

Original article. Butterfly in Stomach: Investigation on the Influence of Pre-competition Anxiety on Perceived Athletic Performance during SCUAA Games Season. Vol. 11, n. ° 3; p. 1-26, July 2025.

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Butterfly in stomach: Investigation on the influence of pre-competition anxiety on perceived athletic performance during SCUAA games season

Mariposa en el estómago: investigación sobre la influencia de la ansiedad previa a la competición en el rendimiento deportivo percibido durante la temporada de juegos SCUAA

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Abstract

The study aligns with the university research agenda of Education and Pedagogy for Filipino learners. Also, it aligns with the Sustainable Development Goal on Quality Education and Good Health and Well-being of the United Nations. Using a quantitative research design, the study examined the predictive ability of sports anxiety on perceived performance and physical fitness among 103 Filipino collegiate student-athletes before the SCUAA games (Region 3). Purposive sampling categorized participants into ball sports (n=45), combat sports (n=37), and racket sports (n=21), with strict eligibility criteria. Data were collected using the Sport Anxiety Scale-2 (SAS-2), the Self-Perception of Physical Fitness Scale, and the Athlete's Subjective Performance Scale (ASPS). Following ethical clearance and informed consent, data were analyzed using multiple linear regression in SPSS version 30 to identify predictors. The Central Limit Theorem ensured the appropriateness of parametric tests, and results were handled confidentially and made available to participants and the university. Among all respondents, sports anxiety and its dimensions did not predict perceived sports performance, except in ball sports, where somatic anxiety was a negative predictor. Sports anxiety negatively predicts perceived muscular strength, cardio, and total physical fitness. In ball sports, it predicts lower muscular strength, motor coordination, cardiorespiratory fitness, and total fitness, but morphological fitness showed no association. In racket sports, only cardiorespiratory fitness was negatively predicted by anxiety, with other dimensions showing no significant relationship. In combat sports, no association was found between sports anxiety and any perceived physical fitness dimensions. Future research should include a larger, more diverse sample across different sports and skill levels to improve generalizability and statistical power.

Keywords: anxiety, sports anxiety, physical fitness, sports performance, athletes.

Resumen

El estudio se alinea con la agenda de investigación universitaria sobre Educación y Pedagogía para los estudiantes filipinos. Además, está en consonancia con el Objetivo de Desarrollo Sostenible de la ONU sobre Educación de Calidad y Bienestar. Utilizando un diseño de investigación cuantitativo, el estudio examinó la capacidad predictiva de la ansiedad deportiva en el rendimiento percibido y la condición física de 103 estudiantes-atletas filipinos universitarios antes de los juegos SCUAA (Región 3). Se utilizó un muestreo intencional para categorizar a los participantes en deportes de balón (n=45), deportes de combate (n=37) y deportes de raqueta (n=21), aplicando estrictos criterios de elegibilidad. Los datos se recopilaron mediante la Escala de Ansiedad Deportiva-2 (SAS-2), la Escala de Autopercepción de la Condición Física y la Escala de Rendimiento Subjetivo del Atleta (ASPS). Tras la aprobación ética y el consentimiento informado, los datos se analizaron mediante regresión lineal múltiple en SPSS versión 30 para identificar predictores. El Teorema del Límite Central garantizó la idoneidad de las pruebas paramétricas, y los resultados se manejaron de manera confidencial y estuvieron disponibles para los participantes y la universidad. Entre todos los encuestados, la ansiedad deportiva y sus dimensiones no predijeron el rendimiento deportivo percibido, excepto en los deportes de balón, donde la ansiedad somática fue un predictor negativo. La ansiedad deportiva predice negativamente la percepción de la fuerza muscular, la

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resistencia cardiovascular y la condición física total. En los deportes de balón, predice una menor fuerza muscular, coordinación motora, condición cardiorrespiratoria y condición física total, pero no se encontró asociación con la condición morfológica. En los deportes de raqueta, solo la condición cardiorrespiratoria fue negativamente predicha por la ansiedad, mientras que las demás dimensiones no mostraron una relación significativa. En los deportes de combate, no se encontró ninguna asociación entre la ansiedad deportiva y ninguna de las dimensiones de la condición física percibida. Futuras investigaciones deberían incluir una muestra más grande y diversa en diferentes deportes y niveles de habilidad para mejorar la generalización y el poder estadístico.

Palabras clave: ansiedad, ansiedad deportiva, condición física, rendimiento deportivo, atletas.

Introduction

Anxiety is a complex emotional state involving interrelated cognitive, behavioral, and physiological responses, often marked by unease, fear, and apprehension. According to the DSM-5, it is characterized by excessive fear, irrational thoughts, and avoidance behaviors that impair daily life (Hendriks, 2017). Grounded in cognitive-behavioral theory and multidimensional anxiety theory, anxiety in athletic contexts can be examined as both a trait and a state construct. It may be situational or a stable personality trait reflecting heightened emotional reactivity (Alasheev & Bykov, 2002; Lobo et al., 2025), shaped by genetic, environmental, and neurochemical factors, and can range from adaptive to chronic, debilitating conditions (Eysenck, 1982) that affect mental health and quality of life (Al-Biltagi, 2016).

