

RELATIONSHIP BETWEEN PHYSICAL CONDITION, CONCENTRATION, AND ANXIETY IN NUSANTARA PETANQUE CLUB KEDIRI ATHLETES

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Abstract

This research is motivated by the importance of physical condition in petanque, which is thought to be related to athletes' concentration and anxiety levels during matches. This study aims to determine the levels of physical condition, concentration, and anxiety, and to examine the relationship between physical condition and concentration and anxiety in athletes from the Nusantara Petanque Club Kediri. The study used a quantitative approach with a correlational design. The study participants consisted of 15 active petanque athletes from the Nusantara Petanque Club Kediri who participated in a regular training program, with a total sampling technique. Physical condition data were obtained through tests of arm muscle strength, arm muscle power, grip strength, wrist flexibility, balance, and eye-hand coordination. Concentration was measured using the Grid Concentration Test, while anxiety was measured using the Sport Competition Anxiety Test (SCAT). Data analysis used the Pearson Product Moment correlation test. The results showed a significant positive relationship between physical condition and concentration ($r = 0.729$; $p = 0.002$) and a significant negative relationship between physical condition and anxiety ($r = -0.762$; $p = 0.001$). These findings indicate that athletes in better physical condition tend to have higher levels of concentration and lower levels of anxiety. Thus, physical condition shows a significant relationship with concentration and anxiety in athletes from the Nusantara Petanque Club Kediri without indicating a causal relationship.

Keywords: Physical Condition; Concentration; Anxiety; Petanque Athletes

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INTRODUCTION

Petanque is a precision sport with unique characteristics, combining technical ability, physical fitness, and psychological aspects of athletes to achieve optimal performance (Nurhasan et al., 2024). Unlike sports that prioritize speed and physical contact, petanque emphasizes throwing accuracy, movement control, body stability, and the ability to maintain focus throughout the match. Petanque athletes are required to perform consistent movements under competitive pressure, making physical and mental factors crucial and interrelated in determining an athlete's success. Good physical condition not only supports technical ability but also plays a role in maintaining an athlete's cognitive abilities and psychological stability during competition (Wahyu Perdana et al., 2022).

Physical condition is a key component in developing sports performance because it serves as the foundation for effective and efficient physical activity. According to (Hanief & Purnomo, 2019), the characteristics of petanque require several biomotor components, such as muscle strength, balance, coordination, and flexibility, to produce accurate throws. Research by (Dahrial, 2022) shows that the physical condition of petanque athletes is a crucial factor in competition readiness because it is related to the ability to maintain movement quality throughout the match. In line with (Hilmi, 2021) research, petanque athletes require specific physical fitness because the sport requires postural stability and high motor control. This demonstrates that physical fitness is not only related to general physical abilities but also to an athlete's ability to maintain focus and perform technically.

The physical fitness components of petanque differ from those of other sports. Arm muscle strength, power, grip strength, wrist flexibility, balance, and hand-eye coordination are crucial for producing precise throwing movements. Hanief and Purnomo (2019) explain that arm strength and balance contribute to a petanque athlete's throwing results. Research by (Amalia et al., 2019) also shows that grip strength and flexibility are related to the accuracy of throwing technique. Furthermore, (Lestari et al., 2023) found that the combination of strength and balance can enhance the effectiveness of a petanque athlete's performance. Based on these research findings, it is clear that physical fitness plays a significant role in supporting an athlete's technical ability.

In addition to physical fitness, psychological factors are also crucial in competitive sports, particularly concentration. Concentration is an athlete's ability to focus on the task at hand and ignore distractions that could impact performance (Ashari & Yulianti, 2022). In petanque, concentration plays a crucial role because athletes must be able to calculate distance, throw direction, field conditions, and game strategy within a specific timeframe. (Robiyatul et al., 2026) explains that concentration is related to a petanque athlete's throwing results because the ability to focus helps athletes better control their movements. Research by (Oktaviani et al., 2023) also shows that mental training can improve the concentration and throwing accuracy of petanque athletes. This finding is supported by (Isdarianti et al., 2024), who found that concentration levels are related to petanque athletes' shooting performance.

