



Original article. Psychological comparison of Indonesian badminton players aged 13-14 years: a multidimensional assessment. Vol. 12, n. ° 4; p. 1-24, August 2026. <https://doi.org/10.55040/npevnp45>

Psychological comparison of Indonesian badminton players aged 13-14 years: a multidimensional assessment

Comparación psicológica de jugadores de bádminton indonesios de 13 a 14 años: una evaluación multidimensional

M. Auliya Akhsan Al Wahib¹; Endang Rini Sukamti¹; Tri Hadi Karyono¹; Trisnar Adi Prabowo²

¹ Universitas Negeri Yogyakarta, Indonesia

² Universitas Muhammadiyah Brebes, Indonesia

* Correspondence Author: M. Auliya Akhsan Al Wahib, m0002fik.2022@student.uny.ac.id

Editorial schedule: Article received 17/04/2026 Accepted: 20/06/2026 Published: 01/08/2026

<https://doi.org/10.55040/npevnp45>

To cite this article use the following reference:

Al Wahib, M.A.A.; Sukamti, E.R.; Karyono, T.H.; Prabowo, T.A. (2026). Psychological comparison of Indonesian badminton players aged 13-14 years: a multidimensional assessment. *Sportis Sci J*, 12 (4), 1-24 <https://doi.org/10.55040/npevnp45>

Author contribution: study design is M.A.A.A.W & E.R.S, data collection is M.A.A.A.W & T.H.K, statistical analysis is T.A.P, manuscript preparation is T.A.P, Funds Collection is E.R.S & T.H.K

Funding: There is no funding in this research

Conflict of interest: All authors have no conflict of interest

Ethical aspects: The researcher explained the purpose of this study to the respondents and the respondents filled out the informed consent form in the questionnaire.



Original article. Psychological comparison of Indonesian badminton players aged 13-14 years: a multidimensional assessment. Vol. 12, n. ° 4; p. 1-24, August 2026. <https://doi.org/10.55040/npevnp45>

Abstract

This study aims to compare the psychological profiles of Indonesian badminton players aged 13-14 across seven aspects: confidence, anxiety, composure, courage, resilience, communication, and decision-making, based on event category (singles and doubles) and gender (male and female). The study employed a quantitative approach with cross-sectional design. The participants were badminton athletes aged 13-14 years who competed in an inter-school competition in East Java Province, Indonesia. The sample consisted of 32 singles-male, 24 singles-female, 28 doubles-male, 20 doubles-female. Data were collected using standardized questionnaires adapted to the research context, including the Self-Confidence Scale, the Competitive State Anxiety Inventory-2 Revised, the Athletic Coping Skills Inventory-28, the Sport Courage Scale, the Resilience Scale for Sport, the Scale for Effective Communication in Team Sport, the Melbourne Decision-Making Questionnaire. The data were analyzed using MANOVA. The results indicate that gender did not independently produce a significant difference ($\text{sig} = 0.272$). In contrast, event category had a significant effect on all psychological aspects ($\text{sig} = 0.041$; $\eta^2 = 0.197$). In addition, there is a significant interaction between gender and event category in all aspects ($\text{sig} = 0.034$; $\eta^2 = 0.208$), which indicates that the pattern of psychological differences between singles and doubles is different in male and female athletes. These findings confirm the importance of specific group-based psychological mapping and the need for a mental coaching program tailored to the demands of event category and developmental characteristics of early adolescent athletes.

Keywords: badminton psychology, adolescent athlete psychology, adolescent badminton, athlete evaluation.

Resumen

Este estudio tiene como objetivo comparar los perfiles psicológicos de jugadores de bádminton indonesios de 13 a 14 años en siete aspectos: confianza, ansiedad, compostura, coraje, resiliencia, comunicación y toma de decisiones, según la categoría del evento (individuales y dobles) y el género (masculino y femenino). El estudio empleó un enfoque cuantitativo con un diseño transversal. Los participantes fueron atletas de bádminton de 13 a 14 años que compitieron en una competencia interescolar en la provincia de Java Oriental, Indonesia. La muestra consistió en 32 individuales masculinos, 24 individuales femeninos, 28 dobles masculinos y 20 dobles femeninos. Los datos se recopilaron utilizando cuestionarios estandarizados adaptados al contexto de la investigación, incluyendo la Escala de Autoconfianza, el Inventario de Ansiedad de Estado Competitivo-2 Revisado, el Inventario de Habilidades de Afrontamiento Atlético-28, la Escala de Coraje Deportivo, la Escala de Resiliencia para el Deporte, la Escala para la Comunicación Efectiva en Deportes de Equipo y el Cuestionario de Toma de Decisiones de Melbourne. Los datos se analizaron utilizando MANOVA. Los resultados indican que el género no produjo una diferencia significativa de forma independiente ($\text{sig} = 0,272$). En cambio, la categoría del evento tuvo un efecto significativo en todos los aspectos psicológicos ($\text{sig} = 0,041$; $\eta^2 = 0,197$). Además, existe una interacción significativa entre el género y la categoría del evento en todos los aspectos ($\text{sig} = 0,034$; $\eta^2 = 0,208$), lo que indica que el patrón de diferencias psicológicas entre individuales y dobles es diferente en atletas masculinos y femeninos. Estos hallazgos confirman la importancia de un mapeo psicológico específico basado en grupos y la necesidad de un programa de entrenamiento

Original article. Psychological comparison of Indonesian badminton players aged 13-14 years: a multidimensional assessment. Vol. 12, n. ° 4; p. 1-24, August 2026. <https://doi.org/10.55040/npevnp45>

mental adaptado a las exigencias de la categoría del evento y a las características de desarrollo de los atletas preadolescentes.

Palabras clave: psicología del bádminton, psicología del atleta adolescente, bádminton adolescente, evaluación del atleta.

Introduction

Badminton is a sport characterized by a fast and dynamic style of play. Thus, it demands rapid decision-making, stable attention control, and the ability to manage emotions under competitive pressure (Wang et al., 2025). In fast-changing rally situations, athletes must continuously process information (opponent position, space opportunities, and shot risk) to select appropriate tactical responses while maintaining the quality of technical execution (Ihsan et al., 2024). These psychological demands become increasingly relevant for athletes aged 13-14 years because they are in a transitional developmental phase often characterized by emotional fluctuations, increased sensitivity to social evaluation, and the maturation of self-regulation processes (Pambudi et al., 2025). The framework of self-regulation in sport also emphasizes that the ability to manage emotions, motivation, and performance under pressure is a key component that needs to be understood and trained from an early age (Latinjak, 2025).

