Performance anxiety among student table tennis players

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ABSTRACT

Background: Anxiety is a common psychological factor that significantly affects athletic performance, especially in competitive settings. Student-athletes face dual pressures from academic responsibilities and athletic commitments, making them vulnerable to performance anxiety that can impair focus, concentration, and decision-making.

Objectives: This study aims to analyze performance anxiety among table tennis athletes in the Student Activity Unit (UKM) of Universitas PGRI Semarang and to examine differences in performance evaluation outcomes based on sources from internal and external factors.

Methods: A comparative quantitative design with a cross-sectional approach was used. Fifty athletes participated (n=25 assessed by internal factors, n=25 assessed by external factors). Anxiety/performance was measured using a self-report questionnaire consisting of 15 Likert-scale items (1-5 scale) validated by three sport psychology experts. Data were analyzed using one-way ANOVA after confirming normality (Shapiro-Wilk test) and homogeneity (Levene's test).

Results: The internal group had a higher mean score (M = 3.64, SD = 0.86) compared to the external group (M = 3.07, SD = 0.86). ANOVA revealed a statistically significant difference, $F(1,48) = 4.92$, $p = 0.031$, $\eta^2 = 0.093$, with an estimated Cohen's d of approximately 0.66, indicating a medium effect size. These findings indicate that anxiety factors affect athletes' performance, with internal factors tending to score higher than external factors.

Conclusions: This study concludes that anxiety affects the performance of table tennis athletes in the Student Activity Unit (UKM) at Universitas PGRI Semarang. Specifically, internal factors such as self-confidence and perfectionism have been proven to have a greater impact than external factors.

Keywords: anxiety, assessment, concentration, table tennis.

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INTRODUCTION

Humans participate in sports activities for various reasons. In general, four primary purposes underpin individuals' participation in sports: recreation, education, therapy, and achievement (Bailey, 2017; Harris et al., 2017). Recreation refers to engaging in sports as a form of entertainment or stress relief, emphasizing enjoyment, relaxation, and leisure. Educationally, sports are incorporated into school and university settings to instill values such as discipline, cooperation, sportsmanship, and to develop motor skills. Therapeutically, some individuals participate in sports as part of a healing or rehabilitation process, aimed at improving both physical and mental recovery. In terms of achievement, sports are pursued to reach specific performance goals, requiring a deep understanding and application of disciplines such as physiology, psychology, biomechanics, and nutrition to optimize the athlete's potential and achieve the best results (Martín-Rodríguez et al., 2024; Samandar, 2023).

In Indonesia, the development of sports continues to progress, primarily due to the active participation and increasing public awareness of the importance of sports (Ma'mun et al., 2022; Rahadian et al., 2021). To achieve optimal performance in sports, talent development must begin at a young age. This aligns with the Republic of Indonesia Law No. 11 of 2022 concerning the National Sports System, Chapter VI, Article 22 Paragraph 4, which states: "The development and cultivation of sports shall be carried out systematically through stages of introduction, monitoring, guidance, continuous talent development, and achievement enhancement (Pemuda dan Olahraga, 2022).

Sports are structured physical activities performed regularly to improve health and physical fitness (Mahyuddin et al., 2025; Ozemek et al., 2018). Engaging in sports not only benefits physical well-being but also has a positive impact on mental health, including reducing stress and anxiety (Vella et al., 2023; Zekioğlu et al., 2024). Moreover, sports contribute significantly to character building, discipline, and teamwork (Andriansyah et al., 2025; Rusdin et al., 2023). Various types of sports are now being implemented across educational levels to support the development of healthy and active student profiles (Pradana, 2021). Higher education institutions are increasingly expected to produce young athletes with strong physical, technical, and psychological qualities (Rusandi et al., 2025).

Table tennis is a competitive sport contested at various regional, national, and even international levels (Islamy, 2017; Zhang & Breedlove, 2021). As a racket sport, table tennis requires quick reflexes, high precision, and tactical thinking within a short timeframe (Zhang et al., 2023). The sport is challenging not only in terms of technical and physical aspects but also psychologically, as competitive pressure can arise from the preparation phase to the critical moments during matches (Raab et al., 2005). In the context of collegiate or national-level competitions, table tennis athletes face challenges such as intense competition, high expectations from coaches, and academic demands, all of which can impact their mental focus

Anxiety is an emotional response that arises when individuals face situations perceived as threatening or highly stressful, either physically or psychologically (Mahfud et al., 2025; Agustini et al., 2024; Bondarchuk et al., 2024). In the context of sports, anxiety is a critical issue because it can significantly impact an athlete's

performance, particularly in competitive situations such as matches or team selections (Spielberger, 2021; Prasetya et al., 2024). Sport-related anxiety is generally classified into two types: cognitive anxiety, which involves worry and negative thoughts, and somatic anxiety, which is characterized by physiological symptoms such as increased heart rate and muscle tension (Kemarat et al., 2022). Research indicates that cognitive anxiety tends to disrupt concentration and decision-making, while somatic anxiety more directly affects motor control and physical coordination during competition (Mercader-Rubio et al., 2023).