The ability to maintain concentration during a match is inseparable from an athlete's physical condition. Physical fatigue that occurs during a match can lead to cognitive decline, making it difficult for athletes to maintain focus. (Prasetyo et al., 2025) explain that physical fatigue can lead to decreased cognitive function and decision-making abilities in athletes. Consistent (Restuti et al., 2023), exhausting physical activity can affect a person's attention and mental control. Therefore, good physical condition is thought to have a positive relationship with an athlete's concentration ability because a physiologically prepared body can support optimal cognitive function.

In addition to concentration, anxiety is another psychological factor that often arises in competitive sports. Anxiety can arise from competition pressure, the demands of achievement, fear of failure, and worry about the outcome. (Martens et al., 1990), using Multidimensional Anxiety Theory,

explain that sports anxiety consists of cognitive anxiety, somatic anxiety, and self-confidence. In petanque athletes, anxiety can cause impaired concentration, muscle tension, and changes in movement control, thus impacting throwing accuracy.

Research by (Isdarianti et al., 2025) showed that petanque athletes still experience anxiety levels before matches, although they are in the low to moderate range. Research by (Mulyani & Syah, 2025) also found that some petanque athletes experience moderate to high anxiety before matches. This situation indicates that athletes' mental preparedness remains a crucial aspect in performance development. Furthermore, Widya (Putri, S. A., Pratama, R. S., Haryono, S., & Romadhoni, 2025) found a negative relationship between self-confidence and athlete anxiety, with higher self-confidence indicating lower levels of anxiety.

Many psychological approaches have been developed to address athlete anxiety. (Isyani et al., 2022) explain that coping strategies based on Problem-Focused Coping can help petanque athletes reduce pre-match anxiety (Raibowo et al., 2023) also state that relaxation techniques, visualization, and self-talk can help athletes manage psychological stress before a match. Furthermore, (Al Hadiq et al., 2025) explain that self-hypnosis techniques can help improve concentration and reduce anxiety in petanque athletes. The results of this study indicate that psychological aspects have a significant influence on athletes' readiness for competition.

However, based on previous research, most studies still focus separately on physical and psychological aspects. Research on petanque has largely discussed the relationship between physical condition and technical abilities such as throwing accuracy, while psychological research has focused more on examining anxiety, concentration, and self-confidence separately. Limited research has examined the relationship between physical condition and concentration and anxiety simultaneously in petanque athletes. This situation indicates a research gap that requires further study to understand the relationship between physical readiness and athletes' psychological aspects.

Based on initial observations of athletes from the Nusantara Petanque Club Kediri, it was found that some athletes experienced decreased concentration during long matches and showed signs of anxiety when facing high-pressure matches. This research is novel in its integrative approach, analyzing the relationship between physical condition and two psychological aspects of athletes, namely concentration and anxiety, simultaneously in petanque athletes. Based on observations at the Nusantara Petanque Club in Kediri, training programs have focused primarily on improving pointing and shooting techniques and developing physical condition components.

However, evaluation of psychological factors, particularly concentration and competition anxiety, has been limited. However, differences in athletes' ability to maintain focus and control anxiety were found during training and match simulations, despite relatively similar levels of physical condition. This indicates that petanque athlete performance is influenced not only by physical ability but also by psychological readiness, which interacts with physical condition.

Most previous studies have examined the relationship between physical condition and technical performance or sporting achievement, while research on the relationship between physical condition and psychological aspects in petanque is relatively limited. Other studies generally examine only one psychological variable, such as concentration or anxiety, separately, thus failing to provide a comprehensive picture of how physical condition relates to both aspects simultaneously. Therefore, this study offers a new perspective by integrating measurements of physical condition, concentration, and anxiety into a single analytical model for petanque athletes.

