Model analysis of the mediating effect of sport anxiety on wushu routine sport performance

Análisis del modelo del efecto mediador de la ansiedad deportiva en el rendimiento en rutinas de wushu

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Abstract

Background: Self-efficacy is applied to explain the role of self-confidence in improving performance outcomes. However, a model analysis examining the mediating effect of sport anxiety on sport performance under the condition of self-confidence as a mediating variable at different levels of Wushu routine (Taolu) competitions has not yet been conducted.
Objectives: This study aimed to investigate the model analysis of the mediating effect of sport anxiety on sport performance when self-confidence acts as a mediating variable.
Methodology: Participants were 491 Chinese collegiate Wushu competition athletes (mean age = 20.7 ± 1.3 years) from Yunnan Province, China. The following tools were used for assessment: the Sport Anxiety Questionnaire, the Self-Confidence Questionnaire, and the Sport Performance Questionnaire.
Results: Self-confidence was found to be a significant predictor only among Wushu routine student athletes at the provincial level (P3), consisting of 91 athletes in competitions, compared to athletes at other levels. At the provincial level, the results revealed that sport anxiety negatively predicted Wushu routine performance (β = −0.306, p < .01. The model explained 9.4% of the variance (R^2 = .094)). Self-confidence mediated the relationship between sport anxiety and Wushu routine performance, with higher self-confidence reducing the negative impact of sport anxiety on Wushu routine provincial performance (Indirect effect = -0.507, 95% CI [-1.446, -0.047]).
Conclusion: Self-confidence is a mediator in the model of sport anxiety's influence on sport performance. Therefore, efforts should be made to improve athletes' self-confidence to attenuate sport anxiety and enhance sport performance in Wushu routine competitions.

Keywords

Mediation effect; wushu taolu; competition performance; wushu anxiety; wushu self-confidence; wushu routine competitions.

Resumen

Introducción: La autoeficacia ha sido utilizada para explicar el papel de la autoconfianza en la mejora del rendimiento deportivo. Sin embargo, no se ha realizado un análisis de modelo que examine el efecto mediador de la ansiedad deportiva sobre el rendimiento deportivo considerando la autoconfianza como variable mediadora en diferentes niveles de competición de rutinas de Wushu (Taolu).
Objetivo: El objetivo de este estudio fue analizar el modelo del efecto mediador de la ansiedad deportiva sobre el rendimiento deportivo cuando la autoconfianza actúa como variable mediadora.
Metodología: Participaron 491 atletas universitarios chinos de Wushu procedentes de la provincia de Yunnan, con una edad media de 20,7 ± 1,3 años. Se utilizaron los siguientes instrumentos: Cuestionario de Ansiedad Deportiva, Cuestionario de Autoconfianza y Cuestionario de Rendimiento Deportivo.
Resultados: Se encontró que la autoconfianza fue un predictor significativo únicamente entre los atletas del nivel provincial (P3), compuesto por 91 participantes. En este nivel, la ansiedad deportiva predijo negativamente el rendimiento en rutinas de Wushu (β = −0.306, p < .01. El modelo explicó el 9.4% de la varianza (R^2 = .094)). La autoconfianza mediaba la relación entre ansiedad deportiva y rendimiento, de modo que una mayor autoconfianza redujo el impacto negativo de la ansiedad (efecto indirecto = -0,507, IC 95% [-1,446, -0,047]).
Discusión: Los resultados coincidieron con estudios previos que destacan la influencia de factores psicológicos sobre el rendimiento, destacando el rol protector de la autoconfianza frente a los efectos de la ansiedad.
Conclusiones: La autoconfianza actúa como mediadora en la relación entre ansiedad deportiva y rendimiento. Se recomienda fomentar la autoconfianza de los atletas para reducir la ansiedad deportiva y mejorar su desempeño en competiciones de Wushu.

Palabras clave

Efecto mediador; Wushu Taolu; rendimiento en competición； ansiedad en Wushu； autoconfianza en Wushu； competiciones de rutinas de Wushu.