International research has consistently shown that performance anxiety in sports negatively impacts athletes' concentration, decision-making, and motor coordination (Spielberger, 2021; Ren et al., 2022) cognitive anxiety consistently showed negative relationships with performance, while somatic anxiety effects varied depending on sport type and skill level. Cognitive anxiety, in particular, is strongly associated with reduced accuracy in decision-making, while somatic anxiety tends to disrupt motor execution and physiological readiness during competition (Mercader-Rubio et al., 2023).

Table tennis, characterized by its rapid pace and demand for split-second decision-making, creates a unique environment where performance anxiety can be particularly detrimental (Bondarchuk et al., 2024). Research from Indonesia revealed that a 60-minute Tai Chi Quan training session significantly reduced cognitive anxiety by 18.6% and somatic anxiety by 27.6% among junior table tennis athletes, while also enhancing their self-confidence (Abdulaziz et al., 2024). In the context of young professional athletes, stress and coping strategies have been found to influence burnout symptoms, which are closely associated with prolonged anxiety (Garinger et al., 2018).

Studies on anxiety also highlight table tennis players because this sport demands a very high level of coordination, reaction speed, and precision (Lee et al., 2025; Rice et al., 2019). In particular, pre-competition anxiety is often experienced by young athletes and students, especially those who are new to competition at a higher level. This condition has the potential to disrupt the psychological performance of athletes in general (Anwari et al., 2025). It should be noted that this anxiety can be triggered by a series of internal and external factors.

Various factors influence athletes' anxiety, which can broadly be categorized into internal and external dimensions. Internal factors refer to psychological attributes inherent to the athlete, such as self-confidence, self-efficacy, and emotional control. Empirical evidence indicates that low levels of self-confidence are negatively associated with increased competitive anxiety, which in turn may impair athletic performance (Triana et al., 2020; Trpkovici et al., 2023). Meanwhile, external factors involve environmental elements, such as social support, pressure from coaches or parents, and high expectations for match results (Ariffin et al., 2025). Both internal and external factors play a crucial role in determining an athlete's overall performance (Ikhram et al., 2020; Pradnyaswari & Budisetyani, 2018). Therefore, it is very important for student athletes to thoroughly understand the level of anxiety they feel so that they can reach their full potential in competition.

Student Activity Units (UKM) are a place for students to develop their interests and talents outside of academic activities, including in sports such as table tennis (Abidin et al., 2022). Student athletes at Universitas PGRI Semarang are part of a

group that actively competes at various levels, both internally on campus and externally. The burden of training, match schedules, and academic demands make them vulnerable to high mental stress. This can affect their emotional balance and mental readiness when competing (Pramesti et al., 2022).

This study focuses on measuring and analyzing the anxiety levels experienced by table tennis athletes at the Universitas PGRI Semarang. This study also aims to determine the dominance of anxiety between internal and external factors.

Through a better understanding of the psychological condition of athletes, it is hoped that the results of this study can be used as a basis for designing a more comprehensive athlete training program. This approach not only emphasizes technical and physical mastery, but also strengthens mental aspects to improve the overall performance and well-being of athletes (Ihsan et al., 2024).

METHODS

Study Design and Participants

This study employed a comparative quantitative design with a cross-sectional approach to examine differences in performance ratings and anxiety levels among student table tennis players based on evaluator source (internal vs. external) (Levin, 2006). The cross-sectional framework enabled efficient data collection at a single time point while allowing comparisons between two distinct evaluator groups.

The participants were student-athletes registered in the Table Tennis Student Activity Unit (UKM) at Universitas PGRI Semarang during the 2023/2024 academic year. A total of 50 athletes took part in the study, with 25 evaluated by internal factors (UKM coaches and staff) and 25 evaluated by external factors (independent competition judges).

Purposive sampling was used to ensure that all participants met criteria aligned with the research objectives. With an alpha level of 0.05, a desired statistical power of 0.80, and an expected medium effect size (Cohen's d = 0.50), the minimum recommended number of participants was 34 per group. Although the final sample of 50 athletes (25 per group) did not fully meet this threshold, it exceeded the minimum total sample size required to achieve adequate power for between-group comparisons.

Participants were eligible for inclusion if they:

(1) were active members of the table tennis UKM for at least one semester;
(2) had participated in at least one internal or external competition during the academic year;
(3) were between 18 and 24 years of age;
(4) provided informed consent; and
(5) demonstrated regular training attendance (≥75% in the previous semester).

Exclusion criteria consisted of:

(1) sustaining injuries that prevented active participation;
(2) incomplete questionnaire responses exceeding 10% of items;
(3) being on medical leave or inactive training status; and
(4) withdrawing consent during the study.

The final sample comprised 30 male (60%) and 20 female athletes (40%), with a mean age of 19.8 years (SD = 1.2, range = 18–23 years). Participants reported an average training experience of 2.5 years (SD = 0.8, range = 1–4.5 years). In terms of

competitive experience, 64% had competed at the regional level, 28% at the provincial level, and 8% at the national level. No significant demographic differences were observed between the internal and external evaluator groups ($p > 0.05$ across all variables), indicating comparability between groups.