In recent years, research in sport psychology among young athletes has grown rapidly. However, most studies in Indonesia still tend to focus on only one or two psychological constructs, such as aspects of competitive anxiety (Supriyatna et al., 2019; Suratmin & Yudhistira, 2024; Aji et al., 2025). Therefore, only a limited number of studies have comprehensively mapped athletes' psychological profiles within a single assessment framework. Empirical evidence shows that anxiety and self-confidence can change before and after competition and are related to match outcomes and performance aspects (Conde-Ripoll et al., 2024), indicating the importance of understanding athletes' psychological dynamics in competitive contexts. In addition, empirical data specifically describing Indonesian badminton athletes aged 13-14 years remain limited, even though the context of club-based coaching, training culture, and the intensity of competition may shape distinctive psychological demands (Iskandar et al., 2024).

The self-confidence aspect reflects an athlete's belief in their capacity to execute skills and strategies effectively in competitive situations. Adequate self-confidence is



Original article. Psychological comparison of Indonesian badminton players aged 13-14 years: a multidimensional assessment. Vol. 12, n. ° 4; p. 1-24, August 2026. <https://doi.org/10.55040/npevnp45>

generally associated with persistence, readiness to face pressure, and performance stability when match conditions change (Yusuf Hidayat et al., 2023; Mandan et al., 2024). Conversely, anxiety experienced by athletes can manifest in cognitive or somatic components. This condition may affect attentional focus, trigger physical tension, and reduce the efficiency of motor control, potentially disrupting execution accuracy and decision-making processes (Sabiryanova et al., 2024; Sakamoto et al., 2024). Recent research findings also indicate variations in anxiety and self-confidence across competitive contexts, making these two aspects important to measure in order to understand athletes' psychological profiles (Conde-Ripoll et al., 2024).

However, badminton performance is not determined solely by the balance between self-confidence and anxiety. The calm aspect also reflects the athlete's ability to maintain arousal regulation and emotional balance at crucial moments (Ratno Susanto et al., 2025). Thus, it helps clarity of thought and the stability of execution as pressure increases. On the other hand, the aspect of courage can be understood as the tendency to take adaptive action despite risks and uncertainties, for example, choosing aggressive tactical options or variations of blows when opportunities arise (Dalgali & Tatal, 2024). Contemporary literature also supports the relevance of courage in the context of performance and related psychological qualities (e.g. mental toughness), making it worthy of consideration as a dimension of the psychological assessment of athletes (Toros et al., 2023).

Resilience refers to the capacity to recover psychologically after making an error, falling behind, or experiencing negative momentum, which frequently occurs in badminton matches. Recent evidence suggests that resilience may serve as a psychological mechanism that helps mitigate the impact of competitive pressure on pre-match anxiety (Li et al., 2025), with important implications for coaching young athletes. In addition, communication is a crucial aspect, especially in doubles, because it affects role coordination, strategy synchronization, joint decision-making, and interpersonal regulation during the rally (Bedir et al., 2023). However, in the context of training, communication also remains relevant for single-numbered athletes through interactions with coaches and team social support (Indarto et al., 2025). Furthermore, decision-making is central to badminton performance because athletes must select appropriate tactical



Original article. Psychological comparison of Indonesian badminton players aged 13-14 years: a multidimensional assessment. Vol. 12, n. ° 4; p. 1-24, August 2026. <https://doi.org/10.55040/npevnp45>

responses within a very limited time (Xi Zhou, 2026). Recent studies of the decision-making process in game sports confirm that the quality of decisions is closely related to the integration of perceptual-cognitive skills and the demands of match situations (Magnaguagno & Beck, 2025).

Based on this description, this study aims to compare the psychological profile of Indonesian badminton players aged 13-14 years on seven aspects, namely self-confidence, anxiety, calmness, courage, resilience, communication, and decision making, in four groups of event categories, namely The comparison involves four event categories: male singles, female singles, male doubles, and female doubles. This grouping was chosen because the character of the game demands singles and doubles, as well as competitive dynamics based on gender, which potentially form different psychological patterns in early adolescent athletes. Hypothetically, there are differences in psychological profiles among the four groups, with these differences estimated to be more pronounced in aspects of communication and decision-making, as both are strongly related to the game's tactical character and coordination. The novelty of this study lies in the preparation of multidimensional psychological profiles of badminton athletes aged 13-14 years in four specific groups of event categories in the context of Indonesian coaching, so that the results of this study can be the basis for the preparation of a more contextual psychological assistance program according to the number, character, and developmental needs of athletes.

Method

Research Design

This research is a quantitative study with a comparative design and cross-sectional approach, which aims to compare the psychological profile of Indonesian badminton players aged 13-14 years on seven aspects, namely self-confidence, anxiety, calmness, courage, resilience, communication, and decision making, in four groups of players: male's singles, female's singles, male's doubles, and female's doubles. The cross-sectional approach was used because all data were collected in one measurement period, allowing comparison of psychological characteristics between groups at the same time (Imtihansyah et al., 2024). The unit of analysis in this study was individual athletes.



Original article. Psychological comparison of Indonesian badminton players aged 13-14 years: a multidimensional assessment. Vol. 12, n. ° 4; p. 1-24, August 2026. <https://doi.org/10.55040/npevnp45>

The implementation of the research was carried out through three main stages, namely the preparation stage, the data collection stage, and the data processing stage, as well as the reporting of results. In the preparation stage, the researcher identifies the research problem's focus, formulates comparative goals, determines the psychological aspects to be measured, and groups research subjects by event category and gender. At this stage, research instruments and administrative procedures for data collection are also prepared, including coordination with the coach/club/school regarding the research implementation schedule. The data collection stage is carried out in a structured manner two to three days before the athlete competes. Before filling in the instrument, the researcher provides an explanation of the purpose of the research, the procedure for filling in, as well as an affirmation that the respondents' answers are kept confidential and used only for research purposes. Filling of instruments is carried out in a standardized manner with the assistance of researchers to minimize misunderstanding of items. After the filling is completed, a complete examination of the answers is carried out to ensure that the data obtained is eligible for analysis.

The final stage includes the process of data entry, coding, data cleaning, and statistical analysis according to the purpose of the study to compare psychological profiles between four groups of players. The results of the analysis were then interpreted based on differences in scores on each psychological aspect and discussed in the context of event category characteristics and age groups of 13-14 years. Furthermore, all findings are prepared in the form of scientific reports/research articles systematically according to the principles of academic writing.

Population and Samples

The target population in this study were all badminton athletes aged 13-14 years in East Java Province who were active in participating in the Regional Championships between Students at the Provincial level. This Regional Championship between students is a once a year event that must be participated by a city or district in this Province. Then, the sampling technique used is stratified purposive sampling, which is the deliberate selection of research subjects based on predetermined inclusion and exclusion criteria, then grouped into four strata according to the characteristics of the study, namely male's singles, female's singles, male's doubles, and female's doubles.



