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A Study of Smash Proficiency in Badminton Players at Club PB Abadi Indralaya

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Abstrak

Penelitian ini bertujuan untuk mengevaluasi kemampuan smash dalam bulu tangkis di Klub PB Abadi Indralaya dan memberikan rekomendasi untuk meningkatkan teknik latihan. Penelitian ini menggunakan metode deskriptif kuantitatif melalui teknik survei evaluasi keterampilan. Populasi penelitian terdiri dari 18 atlet (10 laki-laki dan 8 perempuan) yang dipilih melalui prosedur sampling lengkap. Alat penilaian terdiri dari evaluasi keterampilan smash berdasarkan kriteria yang ditetapkan oleh Federasi Badminton Dunia (BWF) dan PB PBSI. Data dianalisis menggunakan statistik deskriptif, meliputi rata-rata, simpangan baku, maksimum, minimum, dan distribusi frekuensi, serta diklasifikasikan ke dalam lima kategori kemampuan: excellent, baik, memadai, kurang, dan sangat kurang. Hasil menunjukkan bahwa rata-rata kemampuan smash atlet adalah 7,11 dari 10 upaya, dengan mayoritas dikategorikan sebagai baik (38,9%), diikuti oleh cukup (27,8%) dan luar biasa (16,7%). Rata-rata skor smash atlet laki-laki adalah 7,50, sedangkan atlet perempuan 6,62, dan studi perbandingan tidak menunjukkan perbedaan signifikan antara kedua kelompok. Faktor-faktor yang mempengaruhi keahlian smash meliputi pemahaman teknik dasar, kekuatan otot, koordinasi gerakan, dan frekuensi latihan. Penelitian menyimpulkan bahwa latihan metode smash di Klub PB Abadi Indralaya menghasilkan hasil positif; namun, peningkatan dalam latihan kekuatan, koordinasi, dan latihan target sangat penting untuk mencapai konsistensi dan presisi yang lebih baik dalam pukulan. Temuan studi ini dapat menjadi acuan bagi pelatih dalam merumuskan program latihan yang lebih spesifik dan terarah untuk meningkatkan performa smash pemain.

Kata kunci: *Bulu Tangkis, Smash, Pemain*

Abstract

This study aims to assess the smashing proficiency in badminton at Club PB Abadi Indralaya and provide recommendations for improving training techniques. The research utilises a quantitative descriptive methodology through a skills evaluation survey technique. The study population consisted of 18 athletes (10 males and 8 females) chosen by complete sample procedures. The assessment tool comprises a smash skill evaluation based on the criteria established by the Badminton World Federation (BWF) and PB PBSI. The data were evaluated using descriptive statistics, encompassing mean, standard deviation, maximum, minimum, and frequency distribution, and were classified into five capability categories: excellent, good, adequate, inadequate, and severely deficient. The results revealed that the average smash ability of athletes was 7.11 out of 10 attempts, with the majority categorised as good (38.9%), followed by fair (27.8%) and extraordinary (16.7%). The average smash score for male athletes was 7.50, whereas for female athletes it was 6.62, and the comparative study revealed no significant difference between the two groups. Factors affecting smash proficiency include understanding basic techniques, muscle strength, movement coordination, and training frequency. The research concluded that smash method training at Club PB Abadi Indralaya yielded positive results; still, improvements in strength training, coordination, and target training are essential for attaining more consistency and precision in punching. The findings of this study may provide a reference for coaches in formulating more specialised and targeted training regimens to improve players' smash performance.

Keywords: Badminton, Smash, Players

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1. INTRODUCTION

Badminton is a highly popular sport in Indonesia, integral to the national athletic identity. Badminton is one of the most popular sports in Indonesia, covering both professional and amateur levels (Federica, 2019). Alviyana et al. (2025) describe badminton as a racket sport involving two players (singles) or two teams (doubles) competing across a net. Badminton consists of players attempting to hit the shuttlecock over the net to land it in the opponent's court. Badminton is a fast-paced racket sport where skilled players strike the shuttlecock with remarkable speed and precision (Putra et al., 2021). Badminton is a highly popular sport globally, demanding speed, agility, and dexterity (Sausan, 2025). Indonesia has a notable badminton heritage and significant global achievements. National athletes' achievements in international competitions like the Olympics and World Championships have transformed badminton from a recreational activity into a symbol of national pride. Sports are essential to human life, providing avenues for creativity, education, and achievement (Mustofa et al., 2022). This sport is popular across schools, neighbourhoods, and local clubs, forming a foundation for future athletes.