Ethical approval statement

This research was ethically reviewed and approved by the Ethics Committee of the Faculty of Social Sciences and Physical Education (FPIPSKR), Universitas PGRI Semarang (Approval No. 147/EC/FPIPSKR-UPGRIS/II/2025). All research procedures involving human participants were carried out in accordance with the ethical principles of the relevant institutional and national research committees and complied with the Declaration of Helsinki (1964) and its subsequent revisions. Prior to participation, all respondents provided written informed consent.

Research Instruments

Performance anxiety was assessed using a self-report instrument adapted from the Sport Anxiety Scale-2 (Smith et al., 2006), a widely validated measure of multidimensional competitive anxiety. The adapted questionnaire consisted of 15 items representing three subscales: somatic anxiety, worry, and concentration disruption. The somatic anxiety subscale (5 items) captured physical symptoms of anxiety, such as bodily tension and increased heart rate, prior to evaluation. The worry subscale (5 items) assessed cognitive concerns related to performance outcomes, including fear of underperforming or disappointing others. The concentration disruption subscale (5 items) measured attentional difficulties during performance, such as mental wandering and problems maintaining focus.

All items were rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Total scores ranged from 15 to 75, with higher values indicating greater levels of performance anxiety. Subscale scores were also analyzed independently to provide a more nuanced understanding of athletes' anxiety profiles.

Procedure

The study procedures were carried out in two phases: evaluator assignment and data collection. Participants were first allocated to one of two evaluation conditions using computer-generated random numbers. In the internal evaluator group ($n = 25$), athletes were assessed by UKM table tennis coaches and staff who had worked with them for at least one semester and were familiar with their training history and performance characteristics. In contrast, athletes in the external evaluator group ($n = 25$) were evaluated by certified referees and judges from regional table tennis competitions who had no prior relationship with the athletes. External factors were recruited through the local chapter of the Indonesian Table Tennis Association to ensure professional independence.

Data collection took place over two weeks in April 2024 and followed a standardized sequence of events. On the first day, participants received a detailed explanation of the study's aims, procedures, potential risks, and confidentiality measures. Written informed consent was then obtained. Subsequently, athletes completed a brief demographic survey that captured information on age, gender, training duration, competitive experience, and academic year.

Between Days 2 and 5, participants completed the performance anxiety questionnaire 15–20 minutes before their scheduled performance evaluation. This timing was selected to assess pre-performance anxiety in alignment with established sport psychology research protocols. Following the questionnaire, participants underwent a structured performance assessment. Each session began with a 10-minute warm-up, followed by a 20-minute technical skills demonstration that included 20 forehand drive repetitions, 20 backhand drive repetitions, and 10 service attempts. Athletes then engaged in a 15-minute simulated match consisting of a best-of-three game format against an opponent of comparable skill level. Factors completed the performance rubric during and immediately after the assessment to ensure accurate and consistent scoring.

After completion of all evaluation sessions, a debriefing was conducted on Day 14. During this session, participants received individualized performance feedback and general information regarding the study's purpose and outcomes.

Data Analysis

Data were analyzed using IBM SPSS Statistics 26. Preliminary checks confirmed that all questionnaires were complete and no participant exceeded the 10% missing data limit. The Shapiro–Wilk test indicated normal score distributions ($p > 0.05$), and Levene's test confirmed homogeneity of variance ($p > 0.05$). Outliers were screened using box plots and z-scores (±3.29) and were retained if not due to entry errors.

A one-way between-subjects ANOVA was conducted to compare performance scores between athletes assessed by internal versus external factors. The evaluator source was the independent variable, and the composite performance score was the dependent variable. Significance was set at $\alpha = 0.05$. Effect sizes were calculated using eta squared (η^2) and Cohen's d, following conventional interpretation thresholds. Descriptive statistics (means, standard deviations, score ranges, and 95% CIs) were produced for each group, while demographic variables were summarized using frequencies, percentages, and means.

RESULTS

Table 1 presents the descriptive statistics for performance scores across the two evaluator groups. The internal evaluator group achieved a mean performance score of 3.64 (SD = 0.86, 95% CI [3.29, 3.99]), while the external evaluator group had a lower mean score of 3.07 (SD = 0.86, 95% CI [2.72, 3.42]). The mean difference between groups was 0.57 points on the 5-point scale, representing approximately an 11% difference in ratings. Figure 1 shows the difference between the average results of internal evaluator and external evaluator.

