



The Relationship Between Concentration and Volleyball Serve Accuracy Among Junior High School Extracurricular Participants

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Keywords

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Abstract

Volleyball is one of the sports that can improve students' motor skills, cognitive abilities, and social values. Serve is one of the fundamental techniques that needs accuracy to start the game and also the first offensive action. This study aimed to determine the relationship between concentration and volleyball service accuracy among junior high school extracurricular participants. This research employed a quantitative approach with a correlational design. The sample consisted of 20 students participating in volleyball extracurricular activities. The instruments used were a concentration test and a volleyball service accuracy test. Data were analyzed using normality tests, linearity tests, and Pearson Product Moment correlation analysis. The results showed a significant relationship between concentration and volleyball service accuracy ($r = 0.650$; $p = 0.002 < 0.05$). These findings indicate that higher levels of concentration are associated with better service accuracy. Therefore, concentration is one of the psychological factors contributing to the successful execution of volleyball service techniques.

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INTRODUCTION

Volleyball is one of the most widely developed sports in school settings due to its high educational, competitive, and social values. In the context of physical education, volleyball functions not only as a means of improving physical fitness but also as a medium for developing students' motor skills, cognitive abilities, and psychological aspects. The success of volleyball instruction and training in schools is largely determined by the mastery of fundamental techniques in a proper and consistent manner (Suparman, 2020; Syntia et al., 2022).

One of the fundamental techniques that plays a crucial role in volleyball is the serve. The serve is the initial action to start the game and simultaneously represents a strategic opportunity to score points directly (Perdima & Voli, 2023). In modern gameplay, the serve is no longer merely a formality to initiate a rally; rather, it has evolved into the first offensive action that requires high levels of accuracy, control, and consistency. Serve accuracy is an important indicator in determining the effectiveness of this technique, as service errors not only eliminate the opportunity to score but also provide an immediate advantage to the opponent (Ponidin et al., 2017).

Serve accuracy is influenced by various factors, including physical, technical, and psychological components (Raibowo et al., 2023; Zaputra, 2025). Physical factors include arm muscle strength, coordination, balance, and postural stability. Meanwhile, technical factors relate to the proper mastery of movement mechanics. However, the successful execution of the serve cannot be separated from psychological factors, one of which is concentration. In both game and practice situations, the ability to focus attention on the target and the movement process is essential for producing accurate serves (Rachma, 2025).

In the context of sports, concentration refers to an individual's ability to direct and sustain attention on relevant stimuli while ignoring internal and external distractions. In precision motor skills such as the volleyball serve, attentional stability is crucial to ensure optimal coordination between the visual and neuromuscular systems. Disruptions in attention may lead to deviations in ball direction, improper force application, and inconsistencies in the timing of ball contact (Adila et al., 2023).

At the junior high school level, students' concentration abilities are still in a developmental stage (Ananda et al., 2024). Early adolescence is characterized by emotional fluctuations, increased sensitivity to the social environment, and variability in learning and training motivation. These conditions may affect attentional stability when performing motor tasks. In extracurricular volleyball activities, differences in individual concentration levels are often reflected in variations in serve accuracy. Some students are able to perform serves consistently, while others demonstrate repeated inaccuracies despite having a theoretical understanding of the technique (T. Hidayat et al., 2022; Sadzali et al., 2023).

Motor skill performance is not solely determined by physical ability but also by the quality of attentional control (Ningsih et al., 2020). However, within the context of sports development in junior high schools, empirical studies specifically examining the relationship between concentration and volleyball serve accuracy remain relatively limited. Most studies tend to focus on physical conditioning factors or technical training methods, while psychological aspects have not been extensively examined quantitatively in extracurricular learning contexts.

Based on this background, it is important to conduct research that examines the relationship between concentration and volleyball serve accuracy among junior high school extracurricular participants. Understanding this relationship is expected to provide theoretical contributions to the development of sport psychology studies in educational settings, as well as practical contributions for physical education teachers and coaches in designing more comprehensive training programs that integrate technical, physical, and mental aspects. Therefore, this study aims to determine whether there is a relationship between concentration and volleyball serve accuracy among junior high school extracurricular participants.