This game serves as the foundation for numerous other sports, as nearly all games feature a specific target or goal (Sari et al., 2020). Mastering basic tactics is essential for badminton players to advance in competition. The smash is a vital movement that can greatly influence match outcomes. The smash serves as a primary tool for exerting pressure on opponents and directly scoring points. This shot features a shuttlecock struck forcefully from an elevated position at high speed, demonstrating a steep descent angle and notable precision (Putra & Nugroho, 2021).

Executing an effective smash requires physical strength, optimal body coordination, balance, and mastery of technique. Directional smashes are crucial for badminton players (Rahmat, 2021). Smash shots necessitate coordinated movements, concluding with a wrist action to direct the shot as intended by the athlete (Hiley, 2020). Gill et al. (2020) highlight that each shoulder movement distinctly influences daily activity performance. Many studies show that the ability to perform a smash is greatly influenced by physical parameters such as arm and shoulder muscle strength, arm length, flexibility, and eye-hand coordination (Fathurrahman et al., 2022; Kusnandar, 2023). This talent necessitates ongoing training for athletes to maximise their potential.

Badminton provides numerous advantages, particularly for children's physical growth and psychological development (Asrofi, 2021). Training-level badminton clubs are crucial for developing exceptional athletes. Clubs provide a foundational setting for players to identify, develop, and enhance their badminton skills prior to progressing to national training or competitions. PB Abadi Indralaya Club is a local organization dedicated to training young athletes in Indralaya. This club offers young people a chance to enhance their skills and interests while fostering potential athletes for regional and national success.

During training, variations in athletes' talents often pose challenges. Initial observations indicate significant differences in the smash tactics of athletes at PB Abadi Indralaya Club. Some athletes possess the ability to perform fast and precise smashes, while others struggle with hitting power, accuracy, and movement synchronisation. The smash involves complex actions that necessitate the synchronisation of major body parts (Ade et al., 2022). The smash is a fundamental badminton technique that effectively disrupts an opponent's play with precision (Azhar, 2022). This underscores the necessity for a systematic evaluation of

athletes' smash capabilities. The smash seeks to conclude the opponent's game with a strong and accurate shot (Arizzi & Kustoro, 2022). A precise smash offers a notable advantage in scoring (Zhang et al., 2021). This assessment will aid coaches in developing effective training methods suited to each athlete's needs. Advancements in sports science and technology have greatly enhanced the significance of data-driven assessment. The incorporation of science and technology in badminton training facilities aids coaches and athletes in their training (Abdullah et al., 2022).

Coaches in club training now utilise empirical data alongside experience and instinct to assess players' conditions and abilities. Coaches can identify athletes' strengths and weaknesses through smash skill analysis. This information can inform targeted training programs, such as enhancing explosive power via weight training, improving coordination through technical training, or increasing accuracy with precision target training.
Previous studies have demonstrated the significance of assessing technical skills in badminton. Wibowo and Ramadhan (2020) demonstrated that repetitive training techniques enhance smash effectiveness in adolescent athletes. Santosa (2022) found that explosive strength training significantly impacts shuttlecock speed in smashes. These findings show that assessing technical skills is essential for achieving optimal performance.
This study examines the smash techniques used by badminton players at the PB Abadi Indralaya Club. This study addresses the gap in research on smash skill conditions at local clubs, particularly for adolescent athletes. This study aims to accurately assess athletes' smash abilities, informing the development of targeted training programs. This study aims to achieve three main objectives. This study describes the smash skills of PB Abadi Indralaya badminton athletes, providing an overview of their acquired abilities. This study identifies factors influencing variations in smash abilities among athletes, such as physical condition, technical skills, and training experience.

This study offers recommendations for enhancing training programs based on analysis results, serving as a reference for coaches to develop more effective training tactics. This study provides information on the smash abilities of athletes in the PB Abadi Indralaya Club. This information aids in enhancing individual skills and aligns with the club's goal of developing exceptional athletes. This study seeks to enhance knowledge in physical education, sports, and health, focusing on the analysis of badminton technical skills at the basic training level. National athletes' successes in international competitions, such as the Olympics and World Championships, have transformed badminton from a recreational activity into a symbol of national pride.

