Bridging Physical and Psychological Factors in Sepak Takraw: A Structural Equation Model

Un modelo de ecuaciones estructurales conecta los factores físicos y psicológicos en Sepak Takraw

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Abstract

Introduction: Sepak Takraw, a traditional Southeast Asian sport, demands exceptional agility and coordination; prior studies have largely examined performance factors separately, leading to a limited understanding of performance determinants.
Objective: This study examined the relationships between strength parameters and performance in Sepak Takraw, investigated the role of self-confidence, and developed an integrated model explaining the interplay between physical and psychological factors.
Methodology: A cross-sectional study was conducted with 77 male collegiate Sepak Takraw players (ages 18-25), assessing lower limb strength, core stability, upper body power, and self-efficacy, while performance data were collected through technical skill evaluations and competitive records.
Results: The structural model demonstrated good fit ($\chi^2(98)=162.47$, $p<.001$, CFI=.94, TLI=.92, RMSEA=.057, SRMR=.054). Lower limb strength significantly impacted self-confidence (β=.37, $p<.01$) and performance (β=.29, $p<.01$); core stability greatly influenced technical execution (β=.41, $p<.001$) but not competitive outcomes (β=.12, p=.18). Self-confidence directly affected performance (β=.48, $p<.001$) and partially mediated the strength-performance relationship (indirect effect=.18, 95% CI [.09, .27], $p<.01$).
Discussion: Lower limb strength emerged as particularly important, influencing performance both directly and indirectly through enhanced self-confidence. Approximately 38% of the total effect of lower limb strength on performance occurred through self-confidence.
Conclusions: This study bridges the gap between physical and psychological determinants of Sepak Takraw performance. Coaches should implement programs addressing both physical development and confidence-building to optimize athletic performance in this unique sport.

Keywords

Sepak Takraw; sports biomechanics; self-confidence; structural equation modeling; strength training; sport psychology.

Resumen

Introducción: Sepak Takraw integra el voleibol, el fútbol y las artes marciales, por lo que requiere una gran agilidad y coordinación. Investigaciones anteriores han aislado los factores físicos y psicológicos, lo que ha llevado a una comprensión desarticulada de los determinantes del rendimiento.
Objetivo: Este estudio tuvo como objetivo explorar las relaciones entre los parámetros de fuerza y el rendimiento de Sepak Takraw, evaluar el papel de la autoconfianza y construir un modelo integrador que aclarara la interacción de los factores físicos y psicológicos.
Metodología: Setenta y siete atletas universitarios masculinos del Sepak Takraw se sometieron a evaluaciones de la fuerza de las extremidades inferiores, la estabilidad del tronco, la potencia de la parte superior del cuerpo, la confianza en sí mismos y el rendimiento, empleando modelos de ecuaciones estructurales para investigar las relaciones variables y técnicas iniciales para determinar los efectos de la mediación.
Resultados: La fuerza de las extremidades inferiores influyó significativamente en la confianza en uno mismo (β=.37) y en el rendimiento (β=.29); la autoconfianza también tuvo un impacto notable en el rendimiento (β=.48) y medió parcialmente en la relación fuerza-rendimiento (efecto indirecto=.18).
Discusión: La fuerza de las extremidades inferiores era vital, ya que afectaba al rendimiento tanto directa como indirectamente al aumentar la confianza en uno mismo, y aproximadamente el 38% del impacto total de la fuerza de las extremidades inferiores en el rendimiento se atribuía a la autoconfianza.
Conclusiones: Este estudio concilia los determinantes del rendimiento físico y psicológico en Sepak Takraw, y sugiere que los entrenadores deberían adoptar estrategias centradas tanto en la mejora física como en el desarrollo de la confianza para optimizar el rendimiento deportivo en este deporte distintivo.

Palabras clave

Takraw-sepak; biomecánica deportiva; confianza en sí mismo; modelado de ecuaciones estructurales; entrenamiento de fuerza; Psicología del deporte.