In the domain of competitive sports, anxiety emerges as a response to performance-related stressors, and is categorized into state anxiety—a temporary emotional reaction—and trait anxiety—a personality disposition influencing stress perception (Zhang et al., 2018). Pre-competitive anxiety involves somatic tension and cognitive symptoms such as fear of failure and negative self-evaluation, impairing performance (Hussain et al., 2021). Competitive state anxiety is a transient emotional state triggered by immediate situational demands (Duică et al., 2014). Recent interventions, particularly cognitive-behavioral approaches, have shown effectiveness in managing its impact (Ryska, 2017). Biopsychological, social, and competitive pressures all contribute to its onset and intensity (Fry, 2019). Athletes in high-stakes competitions

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like the State Colleges and Universities Athletic Association (SCUAA) Games – Region 3 are particularly vulnerable due to internal expectations and external pressures from coaches, teammates, and spectators.

Sports anxiety significantly influences athletic performance across various sport classifications, including individual, team, and combat sports. In individual sports such as tennis and gymnastics, athletes face heightened anxiety due to self-reliance, which can lead to impaired motor execution and increased cognitive distress (Pokharel & Zhu, 2018; Preja, 2019; Lobo et al., 2024). Female athletes, particularly in track and field, have reported higher anxiety levels than males in individual settings (Singh & Kumar, 2012). Conversely, in team sports, the distribution of responsibility among teammates can help buffer anxiety, with basketball and football players typically exhibiting lower anxiety (Moroianu & Popescu, 2023). Interestingly, moderate anxiety levels have been found to enhance performance among young female team athletes (Patel et al., 2010). Combat sports athletes—such as wrestlers and martial artists—often experience detrimental effects of anxiety on reaction time and decision-making, leading to decreased performance (Bukhari et al., 2021). Multi-sport research corroborates that elevated pre-competitive anxiety is generally associated with performance decline, while self-esteem and effective anxiety regulation strategies are critical to better outcomes (Hussain et al., 2021; Chen, 2024).

In addition to performance, anxiety has a marked impact on physical fitness, particularly through its somatic component. Somatic anxiety includes physical symptoms such as elevated heart rate, muscle tightness, and dizziness (Tyrer, 1982), while cognitive anxiety involves mental elements like worry and rumination (Steptoe & Kearsley, 1990). In sports settings, somatic anxiety is typically expressed through increased sweating, muscle tension, and gastrointestinal discomfort (Smith, et al., 1990). It is closely associated with somatization, where emotional distress manifests physically (Özen et al., 2010). Distinguishing between cognitive and somatic anxiety is essential, as both contribute uniquely to performance variability (Parnabas, Mahamood, & Parnabas, 2013). High anxiety has been linked to negative perceptions of fitness regardless of actual physical condition (Abadie, 1988), reduced VO₂ max (Makepeace, 2015), and lower

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physical competence in various populations. Children with better agility and resilience tend to have lower anxiety (Li et al., 2020), and adolescents with poor cardiorespiratory and muscular fitness display higher anxiety levels (Costigan et al., 2024). Among college students, improved physical fitness has been shown to lower anxiety levels (Yin et al., 2022), while in individuals with chronic conditions like fibromyalgia, anxiety negatively correlates with muscular strength, flexibility, and endurance (Córdoba-Torrecilla et al., 2016; Masagca, 2024b). In athletes, anxiety-induced changes in body composition and anaerobic power can negatively affect competitive readiness (Pei-zhen, 2010), particularly through reductions in cardiovascular fitness (Makepeace, 2015; Masagca, 2024a).

Despite extensive literature on sports anxiety, key research gaps remain. Many studies rely on objective physical fitness data while overlooking subjective perceptions of performance and fitness. This creates an incomplete understanding of the athlete's internal experience and self-assessment. Furthermore, existing studies rarely explore these dynamics in Filipino collegiate athletes, representing a significant population gap. Additionally, few studies assess anxiety and fitness changes during the pre-competition phase of high-stakes events like the SCUAA Games, revealing a temporal gap in current research.

To address these gaps, the present study aims to examine the predictive relationship between sports anxiety, perceived athletic performance, and perceived physical fitness among Filipino collegiate student-athletes before the SCUAA Games (Region 3). Hypotheses were formulated based on the theoretical framework and synthesis of existing empirical literature.

- H₁ Sports anxiety has a direct influence on perceived sports performance
- H₂ Sports anxiety has a direct influence on perceived physical fitness

Methodology

Research Design

The study employed a quantitative, cross-sectional research design to examine the predictive relationship between sports anxiety, perceived sports performance, and

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perceived physical fitness among collegiate student-athletes. This design allowed data to be collected during the pre-competition phase of the SCUAA Games – Region 3, capturing athletes' psychological and physical states prior to competition. Validated self-report instruments were used to gather numerical data, and statistical techniques were applied to assess predictive relationships among variables.