This research is expected to enrich scientific studies on the factors influencing petanque athlete performance, particularly through the understanding that performance coaching should not only focus on improving physical condition but also consider the athlete's psychological readiness. The results of this study are expected to provide a basis for coaches in developing more comprehensive training programs by integrating physical and mental training, thereby making the petanque athlete development process more effective, measurable, and tailored to the athlete's needs based on field evaluations.

Therefore, research into the relationship between physical condition and concentration and anxiety in athletes from the Nusantara Petanque Club Kediri is crucial. This research is expected to provide a scientific overview of the relationship between physical readiness and the psychological aspects of athletes, thus providing a basis for developing a more comprehensive training program. With an approach that integrates physical and mental aspects, petanque athlete development can be more effective, improving performance and achievement.

METHODS

This study employed a quantitative research approach using a correlational design to examine the relationship between physical condition, concentration, and competitive anxiety among petanque athletes. The research was conducted at Nusantara Petanque Club, Kediri, Indonesia. The study population consisted of all registered athletes in the club, and because the population size was relatively small, a total sampling technique was applied. Consequently, all 15 athletes participated as research subjects.

The independent variable in this study was physical condition, while the dependent variables were concentration and competitive anxiety. Physical condition was assessed through six biomotor components, namely arm muscle strength, arm muscle power, handgrip strength, wrist flexibility, balance, and hand-eye coordination. Since each physical test used different units of measurement, all scores were standardized using Z-score transformation and subsequently converted into T-scores to obtain a composite physical condition score.

Concentration was measured using the Grid Concentration Test (GCT), which objectively evaluates an athlete's ability to maintain attention and focus within a predetermined time limit.

Competitive anxiety was measured using the Sport Competition Anxiety Test (SCAT), a standardized questionnaire developed to assess athletes' competitive trait anxiety before competition.

Data collection was conducted by administering the physical performance tests followed by the concentration test and the SCAT questionnaire. Prior to hypothesis testing, descriptive statistical analysis was performed to describe the characteristics of each variable. Data normality was examined using the Shapiro–Wilk test because the sample size was fewer than 50 participants. Since all variables met the assumption of normality ($p > 0.05$), the relationships between variables were analyzed using the Pearson Product Moment correlation test with a significance level of 0.05. Statistical analyses were performed using IBM SPSS Statistics.

RESULTS AND DISCUSSION

Descriptive Statistics

Descriptive statistical analysis was conducted to provide an overview of the data characteristics for each research variable, namely physical condition, concentration, and athlete anxiety. Descriptive statistics included minimum, maximum, mean, and standard deviation values to illustrate data trends and the level of variation within each variable.

The analysis results show that athletes' physical condition has varying levels of achievement, reflecting differences in biomotor abilities between athletes. This variation is obtained from six components of physical condition: arm muscle strength, arm muscle power, handgrip strength, wrist flexibility, balance, and eye-hand coordination, which are then standardized into a single physical condition index. These differences in scores indicate that each athlete has a different level of physical readiness as capital to support performance during competitions.

Physical Condition

The raw data obtained from the physical condition test were then analyzed for range, minimum, maximum, mean, and standard deviation. The table details are as follows:

Table 1. Descriptive Analysis Results of Physical Condition Data

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Arm Muscle Strength	15	28	11	39	22.53	9.568
Wrist Flexibility	15	10	80	90	86.13	3.114
Arm Muscle Power	15	137	225	362	284.20	45.712
Hand Squeeze Strength	15	32	13	45	28.40	8.935
Balance	15	33	22	55	40.73	8.672

Eye-Hand Coordination	15	16	10	26	16.60	4.793
Valid N (listwise)	15					

Source: (processed by researchers, 2026)

Based on the table, the arm muscle strength component had an average score of 22.53, indicating that the athletes' arm strength was still in the poor category. The wrist flexibility component had an average score of 86.13 degrees, indicating that the athletes' flexibility was within the normal range.