Introduction

With the globalization of sports competition, the research on sports science has gradually increased, including many projects, such as Martial arts, Taekwondo, Judo, etc. Sports psychology has a huge impact on sports competition, and research in this area has also gradually increased, especially sports anxiety, sports competition results and the connection between them, etc. And this has been studied for a long time. For example, (Chapman, Chris, et al., 1997) conducted a study on Tae Kwon-do competitors, and their anxiety, self-confidence and performance. They concluded that the players who won reported lower cognitive and somatic anxiety and higher self-confidence than those who lost. La Fratta, Irene, et al. (2021) investigated in 56 young male soccer players, the psychophysiological stress response 96 and 24h before one soccer match of a tournament, revealed different levels of Cortisol (C) and Oxytocin (OT) or expressions of competitive state anxiety subcomponents. They found that winners had significantly lower Cognitive anxiety and higher Self-confidence scores than losers. Besharat, M. A., & Pourbohlool, S. (2011) examined the moderating effects of self-confidence and sport self-efficacy on the relationship between competitive anxiety and sport performance in a sample of Iranian athletes.

Recent studies have reinforced these findings across different cultural contexts. Saniah (2024) reported that competition anxiety had a significant negative effect on self-efficacy among Indonesian student-level boxing athletes, suggesting that higher anxiety reduces athletes' confidence in their abilities. Similarly, David (2025) found that physical activity among student athletes was associated with higher self-esteem and lower anxiety, highlighting the protective role of psychological and behavioral factors in athletic performance. Together, these studies underscore the importance of investigating sport anxiety and self-confidence in Wushu athletes.

With the continuous development of competitive sports, the requirements for Wushu athletes are getting higher and higher, 武术 (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' (Zhou 2010, authors' translation). (Dai & Lu, 2019). Wushu exercises especially highlighted the "essence, Qi, and spirit" which necessitated the accuracy and coordination of the motor center corresponding to the cerebral cortex (Li, E, et al., 2022). This research is going to study the relationship between Wushu routine (Taolu) competition anxiety and sports performance. Mehrsafar, Amir Hossien, et al. (2019) found that an 8-week mindfulness intervention in 26 elite Sanda Wushu athletes led to significant reductions in both cognitive and physical anxiety, as measured in post-intervention and follow-up assessments.

It also tends to interpret the anxiety intensity as a positive challenge rather than a negative sense of control through the total of 327 participants in the China University Wushu Sanda Championship 2019 surveyed (Yang, H, et al., 2020). The popularity of Wushu has led to its research and practice in different cultures, such as Wushu Routine Competition (Zhao, C., & Li, B., 2021); Jumps in Wushu (Gutiérrez-Santiago, A, et al., 2022); Wushu Nanquan (Cha, J. Y., & Jee, Y. S., 2018); Traditional Wushu (Ren, Tuo, et al., 2022); Elite Wushu athletes (Mehrsafar, Amir Hossien, et al., 2019); Wushu Sanda Athletes (Doris Apriani Ritonga, et al., 2020); Wushu athletes (Li, E, et al., 2022) and so on.

However, research on sports anxiety is relatively scarce compared to studies on collegiate Wushu routine (Taolu) students athletes. By integrating various aspects and combining sports anxiety, self-confidence, and sport performance, a structural equation modeling is established to quantitatively assign values to achieve excellent performance in Wushu routine performance. Therefore, this study proposes the following objectives for the discovery.

So, this study adopted a stratified random sampling method, selecting participants from diverse universities across Yunnan Province, China. Variables such as prior psychological training and medical conditions were controlled to ensure accurate analysis of sport anxiety and self-confidence in relation to Wushu routine performance, Hypotheses H1: Sport anxiety will be negatively associated with performance outcomes in Wushu routine competitions. H2: Self-confidence will mediate the relationship between sport anxiety and Wushu routine performance, with higher self-confidence reducing the negative impact of sport anxiety on performance.