Sampling and respondents

The study included 103 student-athletes from various sports disciplines at a state university during the second semester of Academic Year 2024–2025. Participants were grouped into three categories based on sport type: Ball sports (n=45), Combat sports (n=37), and Racket sports (n=21). Ball sports included basketball, football, futsal, sepak takraw, and volleyball; combat sports included taekwondo, arnis, karatedo, and boxing; and racket sports included badminton, table tennis, and tennis. The adequacy of the sample size is supported by methodological guidelines for regression analysis. According to established criteria, a sample of at least $50 + 8m$ (for testing individual predictors) or $104 + m$ (for testing the full model), where m is the number of predictors, is acceptable (Green, 1991; Tabachnick & Fidell, 2013). Samples of over 100 are also considered robust for multivariate analysis when moderate effect sizes are expected (Hair et al., 2019). Thus, the sample of 103 was statistically sufficient for this study's regression-based approach. The unequal distribution among sport types reflects the actual university training pool. Purposive sampling was employed to ensure that respondents met specific inclusion criteria: they must be bona fide student-athletes of Bulacan State University, official members of a university sports team, and have at least one year of formal athletic training. Athletes aged 25 and above or those exceeding the playing age were excluded. Participation was voluntary, and athletes retained the right to withdraw at any time. Table 1 presents the respondents' demographic profile, including data on age, height, weight, and body mass index (BMI) for participants grouped into ball sports, combat sports, racket sports, and all respondents combined. Mean and standard deviation were used in the analysis. The mean age was 20.36 ± 1.49 years for ball sports respondents, 20.32 ± 1.25 years for combat sports respondents, 19.95 ± 1.13 years for racket sports respondents, and 20.26 ± 1.35 years overall. The mean height was 164.91 ± 11.77 cm for ball sports respondents, 166.20 ± 9.54 cm for combat sports respondents, 159.08 ± 10.81

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cm for racket sports respondents, and 164.19 ± 11.14 cm overall. The mean weight was 64.69 ± 18.14 kg for ball sports respondents, 60.19 ± 12.01 kg for combat sports respondents, 56.12 ± 10.69 kg for racket sports respondents, and 61.33 ± 15.16 kg overall. The mean BMI was 24.13 ± 8.38 for ball sports respondents, 21.68 ± 3.26 for combat sports respondents, 22.16 ± 3.77 for racket sports respondents, and 22.85 ± 6.22 overall.

Table 1. Demographic Profile of the Respondents

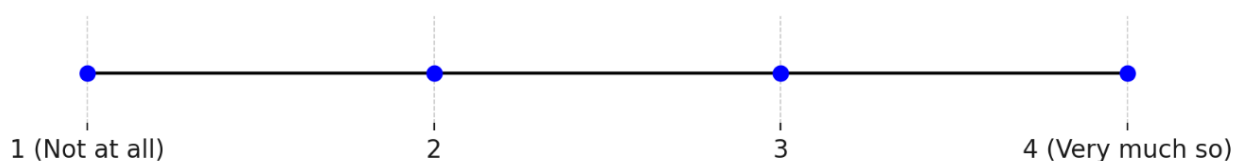
	Ball Sports	Combat Sports	Racket Sports	All
Age	20.36+1.49	20.32+1.25	19.95+1.13	20.26+1.35
Height	164.91+11.77	166.20+9.54	159.08+10.81	164.19+11.14
Weight	64.69+18.14	60.19+12.01	56.12+10.69	61.33+15.16
BMI	24.13+8.38	21.68+3.26	22.16+3.77	22.85+6.22

Research Instrument

Sports Anxiety

The Sport Anxiety Scale-2 (SAS-2) is a validated and reliable self-report instrument designed to measure sport-specific anxiety in athletes. It evaluates three key dimensions: somatic anxiety (physical symptoms such as muscle tension and elevated heart rate), worry (negative thoughts about performance), and concentration disruption (difficulty maintaining focus) (Smith et al., 2006). This updated version of the original Sport Anxiety Scale offers improved psychometric accuracy (Smith et al., 2006). Its construct validity has been confirmed through factor analyses that clearly distinguish cognitive and somatic components of anxiety (Grossbard et al., 2009). The scale also demonstrates high internal consistency, with Cronbach's alpha ranging from 0.84 to 0.91, indicating strong reliability (Smith et al., 2006). Additionally, it exhibits predictive validity, showing significant correlations with athletic performance outcomes (Martinet & Ferrand, 2009). Figure 1 displays the Likert scale used in the SAS-2, ranging from 1 ("Not at all") to 4 ("Very much so").

Figure 1. Likert Scale of Sport Anxiety Scale-2



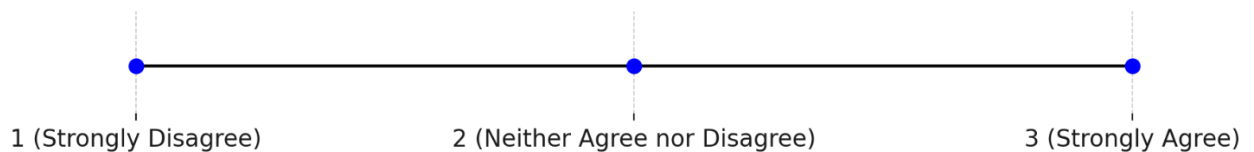
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Subjective physical fitness level

Subjective physical fitness levels were assessed using the Self-Perception of Physical Fitness Scale, which measures perceived physical fitness in individuals aged 11.0 to 18.9 years (Cossio-Bolaños et al., 2016). This scale evaluates four key dimensions: morphological fitness, muscular strength, motor fitness, and cardiovascular fitness. Respondents express their level of agreement with statements related to these dimensions on a 3-point Likert scale. Figure 2 presents the Likert scale for the Self-Perception of Physical Fitness Scale, with response options ranging from 1 (Strongly Disagree) to 2 (Neither Agree nor Disagree) and 3 (Strongly Agree).