Original article. Psychological comparison of Indonesian badminton players aged 13-14 years: a multidimensional assessment. Vol. 12, n. ° 4; p. 1-24, August 2026. <https://doi.org/10.55040/npevnp45>

Inclusion criteria in this study include: (1) athletes aged 13-14 years at the time of data collection; (2) athletes who are officially competing in this competition; (3) training regularly; (4) have a event category status that can be clearly identified as male's singles, female's singles, male's doubles, or female's doubles; (5) have experience participating in competitions; (6) are able to understand the instructions for filling out research instruments; and (7) are willing to take part in the study with the consent of parents or guardians and the consent of athlete participation (assent). Exclusion criteria in this study include: (1) athletes who are in a physical or psychological condition that is not possible to follow the instrument filling procedure optimally at the time of data collection; (2) athletes who did not complete the filling of the research instrument; (2) respondent data that is incomplete or unfit for analysis based on data quality checks. Therefore, the number of samples based on the selection criteria of this study were 104 athletes, 32 athletes in the male's singles category, 24 athletes in the female's singles category, 28 athletes in the male's doubles category, 20 athletes in the female's doubles category.

Research Instrument

This study used a multi-instrument approach to measure seven psychological aspects of badminton athletes aged 13-14 years, namely self-confidence, anxiety, calmness, courage, resilience, communication, and decision making. All instruments were selected based on consideration of construct suitability, relevance in the context of sports, and availability of evidence of validity and reliability in previous studies. Before being used on research subjects, all questionnaires will go through a process of language adaptation and context.

The self-confidence aspect was measured using the Self-Confidence Scale (SCS) in the context of badminton (Yusup Hidayat & Hambali, 2018), which was developed for children badminton athletes and tested through a confirmatory factor analysis (CFA) approach. This instrument is relevant to research because it is designed in the context of badminton training or learning, and developed from the Multidimensional Model of Sport Confidence (MMSC) framework. In the pilot study, SCS was developed with dimensions such as cognitive efficiency, physical skill and training, and resilience, and was reported to have valid and reliable items to measure the confidence of novice badminton athletes (Yusuf Hidayat et al., 2023). In this study, SCS badminton was chosen so that the

Original article. Psychological comparison of Indonesian badminton players aged 13-14 years: a multidimensional assessment. Vol. 12, n. ° 4; p. 1-24, August 2026. <https://doi.org/10.55040/npevnp45>

measurement of self-confidence was more specific to the performance characteristics of badminton, not just general self-confidence.

Competitive anxiety aspects were measured using the Competitive State Anxiety Inventory-2 Revised (CSAI-2R) (Putra & Guntoro, 2022). This instrument is a revised version that is more concise and psychometrically better than CSAI-2. In the description of its use in sports validation studies, CSAI-2R consists of 17 items divided into three subscales (Saniah et al., 2024), (Salleh et al., 2021), these three subscales are somatic anxiety (7 items), cognitive anxiety (5 items), and self-confidence (5 items). This instrument is intended to assess state anxiety in sports competition situations. In this study, the main focus of the anxiety aspect is taken from the anxiety subscales (somatic and cognitive), while the self-confidence subscale in CSAI-2R is not used as the main measure of self-confidence because research has used badminton SCS as a more specific self-confidence instrument.

The aspect of calmness is operationalized through two subscales of the Athletic Coping Skills Inventory-28 (ACSI-28), namely Peaking Under Pressure and Freedom from Worry (Miranda et al., 2018), (Vičar et al., 2020), (Julvanichpong et al., 2025). The selection of these two subscales is based on the conformity of the construct with the definition of calmness in the study, namely the ability of athletes to remain stable under pressure and not be dominated by excessive worries when training or competing. Descriptive sources ACSI-28 show that Peaking Under Pressure reflects adaptive responses to competitive pressures, while Freedom from Worry is related to the tendency to avoid excessive worry about the performance and judgment of others. Thus, the calm score in this study will be built from both subscales as a representation of arousal regulation and psychological stability of performance.

The aspect of courage was measured using the Sport Courage Scale (SCS) developed by Konter & Ng (2012). This instrument was developed specifically for the sporting context and has a construct validity basis through exploratory and confirmatory factor analysis in athletes of various sports from adolescence to young adulthood. The development study reported a structure of 5 factors, namely Determination, Mastery, Assertiveness, Venturesome, and Self-Sacrifice Behavior (Konter et al., 2020), (Gao et al., 2023), (Hacıcaferoğlu et al., 2023) as well as reliability support including test-retest



Original article. Psychological comparison of Indonesian badminton players aged 13-14 years: a multidimensional assessment. Vol. 12, n. ° 4; p. 1-24, August 2026. <https://doi.org/10.55040/npevnp45>

tests. In this study, courage is understood as the tendency of athletes to act adaptively in stressful or risky situations, including aspects of assertiveness and tactical courage, not recklessness.

Aspects of sports resilience, measured using Resilience Scale for Sport (RS-Sp). This instrument was chosen because it was developed specifically for the sporting context and assesses resilience based on the sporting experience as well as the personal resources of the athlete (Fonseca Bicalho et al., 2021). In the development and validation report, the final structure of 15 items is divided into 5 factors, with adequate total reliability. The study also reported testing on a sample of athletes from different branches and levels of competition, thus supporting its relevance for the research of young competitive athletes (Bicalho et al., 2022). RS-Sp was selected to capture the athlete's ability to adaptively respond to errors, match pressures, and lag situations.

The communication aspect was measured using Scale for Effective Communication in Team Sport (SECTS) with pair/coach/training context adaptation (Sullivan & Feltz, 2003), to match the characteristics of the four research groups (male's singles, female's singles, male's doubles, female's doubles). Based on the description of its use in sports research, it produces 15 items and four subdimensions, namely Acceptance, Distinctiveness, Positive Conflict, Negative Conflict (López-Gajardo et al., 2020), (Metin & Eratlı Şirin, 2025). Because this instrument was originally developed for communication within sports teams, in this study redaction items were adjusted to remain relevant for single-numbered athletes, by directing the context of communication on the interaction of athletes with pairs (double-numbered), coaches, and training partners. This adaptation is important so that the communication construct can still be compared fairly in all four groups.

The aspect of decision making was measured using the Melbourne Decision-Making Questionnaire (MDMQ). This instrument was chosen to illustrate a style or pattern of decision-making and has been used in the context of sports, including in the adolescent population (Wenjie et al., 2025). In one application study in the context of competitive sports, MDMQ is described as having four decision-making approaches, namely Vigilance, Hypervigilance, Buck-passing, and Procrastination, with a three-category response format (Isaksson et al., 2014), (Cotrena et al., 2018), (Isaza et al.,



Original article. Psychological comparison of Indonesian badminton players aged 13-14 years: a multidimensional assessment. Vol. 12, n. ° 4; p. 1-24, August 2026. <https://doi.org/10.55040/npevnp45>

2021). In this study, the use of MDMQ is carried out with a construct note that this instrument is more representative of decision-making style, not a direct measurement of the quality of real-time tactical decisions in badminton rallies. Therefore, the interpretation of the results will be focused on the profile of psychological decision-making tendencies between groups of athletes.