The arm muscle power component had an average score of 284.20 cm, which is categorized as moderate. Meanwhile, the hand compression muscle strength had an average score of 28.40 kg, which is categorized as moderate. The athletes' balance ability averaged 40.73 seconds, which is categorized as good, while hand-eye coordination averaged 16.80, which is categorized as good.

Data on the physical condition of athletes from the Nusantara Petanque Club Kediri when presented in the form of a dominant category distribution is as follows:

Table 2. Dominant Category Data Physical Condition

Physical Condition Components	Dominant Category
Arm Muscle Strength	Poor
Wrist Flexibility	Good
Arm Muscle Power	Moderate
Hand Squeeze Strength	Moderate
Balance	Good
Eye-Hand Coordination	Moderate

Source: (processed by researchers, 2026)

Based on the descriptive analysis, the physical condition of the Nusantara Petanque Club Kediri athletes showed varying characteristics in each biomotor component. Arm muscle strength was still predominantly in the poor category, while wrist flexibility and balance were in the good category. Meanwhile, arm muscle power, grip strength, and eye-hand coordination were predominantly in the moderate category. In general, these results indicate that the athletes are in fairly good physical condition, but still need improvement in several biomotor components, especially arm muscle strength, to support optimal performance in petanque.

Concentration

The results of the descriptive analysis of the concentration variable showed that from 15 athletes obtained a minimum score of 3, a maximum score of 26, an average score of 15.00, and a standard

deviation of 5.085. Based on the Grid Concentration Test assessment norms, the athletes' concentration level was in the moderate category.

Table 3. Concentration Test Results

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Concentration	15	23	3	26	15.00	5.085
Valid n (listwise)	15					

Source: (processed by researchers, 2026)

The grid data for the concentration test of the Nusantara Petanque Club Kediri athletes is presented in the form of a frequency distribution as follows:

Table 4. Concentration Level Data Frequency

Achievement	Classification	Frequency	Percentage
Excellent	21 <	1	6,67%
Good	20 - 16	5	33,33%
Average	15 - 11	7	46,67%
Poor	10 - 6	1	6,67%
Very Poor	5 >	1	6,67%
Total		15	100%

Source: (processed by researchers, 2026)

Based on the data above, the average concentration value of the Nusantara Petanque Club Kediri athletes is 15.00, which is in the “MEDIUM” category.

Anxiety

For the anxiety variable, the SCAT analysis results showed a minimum score of 40, a maximum score of 49, a mean score of 44.47, and a standard deviation of 2.615. Based on SCAT norms, all athletes were in the high anxiety category.

Table 5. Sports Competition Anxiety Test Results

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Anxiety	15	9	40	49	44.47	2.615
Valid n (listwise)	15					

Source: (processed by researchers, 2026)

Anxiety data of Nusantara Petanque Club Kediri athletes when presented in the form of a

frequency distribution is as follows:

Table 6. Anxiety Level Data Frequency

Classification	Score	Frequency	Percentage
Low	19 >		
Average	20 – 29		
Moderate	30 – 39		
High	40 – 49	15	100%
Very High	50		
Total		15	100%

Source: (processed by researchers, 2026)

Based on the data above, the average SCAT score of Nusantara Petanque Club Kediri athletes is 44.47, which is in the “HIGH” category.

The relationship between physical condition and concentration

The analysis of the relationship between physical condition and concentration in athletes from the Nusantara Petanque Club Kediri was conducted using the Pearson Product Moment correlation test. Based on the analysis results, a correlation coefficient value of 0.729 was obtained with a significance value of $0.002 < 0.05$. These results indicate a significant relationship between physical condition and athlete concentration. A positive correlation value indicates that the better the physical condition of an athlete, the higher their concentration ability in carrying out competition activities.