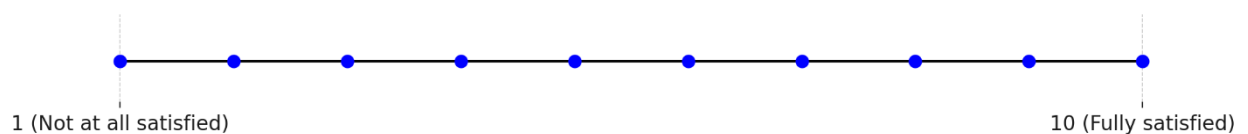
Figure 2. Likert Scale of Self-Perception of Physical Fitness Scale



Subjective Sports Performance

The Athlete's Subjective Performance Scale (ASPS) was employed to measure subjective sports performance. This scale was validated through Rasch analysis using data from 201 Korean university athletes, demonstrating strong reliability with an item separation index of 3.54 and a person separation index of 2.86 (Lee et al., 2023). Initially, the scale had a 10-category rating system, but analysis revealed disordered thresholds, leading to adopting a 6-category scale for improved reliability and measurement accuracy (Lee et al., 2023). Figure 3 presents the rating scale for the ASPS, ranging from 1 ("Not at all satisfied") to 10 ("Fully satisfied").

Figure 3. Rating Scale of Self-Perception of Athlete's Subjective Performance Scale



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Data Gathering

Data collection was conducted one week prior to the SCUAA Games – Region 3 to capture anxiety, performance perceptions, and physical fitness during the pre-competition phase. After securing ethical clearance from the Local In-House Ethics Committee, researchers coordinated with team coaches for scheduling. The three standardized instruments were administered in a classroom setting, and trained research assistants facilitated completion to ensure standardized administration across all groups.

Data Analysis

Responses were screened for completeness. Entries missing less than 10% of responses on any scale were processed using mean substitution; those with larger gaps were excluded. Assumptions for regression (e.g., normality, linearity, multicollinearity) were tested prior to analysis. Multiple linear regression analysis was performed using SPSS version 30 to assess whether sports anxiety could significantly predict perceived sports performance and physical fitness. The Central Limit Theorem justified the use of parametric tests due to the sample size exceeding 30. Regression analysis was selected for its appropriateness in examining predictive relationships involving continuous dependent variables.

Potential Ethical Issues

The study received approval from the Local In-House Ethics Committee of the College of Sport, Exercise, and Recreation at the institution. Following ethical clearance, the research coordinator granted permission to initiate data collection. Participants were invited to provide informed consent and were assured that the results would be accessible to them and the institution's administration upon request. Additionally, it was emphasized that all collected data would be handled with strict confidentiality.

Results

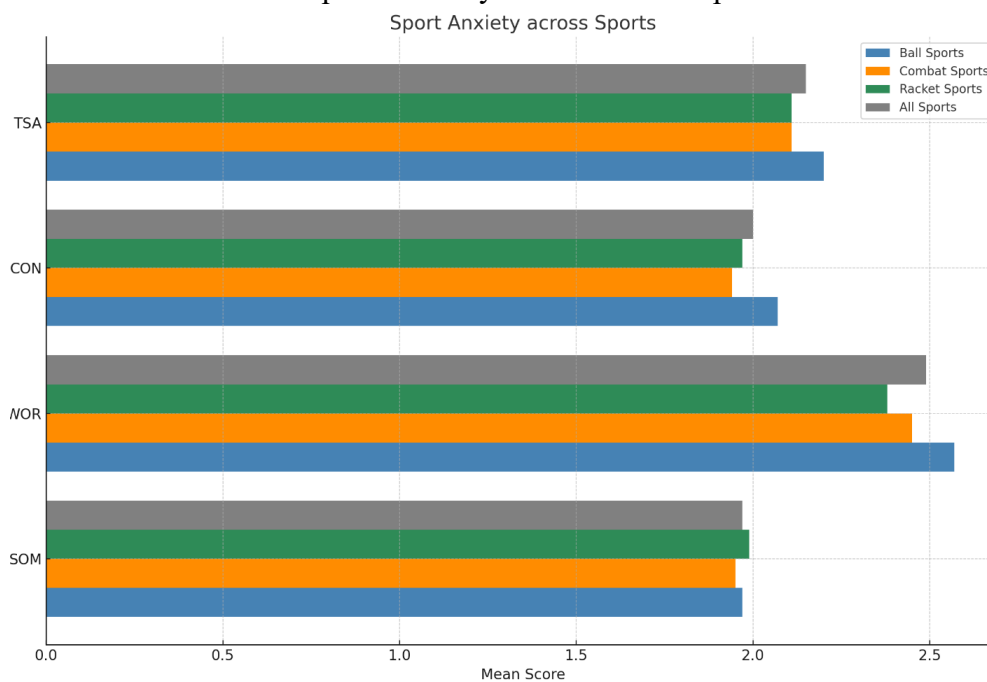
Table 2 presents the levels of sport anxiety dimensions—somatic anxiety, worry, and concentration disruption, across Ball Sports, Combat Sports, Racket Sports, and All Sports, using mean and standard deviation in the analysis. For Somatic Anxiety, Ball Sports recorded a mean of 1.97 ± 0.64 , Combat Sports 1.95 ± 0.61 , Racket Sports $1.99 \pm$

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0.76, and All Sports 1.97 ± 0.66 . In Worry, Ball Sports recorded a mean of 2.57 ± 0.83 , followed by Combat Sports with 2.45 ± 0.83 , Racket Sports with 2.38 ± 0.93 , and All Sports with 2.49 ± 0.85 ; for Concentration Disruption, Ball Sports showed a mean of 2.07 ± 0.61 , Combat Sports 1.94 ± 0.71 , Racket Sports 1.97 ± 0.71 , and All Sports 2.00 ± 0.67 . In Total Sport Anxiety, Ball Sports recorded 2.20 ± 0.58 , Combat Sports 2.11 ± 0.63 , Racket Sports 2.11 ± 0.75 , and All Sports 2.15 ± 0.64 .