METHODS

This study employed a quantitative approach with a correlational research design. The research was conducted among male participants of the volleyball extracurricular program at SMPN 1 Bantarkawung. The population consisted of all students participating in the volleyball extracurricular activity, with a total sample of 20 students selected using a total sampling technique. The research instruments included a concentration test to measure the students' level of focus and a volleyball serve accuracy test to assess serving precision. Data analysis was conducted using the Shapiro–Wilk normality test, linearity test, and Pearson Product-Moment correlation test with the assistance of SPSS software.

RESULTS AND DISCUSSION

Data analysis was conducted through several stages, including prerequisite tests and hypothesis testing. The prerequisite tests consisted of normality and linearity tests, while hypothesis testing was performed using the Pearson Product-Moment correlation.

Table 1. Normality Test (Shapiro–Wilk)

Variable	Statistic	df	Sig.
Serve Accuracy	0.963	20	0.611
Concentration	0.909	20	0.061

The results of the normality test using Shapiro–Wilk indicated that the significance value for the serve accuracy variable was 0.611 and for the concentration variable was 0.061. Both values were greater than 0.05, indicating that the data for both variables were normally distributed. Therefore, parametric analysis was deemed appropriate to examine the relationship between variables.

Table 2. Linearity Test (ANOVA)

Variables	Sig.
Serve Accuracy * Concentration	0.104

The linearity test was conducted to determine whether the relationship between concentration and serve accuracy was linear. The result showed a significance value of 0.104 (> 0.05), indicating that the relationship between the two variables met the assumption of linearity. This suggests that an increase in concentration tends to be followed by an increase in serve accuracy in a linear pattern.

Table 3. Pearson Product-Moment Correlation Test

Variable		Serve Accuracy	Concentration
Serve Accuracy	Pearson Correlation	1	0.650**
	Sig. (2-tailed)	—	0.002
	N	20	20
Concentration	Pearson Correlation	0.650**	1
	Sig. (2-tailed)	0.002	—
	N	20	20

Based on the results of the Pearson Product-Moment correlation test, the correlation coefficient (r) was 0.650 with a significance value of 0.002 (< 0.05). These findings indicate a significant and positive relationship between concentration and volleyball serve accuracy. A correlation coefficient of 0.650 can be categorized as a strong relationship. This means that students with higher levels of concentration tend to demonstrate better serve accuracy compared to those with lower levels of concentration. Thus, the research hypothesis stating that there is a relationship between concentration and volleyball serve accuracy is accepted.

The findings of this study reveal a significant and positive relationship between concentration and volleyball serve accuracy. This indicates that psychological aspects, particularly the ability to focus attention, are closely associated with the performance of fundamental technical skills in volleyball (A. Hidayat, 2018). The relationship suggests that successful serving is not solely determined by technical mastery or muscular strength, but also by an individual's ability to consistently manage focus during the execution of precision-based motor tasks (Asnaldi, 2020; Kurniawan et al., 2021).

From a theoretical perspective, concentration is part of the attentional control system, which functions to direct cognitive resources toward relevant stimuli while inhibiting irrelevant distractions. In the context of a volleyball serve, relevant stimuli include the target direction, body position and balance, arm coordination, ball toss stability, and precise timing at the moment of hand-ball contact (Azmi et al., 2025; Baqer & Bawono, 2013; Ongko & Jannah, 2016). These components operate in an integrated sequence of movement. When students are able to maintain focus on these elements, the nervous system can coordinate motor responses more efficiently, resulting in more stable execution and improved accuracy. Conversely, attentional disruptions may lead to minor errors in swing angle, force distribution, or ball direction, ultimately affecting serve accuracy (Hartanti et al., 2016).