Table 7. Results of the Correlation Test between Physical Condition and Concentration

		Physical Condition	Concentration
Physical Condition	Pearson Corelation	1	.729
	Sig. (2-tailed)		.002
	N	15	15
Concentration	Pearson Corelation	.729	1
	Sig. (2-tailed)	.002	
	N	15	15

Source: (processed by researchers, 2026)

These results indicate that physical condition plays a role in supporting athletes' concentration abilities. Athletes in better physical condition are more likely to maintain focus, control their movements, and maintain precision in throwing techniques in petanque. Optimal physical condition

also helps athletes reduce fatigue during competition, thus improving their ability to maintain attention.

The relationship between physical condition and anxiety

The analysis of the relationship between physical condition and anxiety showed a correlation coefficient of -0.762 with a significance value of $0.001 < 0.05$. These results indicate a significant relationship between physical condition and athlete anxiety. A negative correlation value indicates that the relationship between the two variables is in the opposite direction, meaning that the better the athlete's physical condition, the lower the perceived anxiety level.

Table 8. Results of the Correlation Test between Physical Condition and Anxiety

		Physical Condition	Anxiety
Physical Condition	Pearson Corelation	1	-.762
	Sig. (2-tailed)		.001
	N	15	15
Anxiety	Pearson Corelation	-.762	1
	Sig. (2-tailed)	.001	
	N	15	15

Source: (processed by researchers, 2026)

Based on these results, it can be explained that an athlete's physical readiness is related to their psychological state before a match. Athletes in better physical condition tend to have higher self-confidence, which can reduce stress and anxiety during matches. Conversely, less than optimal physical condition can make athletes more susceptible to fatigue and increase anxiety about their abilities during the match.

The present study demonstrated that physical condition was significantly associated with both concentration and competitive anxiety among athletes of Nusantara Petanque Club Kediri. Specifically, physical condition showed a strong positive correlation with concentration ($r = 0.729$, $p = 0.002$) and a strong negative correlation with competitive anxiety ($r = -0.762$, $p = 0.001$). These findings indicate that athletes with better physical condition tend to maintain higher levels of concentration while simultaneously experiencing lower levels of competitive anxiety. The magnitude of both correlation coefficients suggests that the relationships are not only statistically significant but also practically meaningful in the context of petanque performance.

The positive relationship between physical condition and concentration can be explained from both physiological and psychological perspectives. According to Bompa and Buzzichelli (2019), well-developed biomotor components, including muscular strength, power, flexibility, balance, and coordination, enable athletes to perform technical movements more efficiently while reducing

unnecessary energy expenditure. In precision sports such as petanque, efficient movement execution minimizes physical fatigue, allowing athletes to allocate greater cognitive resources toward maintaining attentional focus throughout competition. Athletes who possess adequate physical readiness are therefore more capable of sustaining concentration during repeated throwing attempts despite experiencing competitive pressure.

The correlation coefficient of $r = 0.729$ represents a strong positive relationship, indicating that physical condition contributes substantially to athletes' concentration. Statistically, this coefficient corresponds to approximately 53.1% shared variance ($r^2 = 0.531$) between physical condition and concentration. This finding suggests that more than half of the variation in athletes' concentration is associated with differences in physical condition, while the remaining variation may be explained by other factors such as competitive experience, motivation, psychological skills, sleep quality, coaching strategies, and environmental conditions. Therefore, although physical condition is not the sole determinant of concentration, it constitutes an important component that should be incorporated into athlete development programs.

These findings are consistent with Harris and Harris (1984), who emphasized that concentration depends on an athlete's ability to selectively direct attention toward task-relevant information while minimizing distractions. Physical fatigue may impair attentional control by increasing cognitive load and reducing information-processing efficiency. Consequently, athletes with superior physical fitness are more likely to maintain stable attentional focus during competition. The present findings also support previous studies by Kristanto (2020), Ashari and Yulianti (2022), Oktaviani et al. (2023), and Isdarianti et al. (2024), which reported that concentration is an important determinant of throwing performance in petanque athletes. Unlike those studies, however, the present research demonstrates that concentration is associated not only with technical or psychological factors but also with athletes' overall physical condition.