Method

Participants

This study was a cross-sectional study to examine sport anxiety, self-confidence, and Wushu routine performance among collegiate Wushu athletes. Content validity of the instruments was evaluated by three experts in sports science and related fields (Ph.D. level), ensuring alignment with the study objectives. A pilot test was conducted with 34 students from Chuxiong Normal University, China, to assess the clarity, reliability, and validity of the scales. The pilot and main study both demonstrated good reliability and validity, with Cronbach's alpha for the total scale reported at 0.916.

Procedure

This study was approved by the Ethics Committee of Burapha University (BUU), under research project code: G-HS*081/2023*, and was conducted in accordance with ethical principles that respect the rights, dignity, and safety of all participants. Prior to data collection, participants were informed about the purpose and content of the study, and written informed consent was obtained.

Team coaches or student leaders assisted in the distribution and collection of the online questionnaires. A stratified quota sampling method was applied, with each university limited to a maximum of *40* participants to ensure proportional representation. Participants were informed that their participation was voluntary and that they could withdraw from the study at any time without any consequences.

A total of *491* valid questionnaires were retained after data cleaning (mean age = *20.70* ± *1.30* years), with *7.9%* of cases missing age data. Among these, *91* athletes (male = *48*, female = *43*) who placed in the top eight at the provincial-level Wushu routine competitions (P3) were selected for further analysis. To protect participants' privacy, all data were collected and analyzed anonymously.

Questionnaire design

The questionnaire was designed to be administered online and consisted of three sections: (1) an introduction outlining the study's purpose, procedures, and confidentiality statement; (2) demographic information, including Sex, age, university, and competition experience; and (3) validated measurement scales for sport anxiety, self-confidence, and Wushu routine performance.

Sport anxiety was measured using the Sports Anxiety Scale-2 (SAS-2), originally developed by Smith, Ronald E., et al. (2006). The SAS-2 assesses cognitive, somatic, and behavioral components of sport anxiety through 21 items scored on a 4-point Likert scale (1 = Not at all to 4 = Very much so), comprising Worry (7 items), Concentration Disruption (5 items), and Somatic Trait Anxiety (9 items) subscales. The scale demonstrated strong internal consistency in this study, with a Cronbach's alpha of 0.954.

Self-confidence was assessed using the Self-Confidence subscale of the Competitive State Anxiety Inventory-2 (CSAI-2; Vealey, 1990), which consists of 9 items measuring an individual's confidence in their performance. The subscale demonstrated high internal consistency, with a Cronbach's alpha of 0.947

Wushu routine performance was assessed by assigning scores based on athletes' official competition rankings following standardized Wushu rules. Scores ranged from 9 to 1 for placements from 1st to 8th, respectively, across five competition levels: university, state (prefectural), provincial, national, and international.

Data analysis

Descriptive statistics were used to summarize the characteristics of the data, including mean and standard deviation. Pearson correlation analysis was conducted to examine the associations among the study variables. IBM® SPSS® Statistics *27.0* was used for data management and correlation analysis. A bootstrapping method was applied to test the mediation effects using PROCESS v*4.1 (*Hayes, *2012).* AMOS *28.0* was used to conduct the mediation model analysis. Structural equation modeling (SEM) was applied to examine the hypothesized relationships among sport anxiety, self-confidence, and sport performance. A significance level of $P < 0.05$ was used for all statistical tests.

Results

Test of Mediation Effect

Sports anxiety-Self-confidence-Sport performance modeling

The structural validity of the Sport Anxiety-Self-confidence-Sport performance Modeling was examined using exploratory factor and validation factor analyses, and the KMO value of the Sport Anxiety–Self-confidence–Sport Performance Modeling scale was 0.946 ($p < .001$), 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 66.796%, which was higher than the critical value of 50%, indicating that the related scale had a good level of structural validity.