Table 2. Sports Anxiety Level of the Respondents



	Ball Sports	Combat Sports	Racket Sports	All
Sport Anxiety				
SOM	1.97±0.64	1.95±0.61	1.99±0.76	1.97±0.66
WOR	2.57±0.83	2.45±0.83	2.38±0.93	2.49±0.85
CON	2.07±0.61	1.94±0.71	1.97±0.71	2.00±0.67
TSA	2.20±0.58	2.11±0.63	2.11±0.75	2.15±0.64

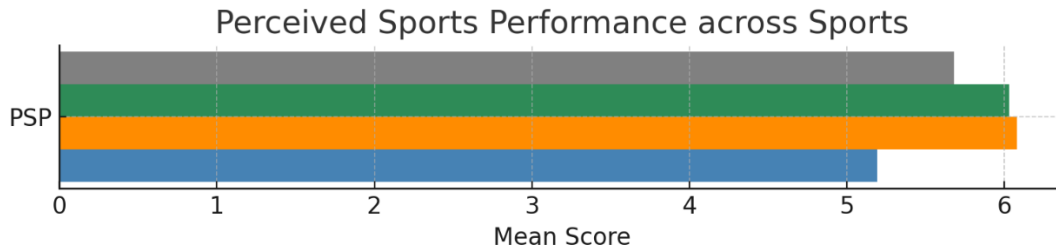
Note. *SOM* = Somatic Anxiety; *WOR* = Worry; *CON* = Concentration Disruption; *TSA* = Total Sport Anxiety

Table 3 presents the levels of Perceived Sports Performance across sports. For Perceived Sports Performance, Ball Sports recorded a mean of 5.19 ± 1.54 , Combat Sports 6.08 ± 1.21 , Racket Sports 6.03 ± 1.06 , and All Sports 5.68 ± 1.41 .

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Table 3. Perceived Sports Performance Level of the Respondents



	Ball Sports	Combat Sports	Racket Sports	All
PSP	5.19±1.54	6.08±1.21	6.03±1.06	5.68±1.41

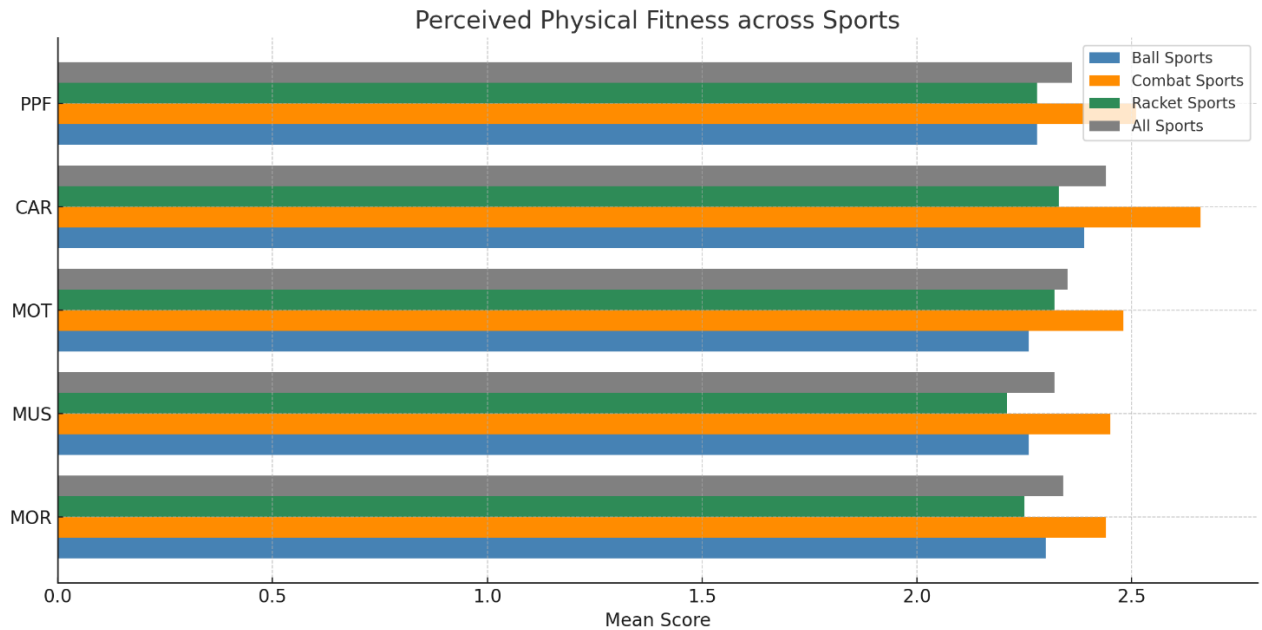
Note. PSP = Perceived Sports Performance

Table 4 presents the Perceived Physical Fitness (PPF) levels across sports. For the Motor Dimension, Ball Sports recorded a mean of 2.30 ± 0.44 , Combat Sports 2.44 ± 0.46 , Racket Sports 2.25 ± 0.51 , and All Sports 2.34 ± 0.47 . In Muscle Strength, Ball Sports exhibited a mean of 2.26 ± 0.48 , Combat Sports 2.45 ± 0.45 , Racket Sports 2.21 ± 0.42 , and All Sports 2.32 ± 0.47 . For Motor Dimension, Ball Sports recorded a mean of 2.26 ± 0.46 , Combat Sports 2.48 ± 0.45 , Racket Sports 2.32 ± 0.46 , and All Sports 2.35 ± 0.47 . In the Cardiorespiratory Dimension, Ball Sports yielded a mean of 2.39 ± 0.48 , Combat Sports 2.66 ± 0.40 , Racket Sports 2.33 ± 0.47 , and All Sports 2.44 ± 0.48 , for Perceived Physical Fitness, Ball Sports showed a mean of 2.28 ± 0.43 , Combat Sports 2.51 ± 0.38 , Racket Sports 2.28 ± 0.37 , and All Sports 2.36 ± 0.42 . These values summarize the levels of physical fitness across different sports categories.