The present study also identified a strong negative relationship between physical condition and competitive anxiety ($r = -0.762$, $p = 0.001$). The negative direction of the correlation indicates that athletes with better physical condition tend to experience lower levels of anxiety before and during competition. This relationship has substantial practical importance because the correlation coefficient corresponds to approximately 58.1% shared variance ($r^2 = 0.581$), indicating that physical condition accounts for a considerable proportion of variability in competitive anxiety. Although anxiety is also influenced by psychological, social, and situational factors, these findings highlight physical preparedness as an important protective factor against excessive competitive anxiety.

From a theoretical perspective, Martens et al. (1990) proposed that competitive anxiety consists of cognitive concerns and physiological responses that emerge when athletes perceive competitive situations as threatening. Athletes who feel physically prepared generally demonstrate greater confidence in their abilities, thereby reducing uncertainty regarding performance outcomes.

Conversely, inadequate physical readiness may increase self-doubt, perceived effort, and fear of failure, ultimately elevating anxiety levels. In petanque, where success depends on movement precision rather than physical confrontation, excessive anxiety may disrupt attentional focus, impair fine motor control, and decrease throwing accuracy. Therefore, maintaining good physical condition contributes not only to physiological readiness but also to psychological stability during competition.

The present findings support previous research conducted by Badaru et al. (2022), Muliyani and Syah (2025), and Putri et al. (2025), which identified competitive anxiety as an important psychological factor affecting petanque athletes' performance. However, previous studies primarily focused on describing anxiety levels or evaluating psychological interventions such as self-confidence training, coping strategies, imagery, or self-talk. The present study extends the existing literature by demonstrating that physical condition itself is significantly associated with competitive anxiety. This finding suggests that improving athletes' physical fitness may indirectly contribute to anxiety management in addition to enhancing physical performance.

The practical implications of these findings are particularly relevant for coaches and sport practitioners. Training programs for petanque athletes should not focus exclusively on technical skills but should integrate systematic physical conditioning with psychological preparation. Strength, power, balance, flexibility, and coordination training should be developed simultaneously because improvements in these biomotor components may facilitate better concentration and reduce competitive anxiety. Regular monitoring of athletes' physical condition may also assist coaches in identifying athletes who are at greater risk of experiencing psychological difficulties before competition. Consequently, physical conditioning should be considered an integral component of comprehensive athlete development rather than merely a means of improving physical performance.

Several limitations should be acknowledged when interpreting these findings. The study involved only 15 athletes from a single petanque club, which may limit the generalizability of the results. In addition, the correlational design identifies associations rather than causal relationships. Therefore, it cannot be concluded that improvements in physical condition directly cause increases in concentration or reductions in anxiety. Future studies should include larger and more diverse samples, employ longitudinal or experimental designs, and examine additional variables such as self-confidence, competitive experience, motivation, and psychological skills to provide a more comprehensive understanding of athlete performance.

CONCLUSION

This study demonstrates that physical condition plays a fundamental role in shaping the psychological readiness of petanque athletes, particularly in improving concentration and reducing competitive anxiety. The findings revealed a significant positive relationship between physical condition and concentration ($r = 0.729$; $p = 0.002$), indicating that athletes with better physical condition tend to maintain higher levels of attentional focus during competition. Adequate physical fitness enables

athletes to minimize the effects of fatigue, sustain cognitive performance, and execute technical skills more accurately and consistently under competitive conditions. As a result, athletes are better able to process tactical information, maintain decision-making quality, and perform shooting techniques effectively throughout the match.

In addition, this study identified a significant negative relationship between physical condition and competitive anxiety ($r = -0.762$; $p = 0.001$), suggesting that athletes with superior physical condition experience lower levels of competitive anxiety. Better physical preparedness enhances athletes' confidence in their ability to cope with the physical demands of competition, thereby reducing excessive psychological and physiological responses to competitive pressure. Consequently, optimal physical condition not only supports physiological performance but also contributes to emotional stability, allowing athletes to remain composed and focused when facing challenging competitive situations.