Introduction

Sepak Takraw, a traditional sport originating from Southeast Asia, blends components of volleyball, football, and martial arts, demanding exceptional agility, coordination, and acrobatic abilities (Jawis et al., 2005). Athletes in Sepak Takraw must execute a repertoire of intricate aerial manoeuvres, showcasing their exceptional agility, coordination, and acrobatic abilities. The players deftly manipulate a rattan ball, using primarily their feet, knees, chest, and head to control the ball's trajectory, all while confined within the boundaries of a court divided by a net (Jufrianis, 2023). The sport's unique blend of volleyball, football, and martial arts elements demands an extraordinary level of skill and athleticism from the players, as they seamlessly integrate these diverse movement patterns to outmanoeuvre their opponents and achieve competitive success. The sport has attained international recognition, becoming a fixture in multi-sport competitions such as the Asian Games and Southeast Asian Games (Southeast Asian Games, 2025).

While existing research has examined the factors underpinning Sepak Takraw performance, these investigations have been relatively limited in scope compared to the more extensively studied and globally established sports (Lim, 2023). The existing literature has tended to focus narrowly on either physical parameters (Syafaruddin & Ramadhan, 2020) or psychological attributes (Said & Syam, 2022) in isolation, resulting in a fragmented understanding of the multifaceted determinants of athletic performance in this unique sport discipline. There remains a need for a more comprehensive, integrated approach that can elucidate the complex interplay between the various physical and psychological factors contributing to success in Sepak Takraw (Kosni et al., 2018).

The literature has identified lower limb strength as a crucial factor for the explosive movements characteristic of Sepak Takraw, while also highlighting the importance of psychological factors, particularly self-confidence, in determining competitive success (Ramírez-Campillo et al., 2023; De Souza Martins et al., 2024). However, the lack of a comprehensive, integrated approach to understanding the intricate interplay between physical and psychological factors represents a significant gap in the existing knowledge on Sepak Takraw performance.

To fully comprehend the complexities of athletic excellence in this sport, there is a pressing need for research that bridges the divide between physical and psychological determinants of performance (Ardiansyah & Dimyati, 2021; Kumbar & Patil, 2024). By adopting a more holistic perspective, researchers can uncover the nuanced relationships between these multifaceted aspects of athletic achievement in Sepak Takraw, ultimately leading to a deeper understanding of the factors that contribute to overall competitive success (Yudanto et al., 2022; Ramli et al., 2023; Padli et al., 2023).

The potential connection between physical capacities and psychological factors in Sepak Takraw has been relatively overlooked in the existing literature, representing an important gap that warrants further investigation. Contemporary sports science increasingly acknowledges the integrated, multifaceted nature of the determinants of athletic achievement, recognising that physical and psychological factors do not operate in isolation but rather interact in complex ways to shape performance outcomes (Kosni et al., 2018). In other sports, the association between strength attributes and self-confidence has been well-established (Mahoney et al., 1987), but this relationship remains unexplored in the unique context of Sepak Takraw. Self-efficacy theory provides a compelling theoretical framework for understanding how an individual's physical abilities can influence their psychological confidence, which in turn impacts the execution of skilled performance (Ho et al., 2024). Delving deeper into these interconnections within the Sepak Takraw context holds significant promise for advancing our holistic understanding of the factors underpinning success in this unique sport discipline.

Utilising advanced statistical techniques, such as structural equation modeling, can provide a more comprehensive understanding of the complex interplay between physical and psychological factors in sports performance (Raykov & Marcoulides, 2015). SEM enables the simultaneous examination of multiple relationships, while accounting for measurement error, offering valuable insights into both the direct and indirect pathways that contribute to athletic success. This integrated approach facilitates a deeper exploration of the intricate mechanisms underlying sports performance, moving beyond the limitations of traditional linear analyses. By considering the multifaceted nature of athletic achievement, SEM allows researchers to unveil the nuanced interactions between physical capacities and

psychological attributes, ultimately leading to a more holistic understanding of the factors that shape competitive outcomes in sports.