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Table 4. Perceived Physical Fitness Level of the Respondents



	Ball Sports	Combat Sports	Racket Sports	All
MOR	2.30±0.44	2.44±0.46	2.25±0.51	2.34±0.47
MUS	2.26±0.48	2.45±0.45	2.21±0.42	2.32±0.47
MOT	2.26±0.46	2.48±0.45	2.32±0.46	2.35±0.47
CAR	2.39±0.48	2.66±0.40	2.33±0.47	2.44±0.48
PPF	2.28±0.43	2.51±0.38	2.28±0.37	2.36±0.42

Note. PPF= Perceived Physical Fitness; MOR=Motor Dimension; MUS=Muscle Strength; MOT=Motor Dimension; CAR=Cardiorespiratory Dimension

Linear regression was conducted to examine the predictive relationship between sports anxiety dimensions—somatic anxiety, worry, concentration disruption, and perceived sports performance across different sports types (Ball Sports, Combat Sports, and Racket Sports in Table 5. None of the anxiety dimensions significantly predicted perceived sports performance for all respondents. Somatic anxiety ($R^2 = .024$, $F = 2.437$, $p = .122$), worry ($R^2 = .019$, $F = 1.910$, $p = .170$), concentration disruption ($R^2 = .013$, $F = 1.303$, $p = .256$), and sport anxiety ($R^2 = .023$, $F = 2.401$, $p = .124$) all had p-values exceeding .05, leading to the rejection of H_1 for each dimension. For Ball Sports respondents, somatic anxiety significantly predicted perceived sports performance ($R^2 = .091$, $F = 4.314$, $p = .044$), leading to the acceptance of H_1 . However, worry ($R^2 = .033$, $F = 1.486$, $p = .229$), concentration disruption ($R^2 = .021$, $F = .933$, $p = .339$), and sport anxiety ($R^2 = .062$, $F = 2.826$, $p = .100$) did not significantly predict perceived sports

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performance, resulting in the rejection of H_1 for these dimensions. Among Combat Sports respondents, none of the anxiety dimensions significantly predicted perceived sports performance. Somatic anxiety ($R^2 = .027$, $F = .963$, $p = .333$), worry ($R^2 = .003$, $F = .088$, $p = .769$), concentration disruption ($R^2 = .000$, $F = .009$, $p = .926$), and sport anxiety ($R^2 = .006$, $F = .224$, $p = .639$) all had non-significant p-values, leading to the rejection of H_1 for all dimensions. For Racket Sports respondents, none of the anxiety dimensions significantly predicted perceived sports performance. Somatic anxiety ($R^2 = .099$, $F = 2.098$, $p = .164$), worry ($R^2 = .057$, $F = 1.157$, $p = .295$), concentration disruption ($R^2 = .030$, $F = .584$, $p = .454$), and sport anxiety ($R^2 = .069$, $F = 1.399$, $p = .251$) all had p-values above .05, leading to the rejection of H_1 for each dimension.

Table 5. Predictive Analysis Between Sports Anxiety Dimensions and Perceived Sports Performance

Group	Hypothesis		Beta Coefficient	R^2	F	t -value	p -value	Decision
ALL	H_1	SOM→PSP	-.329	.024	2.437	-1.561	.122	Rejected
		WOR→PSP	-.225	.019	1.910	-1.382	.170	Rejected
		CON→PSP	-.237	.013	1.303	-1.142	.256	Rejected
		SA→PSP	-.337	.023	2.401	-1.549	.124	Rejected
BS	H_1	SOM→PSP	-.724	.091	4.314	-2.077	.044	Accepted
		WOR→PSP	-.341	.033	1.486	-1.219	.229	Rejected
		CON→PSP	-.371	.021	.933	-.966	.339	Rejected
		SA→PSP	-.662	.062	2.826	-1.681	.100	Rejected
CS	H_1	SOM→PSP	.326	.027	.963	.981	.333	Rejected
		WOR→PSP	.073	.003	.088	.296	.769	Rejected
		CON→PSP	.027	.000	.009	.094	.926	Rejected
		SA→PSP	.153	.006	.224	.473	.639	Rejected
RS	H_1	SOM→PSP	-.438	.099	2.098	-1.448	.164	Rejected
		WOR→PSP	-.273	.057	1.157	-1.076	.295	Rejected

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CON→PSP	-0.257	.030	.584	-.764	.454	Rejected
SA→PSP	-.372	.069	1.399	-1.183	.251	Rejected

Note. *BS*= Ball Sports; *CS*= Combat Sports; *RS*= Racket Sports; *SOM* = Somatic Anxiety; *WOR* = Worry; *CON* = Concentration Disruption; *PSP* = Perceived Sports Performance; *SA* = Sport Anxiety.

