routine performance, highlighting the complex interplay between these psychological variables. This aligns with Bandura's (1997) Self-Efficacy Theory, which posits that an individual's belief in their ability to perform specific tasks influences their approach to challenges and overall performance. The study's findings underscore the critical role of self-confidence in transforming psychological states—positive emotions—into measurable performance gains.

The study also demonstrated that self-confidence enhances the positive effect of sport emotion on performance, as indicated by the decrease in the regression coefficient from 0.408 ($p < .001$) to 0.243 ($p < .05$). The SEM results showed strong model fit with the following indices.

The model's predictive power for sport performance increased to 24.1%, underscoring the importance of self-confidence in leveraging positive sport emotions for performance gains. These findings align with Fredrickson's (2001) Broaden-and-Build Theory of Positive Emotions, which suggests that positive emotions enhance cognitive and behavioral flexibility, contributing to resilience and improved performance. Research by Laborde et al. (2016) also supports this

perspective, demonstrating that athletes with high emotional intelligence (EI) are better equipped to manage stress and capitalize on positive emotions during competition. Moreover, [Montenegro-Bonilla et al. \(2024\)](#), in a meta-analysis, confirmed that emotional intelligence enhances sports performance by improving cognitive processes and emotional regulation, highlighting that self-confidence acts as a catalyst for emotional intelligence to influence athletic outcomes positively.

The SEM model validated Self-Efficacy Theory by providing empirical evidence that self-confidence mediates the relationship between Wushu Taolu sport emotion and Wushu Taolu performance. The strong model fit indices highlight the robustness of the conceptual framework, which accurately explains the psychological processes that influence Wushu student-athletes' performance.

In conclusion, this study provides a comprehensive understanding of the mediating role of self-confidence in sports performance. By integrating theoretical insights with practical applications, it offers a scientific basis for developing evidence-based interventions that enhance self-confidence, reduce anxiety, and leverage positive emotions to achieve optimal performance in Wushu routines and broader sports contexts.

3. Analysis of Self-Confidence Mediation Effect

The Mediation Effect of Self-Confidence Between Wushu Sport Emotion and Wushu Routine Performance

The study also demonstrated a significant mediating role of self-confidence in the relationship between sport emotion and Wushu routine performance P3, with an indirect effect of 1.917 (95% CI [0.111, 4.689]). The model fit indices further validated this mediating effect: CMIN = 230.605, DF = 70, CMIN/DF = 3.294 (acceptable if < 5), Goodness of Fit Index (GFI) = 0.939, Normed Fit Index (NFI) = 0.958, Incremental Fit Index (IFI) = 0.970, Tucker-Lewis Index (TLI) = 0.961, Comparative Fit Index (CFI) = 0.970, Root Mean Square Error of Approximation (RMSEA) = 0.068 (acceptable if < 0.08).

For estimates with wide confidence intervals (the coefficient with CI [0.111, 4.689]), we now explicitly discuss the implications of low precision. Although a statistically significant association was found, the wide CI range could encompass values from very small to very large. We now consistently report CIs alongside effect sizes and p-values.

The high fit indices (GFI, NFI, IFI, TLI, CFI all > 0.9) and RMSEA of 0.068 indicate a well-fitting model, confirming that self-confidence significantly enhances the positive impact of sport emotion on sport performance. This is consistent with research findings. [Terry \(2004\)](#) found that whether athletes perceive stressful situations as challenges or threats can predict young athletes' sport confidence and, in turn, their expected sport performance in response to stressful competitive situations.

Sports emotions mainly affect performance by shaping efficacy beliefs. This aligns with Bandura's statement that 'efficacy belief is the core mechanism of behavioral change' and that athletes need to accumulate successful experiences through emotional management (such as medal-acquisition training) to continuously improve their performance ([Bandura, 1997](#); [Fredrickson, 2001](#)).

This finding aligns with the Broaden-and-Build Theory, which emphasizes that positive emotions expand cognitive flexibility and resilience, leading to improved performance. Athletes with high emotional intelligence (EI) are better equipped to interpret competitive situations positively, maintaining mental clarity and focus. The study by [Laborde et al. \(2016\)](#) supports this view, showing that emotional intelligence correlates with better stress management and more effective use of psychological skills, such as visualization and self-talk, which in turn lead to enhanced performance.

Additionally, [Montenegro-Bonilla et al. \(2024\)](#) found through a meta-analysis that emotional intelligence not only improves cognitive processes but also predicts sports performance by enhancing decision-making and focus. This is particularly important in dynamic sports like Wushu, where split-second decisions are vital. [Terry \(2004\)](#) reinforced that emotions experienced before and during competition significantly influence performance quality, demonstrating that emotional regulation is as critical as physical training.