Table 1. Descriptive Statistics for Performance Scores by Evaluator Source

Evaluator Group	N	Mean	SD	95% CI	Min	Max	Range
Internal	25	3.64	0.86	[3.29, 3.99]	2.1	5.0	2.9
External	25	3.07	0.86	[2.72, 3.42]	1.8	4.6	2.8
Total	50	3.36	0.91	[3.10, 3.61]	1.8	5.0	3.2

Note. CI = confidence interval; Min = minimum score; Max = maximum score

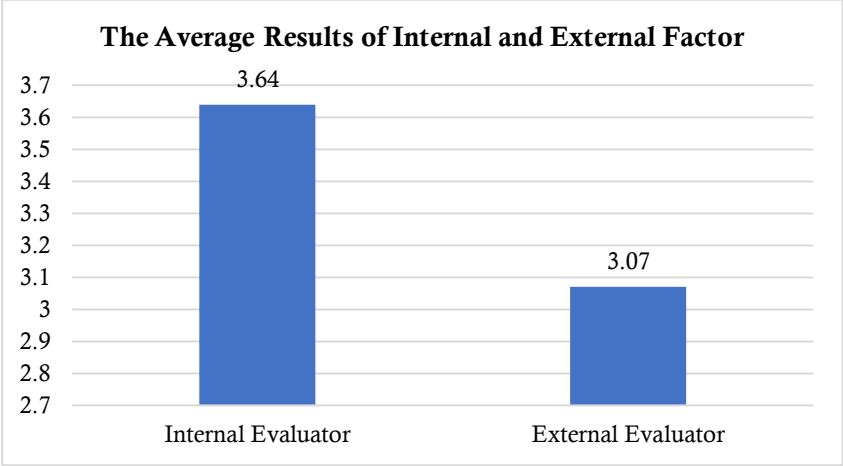

Figure 1. Average Results of Internal and External Factors

The Shapiro-Wilk test was conducted to assess whether performance scores in each group were drawn from normally distributed populations. Results indicated that both groups met the normality assumption (Table 2). For the internal evaluator group, W = 0.953, p = 0.181, and for the external evaluator group, W = 0.947, p = 0.207. Since all p-values exceeded 0.05, the null hypothesis of normality was retained, indicating that parametric testing was appropriate.

Table 2. Normality Test Results

Variable	Kolmogorov-Smirnov		Shapiro-Wilk		Interpretation
	Statistic	Sig.	Statistic	Sig.	
Internal Evaluator Score	0.148	0.056	0.953	0.181	Normal
External Evaluator Score	0.141	0.151	0.947	0.207	Normal

Note. df = 25 for both groups. Normality assumption satisfied if p > 0.05.

Levene's test for equality of variances was conducted to determine whether the assumption of homogeneity of variances was met. The test yielded F(1, 48) = 1.099, p = 0.300, indicating that variances were not significantly different between groups (Table 3). This result confirmed that the homogeneity assumption required for ANOVA was satisfied.

Table 3. Test of Homogeneity of Variance

Variable	Levene Statistic	df1	df2	Sig.	Interpretation
Performance Score	1.099	1	48	0.300	Homogeneous variance

A one-way between-subjects ANOVA was conducted to examine the effect of evaluator source on performance scores. The ANOVA revealed a statistically significant difference between groups, F(1, 48) = 4.917, p = 0.031, η^2 = 0.093 (Table 4).

Table 4. One-Way ANOVA Results

Source	Sum of Squares	df	Mean Square	F	Sig.	η^2
Between Groups	3.618	1	3.618	4.917	0.031	0.093
Within Groups	35.321	48	0.736			
Total	38.939	49				

Note. η^2 = eta squared (proportion of variance explained).

These results indicate that assessment factors have an influence on the scores obtained, with groups assessed based on internal factors having different average scores compared to external groups. This difference reflects that the source of

assessment can influence the final results, which is important to note in evaluating individual performance or achievements.

DISCUSSION

This study investigates the effect of anxiety on performance appraisal in the Student Activity Unit at Universitas PGRI Semarang. The results show a significant difference between internal and external factors, with internal factors yielding much higher performance scores than external factors. These results, supported by a medium to large effect size ($\eta^2 = 0.093$; $d = 0.66$), indicate that anxiety plays a significant role in shaping athletes' performance.

The anxiety experienced by student athletes is largely driven by internal factors such as academic demands (academic stress), heavy workloads, and deficits in time management skills. These findings are consistent with other studies examining the impact of academic stress on the mental health of the student population (Amira et al., 2021; Zahwa & Hanif, 2024). Based on previous research, internal aspects such as low self-confidence, minimal self-efficacy, and limitations in self-control are significant contributors to the high levels of anxiety experienced by individuals (Izza & Lailiyah, 2024a).

Conversely, anxiety is not only triggered by internal factors. External factors such as faculty guidance, social support, and family pressure have been shown to have a significant impact, particularly in relation to students' academic pressure (Amrina & Pertiwi, 2022; Abubakar, 2015). Furthermore, in the field of sports, athletes' anxiety levels are influenced by a range of other external factors, including pressure from coaches, social support, expectations of results, the significance of the opponents they face, and their physical condition and readiness to compete (Izza & Lailiyah, 2024b).

