

Analysis of Basic Volleyball Smash Technique Skills In Extracurricular Courses At State Senior High School 1 Kertek Wonosobo

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ABSTRACT

The background of this research is based on the Objective: The objective to be achieved in this research is to analyse the level of basic volleyball smash technique skills in extracurricular participants of SMA Negeri 1 Kertek Wonosobo. Method: This research method is qualitative research, namely, the data collected are in the form of pictures and words, not numbers. Results: Based on the results of data analysis on 20 extracurricular students, it is known that the basic smash technique skills are generally in the "good" category. This is indicated by an average value (mean) of 13.60 out of a maximum score of 20. This value indicates that most students have been able to understand and apply most aspects of the smash technique, although not yet perfectly. Conclusion: Although the mastery of the technique is generally quite good, further, more focused coaching is still needed, especially in the implementation and final stages, to improve technical consistency, movement efficiency, and safety in playing. Suggestion: With directed and systematic coaching, it is hoped that students' smash technique skills can improve comprehensively and more evenly.

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A. Conception and design of the study;
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INTRODUCTION

Volleyball is one of the most popular sports globally, played competitively and recreationally by millions of people across different age groups. Its appeal lies in the combination of technical, tactical, and physical elements that demand coordination, agility, and teamwork (Gabbett & Georgieff, 2020). The sport consists of several fundamental techniques, including serving, passing, setting, blocking, and spiking or smashing, each requiring systematic mastery for effective performance. Among these, the smash or spike is considered one of the most dynamic and powerful offensive actions in the game, often determining the outcome of rallies and ultimately matches (Forthomme et al., 2017).

In school settings, especially in Indonesia, volleyball has become an integral part of physical education and extracurricular programs. High school extracurricular activities

not only foster student interest in sports but also serve as a platform for technical skill development and social-emotional learning (Setiadi et al., 2019). Through well-structured training programs, students can gain competency in various sports-specific skills that may contribute to their physical literacy and overall well-being. Therefore, analyzing the level of mastery in basic skills such as the volleyball smash is crucial for both pedagogical evaluation and future skill progression.

The volleyball smash, commonly referred to as the spike, is a high-velocity, downward shot used to terminate a rally and score a point. Executing a successful smash requires a complex coordination of biomechanical movements—starting from the approach run, take-off, arm swing, ball contact, and landing (Tilp & Wagner, 2016). Each phase involves the activation of specific muscle groups and motor patterns that require both technical training and physical conditioning. At the high school level, the effectiveness of smash techniques can be a direct indicator of a student's overall understanding and application of volleyball fundamentals.

In the context of extracurricular sports, where participation is often voluntary and student skill levels vary, it becomes essential to evaluate how well students can perform such complex techniques. This evaluation aids teachers and coaches in designing training modules that are developmentally appropriate and performance-oriented (Sutiyono et al., 2020). Moreover, technical assessments can inform stakeholders about the efficacy of extracurricular programs in meeting sports skill development objectives.

Despite the inclusion of volleyball in physical education and extracurricular curricula, several challenges persist in the development of specific technical skills, such as the smash. A significant proportion of students struggle with coordination during the approach phase, proper timing during ball contact, and follow-through mechanics, which results in ineffective or inconsistent smashes (Palao et al., 2020). These technical shortcomings can stem from a lack of structured training, limited coaching expertise, or insufficient feedback mechanisms during practice sessions.

Furthermore, the quality of volleyball instruction in extracurricular settings often varies, depending on the availability of facilities, coaching resources, and institutional support. In many schools, including those in Wonosobo Regency, extracurricular sports programs may be under-resourced, affecting the regularity and quality of training sessions (Rahmawati & Sugiyanto, 2020). These issues highlight the need for data-driven evaluations that analyse the current state of students' technical competencies in specific volleyball skills, such as the smash.

While several studies have explored the biomechanics of volleyball skills or the effectiveness of training interventions in athletic populations, limited research has focused on evaluating basic volleyball skills in the context of high school extracurricular programs in rural or semi-urban areas. Most existing research has been centred on elite athletes or physical education programs, overlooking the informal and often variable nature of extracurricular sports settings (Kugler et al., 2021; Mroczek et al., 2018).

Additionally, current literature lacks a systematic examination of the technical execution of the smash among non-professional adolescent players in Indonesia,

especially in less urbanized regions such as Wonosobo. This creates a significant gap in understanding how well students acquire complex motor skills like the volleyball smash when exposed to non-formal coaching environments. Bridging this gap is vital to formulating instructional improvements and targeted interventions for skill enhancement in extracurricular volleyball programs.