A practical example of this mediation effect is seen in sports like basketball, where players with high self-confidence and emotional intelligence often perform better under pressure, maintaining shooting accuracy and defensive effectiveness in high-stakes situations ([Ángel et al., 2006](#)). By cultivating self-confidence, coaches can help athletes harness positive sport

emotions, transforming them into performance gains. Future research should still focus on other potential influencing factors, such as gender and age.

No mediation effects were found in non-provincial groups. This may be due to differences in how sports emotions affect performance across competitions at different levels, as well as differences in the number of participants and their level of participation. As competition increases, the number of participants declines. Of course, this is also related to the importance that different places attach to Wushu Taolu competitions.

This chapter provided a comprehensive discussion of the research findings on the influence of sport emotion and the mediating role of self-confidence on Wushu routine performance among college student-athletes. The study utilized Structural Equation Modeling (SEM) to validate the conceptual model, offering robust statistical support and theoretical insights into how psychological factors affect athletic performance. The study has some limitations; however, the overall performance of athletes ranked in the top eight at the provincial level is established. Key Findings are as follows:

1. **Direct Effect of Sport Emotion on Performance:** The study demonstrated a significant positive impact of sport emotion on Wushu Routine (Taolu) performance P3, with a path coefficient of $\beta = 0.408$ ($p < .001$), explaining 16.6% of the variance in performance. This finding aligns with [Bandura's \(1997\)](#) Self-Efficacy Theory, suggesting that heightened sport emotion enhances self-confidence and, in turn, improves performance outcomes.

The positive influence of sport emotion on performance P3 ($\beta = 0.408$, $SE = 0.255$, $p < .001$), which explains 16.6% of the variance, reinforces the hypothesis that positive sport emotions enhance athletic performance. This finding is supported by [Laborde et al. \(2016\)](#), [Jones \(2012\)](#), and [Montenegro-Bonilla et al. \(2024\)](#), who emphasize the beneficial effects of sport emotion on athletes' performance. The SEM model demonstrated strong fit indices (GFI = 0.939, CFI = 0.970, RMSEA = 0.068), validating the robustness of the proposed model.

2. **Mediating Role of Self-Confidence:** Self-confidence played a critical mediating role between sport emotion and sport performance, P3. Self-confidence mediated the relationship between sport emotion and Wushu routine

performance, with higher self-confidence enhancing the positive impact of sport emotion on performance (Indirect effect = 1.917, $SE = 1.165$, 95% CI [0.111, 4.689]).

The mediation analysis revealed that self-confidence significantly strengthened the positive relationship between sport emotion and performance (β decreased from 0.408 to 0.243). Self-confidence, together with sport emotion, explained 24.1% of the variance in performance. These variables explain 24.1% of the variance in performance ($R^2 = 0.241$), which is considered a moderate effect in psychological research. This finding is consistent with [Bandura's \(1997\)](#) Self-Efficacy Theory, the Broaden-and-Build Theory ([Fredrickson, 2001](#)), and so on, suggesting that positive emotions broaden athletes' cognitive and emotional resources, enhancing performance.

3. This study explores the sports psychology aspect of Wushu Taolu competition performance by combining sports psychology theory with practice evidence. This has significant theoretical and practical implications: research shows that psychological factors, such as Wushu Taolu sports emotions, significantly affect Wushu Taolu Provincial sports performance, and self-confidence is an important mediating factor. The validated SEM model not only provides a scientific foundation for future research but also offers actionable insights for sports psychologists and coaches to develop intervention measures. Enhancing athletes' psychological and emotional preparation for competition through a holistic approach that integrates physical and psychological training provides the support they need to compete and enables them to achieve sustained excellence in competitive sports.

Suggestions and Recommendations

Develop and implement structured psychological training programs to enhance athletes' self-confidence and emotional intelligence through techniques such as mindfulness, cognitive-behavioral therapy (CBT), and visualization.

Regularly assesses athletes' emotional responses to sport and provides tailored interventions to foster positive emotional states that enhance performance.

Advocate for the integration of sports psychology as a core component of athlete development programs at both amateur and professional levels.

Establish policies to provide mental health resources

and counseling services, ensuring athletes have access to professional psychological support.

Promote holistic athlete development models that balance physical training with mental well-being to support long-term performance sustainability.

Incorporate sports psychology and mental skills training into sports science and physical education curricula.

Encourage research and practical applications focusing on the relationship between psychological factors (e.g., sport emotion, self-confidence) and athletic performance, particularly in Wushu Taolu and other sports disciplines.

Future research should improve the reliability of performance measures. If conditions permit, higher-level Wushu Taolu competitions should be used to track the longitudinal relationship between self-confidence and performance, and intervention measures supported by empirical data or pilot results should be recommended.

- Expand research across diverse sports and cultural contexts to explore the generalizability of findings.

- Investigate the interaction of sport emotion and self-confidence in influencing performance in both individual and team sports.

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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. An ethical consideration in this study was 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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