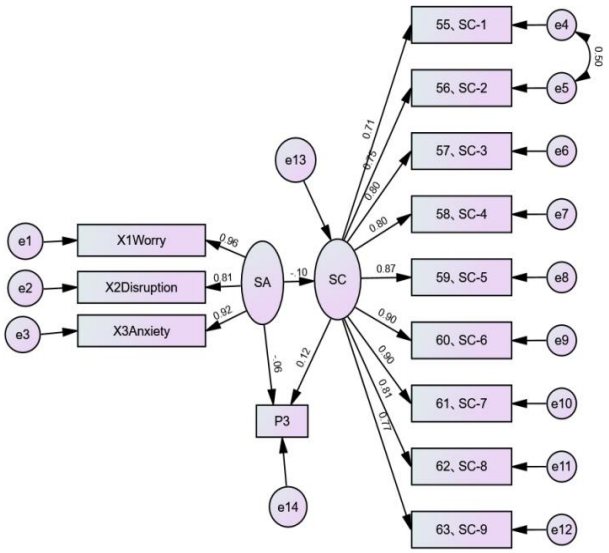
The results of the validation factor analysis can be seen in the Table1 and Figure1. The results of the overall fit coefficient table revealed that CMIN = 218.561, DF = 62, CMIN/DF = 3.525 < 5, GFI = 0.938, NFI = 0.957, IFI = 0.969, TLI = 0.961, CFI = 0.969, and RMSEA = 0.072, which demonstrated an ideal fit of the model. Therefore, the entries of the model satisfied the fit criteria, and the scale had good structural validity.

Table 1. Fit index of Sport anxiety–Self-confidence–Sport performance modeling (n = 491)

Model index	CMIN/DF	GFI	NFI	IFI	TLI	CFI	RMSEA
Standard	<5.00	>.90	>.90	>.90	>.90	>.90	<.10
Index result	3.525	.938	.957	.969	.961	.969	.072

Note. CMIN: Chi-square Statistics; DF: Degree 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.

Figure 1. Fit Index of Sport Anxiety-Self-confidence-Sport Performance Modeling (n=491)



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

Descriptive and Correlation Analyses

1. Correlation Test of Variables Between Sport Anxiety, Self-confidence and Sport Performance (P3) comprising descriptive and correlation analysis, regression analysis, and mediation effect analysis. Due to the mediating effect only being established among students athletes participating in provincial level competitions, further elaboration will not be provided for other levels.

Table 2. Correlations Analysis of SA-SC-P3 (n = 91)

Correlations	Mean	S.D.	SA	SC	P3
SA	38.648	9.318	1		
SC	22.725	5.843	-.271**	1	
P3	18.297	18.831	-.306**	.445**	1

Note. **. Correlation is significant at the 0.01 level (2-tailed).
SA: Sport Anxiety, SC: Self-Confidence, P3: Sport Performance Provincial Level.

Table 2 revealed the Pearson correlation test between the variables of each dimension, sport anxiety, self-confidence, and sport performance provincial level. The correlation coefficient represented the degree of linear correlation between the three variables, which made it possible determine the dependent variable sport performance and independent variable sport anxiety correlation of the correlation hypothesis formed the basis of the model test.

From the data, among the top eight athletes (n = 91, males = 48, females = 43) who had either won Wushu routine competition awards or achieved top-eight scores at provincial-level competitions, a significant correlation ($p < .01$) was observed among sport anxiety, self-confidence, and sport performance. Specifically, the correlation coefficient between sport anxiety and self-confidence was proved to be r = -0.271, between sport confidence and sport performance was $r = 0.445$, and between sport anxiety and sport performance was r = -0.306. In summary, there was a significant negative correlation between sport anxiety and both self-confidence and Wushu routine (Taolu) provincial-level performance, whereas self-confidence was positively correlated with performance ($p < .01$). These significant correlations among the variables provided a solid foundation for subsequent analyses.