The results of this study indicate that athletes' anxiety levels are more influenced by internal aspects than external ones. This conclusion is in line with research conducted by Permana et al. (2022), which highlights that although differences in anxiety levels among athletes are normal, self-confidence is the most significant variable affecting competitive performance. The results of this study reinforce the notion that competitive anxiety does not disappear entirely with increasing competitive experience. In line with the findings of Raga & Lasma (2025), a notable proportion of volleyball athletes at the provincial level still reported high anxiety before and during matches, despite the overall dominance of low anxiety levels. This finding suggests that while emotional regulation skills are generally adequate, psychological readiness varies substantially among athletes. Such variability highlights the need for targeted mental training interventions aimed at enhancing anxiety regulation, particularly in high-pressure competitive contexts. Furthermore, other studies also support that there is an inverse relationship between self-efficacy and anxiety, where an increase in self-efficacy leads to a decrease in competition anxiety (Wohon & Ediati, 2019).

The anxiety experienced by student athletes highlights the complexity of the interaction between academic pressure and the demands inherent in their athletic performance (Pristiwa & Nuqul, 2018). This condition is consistent with findings that high academic pressure can increase anxiety in students, a condition that is exacerbated when they have to maintain athletic performance (Hazlinda & Salim,

2023). Therefore, these findings underscore the need for a holistic approach to support the well-being of student-athletes, given that stress from the academic domain can negatively impact the athletic domain, and vice versa (Amaranto Jeniffer & Amaranto, 2025).

CONCLUSIONS

This study concludes that anxiety affects the performance of table tennis athletes in the Student Activity Unit (UKM) at Universitas PGRI Semarang. Specifically, internal factors such as self-confidence and perfectionism have been proven to have a greater impact than external factors. However, external factors, especially academic pressure and the quality of social support, also have a significant influence. It should be noted that this study has limitations, namely an insufficient sample size and a lack of in-depth data exploration to identify specific triggers of anxiety in athletes, a shortcoming that was also found in previous similar studies.

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DATA AVAILABILITY

All data supporting the findings of this study are included in the article and its supplementary materials. Additional datasets are available from the corresponding author upon reasonable request.

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CONFLICT OF INTEREST

The authors hereby declare that this research is free from any conflict of interest with any party.

REFERENCES

Abdulaziz, M. F., K., D. W. Y., P., H., P. A., & Darmanto, F. (2024). The Effect of Tai Chi Quan Training on the Anxiety Levels of Indonesian Junior Table Tennis Athletes. *ACTIVE: Journal of Physical Education, Sport, Health and Recreation*, *13*(3), 548–551. https://doi.org/10.15294/peshr.v13i3.14129

Abidin, Z., Sadat, A., & Basir, M. A. (2022). Peran Unit Kegiatan Mahasiswa dalam Mengembangkan Minat dan Bakat Mahasiswa di Universitas Muhamadiyah Buton. *Jurnal Manajemen Dan Ilmu Administrasi Publik (JMIAP)*, *4*(4), 256–260. https://doi.org/10.24036/jmiap.v4i4.493

Abubakar, F. (2015). Pengaruh komunikasi interpersonal antara dosen dan mahasiswa terhadap motivasi belajar dan prestasi akademik mahasiswa. *Jurnal pekommas*, *18*(1), 53-62. https://doi.org/10.30818/jpkm.2015.1180106

Agustini, A., Ramadhan, M. R., & Rahmawati, A. (2024, August). Mengatasi Kecemasan melalui Spiritual Emotional Freedom Technique (SEFT). In *Proceeding Conference on Psychology and Behavioral Sciences* (Vol. 3, pp. 90-105). https://doi.org/10.61994/cpbs.v3i.130

Amaranto Jeniffer L, & Amaranto Jeff C. (2025). Exploring Academic Stress Among Student Athletes Challenges and Coping Mechanisms. *International Journal For Multidisciplinary Research*, *7*(1). https://doi.org/10.36948/ijfmr.2025.v07i01.36191

Amira, I., Sriati, A., Hendrawati, H., & Chaerani, A. (2021). Literature Review: Intervensi dalam Menurunkan Kecemasan Pada Mahasiswa Interventions To Reduce Students' Anxiety. *Jurnal Kesehatan Bakti Tunas Husada: Jurnal Ilmu-Ilmu Keperawatan, Analis Kesehatan Dan Farmasi*, *21*(2), 286–302. https://doi.org/10.36465/jkbth.v21i2.760

Amrina, F. N., & Pertiwi, T. L. (2022). Ketakutan terhadap COVID-19 dengan Kecemasan Karier di Masa Depan pada Mahasiswa Tingkat Akhir. *PHILANTHROPY: Journal of Psychology*, *6*(1), 32. https://doi.org/10.26623/philanthropy.v6i1.4933

Andriansyah, R., Alwasi, M. N. D. I., Ramadhan, F. A., Zahra, E., & Riski, D. M. (2025). Strategi dan Peran Pendidikan Jasmani dan Olahraga dalam Membentuk Karakter Anak Bangsa. *Jurnal Ilmiah Multidisiplin Ilmu*, *2*(2), 01-06. https://doi.org/10.69714/fbwfkm98