The novelty of this study lies in its focus on the analysis of volleyball smash techniques among high school students engaged in extracurricular volleyball training, particularly at State Senior High School 1 Kertek Wonosobo. Unlike existing studies that evaluate performance using competitive metrics or laboratory settings, this research adopts a contextualized observational approach tailored to the dynamics of school-based extracurricular activities.

Furthermore, the study integrates technical skill assessment tools to analyze various components of the volleyball smash, such as approach, take-off, arm swing, contact point, and landing mechanics. These assessments provide a comprehensive view of student capabilities and highlight specific areas requiring intervention. By focusing on a non-elite but educationally significant setting, the study offers insights into grassroots-level sports development in Indonesia, contributing to both sports pedagogy and youth talent cultivation.

This study aims to analyze the technical skills involved in executing the basic volleyball smash among students participating in extracurricular volleyball activities at State Senior High School 1 Kertek Wonosobo. Specifically, the research seeks to: (1) Assess the overall skill level of participants in performing volleyball smashes, (2) Identify technical weaknesses in each component of the smash execution, (3) Provide recommendations for instructional design in extracurricular volleyball programs, and (4) Through this research, it is expected that educators, coaches, and policy makers will gain a better understanding of the current state of volleyball training at the high school level and can implement strategies to enhance skill acquisition, particularly for complex techniques such as the smash. This work is also anticipated to serve as a benchmark for similar studies across various educational institutions in Indonesia.

METHODS

This research method is qualitative, meaning the data collected is in the form of images and words, not numbers. Qualitative research, according to Bogdan & Biklen (1992: 21) in (Mouwn Erland 2020), is a research step that produces descriptive data in the form of written or spoken words, as well as the behaviour of the observed person. According to Sugiyono (2020: 134) in (Lufiah et al. 2021), total sampling is a sampling technique where the entire population is used as a sample. Based on this explanation, the sample used in this study was the entire population, namely all students participating in extracurricular activities at SMA Negeri 1 Kertek, totalling 20 students.

Data collection was carried out using a video recorder to observe and assess the volleyball smash steps of SMA Negeri 1 Kertek players. This technique was used to

analyze the players' movements in more detail in this study. The data collection techniques used in this study to obtain research data were observation, interviews, tests, measurements, and documentation.

RESULTS AND DISCUSSION

Result

The research was conducted using a qualitative descriptive approach using instruments such as observations, smash skills tests, interviews, and documentation. The results of these measurements and observations served as the basis for evaluating students' mastery of smash techniques and identifying factors that hinder or support these skills. An in-depth analysis of these findings will be outlined in the following discussion section and linked to theory and previous research.

Table 1.
Overall Skills Test Results

Descriptive Statistics									
	N	Range	Minimum	Maximum	Sum	Mean	Std. Error	Std. Deviation	Variance
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic		Statistic	Statistic
Basic volleyball smash technique skills	20	4	12	16	272	13.60	0.311	1.392	1.937
Valid N (listwise)	20								

The total overall score was 272, with an average (mean) of 13.60. This average value indicates that students' smash skills are generally in the "good" category, according to the assessment criteria used in this study. This average reflects that the majority of students have understood and can apply basic smash techniques quite well, although there is still room for further improvement in technical skills. The standard deviation (1.392) indicates that the distribution of student scores does not deviate significantly from the average value, meaning that inter-individual differences in smash skills are relatively small. This confirms that the participants' skills are evenly distributed, with a tendency to be above the average value. Meanwhile, the standard error of 0.311 indicates that the sample mean estimate is quite precise in representing the population of students participating in extracurricular volleyball.

Table 2.
Early Stage Smash Ability Classification

No	Category	Interval	Fi	%
1	Very Good	85% - 100%	1	5 %
2	Good	65% - 84%	11	55 %
3	Fair	45% - 65%	8	40 %
4	Poor	25% - 45%	0	0 %
5	Very Poor	0% - 25 %	0	0 %
Amount			20	100 %

The results of the classification of initial volleyball smash technique skills in 20 extracurricular students showed that most students were in the "good" category. A total of 11 students (55%) obtained scores between 65%-84%, indicating that they had mastered most of the indicators in the initial stages of smash execution, such as body

posture during the run-up, short steps ending with long steps, and positioning during the push-off. Meanwhile, 8 students (40%) were in the “sufficient” category with a score range of 45%–64%, indicating that although some basic techniques had been mastered, there were still errors in certain aspects, such as arm coordination or body position when jumping. Only 1 student (5%) was in the “very good” category, while no students were in the “poor” or “very poor” categories.