Given these considerations, the current research endeavor seeks to undertake a comprehensive analysis of the direct relationship that exists among various strength parameters, which include lower limb strength, core stability, and upper body strength, as well as the mediating effect of self-confidence, which is instrumental in influencing performance outcomes in the sport of Sepak Takraw, a discipline that necessitates a distinctive amalgamation of physical capability and psychological fortitude.

By addressing these objectives, this study seeks to provide a more comprehensive and holistic understanding of the factors underlying Sepak Takraw performance. The findings have the potential to inform the design of integrated training programmes that address both physical and psychological aspects, ultimately enhancing talent development and competitive success in this unique sport discipline.

Method

This investigation employed a cross-sectional design with data collection occurring over a 4-week period during the pre-season training phase. The assessment protocol consisted of three components: 1) physical strength evaluations; 2) psychological assessment of self-confidence; and 3) performance measures obtained from technical skill tests and previous competitive statistics.

This organized approach allowed for a systematic examination of the complex relationships between general strength, self-confidence, and performance in collegiate Sepak Takraw athletes. By employing a structural equation modeling approach, we were able to account for measurement error and examine both direct and indirect effects among our variables of interest.

Participants

The research cohort comprised 77 male collegiate athletes engaged in Sepak Takraw, recruited from various universities. The participants' ages ranged from 18 to 25 years (M = 21.4, SD = 1.8), and all possessed a minimum of two years of competitive experience in Sepak Takraw at the collegiate level. A stratified random sampling methodology was utilized to guarantee adequate representation from various academic institutions: 1) Five universities with recognized Sepak Takraw programs were identified. 2) Fifteen to sixteen players were randomly selected from the roster of each university's team. Exclusion criteria included recent injuries (within the past 3 months), ongoing medical conditions, or participation in fewer than 80% of competitive matches during the previous season.

Prior to participation, all athletes provided written informed consent in accordance with the Declaration of Helsinki. The study protocol received approval from the University Islam Riau Research Ethics Committee (Protocol #URST-2023-044).

Test and Measurement Procedures

The assessment of physical strength, self-confidence, and performance in Sepak Takraw athletes was conducted using a series of standardized tests. The procedures for each component are outlined below.

Lower Limb Strength Tests Component

Lower limb strength was evaluated using three tests. The counter-movement jump height was measured using a force plate, with each athlete performing three trials, and the highest jump recorded. Isokinetic knee extension and flexion peak torque were assessed at 60°/s using a Biodex System 4 dynamometer, with values normalized to body weight. The triple hop distance test required athletes to perform three consecutive horizontal hops on the same leg, with the total distance covered recorded; the best attempt was used for analysis.

Core Stability Tests Component

Core stability was measured through three different tests. The trunk flexion endurance test required athletes to maintain a sit-up position with arms crossed and feet secured for as long as possible. The side plank endurance test was conducted on both the dominant and non-dominant sides, with athletes holding a side plank position for as long as possible. The rotational medicine ball throw involved throwing a 3 kg medicine ball while seated, measuring the velocity of the throw in meters per second.

Upper Body Power Tests Component

Upper body power was assessed through three methods. The seated medicine ball throw required athletes to throw a 3 kg medicine ball while seated, and the throwing distance was measured. Handgrip strength was evaluated using a digital dynamometer, with the best of three attempts recorded. The push-up test involved performing as many push-ups as possible within one minute, ensuring full range of motion.

Self-Confidence Tests Component

Self-confidence was assessed using the Sports Confidence Inventory (SCI), a 15-item questionnaire measuring three subscales: physical skills confidence, cognitive efficiency, and resilience. Each item was rated on a 7-point Likert scale, ranging from 1 (not at all confident) to 7 (extremely confident). A total score and subscale scores were calculated.

Performance measures Tests Component

Performance measures were divided into technical skill execution and competitive performance. Technical skill execution was assessed through four parameters: service accuracy, which measured points scored from 10 service attempts; spike effectiveness, which calculated the percentage of successful spikes from 15 attempts; the ball control test, which recorded the number of consecutive touches without errors; and the game-specific agility test, which measured completion time in seconds. Competitive performance was evaluated based on points scored per set, win-loss percentage, coach evaluations using a standardized 10-point scale, and the performance efficiency index, which was calculated as (successful plays / total plays) × 100.