Anwari, A. S. N., Isna, N. M., Prasetya, M. R. A., Widodo, A., & Priambodo, A. (2025). Investigating the Effects of Pre-Competition Anxiety on Sport Psychological Performance in Young Athletes Performance. *ACTIVE: Journal of Physical Education, Sport, Health and Recreation*, *14*(2). https://doi.org/10.15294/active.v14i2.19688

Ariffin, N. A. K., Anuar, N., & Azhar, N. A. (2025). Comparative Analysis of Athlete Anxiety and Performance Between Individual and Team Sports in Malaysia. *International Journal of Academic Research in Business and Social Sciences*, *15*(2). https://doi.org/10.6007/IJARBSS/v15-i2/23505

Bailey, R. (2017). Sport, physical activity and educational achievement – towards an explanatory model. *Sport in Society*, *20*(7), 768–788. https://doi.org/10.1080/17430437.2016.1207756

Bondarchuk, O., Balakhtar, V., Pinchuk, N., Pustovalov, I., & Pavlenok, K. (2024). Coping with stressfull situations using coping strategies and their impact on mental health. *Multidisciplinary Reviews*, *7*, 2024spe034. https://doi.org/10.31893/multirev.2024spe034

Garinger, L. M., Chow, G. M., & Luzzeri, M. (2018). The effect of perceived stress and specialization on the relationship between perfectionism and burnout in collegiate athletes. *Anxiety, Stress, & Coping*, *31*(6), 714–727. https://doi.org/10.1080/10615806.2018.1521514

Harris, S., Nichols, G., & Taylor, M. (2017). Bowling even more alone: trends towards individual participation in sport. *European Sport Management Quarterly*, *17*(3), 290–311. https://doi.org/10.1080/16184742.2017.1282971

Hazlinda, M., & Salim, A. (2023). Hubungan Antara Tekanan Akademik Dengan Kecemasan Masa Depan Pada Mahasiswa. *Jurnal Riset Dan Inovasi Pembelajaran*, *3*(3), 265–273. https://doi.org/10.51574/jrip.v3i3.1244

Ihsan, F., Nasrulloh, A., Nugroho, S., & Yuniana, R. (2024). Mental training strategies in improving sport performance: A literature review. *Fizjoterapia Polska*, *24*(3), 15–22. https://doi.org/10.56984/8ZG020ATIP

Ikhram, A., Jufri, M., & Ridfah, A. (2020). Mental Toughness dan Competitive Anxiety Pada Atlet Karate UNM. *Jurnal Psikologi Perseptual*, *5*(2), 100. https://doi.org/10.24176/perseptual.v5i2.5206

Islamy, N. F. (2017). Pengaruh Metode Latihan Dan Motivasi Berprestasi Terhadap Keterampilan Smash Topspin Tenis Meja. *JUARA : Jurnal Olahraga*, *2*(1), 66. https://doi.org/10.33222/juara.v2i1.33

Izza, A. Al, & Lailiyah, S. (2024a). Literature Review: Factors Affecting Final Year Students' Anxiety in Preparing A Thesis in Indonesia. *Journal of Community Mental Health and Public Policy*, *6*(2), 114–125. https://doi.org/10.51602/cmhp.v6i2.153

Izza, A. Al, & Lailiyah, S. (2024b). Literature Review: Factors Affecting Final Year Students' Anxiety in Preparing A Thesis In Indonesia. *Journal of Community Mental Health and Public Policy*, *6*(2), 114–125. https://doi.org/10.51602/cmhp.v6i2.153

Kemarat, S., Theanthong, A., Yeemin, W., & Suwankan, S. (2022). Personality characteristics and competitive anxiety in individual and team athletes. *PLOS ONE*, *17*(1), e0262486. https://doi.org/10.1371/journal.pone.0262486

Lee, A., Maisarah, S., & Wong, Y. (2025). Anxiety Sensitivity and Stress Appraisal as Predictors of Performance Anxiety in Athletes. *Health Nexus*, *3*(3), 1–8. https://doi.org/10.61838/kman.hn.3.3.3

Levin, K. A. (2006). *tudy design III: Cross-sectional studies* (1st ed., Vol. 7). Evidence-based dentistry.

Ma'mun, A., Anggorowati, R., Risma, R., Slamet, S., & Anira, A. (2022). An Historical Overview of the Culture of Sports in Indonesia: Global Issues and Challenges for Future Indonesian Sports Development Policies. *Asian Journal of Sport History & Culture*, *1*(2), 161–182. https://doi.org/10.1080/27690148.2022.2119091

Mahfud, A., Mahmud, S., Pranajaya, S. A., & Agustina, R. (2025). Dari Kecemasan Menuju Kebahagiaan: Strategi Mengelola Respon Emosional dalam Kehidupan Sehari-Hari: Penelitian. *Jurnal Pengabdian Masyarakat dan Riset Pendidikan*, *3*(4), 843-850. https://doi.org/10.31004/jerkin.v3i4.553