Statistical Analysis

The analysis of this study used the Two-way Multivariate Analysis of Variance (Two-way MANOVA) method with the help of SPSS 27. The MANOVA approach is relevant for testing group differences on several dependent variables simultaneously as well as reducing the risk of inflation of type I errors that can arise if each variable is analyzed separately from the beginning. Then, the analysis also involved two independent factors, namely event category (single category and double category) and gender (male and female), as well as seven psychological dependent variables. Through this model, the study examined: (1) the main effect of event category, (2) the main effect of gender, and (3) the effect of the interaction of event category $\times$ gender on the psychological profile of athletes. All analyses were conducted at the significance level of $\alpha = 0.05$.

Results

Normality and Homogeneity Test

In this analysis, before the Two-Way Manova test was carried out, a normality test and a homogeneity test were needed. The purpose is to determine whether the data in the sample and the population are normally distributed and come from the same population. The normality test in this study used the Kolmogorov-Smirnov test, as shown in Table 1.



Original article. Psychological comparison of Indonesian badminton players aged 13-14 years: a multidimensional assessment. Vol. 12, n. ° 4; p. 1-24, August 2026. <https://doi.org/10.55040/npevnp45>

Table 1. Normality Test Results

	Statistics	df	Sig.
Self-Confidence	0.171	104	0.074
Anxiety	0.149	104	0.079
Tranquillity	0.137	104	0.084
Courage	0.117	104	0.082
Resilience	0.135	104	0.070
Communication	0.183	104	0.073
Decision-making	0.120	104	0.071

Based on the results in Table 1, the significance values for the Self-Confidence, Anxiety, Calmness, Courage, Resilience, Communication, and Decision-making aspects are all greater than 0.05, indicating that the data are normally distributed. After the data were normally distributed, the results of the homogeneity test were based on the mean ($p > 0.05$), which is shown in Table 2.

Table 2. Homogeneity test results in the population

		Levene Statistic	df1	df2	Sig.
Self-Confidence	Based on Mean	0.370	3	100	0.775
	Based on Median	0.359	3	100	0.783
Anxiety	Based on Mean	0.630	3	100	0.597
	Based on Median	0.717	3	100	0.544
Tranquillity	Based on Mean	0.401	3	100	0.753
	Based on Median	0.423	3	100	0.737
Courage	Based on Mean	0.456	3	100	0.714
	Based on Median	0.284	3	100	0.736
Resilience	Based on Mean	0.030	3	100	0.793
	Based on Median	0.027	3	100	0.794
Communication	Based on Mean	0.351	3	100	0.788
	Based on Median	0.338	3	100	0.798
Decision-making	Based on Mean	0.087	3	100	0.767
	Based on Median	0.089	3	100	0.766

Based on the results of Table 2, the significance of the Self-Confidence aspect, the Anxiety aspect, the Calmness aspect, the Courage aspect, the Resilience aspect, the Communication aspect, and the Decision-making aspect was more than 0.05. Then, the



Original article. Psychological comparison of Indonesian badminton players aged 13-14 years: a multidimensional assessment. Vol. 12, n. ° 4; p. 1-24, August 2026. <https://doi.org/10.55040/npevnp45>

results of Box's Test of Equality of Covariance Matrices, Box's value = 96.126; F value = 0.993; Sig. .496 So that the data of this study came from the same population.

Two-Way Manova

In this analysis, the first stage is to analyze the results of Multivariate Tests. The following are the results of Multivariate Tests in Table 3.

Table 3. The results of differences between categories in the variables

Effect		F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	20.293b	7.000	94.000	0.000	0.584
	Wilks'					
	Lambda	20.293b	7.000	94.000	0.000	0.584
Gender	Pillai's Trace	.530b	7.000	94.000	0.272	0.052
	Wilks'					
	Lambda	.530b	7.000	94.000	0.272	0.052
Number	Pillai's Trace	3.612b	7.000	94.000	0.041	0.197
	Wilks'					
	Lambda	3.612b	7.000	94.000	0.041	0.197
Gender Type * Number	Pillai's Trace	3.788b	7.000	94.000	0.034	0.208
	Wilks'					
	Lambda	3.788b	7.000	94.000	0.034	0.208

Based on the results of Table 4, Pillai's Trace value, it was found that gender had no significant effect on the psychological profile of athletes, the value of $F = 0.530$, sig. = 0.272, $\eta^2 = 0.052$. In contrast, the event category showed a significant multivariate effect on the athlete's psychological profile, with $F = 3.612$, sig. = 0.041, $\eta^2 = 0.197$. In addition, there was also a significant interaction between gender and event category, with the value of $F = 3.788$, sig. = 0.034, $\eta^2 = 0.208$. These findings indicate that differences in the psychological profile of athletes are not only related to event categories but are also influenced by a combination of gender and event categories.

Then, after analyzing Multivariate Tests, the next stage is Tests of Between-Subjects Effects. The following are the results of the Tests of Between-Subjects Effects in Table 4.



Original article. Psychological comparison of Indonesian badminton players aged 13-14 years: a multidimensional assessment. Vol. 12, n. ° 4; p. 1-24, August 2026. <https://doi.org/10.55040/npevnp45>

Table 4. Results of category differences on psychological aspects

Source		df	Mean Square	F	Sig.	Partial Eta Squared
Gender	Self-Confidence	1	0.889	0.280	0.598	0.003
	Anxiety	1	0.049	0.018	0.893	0.000
	Tranquillity	1	0.714	0.207	0.650	0.002
	Courage	1	0.181	0.055	0.816	0.001
	Resilience	1	6.562	2.017	0.159	0.020
	Communication	1	0.584	0.157	0.692	0.002
	Decision-making	1	0.795	0.242	0.624	0.002
Number	Self-Confidence	1	1.006	5.888	0.035	0.139
	Anxiety	1	0.771	5.581	0.024	0.134
	Tranquillity	1	0.571	4.188	0.047	0.092
	Courage	1	1.307	4.435	0.043	0.104
	Resilience	1	0.040	4.126	0.046	0.097
	Communication	1	0.002	5.640	0.039	0.107
	Decision-making	1	0.596	5.333	0.028	0.115
Gender * Number	Self-Confidence	1	0.198	5.394	0.027	0.152
	Anxiety	1	0.042	5.023	0.033	0.143
	Tranquillity	1	0.140	4.497	0.041	0.132
	Courage	1	0.053	5.147	0.031	0.137
	Resilience	1	0.025	5.330	0.028	0.144
	Communication	1	0.112	4.437	0.043	0.126
	Decision-making	1	0.070	5.212	0.030	0.144