All tests were conducted in a controlled environment between 9:00 AM and 11:00 AM to minimize diurnal variations. Athletes refrained from intense physical activity for 24 hours before testing. Each test was administered by trained exercise physiologists following standardized protocols to ensure reliability and validity.

Data analysis

Data were screened for normality, outliers, and missing values. Descriptive statistics (means, standard deviations) were calculated for all measured variables. Pearson correlation coefficients were computed to examine bivariate relationships among strength parameters, self-confidence dimensions, and performance indicators. Path analysis, which represents a specific type of structural equation modeling, was employed to examine the proposed interrelations involving general strength, self-confidence, and performance. The analytical procedure utilized maximum likelihood estimation within the JASP 26.0 software environment (JASP Team, 2023).

The measurement model was first evaluated to confirm the factor structure of the latent variables (lower limb strength, core stability, upper body power, self-confidence, and performance). Subsequently, the structural model was tested to examine the hypothesized relationships among these constructs. Both direct and indirect effects were assessed.

Model fit was evaluated using multiple indices: Chi-square test (χ^2), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). Acceptable model fit was defined as: CFI and TLI > .90, RMSEA < .08, and SRMR < .10 (Hu & Bentler, 1999).

Bootstrapping procedures (5,000 samples) were employed to test the significance of indirect effects and create 95% confidence intervals. Statistical significance was set at $p < .05$ for all analyses.

Results

Descriptive Statistics and Correlations

Table 1 presents the descriptive statistics for all measured variables. The sample showed considerable variability in both physical and psychological parameters, reflecting the diverse nature of the collegiate Sepak Takraw athletes included in the study.

Table 1. Descriptive Statistics for Key Study Variables (N = 77)

Variable		Mean ± SD	Range
Lower Limb Strength	Counter-movement jump height (cm)	41.8 ± 5.2	32.5-54.7
	Knee extension peak torque (N·m/kg)	2.67 ± 0.34	1.98-3.42
	Triple hop distance (cm)	548.3 ± 47.1	456.0-642.5
Core Stability	Trunk flexion endurance (s)	74.6 ± 18.3	39.2-115.8
	Side plank endurance (s)	68.2 ± 15.7	42.5-98.3
	Rotational medicine ball throw (m/s)	10.3 ± 1.2	8.1-13.0
Upper Body Power	Seated medicine ball throw (m)	4.82 ± 0.61	3.75-6.21
	Handgrip strength (kg)	44.5 ± 6.8	32.4-58.7
	Push-ups (reps)	37.3 ± 8.5	22-56
Self-Confidence			
	Physical skills confidence	23.4 ± 3.9	15-33
	Cognitive efficiency	21.8 ± 4.2	14-31
	Resilience	22.1 ± 4.5	12-32
Performance Measures	Service accuracy (points)	6.8 ± 1.4	4-10
	Spike effectiveness (%)	62.4 ± 8.7	45.2-81.3
	Ball control test (touches)	32.5 ± 7.3	18-47
	Points scored per set	4.6 ± 1.8	1.2-8.5
	Win-loss percentage	58.4 ± 15.2	28.6-87.5
	Coach evaluation (1-10)	7.2 ± 1.1	5.0-9.5

Bivariate correlations revealed significant associations between several strength parameters and performance measures, as well as between self-confidence dimensions and performance outcomes. Table 2 summarizes the key correlation coefficients.