In Table 6, the same statistical analysis was also conducted to examine the predictive relationship between sports anxiety and various dimensions of Perceived Physical fitness, including motor dimension, muscle strength, motivation, and cardiorespiratory dimension, across different sports types. Table 6 shows that for all respondents, motor dimension ($R^2 = .020$, $F = 2.073$, $p = .153$), motivation ($R^2 = .020$, $F = 2.012$, $p = .159$), and cardiorespiratory dimension ($R^2 = .020$, $F = 2.073$, $p = .153$) did not significantly predict the outcome, resulting in the rejection of H_2 for these dimensions. Conversely, muscle strength ($R^2 = .041$, $F = 4.303$, $p = .041$), cardiorespiratory dimension ($R^2 = .047$, $F = 5.019$, $p = .027$), and perceived physical fitness ($R^2 = .040$, $F = 4.158$, $p = .044$) significantly predicted the outcome, leading to the acceptance of H_2 for these dimensions. For Ball Sports respondents, H_2 was accepted for muscle strength ($R^2 = .229$, $F = 12.746$, $p < .001$), motivation ($R^2 = .173$, $F = 8.993$, $p = .004$), cardiorespiratory dimension ($R^2 = .204$, $F = 11.019$, $p = .002$), and perceived physical fitness ($R^2 = .197$, $F = 10.526$, $p = .002$). However, motor dimension ($R^2 = .075$, $F = 3.511$, $p = .068$) did not significantly predict the outcome, resulting in the rejection of H_2 . Among Combat Sports respondents, none of the dimensions of sports anxiety significantly predicted the outcome. Motor dimension ($R^2 = .023$, $F = .858$, $p = .361$), muscle strength ($R^2 = .009$, $F = .342$, $p = .562$), motivation ($R^2 = .057$, $F = 2.194$, $p = .147$), cardiorespiratory dimension ($R^2 = .036$, $F = 1.364$, $p = .251$), and perceived physical fitness ($R^2 = .039$, $F = 1.456$, $p = .235$) all had p-values exceeding .05, indicating the rejection of H_2 for all dimensions. For Racket Sports respondents, only the cardiorespiratory dimension significantly predicted the outcome ($R^2 = .209$, $F = 4.769$, $p = .042$), leading to the acceptance of H_2 . However, motor dimension ($R^2 = .120$, $F = 2.449$, $p = .135$), muscle strength ($R^2 = .055$, $F = 1.046$, $p = .320$), motivation ($R^2 = .100$, $F = 1.997$, $p = .175$), and perceived physical fitness ($R^2 = .183$, $F = 4.029$, $p = .060$) did not significantly predict the outcome, resulting in the rejection of H_2 for these dimensions.

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Table 6. Predictive Analysis Between Sports Anxiety and Perceived Physical Fitness Dimensions

Group	Hypothesis		Beta Coefficient	R ²	F	t-value	p-value	Decision
ALL	H ₂	SA→MOR	-.104	.020	2.073	-1.440	.153	Rejected
		SA→MUS	-.150	.041	4.303	-2.074	.041	Accepted
		SA→MOT	-.102	.020	2.012	-1.418	.159	Rejected
		SA→CAR	-.164	.047	5.019	-2.240	.027	Accepted
		SA→PPF	-.130	.040	4.158	-2.039	.044	Accepted
BS	H ₂	SA→MOR	-.208	.075	3.511	-1.874	.068	Rejected
		SA→MUS	-.398	.229	12.746	-.478	<.001	Accepted
		SA→MOT	-.332	.173	8.993	-2.999	.004	Accepted
		SA→CAR	-.373	.204	11.019	-3.320	.002	Accepted
		SA→PPF	-.327	.197	10.526	-3.244	.002	Accepted
CS	H ₂	SA→MOR	.109	.023	.858	.926	.361	Rejected
		SA→MUS	.071	.009	.342	.585	.562	Rejected
		SA→MOT	.179	.057	2.194	1.484	.147	Rejected
		SA→CAR	.131	.036	1.364	1.168	.251	Rejected
		SA→PPF	.123	.039	1.456	1.207	.235	Rejected
RS	H ₂	SA→MOR	-.238	.120	2.449	-1.565	.135	Rejected
		SA→MUS	-.133	.055	1.046	-1.023	.320	Rejected
		SA→MOT	-.191	.100	1.997	-1.413	.175	Rejected
		SA→CAR	-.286	.209	4.769	-2.184	.042	Accepted
		SA→PPF	-.211	.183	4.029	-2.007	.060	Rejected

Note. BS= Ball Sports; CS= Combat Sports; RS= Racket Sports; SA=Sports Anxiety; MOR=Motor Dimension; MUS=Muscle Strength; MOT=Motor Dimension; CAR=Cardiorespiratory Dimension; PPF= Perceived Physical Fitness

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Discussion

Sports anxiety influences perceived sports performance

Among all respondents, it was found that dimensions of sports anxiety and total sports anxiety did not predict perceived sports performance. This contradicts previous literature suggesting that anxiety impairs performance across sports (Pokharel & Zhu, 2018; Preja, 2019; Singh & Kumar, 2012; Bukhari et al., 2021). One possible explanation is that the participants—being collegiate athletes—may have developed adaptive coping mechanisms or resilience that buffered the effects of anxiety on performance. Additionally, the use of self-report performance measures may not have captured actual performance outcomes, possibly masking subtle anxiety-performance interactions. Future research could incorporate objective data (e.g., performance metrics, biometric responses) to clarify these relationships.