Overall, these findings confirm that athletic performance in petanque is influenced by the interaction between physical and psychological factors. Physical condition should therefore be viewed not merely as a determinant of physiological capacity but also as an important foundation for developing concentration and controlling competitive anxiety. The results of this study provide empirical evidence that comprehensive athlete development programs should integrate physical conditioning with psychological preparation to maximize competitive performance. Furthermore, this study contributes to the scientific literature on petanque by strengthening the evidence that physical condition is closely associated with athletes' psychological readiness, providing valuable information for coaches and sports practitioners in designing more effective and evidence-based training programs.

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REFERENCES

- Al Hadiq, M. F., Bakhri, R. S., & Ramadhan, C. U. (2025). Teknik Self-hypnosis dalam Mengelola Kecemasan dan Meningkatkan Konsentrasi Atlet Petanque: Suatu Penelitian Pengabdian. *Al Khidma: Jurnal Pengabdian Masyarakat*, 5(2), 491. <https://doi.org/10.35931/ak.v5i2.5399>
- Amalia, B., Saharuddin, & Arifin, Z. (2019). Hubungan antara kesiapan fisik dan psikologis terhadap hasil permainan petanque. *Jurnal SPORTIF: Jurnal Penelitian Pembelajaran*, 2(3), 63–70. <https://journal.uir.ac.id/index.php/JSP/article/download/3041/2124/>
- Ashari, K., & Yulianti, M. (2022). Hubungan Kordinasi Mata Tangan Dan Konsentrasi Pada Hasil Shooting Atlet UKM Petanque UIR. *Jurnal Olahraga Dan Kesehatan (ORKES)*, 1(2), 209–218. <https://doi.org/10.56466/orkes/vol1.iss2.19>