Mahyuddin, R., Sudirman, A., & Hamid, M. W. (2025). Edukasi Program Kesegaran Jasmani Anak dan Remaja: Program Aktivitas Fisik untuk Meningkatkan Pertumbuhan dan Perkembangan. *KOMET: Kolaborasi Masyarakat Berbasis Teknologi*, *1*(3), 83-88. https://doi.org/10.70103/komet.v1i3.33

Martín-Rodríguez, A., Belinchón-deMiguel, P., Rubio-Zarapuz, A., Tornero-Aguilera, J., Martínez-Guardado, I., Villanueva-Tobaldo, C., & Clemente-Suárez, V. (2024). Advances in Understanding the Interplay between Dietary Practices, Body Composition, and Sports Performance in Athletes. *Nutrients*, *16*(4), 571. https://doi.org/10.3390/nu16040571

Mercader-Rubio, I., Ángel, N. G., Silva, S., & Brito-Costa, S. (2023). Levels of Somatic Anxiety, Cognitive Anxiety, and Self-Efficacy in University Athletes from a Spanish Public University and Their Relationship with Basic

Psychological Needs. *International Journal of Environmental Research and Public Health*, *20*(3), 2415. https://doi.org/10.3390/ijerph20032415

Mercader-Rubio, I., Gutiérrez Ángel, N., Silva, S., Moisão, A., & Brito-Costa, S. (2023). Relationships between somatic anxiety, cognitive anxiety, self-efficacy, and emotional intelligence levels in university physical education students. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.1059432

Ozemek, C., Laddu, D. R., Lavie, C. J., Claeys, H., Kaminsky, L. A., Ross, R., Wisloff, U., Arena, R., & Blair, S. N. (2018). An Update on the Role of Cardiorespiratory Fitness, Structured Exercise and Lifestyle Physical Activity in Preventing Cardiovascular Disease and Health Risk. *Progress in Cardiovascular Diseases*, *61*(5–6), 484–490. https://doi.org/10.1016/j.pcad.2018.11.005

Pemuda dan Olahraga. (2022, March 16). *Undang-undang (UU) Nomor 11 Tahun 2022 tentang Keolahragaan*. https://Peraturan.Bpk.Go.Id/Details/203148/Uu-No-11-Tahun-2022

Permana, D. A., Suryanto, S., & Priambodo, A. (2022). Kecemasan dan Percaya Diri Atlet Atletik Menjelang Pertandingan. *Jurnal Psikologi Perseptual*, *7*(1), 4. https://doi.org/10.24176/perseptual.v7i1.6041

Pradana, A. A. (2021). Strategi Pembentukan Karakter Siswa Pada Jenjang Pendidikan Dasar Melalui Mata Pelajaran Pendidikan Jasmani Olahraga dan Kesehatan. *PREMIERE : Journal of Islamic Elementary Education*, *3*(1), 78–93. https://doi.org/10.51675/jp.v3i1.128

Pradnyaswari, A. A. A., & Budisetyani, I. G. P. W. (2018). Hubungan Kecerdasan Emosional dengan Kecemasan Bertanding Pada Atlet Softball Remaja Putri Di Bali. *Jurnal Psikologi Udayana*, *5*(01), 218. https://doi.org/10.24843/JPU.2018.v05.i01.p20

Pramesti, A. D., Hermahayu, H., & Faizah, R. (2022). Study of identifying factors for the developing measuring instrument on the psychological readiness of athletic athletes. *Jurnal SPORTIF: Jurnal Penelitian Pembelajaran*, *8*(3), 17-36. https://doi.org/10.29407/js_unpgri.v8i3.18807

Prasetya, R., Ningsih, M., Ningsih, S., Adli, A. S., & Firmansyah, R. F. (2024). Permasalahan Kecemasan Atlet pada Saat Pertandingan Olahraga Cricket. *JURNAL PENDIDIKAN OLAHRAGA*, *14*(6), 401–406. https://doi.org/10.37630/jpo.v14i6.1719

Pristiwa, L. G. G., & Nuqul, F. L. (2018). Gambaran Kecemasan Atlet Mahasiswa: Studi Pada Unit Kegiatan Mahasiswa (UKM) Olah Raga Universitas Islam Maulana Malik Ibrahim Malang. *Jurnal Psikologi Integratif*, *6*(1), 50. https://doi.org/10.14421/jpsi.v6i1.1471

Raab, M., Masters, R. S. W., & Maxwell, J. P. (2005). Improving the 'how' and 'what' decisions of elite table tennis players. *Human Movement Science*, *24*(3), 326–344. https://doi.org/10.1016/j.humov.2005.06.004

Raga, R. R., & Lasma, Y. (2025). An analysis of anxiety levels among volleyball athletes during a provincial inter-club tournament in Jakarta, Indonesia. *Physical Education and Sports: Studies and Research, 4*(2), 175-185. https://doi.org/10.56003/pessr.v4i2.605