As for ball sports, only the somatic dimension of anxiety was found to negatively predict perceived sports performance. This suggests that lower somatic arousal—such as reduced muscle tension or heart rate—supports better self-assessed performance in ball sports like basketball and volleyball. This finding aligns with studies showing that somatic anxiety significantly hinders performance in football, basketball, and hockey (Parnabas & Parnabas, 2015). These results support the idea that somatic symptoms can disrupt motor coordination, focus, and decision-making in fast-paced, dynamic sports.

Sports anxiety influences perceived physical fitness

Sports anxiety was found to negatively predict perceived muscular strength, cardiorespiratory fitness, and overall physical fitness. This supports previous findings that anxiety negatively affects self-perceptions of fitness more than actual physical indicators (Abadie, 1988). Longitudinal studies also confirm that increased anxiety reduces muscular and cardiovascular fitness (Costigan et al., 2024), and contributes to lower fitness perception in adolescent women (Portman et al., 2018). Moreover, anxiety undermines resilience, mental health, and the psychological benefits of perceived fitness (Neumann et al., 2021). The inverse relationship between fitness and anxiety is further supported by findings that poor fitness predicts higher anxiety and depression risk

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(Kandola et al., 2020), while better fitness reduces anxiety and body dissatisfaction (Rojó-Ramos et al., 2023).

In ball sports, anxiety significantly predicted lower levels of perceived muscular strength, motor coordination, cardiorespiratory fitness, and overall fitness. These results confirm that anxiety hinders strength, agility, and coordination in sports such as volleyball and handball (Senthilkumar & Kavithashri, 2020), reduces physical reactivity and motor timing in cricket (Yadav & Yadav, 2020), and impairs free-throw accuracy in basketball (Englert & Bertrams, 2012). This highlights the need for sport-specific anxiety management strategies in team sports, where physical and tactical demands are high. The finding that morphological fitness was not associated with anxiety in this group may reflect the relatively stable nature of body composition compared to perceived performance and cardiovascular demands.

In racket sports, anxiety was only significantly associated with perceived cardiorespiratory fitness. This is consistent with evidence showing increased cardiovascular strain and anxiety symptoms in tennis and table tennis athletes under competitive pressure (Turbasova et al., 2020; Wang et al., 2024). The lack of significant associations in other dimensions may be due to the sport's reliance on precision and coordination, which may not be perceived as directly impacted by anxiety unless it affects breathing or energy regulation.

Total sports anxiety did not predict motor and morphological fitness across all respondents. In ball sports, morphological fitness also showed no association with anxiety. In combat sports, none of the fitness components were significantly predicted by anxiety, which could indicate higher psychological resilience or different anxiety responses due to the sport's training demands. In racket sports, except for cardiorespiratory fitness, other perceived fitness components also showed no significant association with anxiety. This partially contradicts previous research, which has shown a broad negative relationship between anxiety and both perceived and objective fitness (Abadie, 1988; Makepeace, 2015; Costigan et al., 2024; Yin et al., 2022; Martinsen et al., 1989). One possible reason is that subjective fitness ratings may not fully reflect

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physiological responses, especially in athletes who are conditioned to tolerate pre-competitive stress.

Limitations and Directions for Future Studies

Despite the valuable insights of this study, several limitations should be noted. The instruments used, while reliable, relied on subjective perception. The Sport Anxiety Scale-2 (SAS-2) assessed somatic anxiety, worry, and concentration disruption but did not account for trait anxiety, which may have long-term effects on fitness and performance. The Self-Perception of Physical Fitness Scale did not measure components such as flexibility, balance, or endurance. The Athlete's Subjective Performance Scale (ASPS), although validated, did not include objective performance data, which may limit the conclusions that can be drawn about actual ability.

Furthermore, the sample size ($n = 103$), though statistically adequate, was split across three sport categories, which may have reduced the power to detect small effects within each group. The sample also came from a single institution, limiting generalizability. Future studies should involve a more diverse and larger sample of athletes, including those from target sports (e.g., archery, shooting) and performance sports (e.g., gymnastics, diving), to capture broader patterns of anxiety and its effects. Future research should also incorporate mixed-methods designs that combine subjective ratings, physiological indicators, and objective performance metrics for a more holistic understanding of athlete functioning. Additionally, longitudinal approaches could help determine how anxiety and fitness interact over the course of a season or training cycle.

Conclusion

Among all respondents, sports anxiety and its dimensions did not predict perceived sports performance, except in ball sports, where somatic anxiety was a significant negative predictor. Sports anxiety also negatively predicted perceived muscular strength, cardiorespiratory fitness, and total physical fitness. In ball sports, anxiety was significantly related to lower muscular strength, motor coordination, cardiorespiratory fitness, and total fitness, with no association observed in morphological fitness. In racket sports, only cardiorespiratory fitness was significantly related to anxiety.

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In combat sports, no significant association was found between sports anxiety and any physical fitness dimension.

These findings underscore the differential impact of anxiety across sport types, contributing to sport-specific theories of performance and anxiety. The study adds to existing literature by confirming that somatic anxiety plays a key role in perceived performance in ball sports and that anxiety can shape how athletes perceive their physical readiness. These insights can inform targeted mental training interventions that address sport-specific anxiety profiles.

Future studies are recommended to include broader anxiety measures, objective fitness and performance metrics, and larger, more diverse samples across different skill levels and sport types. Interventions should be evidence-based, tailored to sport-specific anxiety profiles, and tested longitudinally for effectiveness over time.

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