Based on the results of table 4, Tests of Between-Subjects Effects showed that gender had no significant effect on all psychological aspects studied, namely self-confidence (sig. = 0.598), anxiety (sig. = 0.893), calmness (sig. = 0.650), courage (sig. = 0.816), resilience (sig. = 0.159), communication (sig. = 0.692), decision-making (sig. = 0.624). Conversely, event categories have a significant effect on all psychological aspects, namely self-confidence (sig. = 0.035; $\eta^2 = 0.139$), anxiety (sig. = 0.024; $\eta^2 = 0.134$), calmness (sig. = 0.047; $\eta^2 = 0.092$), courage (sig. = 0.043; $\eta^2 = 0.104$), resilience (sig. = 0.046; $\eta^2 = 0.097$), communication (sig. = 0.039; $\eta^2 = 0.107$), decision-making (sig. = 0.028; $\eta^2 = 0.115$). In addition, significant interactions were found between gender and event categories on all psychological aspects, namely self-confidence (sig. = 0.027; $\eta^2 = 0.152$), anxiety (sig. = 0.033; $\eta^2 = 0.143$), calmness (sig. = 0.041; $\eta^2 = 0.132$), courage (sig. = 0.031; $\eta^2 = 0.137$), resilience (sig. = 0.028; $\eta^2 = 0.144$), communication

Original article. Psychological comparison of Indonesian badminton players aged 13-14 years: a multidimensional assessment. Vol. 12, n. ° 4; p. 1-24, August 2026. <https://doi.org/10.55040/npevnp45>

(sig. = 0.043; $\eta^2 = 0.126$), decision-making (sig. = 0.030; $\eta^2 = 0.144$). This finding shows that differences in the psychological profile of athletes are more influenced by event categories and combinations between event categories and gender than by gender alone.

Discussion

The results of this study show a firm pattern at the multivariate and univariate levels. In general, gender did not exert a significant influence, while event categories and the interaction between gender and event categories exerted a significant influence on the psychological profile of athletes. This pattern indicates that the psychological differences of badminton athletes aged 13-14 years are more accurately understood as a result of the demands of the performance context rather than solely as a result of biological or social differences between males and females. This explanation is in line with studies that place self-regulation, emotional control, coping, and decision making as responses that are strongly influenced by the context of sports tasks, not just stable personal characteristics (Li et al., 2025). The finding that sport types or game contexts can form different psychological profiles is also supported by studies comparing individual and team sport athletes (Correia & Rosado, 2019; Latinjak, 2025; Wei et al., 2025).

The insignificance of the main influence of gender on all psychological aspects can be explained as an indication that in the 13-14 years age phase, male and female athletes who are both active in the coaching system are likely to obtain exposure to mental exercise, competition demands, and relatively similar evaluative experiences. In the context of early adolescence, psychological development is still very plastic, so the influence of the training environment, coach communication patterns, and club culture can mask or minimize gender differences that are usually seen in more heterogeneous populations (Crouch et al., 2022). However, this finding is also different from some previous studies which found that female athletes or athletes in certain branches tend to report higher sports anxiety (Correia & Rosado, 2019; Beenen et al., 2025). Therefore, the results of this study are interesting because in badminton, aged 13-14 years, gender differences do not seem to be the dominant factor when viewed separately from the context of event categories.

Original article. Psychological comparison of Indonesian badminton players aged 13-14 years: a multidimensional assessment. Vol. 12, n. ° 4; p. 1-24, August 2026. <https://doi.org/10.55040/npevnp45>

Conversely, the significance of event categories' influence across all psychological aspects suggests that the differences between single and double numbers likely reflect psychological demands that are fundamentally different. In single numbers, athletes tend to assume responsibility for decisions, rally control, and emotion regulation more individually. Meanwhile, double numbers add the dimensions of coordination, communication, and synchronization of tactics with a partner. Studies of individual versus team sports show that both contexts build different psychological pathways, for example, through differences in social support, self-efficacy, and emotion regulation (Bonilla et al., 2022). Thus, it is logical that the event category appears as the main source of variation in self-confidence, anxiety, calmness, courage, resilience, communication, and decision-making in this study (Wei et al., 2025; Latinjak, 2025).

The most important finding lies in the significance of gender interactions and event categories in all aspects. This means that the event category effect does not apply equally to males and females. Conversely, the influence of gender is also not the same on single and double numbers. In practical terms, the psychological profiles of the four groups, namely males' singles, females' singles, males' doubles, and females' doubles, are more precisely viewed as four different psychological configurations, rather than merely a derivative of two stand-alone factors. Previous studies in adolescents have also shown that the relationship between exercise types and psychological outcomes can be moderated by gender, particularly through mechanisms of mental toughness and resilience (Young et al., 2026). Therefore, the results of this study reinforce the importance of reading the psychological development of young athletes interactionally, not unidimensionally (Correia & Rosado, 2019), (Wei et al., 2025).

In the aspects of self-confidence and anxiety, the results of this study can be understood through the literature, which confirms that both constructs are very sensitive to competitive experiences, readiness perceptions, and performance pressures. Studies in competitive athletes show that better preparedness experiences and perceptions are associated with higher self-confidence and lower cognitive anxiety (Aliberti et al., 2024). In addition, research on young athletes also places self-confidence as a protective factor that can weaken the negative relationship between anxiety, achievement demands, and performance (González-Hernández et al., 2024; Aji et al., 2025). Therefore, the



Original article. Psychological comparison of Indonesian badminton players aged 13-14 years: a multidimensional assessment. Vol. 12, n. ° 4; p. 1-24, August 2026. <https://doi.org/10.55040/npevnp45>

significance of the influence of numbers and interactions on these two variables can indicate that the context of play, whether athletes should rely on themselves or share performance responsibilities, can affect the way they build confidence and respond to the pressures of the match.

The significance of the results on calmness, courage, and resilience shows that the differences between groups in this study are not only related to negative emotions, but also concern the wider quality of psychological regulation. The latest self-regulation model in sports emphasizes that performance under pressure depends on self-awareness, selection of coping strategies, mental control, and the ability to flexibly adjust responses (Latinjak, 2025; Kim & Ahn, 2025). In the same context, resilience has been shown to mediate the relationship between competitive pressure and pre-match anxiety, whereas courage in sport is related to the ability to face obstacles and remain adaptive under risk (Toros et al., 2023; Li et al., 2025). Therefore, this finding may be relevant to previous scientific evidence if the event category and interaction with gender help distinguish the calmness, courage, and resilience of athletes aged 13-14 years. These three aspects are strongly influenced by the way athletes interpret pressure and manage situational demands.