Table 3.

Classification of Smash Ability by Implementation Stage

No	Category	Interval	Fi	%
1	Very Good	85% - 100%	0	0 %
2	Good	65% - 84%	13	65 %
3	Fair	45% - 65%	6	30 %
4	Poor	25% - 45%	0	0 %
5	Very Poor	0% - 25 %	1	5 %
Amount			20	100 %

The classification results of the volleyball smash execution skills showed that the majority of students were in the “good” category, namely 13 students (65%) with scores in the 65%–84% interval. This indicates that the majority of students have mastered most of the important aspects in the implementation of the smash technique, such as body position in the air, the use of the hand and wrist whip, and the continuity of movement when hitting the ball. Furthermore, as many as 6 students (30%) were in the “sufficient” category, with mastery of the technique that was not yet fully stable, especially in terms of movement coordination or power when hitting the ball. Interestingly, there was 1 student (5%) who fell into the “very poor” category, namely having a score below 25%.

Table 4.

Final Stage Smash Ability Classification

No	Category	Interval	Fi	%
1	Excellent	85% - 100%	4	20 %
2	Good	65% - 84%	12	60 %
3	Fair	45% - 65%	3	15 %
4	Poor	25% - 45%	0	0 %
5	Very Poor	0% - 25 %	1	5 %
Amount			20	100 %

This indicates that most participants have mastered the essential techniques for the final stages of a smash, such as landing with bent knees, maintaining body balance, and maintaining a relaxed hand position after the hit. Furthermore, 4 students (20%) even achieved the “very good” category, with near-perfect technique mastery and demonstrated consistency in safe and efficient landings. On the other hand, 3 students (15%) remained in the “sufficient” category, indicating that they only partially mastered the final stages of the technique and still showed some errors in maintaining body position upon landing. Meanwhile, 1 student (5%) fell into the “very poor” category, indicating that the student experienced significant difficulty in completing the sequence of smash movements, particularly in the aspects of balance and coordination after the hit.

Discussion

The findings of this study align with those of Miftahudin and Nurhidayat (2022), who showed that most students demonstrated moderate to good smashing skills, but remained weak in terms of movement continuity and power. They emphasized the importance of structured and repeated practice to improve the quality of their smash execution. A similar finding was also noted in a study by Fatih Prayoga et al. (2023), which highlighted the importance of arm muscle strength and hand-eye coordination for smash success. In their study, 64% of students' smashing skills were categorized as "adequate," indicating a gap between technical understanding and physical ability.

Based on the above findings, it can be concluded that the basic smashing skills of extracurricular volleyball students at SMA Negeri 1 Kertek Wonosobo are generally good. However, certain aspects need improvement, particularly in the implementation phase. This can be achieved through a more systematic training approach, increasing the duration and intensity of training, and providing constructive feedback to students. With appropriate coaching, students' smashing skills can be significantly improved, supporting their performance in matches and more competitive extracurricular activities.

CONCLUSION

Based on the analysis of volleyball smash technique skills in 20 extracurricular students, it can be concluded that, in general, students have a fairly strong technical foundation, especially in the initial stages of smash execution. Fifty-five percent of students were in the "good" category and five percent in the "very good" category, indicating mastery of indicators such as starting posture, step pattern, and push-off position. However, 40 percent of students were still in the "sufficient" category, indicating weaknesses in arm coordination and body position during the jump. In the execution stage, the average score of 3.60 out of 6 indicates that students only mastered some of the execution indicators, such as hand flick, mid-air coordination, and movement continuity. The wide range of scores and standard deviation of 0.821 indicate a significant variation in ability among students, indicating that this stage is the most challenging part. Meanwhile, the final stage showed relatively better results with an average score of 4.40, indicating mastery of approximately 75% of indicators such as landing, hand position upon landing, and body bending. However, the low minimum score and standard deviation of 1.273 indicate disparities between individuals, particularly in maintaining balance and body control after a smash. Therefore, while overall technique mastery is quite good, further, more focused coaching is needed, particularly in the execution and final stages, to improve technical consistency, movement efficiency, and safety in play.

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