Regression Analysis

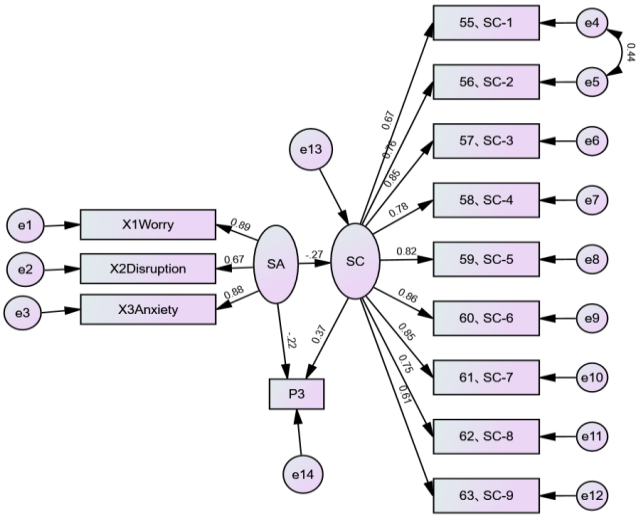
1. Test of the Direct Predictive Effect of Sport Anxiety on Wushu Routine Sport Performance

Table 3. Simple Linear Regression on Sport Performance P3

Predictor	Sport performance P3 (Provincial Level)					
	B	S.E.	β	T	F	R^2
Sport Anxiety	-.618	.204	-.306	-3.032	9.191**	.094

Note. B: Unstandardized Coefficients; SE: Standard Error; β: Standardized Coefficients; T: T-Statistic; F: F Change; R^2: R Square. *p < .05, **p < .01, ***p < .001.

Figure 2. Path Relatedness Between Sport Anxiety, Self-confidence and Sport Performance (n = 91)



Note. SA: Sport Anxiety. SC: Self-confidence. P3: Wushu Taolu Provincial Level Sport Performance

In order to verify the main effect of Wushu Routine competition students' sport anxiety on college students' sport performance P3, this study conducted regression analysis using sport performance P3 as the dependent variable and sport anxiety as the independent variable, using the forced entry method

(see Table 3 and Figure 2). The results showed that sport anxiety (F (1,89) = 9.191, β = -0.306, p < 0.01) had a significant predictive effect on sport performance P3. The above findings supported hypothesis H1: Sport anxiety will be negatively associated with performance outcomes in Wushu routine competitions.

2. Mediating Effect Analysis of Self-Confidence Between Sport Anxiety and Sport Performance

Table 4. Simple Linear Regression on Sport Performance P3

Predictor variable		Model 1	Model 2	Model 3
		Mediator variable Self-confidence	Dependent variable Sport performance P3	
Independent variable	Sport anxiety	-.271**		-.200*
Mediator variable	Self-confidence		.445***	.390***
R^2		.074	.198	.235
F		7.077**	21.929***	13.497***

Note. P3: Sport Performance Provincial Level. *p < .05, **p < .01, *** p < .001.

The mediation test used the sequential method to conduct regression analysis on self-confidence and sport performance P3, and the results are presented in Table 4 and Figure 2. In Model 1, sport anxiety significantly and negatively predicted self-confidence (β = −0.271, p < .01). In Model 2, self-confidence had a significant positive predictive effect on sport performance (β = 0.445, p < .001). In Model 3, after including self-confidence as a mediator, the regression coefficient of self-confidence remained significant (β = 0.390, p < .001). However, the effect of sport anxiety on sport performance was weakened, with its regression coefficient decreasing from β = −0.271 to β = −0.200 (p < .05). These findings indicate that self-confidence played a mediating role, suggesting that sport anxiety negatively influenced sport performance through reduced self-confidence.