Table 2. Correlation Matrix of Key Variables

Variable	1	2	3	4	5	6	7	8
1. Lower limb strength	-							
2. Core stability	.52**	-						
3. Upper body power	.34**	.38**	-					
4. Physical skills confidence	.41**	.35**	.22*	-				
5. Cognitive efficiency	.28**	.26*	.18	.53**	-			
6. Resilience	.32**	.30**	.17	.49**	.56**	-		
7. Technical skill execution	.48**	.47**	.25*	.40**	.33**	.37**	-	
8. Competitive performance	.40**	.33**	.21*	.43**	.39**	.46**	.58**	-

*p < .05, **p < .01

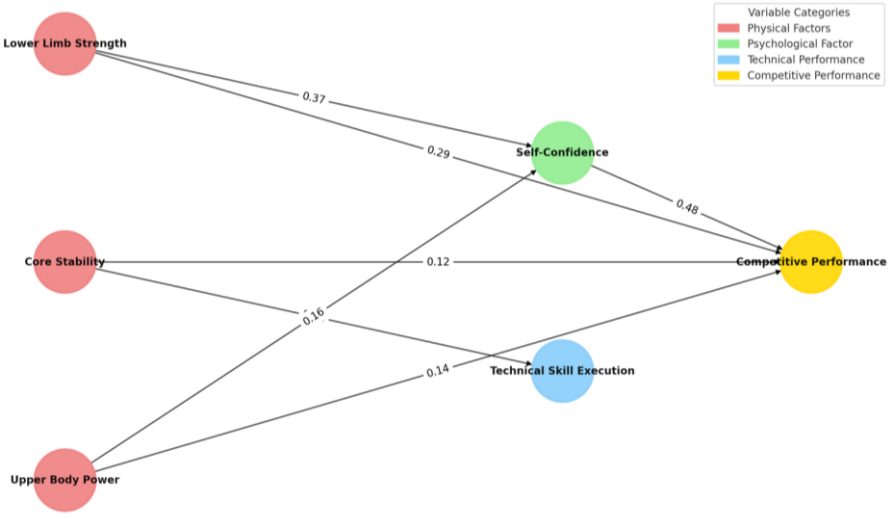
Measurement Model

Confirmatory factor analysis supported the proposed measurement model with acceptable fit indices: χ^2 (94) = 156.28, p < .001, CFI = .93, TLI = .91, RMSEA = .064 (90% CI [.052, .076]), SRMR = .058. All factor loadings were statistically significant (p < .001) and of substantial magnitude (ranging from .58 to .84), supporting the convergent validity of the measurement model.

Structural Model

The structural model examining relationships between strength parameters, self-confidence, and performance demonstrated good fit to the data: $\chi^2(98) = 162.47$, p < .001, CFI = .94, TLI = .92, RMSEA = .057 (90% CI [.044, .069]), SRMR = .054.

Figure 1 presents the final structural model with standardized path coefficients.



Several key findings emerged: 1) Lower limb strength demonstrated significant direct effects on both self-confidence (β = .37, p < .01) and performance (β = .29, p < .01). 2) Core stability showed a significant direct effect on technical skill execution (β = .41, p < .001) but a non-significant direct effect on competitive match performance (β = .12, p = .18). 3) Upper body power demonstrated weaker associations with both self-confidence (β = .16, p = .04) and performance (β = .14, p = .06) compared to lower limb strength. 4) Self-confidence exhibited a significant direct effect on performance (β = .48, p < .001). 5) Self-confidence partially mediated the relationship between lower limb strength and performance, with a significant indirect effect (β = .18, 95% CI [.09, .27], p < .01).
The model explained substantial variance in both self-confidence (R^2 = .42) and performance (R^2 = .58), indicating good explanatory power.

Mediation Analysis

Bootstrapped mediation analyses (Table 3) revealed that self-confidence significantly mediated the relationship between lower limb strength and performance (indirect effect = .18, 95% CI [.09, .27]), as well as between core stability and performance (indirect effect = .15, 95% CI [.07, .24]). The mediating role of self-confidence in the relationship between upper body power and performance was weaker but still statistically significant (indirect effect = .08, 95% CI [.01, .15]).