- Dahrial. (2022). Analisis Kondisi Fisik Atlet Kejurprov Federasi Olahraga Petanque Indonesia (Fopi) Kabupaten Indragiri Hilir. *Jurnal Olahraga Indragiri*, 9(1), 9–25.
- Hanief, Y. N., & Purnomo, A. M. I. (2019). Menuju Pekan Olahraga Provinsi (PORPROV) Jawa Timur Tahun 2019: Analisis Kondisi Fisik Cabang Olahraga Petanque. *Seminar Nasional IPTEK Olahraga, 2019*, ISSN 2622-0156 Studi, 8.
- Hilmi, M. I. (2021). PROFIL KONDISI FISIK ATLET PETANQUE KOTA KEDIRI DALAM MENGHADAPI PORPROV VII JAWA TIMUR. *SINKESJAR*, 833–839.
- Isdarianti, N. L., Abdurrahman, Jul Fajrial, & Karimuddin. (2025). Analisis Anxiety Atlet Petanque Binaan Koni Aceh Menjelang Pertandingan. *Journal Sport Science Indonesia*, 4(4), 167–177. <https://doi.org/10.31258/jassi.4.4.167-177>
- Isdarianti, N. L., Masri, M., Karimuddin, K., Santoso, N., & Wiyanto, A. (2024). Analisa Konsentrasi Terhadap Performa Shooting Atlet Petanque Binaan Koni Aceh. *Journal of Physical Activity and Sports (JPAS)*, 5(3), 181–187. <https://doi.org/10.53869/jpas.v5i3.280>
- Isyani, Salabi, M., & Jamaluddin. (2022). Efektivitas Latihan Coping Strategy Berbasis Problem-Focused Coping (PFC) terhadap Tingkat Kecemasan Pra- Pertandingan Atlet Petanque Undikma. *Jurnal Pendidikan Olahraga Dan Kesehatan IKIP Mataram*, 9(1), 75–81.
- Lestari, E. L., Budi, D., & Nugraha, A. (2023). Pengaruh Modifikasi Media Latihan Menggunakan Pipa Air Terhadap Kemampuan Shooting Dalam Olahraga Petanque Pada Atlet Petanque Sumedang Tahun 2023. *Journal of Physical Education and Sport Pedagogy*, 3(1), 33–42. <https://doi.org/10.17509/jopes.v3i1.63712>
- Martens, R., Vealey, R. S., & Burton, D. (1990). *Competitive anxiety in sport*. Human Kinetics.
- Muliyani, S. E., & Syah, H. (2025). Tingkat Kecemasan Atlet Petanque Universitas Pendidikan Mandalika. *Journal Sport Science and Healt of Mandalika*, 6(1), 55–64. <http://ojs.cahayamandalika.com/index.php/jontak>
- Nurhasan, N., Arif Al Ardha, M., Salsabila Rhesa Pandhadha Putra, N., Asgi Sukmana, A., Bing Yang, C., Pambuka Putra, K., Sawa Bikalawan, S., Firdaus Adli Bakri, M., Bayu Putro, A., & Irani, R. (2024). Petanque research trends and developments in the last decade: a systematic review. *Retos*, 61, 567–577. <https://doi.org/10.47197/retos.v61.109211>
- Oktaviani, S., Budi, D., & Nugraha, A. (2023). Hubungan Antara Tingkat Konsentrasi Dengan Ketepatan Shooting Pada Atlet Petanque. *Journal of Physical Education and Sport Pedagogy*, 1(1), 45–56. <https://doi.org/10.17509/jopes.v1i1.63715>
- Prasetyo, A., Sari, P., Dharma, E., Duhe, P., Mile, R., & Irawan, S. (2025). Petanque untuk Otak Cerdas: Meningkatkan Konsentrasi Lewat Olahraga Santai. *Jurnal Pengabdian Pedagogika*, 03(02), 61–66.
- Putri, S. A., Pratama, R. S., Haryono, S., & Romadhoni, S. (2025). (2025). Tingkat Kecemasan Pada Atlet Petanque: Analisis Faktor Penyebab dan Dampaknya Terhadap Performa. *SPORTIVE. Journal Of Physical Education, Sport and Recreation*, 9(6), 299–309.

- Raibowo, S., Wulandari, I., Prabowo, A., Permadi, A., & Barnanda, O. (2023). *Jurnal Kejaora : Jurnal Kesehatan Jasmani dan Olah Raga* **KECEMASAN DAN KONSENTRASI PADA ATLET TENIS LAPANGAN POMNAS XVII SUMATERA BARAT 2022**. 8(April), 1–8.
- Restuti, D., Sepriadi, S., Ihsan, N., & Wulandari, I. (2023). Analisis Faktor-Faktor yang Mempengaruhi Kecemasan Atlet Petanque pada Pertandingan POMNAS XVII. *Jurnal JPDO*, 6(7), 175–181. <http://jpdo.ppj.unp.ac.id/index.php/jpdo/article/view/1458%0Ahttp://jpdo.ppj.unp.ac.id/index.php/jpdo/article/download/1458/712>
- Robiyatul, S., Nento, A., Dharma, E., Duhe, P., & Kadir, S. (2026). Hubungan Kekuatan Cengkraman , Koordinasi Mata-Tangan, dan Konsentrasi terhadap Akurasi Shooting Atlet Pétanque Gorontalo. *Journal Sport Sciene and Education*, 2(1), 35–43.
- Wahyu Perdana, S., Rahayuni, K., Taufik, T., & Supriyatna, S. (2022). Development Of Imagery And Self-Talk Exercises to Improve The Shooting Game Ability of Nusantara Petanque Club Athletes. *Jurnal SPORTIF: Jurnal Penelitian Pembelajaran*, 8(3), 86–99. https://doi.org/10.29407/js_unpgri.v8i3.18810