Table 5. Result of the Mediation Effect Test

Model	Path	B	E	β	t	p
Model	c (total effect)	-.618	.204	-.306	-3.032	.003
Model 1	a	-.170	.064	-.271	-2.660	.009
Model 2	d (not controlling X)	1.433	.306	.445	4.683	<.001
Model 3	b	1.258	.312	.390	4.029	<.001
	c' (direct effect)	-.404	.196	-.200	-2.064	.042
Model 4 (PROCESSOR)	ab (indirect effect)	Effect	BootSE	β	95% CI	
		-.214	.1280	-.106	-.5172 -.0216	

Note: Model 4 Indirect effect from PROCESS V4.1 by Andrew F.Hayes, confidence intervals 95%, Number of bootstrap samples 5000

To further verify the robustness of the mediating effect, the Bootstrap method was employed to test the mediating role of self-confidence in the relationship between Wushu routine (Taolu) sport anxiety and provincial-level sport performance (P3). As shown in Table 5 (SPSS and PROCESS V4.1) and Table 6 (AMOS 28.0), the results revealed some differences between the complete mediation effects (AMOS 28.0) and partial mediation effects (PROCESS V4.1). Specifically, the AMOS analysis indicated that sport anxiety significantly predicted provincial-level sport performance through self-confidence (Indirect Effect = −0.507, SE = 0.343, 95% CI [−1.446, −0.047]). However, after controlling for the mediating role of self-confidence, the direct effect of sport anxiety on sport performance was no longer significant (Direct Effect = −1.121, SE = 0.541, 95% CI [−2.973, 0.055]). These findings provide additional evidence that self-confidence mediated the negative effect of sport anxiety on sport performance, supporting the robustness of the mediation model

Table 6. Direct and Indirect Effects Decomposition Table

	Effect	SE	C.R.	P	LB (95% CI)	UB (95% CI)
Direct effect	-1.121	.541	-2.074	.038	-2.973	.055
Indirect Effect	-.507	.343			-1.446	-.047

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 anxiety among Wushu routine student-athletes negatively predicted college students' sport self-confidence. In turn, self-confidence positively predicted their sport performance and played a mediating role between sport anxiety and sport performance at

the provincial level. These findings support Hypothesis H2: self-confidence mediates the relationship between sport anxiety and Wushu routine performance, with higher self-confidence reducing the negative impact of sport anxiety on performance.

Discussion

Analysis of the Direct Predictive Effect of Sport Anxiety on College Students' Sport Performance

The study revealed a significant negative correlation between sport anxiety and Wushu routine performance, particularly at the provincial competition level, with a regression coefficient of $\beta = -0.306$ ($p < .01$), accounting for 9.4% of the performance variance. These findings align with Bandura's Self-Efficacy Theory (1997), which suggests that increased anxiety undermines self-confidence, resulting in diminished performance. Bandura argued that self-efficacy, or one's belief in their ability to perform specific tasks, is a critical determinant of how individuals manage stressful situations. When athletes experience high anxiety, their self-efficacy decreases, leading to a self-fulfilling prophecy of poor performance.

My finding aligns with the Self-Efficacy Theory, which emphasizes that confidence in one's abilities mitigates the adverse effects of anxiety on performance. The study also highlighted those international athletes displayed significantly lower anxiety levels and higher self-confidence compared to lower competitive levels. This observation is supported by research by Alejo, Andres Armas, et al. (2020), who found that young adult medalists exhibited lower cognitive and somatic anxiety than their non-medalist counterparts. This evidence suggests that elite athletes possess superior mechanisms for managing anxiety, possibly due to experience and psychological training. For instance, Olympic gymnasts often engage in visualization and relaxation techniques to reduce anxiety, which helps maintain performance stability during high-pressure routines.