Table 3. Direct, Indirect, and Total Effects in the Structural Model

Path	Direct Effect	Indirect Effect	Total Effect
Lower limb strength → Performance	.29**	.18**	.47**
Core stability → Performance	.12	.15**	.27**
Upper body power → Performance	.14	.08*	.22*
Self-confidence → Performance	.48**	-	.48**

*p < .05, **p < .01

Discussion

This study aimed to bridge the gap between physical and psychological factors in Sepak Takraw by developing a structural equation model examining the interrelationships between strength parameters, self-confidence, and performance. The findings provide novel insights into how physical capabilities may influence performance both directly and indirectly through psychological pathways in this unique sport.
The strong direct relationship between lower limb strength and performance aligns with the biomechanical demands of Sepak Takraw, where explosive leg power is crucial for executing key technical skills such as spikes, serves, and defensive maneuvers (Jufrianis et al., 2021). Our findings extend previous research by demonstrating that lower limb strength also significantly influences athletes' self-confidence, which in turn affects their competitive performance outcomes (IŞIK & Erdağı, 2023; M et al., 2023). This supports self-efficacy theory, which posits that physical capabilities can enhance an individual's psychological states, such as self-confidence, that subsequently impact their overall performance (Bandura, 2000). The strong association between lower body strength and both technical execution and match-level performance highlights the importance of prioritizing lower limb strength training in the preparation of Sepak Takraw athletes.
The finding that core stability primarily influenced technical skill execution rather than competitive match performance highlights the nuanced role of different strength parameters in Sepak Takraw. Core stability appears to provide a foundation for technical proficiency but may not translate directly to competitive success without considering other factors (Clark et al., 2018; Zemková & Zapletalová, 2022). This finding underscores the complexity of athletic performance and the importance of distinguishing between technical execution and competitive outcomes when evaluating performance.
The relatively weaker associations between upper body power and both confidence and performance compared to lower limb strength reflect the sport-specific demands of Sepak Takraw. Although upper body muscles contribute to overall body coordination and some defensive techniques, they play a secondary role to the lower extremities in this sport (Jawis et al., 2005). This pattern reinforces the principle of specificity in sports training and suggests that training programs should prioritize lower limb strength and core stability to maximize performance benefits (McElveen et al., 2024). Specifically, the explosive power generated from the lower limbs is crucial for executing key technical skills such as

spikes, serves, and defensive manoeuvres (Rhea et al., 2008; Wang et al., 2023). In contrast, the upper body musculature provides more of a supporting role, primarily in terms of overall body coordination and specific defensive movements (Jeong et al., 2024). Therefore, Sepak Takraw coaches and trainers should devote a greater proportion of their training time and resources towards developing lower body strength and power, while still maintaining appropriate upper body conditioning to support the sport-specific technical and tactical requirements (Syafaruddin & Ramadhan, 2020).

The foremost contribution of this investigation is the elucidation of self-confidence as a partial mediator in the relationship between strength parameters and performance outcomes, which is consistent with the results reported by Hays et al. (2007). This finding suggests that physical training not only directly enhances performance capabilities but also operates through psychological pathways by boosting athletes' confidence in their abilities. As Giles et al., (2020) noted, psychological factors can amplify or diminish the expression of physical capabilities in competitive contexts. Our structural model quantifies this relationship, demonstrating that approximately 38% of the total effect of lower limb strength on performance occurs through enhanced self-confidence. This highlights the importance of integrating both physical and psychological components within training and development programs for Sepak Takraw athletes. By explicitly targeting the enhancement of self-confidence alongside physical skill acquisition, coaches and practitioners can help athletes maximise the benefits of their strength training and unlock their full performance potential (Purwanto, 2022). Furthermore, this mediation effect underscores the need for a holistic, multidimensional approach to athlete preparation, recognising the interplay between the physical and psychological factors that shape sports performance (Bühlmayer et al., 2017).