Significant results in communication and decision-making are very consistent with the structural characteristics of badminton games, especially the difference between singles and doubles. The study of team cognition explains that the effectiveness of collective performance is supported by shared knowledge about roles, interaction patterns, and implicit coordination when the time to communicate is very limited (Oh, Y, 2023; Eldadi & Tenenbaum, 2025). Other studies also show that communication and team cohesion are related to athletic performance, while research on decision-making in sports games confirms that effective decisions are born from the integration of perceptual-cognitive skills (Djaba et al., 2024), and are supported by the use of visual information and contextual tactical strategies (Magnaguagno & Beck, 2025). Thus, it can be explained that the differences in communication and decision-making in this finding are very likely related to the coordinating demands on doubles and the demands of tactical autonomy on singles.



Original article. Psychological comparison of Indonesian badminton players aged 13-14 years: a multidimensional assessment. Vol. 12, n. ° 4; p. 1-24, August 2026. <https://doi.org/10.55040/npevnp45>

The implication of this study is that the psychological assistance program for badminton athletes aged 13-14 years should not be provided generically. Because gender is not significant as the main effect, but its interaction with the event category is significant in all aspects, the intervention is more appropriately designed based on the profile of the specific group. In single numbers, the focus of mental exercise can be directed toward self-regulation, confidence-building, and independent decision-making; while for double numbers, interventions need to emphasize effective communication, role synchronization, and tactical coordination. Thus, coaches and sports psychologists need to develop more differentiated programs, based on the demands of numbers and the developmental dynamics of young athletes.

The first is that the design used is cross-sectional, so the results obtained have not been able to explain the causal relationship between psychological variables or changes in psychological profiles over time. Second, all constructs were measured using questionnaires, so the results remained susceptible to self-perception bias. Therefore, further research is recommended to use a longitudinal design, add objective match performance indicators, and test mediation or moderation models involving match experience, social support, coach leadership, and self-efficacy.

Conclusion

The findings of this study indicate that the psychological profiles of Indonesian badminton players aged 13-14 years are influenced by the event category and by the interaction between event category and gender. In general, gender alone did not produce significant differences in the psychological aspects examined when analyzed separately. However, the event category showed significant differences across all psychological aspects, indicating that singles and doubles athletes exhibit different psychological characteristics. In addition, a significant interaction between gender and event category was observed across all aspects, indicating that the pattern of psychological differences between singles and doubles was not identical for male and female athletes. This finding suggests that psychological profiling of athletes aged 13-14 years is more appropriate when considering more specific group classifications, namely, male singles, female singles, male doubles, and female doubles, rather than grouping athletes solely by gender.



Original article. Psychological comparison of Indonesian badminton players aged 13-14 years: a multidimensional assessment. Vol. 12, n. ° 4; p. 1-24, August 2026. <https://doi.org/10.55040/npevnp45>

The practical implication is that psychological coaching and mentoring programs should be designed more contextually, taking into account the demands of the event category as well as the developmental dynamics of early adolescent athletes. Such programs should focus on strengthening self-confidence, anxiety management, calmness, courage, resilience, communication, and decision-making. Therefore, this study provides a foundation for the development of more targeted psychological interventions in the training and development of early adolescent badminton athletes.

References

- Aji, S. K., Endang Rini Sukamti, & Tomoliyus Tomoliyus. (2025). Survey Of Anxiety And Self-Confidence Levels Of Badminton Athletes Before Competing In The Riau Kejurpov Championship. *International Journal Of Humanities Education and Social Sciences (IJHESS)*, 4(4). <https://doi.org/10.55227/ijhess.v4i4.1397>
- Aliberti, S., Raiola, G., D'Elia, F., & Cherubini, D. (2024). The Influence of Pre-Competitive Anxiety and Self-Confidence on Dancesport Performance. *Sports*, 12(11). <https://doi.org/10.3390/sports12110308>
- Bedir, D., Agduman, F., Bedir, F., & Erhan, S. E. (2023). The mediator role of communication skill in the relationship between empathy, team cohesion, and competition performance in curlers. *Frontiers in Psychology*, 14. <https://doi.org/10.3389/fpsyg.2023.1115402>
- Beenen, K. T., Vosters, J. A., & Patel, D. R. (2025). Sport-related performance anxiety in young athletes: a clinical practice review. *Translational Pediatrics*. AME Publishing Company. <https://doi.org/10.21037/tp-24-258>
- Bicalho, C. C. F., de Melo, G. F., & Noce, F. (2022). Evidence of Validity and Perspectives for Resilience Scales in Sport. *Psicologia: Teoria e Pesquisa*, 38. <https://doi.org/10.1590/0102.3772E38214.EN>
- Bonilla, I., Chamarro, A., & Ventura, C. (2022). Psychological skills in esports: Qualitative study of individual and team players. *Aloma*, 40(1), 36–41. <https://doi.org/10.51698/aloma.2022.40.1.36-41>
- Conde-Ripoll, R., Escudero-Tena, A., & Bustamante-Sánchez, Á. (2024). Pre and post-competitive anxiety and self-confidence and their relationship with technical-



Original article. Psychological comparison of Indonesian badminton players aged 13-14 years: a multidimensional assessment. Vol. 12, n. ° 4; p. 1-24, August 2026. <https://doi.org/10.55040/npevnp45>

- tactical performance in high-level men's padel players. *Frontiers in Sports and Active Living*, 6. <https://doi.org/10.3389/fspor.2024.1393980>
- Correia, M., & Rosado, A. (2019). Anxiety in athletes: Gender and type of sport differences. *International Journal of Psychological Research*, 12(1), 9–17. <https://doi.org/10.21500/20112084.3552>
- Cotrena, C., Branco, L. D., & Fonseca, R. P. (2018). Adaptation and validation of the melbourne decision making questionnaire to Brazilian Portuguese. *Trends in Psychiatry and Psychotherapy*, 40(1), 29–37. <https://doi.org/10.1590/2237-6089-2017-0062>
- Crouch, K. L., Larson, A., & DeBeliso, M. (2022). Motivation Differences between Youth Single-Sport, Multi-Sport, and Single-Sport Specialized Athletes in the Western United States. *ATHENS JOURNAL OF SPORTS*, 9(1), 37–50. <https://doi.org/10.30958/ajspo.9-1-3>
- DALĖALI, V., & TUTAL, V. (2024). Investigation of Basketball Players' Mental Training and Courage Levels and Their Perception of Struggle and Threat in Sports. *Journal of Education and Recreation Patterns*, 5(1), 285–297. <https://doi.org/10.53016/jerp.v5i2.261>
- Djaba, H. S. W., Siswantoyo, Budiarti, R., Fauzi, Sukanti, E. R., Tomoliyus, & Prabowo, T. A. (2024). The Impact of Motivation on Decision-Making of Futsal Goalkeepers in Indonesia : An Analysis of Self-Confidence as Mediator. *Sport Mont*, 22(2), 3–9. <https://doi.org/10.26773/smj.240707>
- Eldadi, O., & Tenenbaum, G. (2025). Team cognition (TC) in sport: Foundations, development, and performance implications. *Psychology of Sport and Exercise*. Elsevier Ltd. <https://doi.org/10.1016/j.psychsport.2025.102927>
- Fonseca Bicalho, C. C., de Melo, G. F., & Noce, F. (2021). Development and validation evidence for the Resilience Scale for Sport (RS-Sp). *International Journal of Sport Psychology*, 52(6), 494–527. <https://doi.org/10.7352/IJSP.2021.52.494>
- Gao, S., Guo, Z., Zhang, R., Jin, J., & Dou, G. (2023). Psychometric properties of the Sport Courage Scale for Chinese athletes. *Frontiers in Psychology*, 14. <https://doi.org/10.3389/fpsyg.2023.1133720>
- González-Hernández, J., Barrera-Vázquez, D., & Gómez-López, M. (2024). Self -