Volleyball serving is classified as a closed motor skill, meaning it is performed in a relatively stable environment that can be controlled by the performer (Pahrian et al., 2017). In such skills, attentional stability before and during movement execution becomes a primary determinant of success. Unlike open skills that require rapid responses to changing environments, serving provides an opportunity for optimal preparation. However, because the performer has full control over the timing of execution, the demand for internal focus becomes even greater. Even minor lapses in concentration can disrupt the integration between the visual and neuromuscular systems, affecting the direction, height, and force of the serve.

From a developmental perspective, junior high school students are in early adolescence, a stage in which executive functions, including attentional control and self-regulation, are still developing (Andiwibowo, 2018; Kuncoro, 2021). The prefrontal cortex, which plays a key role in regulating attention, is not yet fully matured, resulting in variability in the ability to manage distractions and maintain focus (Seluma, 2019). The variation in concentration levels observed in this study can be understood as a consequence of differences in self-regulation capacity (Darmawan et al., 2021; Dwijayanti, 2017). Students with better attentional control are able to maintain consistency in movement parameters, such as postural stability and swing rhythm, leading to more accurate serves. In contrast, students who are easily distracted tend to show fluctuations in execution quality, reflected in inconsistent ball direction and accuracy (Dimi et al., 2023; Faridhatunnisa et al., 2019).

The results of this study emphasize that concentration plays a fundamental role in supporting volleyball skill performance. Concentration is not merely a supporting factor but a controlling mechanism that ensures each component of movement is executed in a coordinated and consistent manner. In the context of serving, the ability to focus attention enables students to regulate the sequence of movements, from preparation to execution and follow-through, more effectively. Without adequate attentional control, even well-practiced techniques may decline in quality during performance.

Training at the school level should not focus solely on repetitive technical practice and physical conditioning but should also include the development of attentional control as an integral part of the training process. In practice, training in schools often emphasizes movement mechanics and repetition volume, while mental aspects are assumed to develop naturally. In fact, concentration is a psychological skill that can be trained systematically and progressively (Huseni et al., 2022; Kesumawati & Alfani, 2025).

These findings reinforce the view that sports training in schools should integrate psychological factors alongside technical and physical components. Training programs designed to enhance focus, such as implementing pre-performance routines before serving, applying controlled breathing techniques to stabilize physiological conditions, or structured concentration exercises through simulated game situations, have the potential to improve serve accuracy. Pre-performance routines, for example, can help students establish consistent

focus patterns, thereby reducing both internal and external distractions. Controlled breathing techniques can also reduce tension and maintain attentional stability prior to movement execution.

The integration of mental training into extracurricular programs may provide long-term benefits in developing students' self-regulation. The ability to control attention, when trained in a sports context, not only improves serve performance but also contributes to the development of discipline, emotional control, and consistency in learning activities. Therefore, a holistic training approach that combines technical, physical, and psychological aspects represents a more comprehensive strategy for improving both learning quality and sports achievement in school environments.

It should be noted that the relationship identified in this study cannot be interpreted as causal, as the research design is correlational. Therefore, further research using experimental designs is recommended to directly examine the effect of concentration-enhancing interventions on serve accuracy. Overall, these findings highlight that concentration is a key determinant in the performance of fundamental volleyball skills, particularly at the junior high school level.

CONCLUSION

Based on the results of the data analysis and discussion, it can be concluded that there is a significant and positive relationship between concentration and volleyball serve accuracy among junior high school extracurricular participants. The correlation analysis indicates that higher levels of concentration are associated with better serve accuracy. Conversely, students with lower levels of concentration tend to demonstrate less consistent serving accuracy.

These findings confirm that concentration, as a psychological factor, has a meaningful association with the performance of fundamental volleyball techniques, particularly in serving skills that require precision and movement stability. Serving, as a closed motor skill, requires stable attentional control to ensure optimal visual-motor coordination. Therefore, the ability to maintain focus becomes a crucial factor in sustaining consistency in direction, force, and timing of the serve.

Overall, this study provides empirical evidence that psychological factors, particularly concentration, should be taken into consideration in sports training at the school level. Volleyball instruction and training should not solely emphasize technical skills and physical conditioning but should also integrate the development of attentional control as part of a more comprehensive training approach.

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