The current study's results are consistent with research (Lin, X. Q, 2015), which examined athletes participating in the National Wushu Championship at Shanghai Medicine University. Lin's findings indicated that athletes with lower cognitive and somatic anxiety performed better in Wushu competitions compared to those with higher anxiety levels. Additionally, Lin reported that athletes with high achievement exhibited greater self-confidence, supporting the notion that reducing anxiety can lead to enhanced performance. Findings of Muhammad, N., Khan, M., & Khan, W. (2020) further reinforce the impact of anxiety on athletic performance, demonstrating that trait, somatic, and cognitive anxiety all significantly affect athletes' performance. Their study, conducted with 126 participants (86 males, 40 females) at the 31st National Games in Khyber Pakhtunkhwa, indicated that managing anxiety is crucial for optimal performance across different sports disciplines. In this regard, this aligns with the present study's conclusion that reducing sport anxiety can enhance performance in Wushu routines, particularly at the provincial competition level. The finding aligns with the Self-Efficacy Theory, which emphasizes that confidence in one's abilities mitigates the adverse effects of anxiety on performance.

In analyzing the Structural Equation Modeling (SEM) results, the model demonstrated a good fit, with model indices such as CMIN/DF = 3.525, GFI = 0.938, CFI = 0.969, and RMSEA = 0.072. These values indicate that the model accurately represents the relationship between sport anxiety and Wushu performance, highlighting the moderating role of self-confidence. The SEM analysis confirms that self-confidence can be mediating effects the negative of sport anxiety, suggesting that interventions aimed at boosting self-confidence could be effective in improving performance.

The practical implications of these findings are evident in sports like figure skating, where athletes often use techniques such as deep breathing, progressive muscle relaxation, and positive self-talk to regulate anxiety. For example, Nathan Chen, an Olympic figure skating champion, employs mindfulness practices to maintain composure under pressure, which enables him to execute complex jumps with precision. Similarly, in Wushu, athletes could benefit from cognitive-behavioral strategies that reduce anxiety, thereby enhancing performance during competition.

In conclusion, the study's findings align with existing literature, demonstrating that sport anxiety has a significant negative impact on performance. The integration of psychological training programs focusing on self-efficacy enhancement, such as visualization techniques, goal-setting, and stress management

strategies, could provide athletes with tools to manage anxiety effectively. Future research should explore longitudinal effects of anxiety interventions on performance stability, particularly in high-pressure competitive environments.

Mediating Role of Self-Confidence in the Relationship Between Sport Anxiety, and Performance

The mediation analysis of this study demonstrated that self-confidence significantly moderates the effects of sport anxiety 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 execute specific tasks influences their approach to challenges and overall performance outcomes. The study's findings underscore the critical role of self-confidence in transforming psychological states, such as anxiety, into measurable performance gains.

The Mediating Role of Self-Confidence in the Relationship Between Sport Anxiety and Sport Performance

The study revealed that self-confidence significantly reduced the negative impact of sport anxiety on Wushu routine performance, with the regression coefficient changing from −0.271 to β = −0.200 ($p < .05$). The Structural Equation Modeling (SEM) analysis showed a robust model fit, as evidenced by the fit indices: CMIN = 218.561, DF = 62, CMIN/DF = 3.525 (acceptable if < 5), Goodness of Fit Index (GFI) = 0.938, Normed Fit Index (NFI) = 0.957, Incremental Fit Index (IFI) = 0.969, Tucker-Lewis Index (TLI) = 0.961, Comparative Fit Index (CFI) = 0.969 (all acceptable if > 0.9), Root Mean Square Error of Approximation (RMSEA) = 0.072 (acceptable if < 0.08).

This means that sport anxiety and self-confidence together explain 23.5% of the variation in Wushu routine sport performance, compared to the model with sport anxiety alone, reinforcing its mediating role. These findings align with Bandura's Self-Efficacy Theory, emphasizing that athletes with high self-confidence can reinterpret anxiety as a challenge rather than a threat, which improves performance stability. This theoretical perspective is also supported by Yang, P, et al. (2024), who demonstrated that self-efficacy boosts motivation and performance by enhancing self-confidence. Furthermore, Muhammad, N., Khan, M., & Khan, W. (2020) found that different types of anxiety (trait, somatic, and cognitive) significantly influenced athletic performance, aligning with the notion that confidence-building interventions can mitigate these negative effects.