Original article. Psychological comparison of Indonesian badminton players aged 13-14 years: a multidimensional assessment. Vol. 12, n. ° 4; p. 1-24, August 2026. <https://doi.org/10.55040/npevnp45>

Confidence in Young Athletes: A Protective Factor Against Perfectionism and Anxiety in Competitive Grassroots Sport. *Perceptual and Motor Skills*, 131(6), 2324–2345. <https://doi.org/10.1177/00315125241290563>

Hacıcaferoğlu, S., Tanyeri, L., & Emniyet, O. T. (2023). Investigation of the effect of courage behaviors on endurance levels of canoe athletes. *Physical Education of Students*, 27(1), 36–44. <https://doi.org/10.15561/20755279.2023.0105>

Hidayat, Yusuf, Yudianta, Y., Hambali, B., Sultoni, K., Ustun, U. D., & Singnoy, C. (2023). The effect of the combined self-talk and mental imagery program on the badminton motor skills and self-confidence of youth beginner student-athletes. *BMC Psychology*, 11(1). <https://doi.org/10.1186/s40359-023-01073-x>

Hidayat, Yusup, & Hambali, B. (2018). Confirmatory Factor Analysis of the Self-Confidence Scale among Beginner Badminton Child-Athletes - A Pilot Study (pp. 951–956). Scitepress. <https://doi.org/10.5220/0007074409510956>

Ihsan, F., Nasrulloh, A., & Nugroho, S. (2024). Analysis of key factors affecting the achievement of badminton athletes at the international level: A systematic review. *Fizjoterapia Polska*, 2024(2), 374–382. <https://doi.org/10.56984/8ZG5608D4E>

Intihansyah, R., Tomoliyus, T., Sukamti, E. R., Fauzi, F., Prabowo, T. A., Prayoga, H. D., ... Amalia, B. (2024). The Impact of Parental Support on Performance Achievement through Achievement Motivation in Elite Athletes in South Kalimantan, Indonesia: A Cross-Sectional Study with Structural Equation Modeling Analysis. *Retos*, 57, 346–354. <https://doi.org/10.47197/retos.v57.105996>

Indarto, A. V., Prabowo, T. A., Afifah, M., Hamzah, A. A. L., & Antoro, W. P. (2025). Coach-Athlete Intimacy Towards Athlete Psychology: A Scoping Review. *Jurnal Pendidikan Jasmani (JPJ)*, 6(1), 108–118. <https://doi.org/10.55081/jpj.v6i1.4117>

Isaksson, U., Hajdarević, S., Jutterström, L., & Hörnsten, Å. (2014). Validity and reliability testing of the Swedish version of Melbourne Decision Making Questionnaire. *Scandinavian Journal of Caring Sciences*, 28(2), 405–412. <https://doi.org/10.1111/scs.12052>



Original article. Psychological comparison of Indonesian badminton players aged 13-14 years: a multidimensional assessment. Vol. 12, n. ° 4; p. 1-24, August 2026. <https://doi.org/10.55040/npevnp45>

- Isaza, A. de J. C., Chulia, A. T., Barrón, R. G., & Castilla, I. M. (2021). Analysis of the psychometric properties of the melbourne decision making questionnaire in Colombian adolescents. *Revista Latinoamericana de Psicología*, 53, 47–55. <https://doi.org/10.14349/rlp.2021.v53.6>
- Iskandar, R., Wismanadi, H., Saraswara, B. S., & Kumaat, N. A. (2024). Literature Review: The Influence Of Politics On Sports Achievement (Study On Badminton Sports Achievement In Indonesia). *COMPETITOR: Jurnal Pendidikan Kepelatihan Olahraga*, 16(3), 790. <https://doi.org/10.26858/cjpko.v16i3.66689>
- Julvanichpong, T., Vongjaturapat, N., Park, J., & Singnoy, C. (2025). Measurement Invariance and Latent Mean Differences of the Thai version of Athletic Coping Skill Inventory. *Sylwan*. <https://doi.org/10.59879/v63ws>
- Kim, Y. V., & Ahn, H. (2025). Protecting the Mental Health of Esports Players: A Qualitative Case Study on Their Stress, Coping Strategies, and Social Support Systems. *International Journal of Mental Health Promotion*, 27(9), 1301–1334. <https://doi.org/10.32604/ijmhp.2025.068251>
- Konter, E., Kueh, Y. C., & Kuan, G. (2020). Courage in competition: Adaptation of the sports courage scale for American English and validation of the factor structure with student-athletes at Clemson University. *International Journal of Environmental Research and Public Health*, 17(13), 1–10. <https://doi.org/10.3390/ijerph17134834>
- Konter, E., & Ng, J. (2012). Development of sport courage scale. *Journal of Human Kinetics*, 33(1), 163–172. <https://doi.org/10.2478/v10078-012-0055-z>
- Latinjak, A. T. (2025). Integrative self-regulation model for sport and exercise: Theory and implications for comprehensive training. *Performance Enhancement and Health*, 13(4). <https://doi.org/10.1016/j.peh.2025.100350>
- Li, Y., Ren, Y., Du, Z., Li, M., & Jiang, J. (2025). Competitive pressure, psychological resilience, and coping strategies in athletes' pre-competition anxiety. *Scientific Reports*, 15(1). <https://doi.org/10.1038/s41598-025-19213-1>
- López-Gajardo, M. A., González-Ponce, I., Ponce-Bordón, J. C., Díaz-García, J., & Leo, F. M. (2020). Spanish validation of the effective communication scale in soccer.



Original article. Psychological comparison of Indonesian badminton players aged 13-14 years: a multidimensional assessment. Vol. 12, n. ° 4; p. 1-24, August 2026. <https://doi.org/10.55040/npevnp45>

Revista Latinoamericana de Psicología, 52(1), 184–192.