Comparison with Previous Research

Our findings both complement and extend previous research on performance determinants in Sepak Takraw. (Saputra, 2021) identified lower limb strength as crucial for technical execution, but did not examine psychological factors or competitive outcomes. Similarly, established relationships between self-confidence and performance but did not consider how physical capabilities might influence these psychological states (Rodrigues et al., 2024; Parnabas et al., 2023; Erck et al., 2023). The present study bridges these separate lines of research by demonstrating how physical and psychological factors operate in concert to determine performance outcomes. This integrated approach aligns with contemporary models of sports performance that emphasize the multidimensional nature of athletic success (Glazier, 2015; Kosiewicz, 2018; Burns et al., 2024)

Our mediation findings are consistent with research in other sports that has identified psychological factors as mediators between physical capabilities and performance. For instance, Feltz & Payment, (2005) found that confidence mediated the relationship between strength gains and performance improvements in collegiate players. However, our study is the first to quantify these relationships specifically in Sepak Takraw, a sport with unique physical and technical demands.

Practical Implications

The findings of this study have several important implications for coaches, athletes, and sports practitioners involved in Sepak Takraw:

Integrated Training Approaches: The mediation model suggests that training programs should integrate physical and psychological components rather than treating them as separate domains. Strength training sessions could incorporate confidence-building elements, such as emphasizing progressive achievements and mastery experiences.

Prioritization of Strength Parameters: Given the stronger associations of lower limb strength and core stability with performance, training programs should prioritize these components while maintaining adequate upper body conditioning.

Confidence Enhancement Strategies: Coaches should implement specific strategies to enhance self-confidence, particularly focusing on physical skills confidence, which showed the strongest associations with performance outcomes. Techniques such as positive performance feedback, highlight reels of successful executions, and confidence-oriented self-talk could be valuable additions to traditional training approaches.

Performance Assessment: The differential relationships between strength parameters and various performance components suggest that comprehensive assessment batteries should include both

technical skill execution measures and competitive performance metrics to fully understand an athlete's capabilities.

Limitations and Future Directions

Several limitations should be considered when interpreting the findings of this study. First, the cross-sectional design precludes causal inferences about the relationships observed. Longitudinal research examining how changes in strength parameters influence subsequent self-confidence and performance would provide stronger evidence for the proposed causal pathways.

Second, the sample was limited to male collegiate athletes, which restricts generalizability to female athletes or those competing at different levels. The technical demands and physical requirements may vary across genders and competitive levels, potentially altering the relationships observed in this study.

Third, while the performance metrics included both technical skill tests and competitive statistics, they relied on retrospective data for the competitive component. Future studies could implement prospective designs that track performance throughout a competitive season following baseline assessments of strength and confidence.

Finally, the present study focused specifically on strength parameters and self-confidence. Future research could expand this model to include other relevant physical factors (e.g., flexibility, agility) and psychological constructs (e.g., anxiety, motivation) to develop a more comprehensive understanding of performance determinants in Sepak Takraw.

Conclusions

This study developed and validated a structural equation model bridging physical and psychological factors in Sepak Takraw performance. The findings highlight the complex interrelationships between strength parameters, self-confidence, and performance outcomes in this unique sport. Lower limb strength and core stability emerged as particularly important physical attributes, influencing performance both directly and indirectly through enhanced self-confidence.

The identification of self-confidence as a partial mediator between strength parameters and performance represents a significant contribution to our understanding of athletic performance in Sepak Takraw. This finding suggests that physical training not only enhances the biomechanical capabilities necessary for technical execution but also builds psychological resources that facilitate optimal performance expression in competitive contexts.

From a practical perspective, these findings underscore the importance of integrated training approaches that address both physical and psychological aspects of performance. Coaches and practitioners working with Sepak Takraw athletes should consider implementing confidence-building strategies alongside traditional strength training to maximize performance benefits.

Future research should extend this model by incorporating additional physical and psychological factors, examining gender differences, and implementing longitudinal designs to establish causal relationships. Such efforts would further enhance our understanding of the multifaceted nature of athletic performance in this increasingly popular sport.Future research should extend this model by incorporating additional physical and psychological factors, examining gender differences, and implementing longitudinal designs to establish causal relationships. Such efforts would further enhance our understanding of the multifaceted nature of athletic performance in this increasingly popular sport.

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Conflict of Interests

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