In practical sports settings, such as figure skating or gymnastics, where athletes perform complex routines under scrutiny, self-confidence is a key factor. Coaches often use psychological techniques like visualization and positive self-talk to increase confidence and reduce anxiety, leading to more consistent performances. For example, Olympic gymnasts employ routine-based visualization to maintain composure during high-pressure routines, showcasing the practical benefits of self-confidence in competitive sports.

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

Analysis of Self-Confidence Mediation Effect

The Mediating Effect of Self-Confidence Between Sport Anxiety and Sport Performance

The study's findings revealed a significant mediating effect of self-confidence in the relationship between sport anxiety and Wushu routine performance at the provincial level. The Structural Equation Modeling (SEM) analysis indicated an indirect effect of -0.507 (95% CI [-1.446, -0.047]) (From AMOS), demonstrating a significant mediation effect. The model fit indices further supported the robustness of

the model: CMIN = 218.561, DF = 62, CMIN/DF = 3.525 (acceptable if < 5), Goodness of Fit Index (GFI) = 0.938, Normed Fit Index (NFI) = 0.957, Incremental Fit Index (IFI) = 0.969, Tucker-Lewis Index (TLI) = 0.961, Comparative Fit Index (CFI) = 0.969, Root Mean Square Error of Approximation (RMSEA) = 0.072 (acceptable if < 0.08). These model fit indices, with GFI, NFI, IFI, TLI, and CFI values all exceeding 0.9, indicate a strong alignment between the theoretical model and the empirical data. The RMSEA value of 0.072 is within the acceptable range, reinforcing the model's structural validity in explaining how self-confidence mediates the effect of Wushu routine sport anxiety on performance.

The negative indirect effect of sport anxiety on performance through self-confidence aligns with Bandura's Self-Efficacy Theory (1997), which posits that self-efficacy beliefs influence how individuals manage stress and challenge. According to Bandura, high self-efficacy reduces the debilitating impact of anxiety, allowing athletes to maintain performance under competitive pressure. The results are consistent with the findings of (Lin, X. Q, 2015), who reported that athletes with lower cognitive and somatic anxiety exhibited higher achievement in Wushu competitions. Similarly, Yang, P, et al. (2024) demonstrated that self-efficacy boosts motivation and enhances performance by increasing self-confidence.

The Broaden-and-Build Theory (Fredrickson, B. L., 2001) complements this perspective by suggesting positive emotions, including confidence, broaden cognitive resources, promoting resilience and adaptive performance. For example, in high-pressure sports like archery or tennis, athletes who manage anxiety effectively through confidence-building practices such as visualization and self-talk often demonstrate greater consistency in performance.

The practical implication of this finding is that coaches and sports psychologists should prioritize interventions that enhance athletes' self-confidence, particularly in high-anxiety environments like Wushu routine competitions. Mindfulness training, cognitive-behavioral techniques (CBT), and goal-setting strategies can help athletes reframe anxiety into productive energy, thereby improving performance outcomes.

Conclusions

This study confirmed that sport anxiety had a significant negative impact on Wushu routine (Taolu) performance among collegiate athletes, and that self-confidence served as a crucial mediating factor in this relationship. Using Structural Equation Modeling (SEM), the proposed model was statistically validated and demonstrated good model fit indices. The findings advanced the understanding of how psychological variables affect performance outcomes in Wushu, a cognitively demanding sport. By revealing the mediating role of self-confidence, this research emphasized the importance of psychological interventions such as mental skills training and anxiety regulation strategies in athletic preparation. These results contributed to the academic field of sport psychology and provided practical applications for coaches and sport professionals to support athletes in managing anxiety and building self-confidence for improved performance. Future research is encouraged to replicate the findings across different performance levels and sport disciplines, and to explore complementary psychological factors using diverse analytical tools to reinforce the reliability of the model.

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