<https://doi.org/10.14349/rp.2020.v52.19>

Magnaguagno, L., & Beck, D. (2025). Decision-making process in game sports: what do top-level players think of current research? *Frontiers in Sports and Active Living*, 7. <https://doi.org/10.3389/fspor.2025.1653834>

Mandan, A., Tomoliyus, T., Alim, A., & Prabowo, T. A. (2024). The Impact of Service Quality on Self-Confidence of Wheelchair Athletes : An Analysis of Family Support as Moderator. *Sport Mont*, 22(2), 3–9. <https://doi.org/10.26773/smj.240717>

Metin, M., & Eratlı Şirin, Y. (2025). Effective Communication as a Mediator between Leadership and Team Cohesion in Football Teams. *Akdeniz Spor Bilimleri Dergisi*, 8(3), 478–489. <https://doi.org/10.38021/asbid.1700012>

Miranda, R., Coimbra, D. R., Filho, M. G. B., Miranda Júnior, M. V., & Andrade, A. (2018). Brazilian version (ACSI-28BR) of athletic coping skills inventory-28. *Revista Brasileira de Medicina Do Esporte*, 24(2), 130–134. <https://doi.org/10.1590/1517-869220182402160980>

Oh, Y. (2023). Communication and Team Cohesion Moderate the Relationship Between Transformational Leadership and Athletic Performance. *SAGE Open*, 13(3). <https://doi.org/10.1177/21582440231195196>

Pambudi, T., Sugiyanto, F. X., Tomoliyus, Ilham, Orhan, B. E., & Geantă, V. A. (2025). Defining the Influence of Age and Gender on Key Performance Metrics in Badminton. *Physical Education Theory and Methodology*, 25(3), 501–510. <https://doi.org/10.17309/tmfv.2025.3.04>

Putra, M. F. P., & Guntoro, T. S. (2022). Competitive State Anxiety Inventory–2R (CSAI-2R): Adapting and Validating Its Indonesian Version. *International Journal of Human Movement and Sports Sciences*, 10(3), 396–403. <https://doi.org/10.13189/saj.2022.100305>

Ratno Susanto, R. S., Anggraeni, D. C., Taroreh, B. S., & Afandi, A. (2025). Analysis of Calmness Training for Archery Sports for PORPROV Athletes in Malang Regency. *Jurnal Moderasi Olahraga*, 5(1), 75–84. <https://doi.org/10.53863/mor.v5i1.1540>



Original article. Psychological comparison of Indonesian badminton players aged 13-14 years: a multidimensional assessment. Vol. 12, n. ° 4; p. 1-24, August 2026. <https://doi.org/10.55040/npevnp45>

- Sabiryanova, D. I., Afanasyeva, V. A., & Semenova, G. I. (2024). The study of anxiety in badminton players aged 12-13 years. *Current Issues of Sports Psychology and Pedagogy*, 4(2), 6–13. <https://doi.org/10.15826/spp.2024.2.103>
- Sakamoto, Y., Komagata, J., Otsuka, A., Shinya, Y., Sendouda, M., & Masu, Y. (2024). Factors Associated with Anxiety and Depression among Elite Collegiate Badminton Players in Japan: Exploratory Analysis. *Psychiatry International*, 5(3), 470–481. <https://doi.org/10.3390/psychiatryint5030033>
- Salleh, R. M., Kuan, G., Aziz, M. N. A., Rahim, M. R. A., Rahayu, T., Sulaiman, S., ... Appukutty, M. (2021). Effects of probiotics on anxiety, stress, mood and fitness of badminton players. *Nutrients*, 13(6). <https://doi.org/10.3390/nu13061783>
- Saniah, S., Sukamti, E. R., Chaeroni, A., Prayoga, H. D., Prabowo, T. A., Suganda, M. A., ... Abdhi, M. I. (2024). An analysis of Indonesian student-level boxing athletes: What Effect Does Competition Anxiety Have on Self-Efficacy? *Retos*, 55, 1030–1037. <https://doi.org/10.47197/retos.v55.106784>
- Sullivan, P., & Feltz, D. L. (2003). The Preliminary Development of the Scale for Effective Communication in Team Sports (SECTS). *Journal of Applied Social Psychology*, 33(8), 1693–1715. <https://doi.org/10.1111/j.1559-1816.2003.tb01970.x>
- Supriyatna, Y., Kusmaedi, N., Hidayat, Y., & Hambali, B. (2019). Regression Equation Model of Motivation, Self-Confidence, and Anxiety Variables in Mastering Badminton Games Learning Outcome Test. *Jurnal Pendidikan Jasmani Dan Olahraga*, 4(2), 111–117. <https://doi.org/10.17509/jpjo.v4i2.18677>
- Suratmin, S., & Yudhistira, D. (2024). Psychological analysis of badminton players from the perspective of self confidence, stress, tension and anxiety. *Retos*, 61, 1468–1473. <https://doi.org/10.47197/retos.v61.110403>
- Toros, T., Ogras, E. B., Okan, İ., Temel, C., Keskin, M. T., Korkmaz, C., & Uluoz, E. (2023). Investigation the Relationship between Mental Toughness and Courage Levels of Sports Sciences Faculty Students for Sustainable Performance. *Sustainability (Switzerland)*, 15(12). <https://doi.org/10.3390/su15129406>
- Vičar, M., Koukal, V., Šašinka, V., & Vaculíková, P. (2020). Development and validation of the czech version of the athletic coping skills inventory (Acsi-28) for soccer



Original article. Psychological comparison of Indonesian badminton players aged 13-14 years: a multidimensional assessment. Vol. 12, n. ° 4; p. 1-24, August 2026. <https://doi.org/10.55040/npevnp45>

referees. *Acta Gymnica*, 50(4), 147–156. <https://doi.org/10.5507/ag.2020.018>

Wang, Y., Li, Z., Xie, X., Yang, G., Chen, T., & Wang, H. (2025). Psychological predictors of competitive levels in badminton athletes: a gender-stratified analysis. *Frontiers in Psychology*, 16. <https://doi.org/10.3389/fpsyg.2025.1698010>

Wei, D., Xue, J., & Sun, B. (2025). Team vs. individual sports in adolescence: gendered mechanisms linking emotion regulation, social support, and self-efficacy to psychological resilience. *Frontiers in Psychology*, 16. <https://doi.org/10.3389/fpsyg.2025.1636707>

Wenjie, C., Lou, F., & Wang, Y. (2025). Application of tactical optimization model and decision-making strategy in football teaching practice. *Humanities and Social Sciences Communications*, 12(1). <https://doi.org/10.1057/s41599-025-04458-y>

Xi Zhou. (2026). The Influence of Simulated Competition Scenario Training on the On-the-Spot Decision-Making Ability of College Badminton Players. *Journal of Modern Education and Culture*, 2(9). <https://doi.org/10.70767/jmec.v2i9.822>

Young, M. G., Poulus, D. R., & Adie, J. M. (2026). Esports, mental toughness, & resilience: Psychological predictors of performance may fall short. *Psychology of Sport and Exercise*, 82. <https://doi.org/10.1016/j.psychsport.2025.103016>