Rahadian, A., Ma'mun, A., Berliana, B., & Nuryadi, N. (2021). Successful Elite Sport Policies: Indonesia at The 2018 Asian Games. *JUARA : Jurnal Olahraga*, *6*(2), 288–303. https://doi.org/10.33222/juara.v6i2.1327

Ren, P., Song, T., Chi, L., Wang, X., & Miao, X. (2022). The Adverse Effect of Anxiety on Dynamic Anticipation Performance. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.823989

Rice, S. M., Gwyther, K., Santesteban-Echarri, O., Baron, D., Gorczynski, P., Gouttebarge, V., Reardon, C. L., Hitchcock, M. E., Hainline, B., & Purcell, R. (2019). Determinants of anxiety in elite athletes: a systematic review and meta-analysis. *British Journal of Sports Medicine*, *53*(11), 722–730. https://doi.org/10.1136/bjsports-2019-100620

Rusandi, D., Juliantine, T., Sucipto, S., & Yulianto, A. G. (2025). Analisis Peran Olahraga dalam Membangun Kualitas Kepemimpinan Generasi Muda. *Sporta Saintika*, *10*(1), 60–74. https://doi.org/10.24036/sporta.v10i1.430

Rusdin, R., Salahudin, S., Rudiansyah, E., Saputra, R., & Furkan, F. (2023). Peran Kepemimpinan Dalam Olah Raga Untuk Membangun Nilai Karakter Bangsa. *Jurnal Pendidikan Jasmani Kesehatan Dan Rekreasi (Penjaskesrek)*, *10*(2), 90–106. https://doi.org/10.46368/jpjkr.v10i2.1299

Samandar, S. (2023). Relevance of The Development of Sports Physiology. *American Journal Of Biomedical Science & Pharmaceutical Innovation*, *3*(12), 79–83. https://doi.org/10.37547/ajbspi/Volume03Issue12-13

Smith, R. E., Smoll, F. L., Cumming, S. P., & Grossbard, J. R. (2006). Measurement of Multidimensional Sport Performance Anxiety in Children and Adults: The Sport Anxiety Scale-2. *Journal of Sport and Exercise Psychology*, *28*(4), 479–501. https://doi.org/10.1123/jsep.28.4.479

Spielberger, C. D. (2021). Stress and anxiety in sports. In *Anxiety in sports* (pp. 3-17). Taylor & Francis.

Triana, J., Irawan, S., & Windrawanto, Y. (2020). Hubungan Antara Kepercayaan Diri Dengan Kecemasan Bertanding Atlet Pencak Silat dalam Menghadapi Salatiga Cup 2018. *PSIKOLOGI KONSELING*, *15*(2), 452-461. https://doi.org/10.24114/konseling.v15i2.16194

Trpkovici, M., Pálvölgyi, Á., Makai, A., Prémusz, V., & Ács, P. (2023). Athlete anxiety questionnaire: the development and validation of a new questionnaire for assessing the anxiety, concentration and self-confidence of athletes. *Frontiers in Psychology*, *14*. https://doi.org/10.3389/fpsyg.2023.1306188

Vella, S. A., Aidman, E., Teychenne, M., Smith, J. J., Swann, C., Rosenbaum, S., White, R. L., & Lubans, D. R. (2023). Optimising the effects of physical activity on mental health and wellbeing: A joint consensus statement from Sports Medicine Australia and the Australian Psychological Society. *Journal of Science and Medicine in Sport*, *26*(2), 132–139. https://doi.org/10.1016/j.jsams.2023.01.001

Wohon, A. M., & Ediati, A. (2019). Hubungan Antara Efikasi Diri dengan Kecemasan Bertanding Pada Atlet Futsal Universitas Diponegoro Semarang. *Jurnal EMPATI*, *8*(2), 399–405. https://doi.org/10.14710/empati.2019.24404

Zahwa, F. K., & Hanif, M. M. (2024). Strategi Efektif Mengatasi Stres Akademik melalui Manajemen Waktu untuk Meningkatkan Kesehatan Mental Mahasiswa. *Jurnal Ilmu Pendidikan dan Psikologi (JIPP)*, *2*(4), 142-148. https://doi.org/10.61116/jipp.v2i4.354

Zekioğlu, A., Tatar, A., & Ayhan, D. (2024). The Importance of Physical Activity in Terms of Mental Health: Investigating the Role of Regular Physical Activity in the Relationships Between Happiness, Mental Well-Being, Stress, Anxiety,

and Depression. *Avrasya Spor Bilimleri ve Eğitim Dergisi*, *6*(2), 128–142. https://doi.org/10.47778/ejsse.1434717

Zhang, S., Chen, G., Wu, Q., & Li, X. (2023). The Interplay Between Table Tennis Skill Development and Sports Performance: A Comprehensive Review. *Pacific International Journal*, *6*(3), 150–156. https://doi.org/10.55014/pij.v6i3.433

Zhang, Y., & Breedlove, J. (2021). Sustaining market competitiveness of table tennis in China through the application of digital technology. *Sport in Society*, *24*(10), 1770–1790. https://doi.org/10.1080/17430437.2021.1901343