This sport appeals to diverse societal segments, including schools, cities, and local clubs, which are essential for nurturing new athletes. Badminton is a competitive sport demanding technical skills, physical fitness, strategic gameplay, and psychological maturity. Badminton players must effectively master basic tactics to progress in competition. The smash is a key skill that significantly impacts the outcome of a match. The smash serves as a key weapon for pressuring opponents and directly scoring points. This shot features a powerful overhead strike with high speed, a steep descent angle, and precise execution (Putra & Nugroho, 2021).

Effective smashing relies on physical strength, body synchronisation, balance, and proper technique mastery. The forehand overhead smash in badminton is among the most explosive shots in racket sports (Tajik et al., 2025). Research indicates that the capacity to execute a smash is significantly affected by physical factors, including arm and shoulder muscle

strength, arm length, flexibility, and hand-eye coordination (Fathurrahman et al., 2022; Kusnandar, 2023).

This skill necessitates ongoing training for athletes to maximise their potential. Iyakrus (2019) asserts that optimal performance necessitates thorough preparation and rigorous training, which cannot be attained immediately. Becoming a reliable player requires training duration, methods, skill refinement, and participation in competitions. Once challenging sports achievements are now routine, as more athletes attain them (Iyakrus et al., 2022). Training-level badminton clubs are crucial for developing elite athletes. Clubs provide a foundational setting for players to identify, develop, and enhance their badminton skills prior to advancing to national training or competitions.

PB Abadi Indralaya Club is a local entity focused on the development of young athletes in Indralaya. This club offers opportunities for youth to develop interests and skills while fostering potential athletes for regional and national success. Differences in athletes' abilities often hinder the training process. Initial observations indicate significant differences in the smash tactics of athletes at PB Abadi Indralaya Club. Some athletes excel in executing fast and accurate smashes, while others struggle with hitting power, accuracy, and movement synchronisation. This highlights the necessity for a systematic evaluation of athletes' smash capabilities.

This assessment will assist coaches in developing efficient training methods tailored to each athlete's needs. Advancements in sports science and technology have greatly enhanced the significance of data-driven assessment. Coaches in club training now utilise empirical data alongside experience and instinct to assess athletes' conditions and abilities.

Analysis of smash skills indicates that an effective smash is a distinct technique for scoring points and securing victory in a match (Ade et al., 2022). Coaches can assess athletes' strengths and weaknesses. This information can inform targeted training programs, including enhancing explosive strength via weight training, improving coordination through specific techniques, and increasing accuracy through precision target training. Wrist flexibility significantly impacts the quality of a smash (Sulaiman et al., 2024). Setiawan (2020) highlights the importance of a fundamental approach to enhance engagement and enjoyment in the game. Mastering basic methods is crucial to prevent injury. Widiastuti et al. (2019) noted that many individuals struggle to enhance their badminton skills due to obstacles such as insufficient facilities, inadequate training programs, and poor physical conditions.

Previous studies highlight the need to assess technical skills in badminton. Wibowo and Ramadhan (2020) demonstrate that repetitive training techniques enhance smash effectiveness in adolescent athletes. Santosa (2022) found that explosive strength training significantly impacts shuttlecock speed in smashes. These findings indicate that assessing technical skills is essential for achieving optimal performance. This study analyses the smash techniques of badminton players at PB Abadi Indralaya Club. This research is relevant given the lack of studies focusing on smash skills at the local club level, especially among adolescent athletes. This study aims to accurately assess athletes' smash abilities and inform the development of targeted training programs.

This study aims to achieve three primary objectives. This study describes the smash technique proficiency level among PB Abadi Indralaya badminton athletes, offering insight into their acquired competencies. This study identifies factors influencing variations in smash

techniques among athletes, including physical condition, technical proficiency, and training experience.

This study offers recommendations for enhancing training programs using analytical data, serving as a reference for coaches to develop more effective training tactics.
This study provides information to PB Abadi Indralaya on the smash abilities of its athletes. This information enhances individual skills and aligns with the club's objective of developing elite athletes. This study seeks to enhance knowledge in physical education, sports, and health, focusing on the analysis of technical skills in badminton at the basic training level.

2. METHOD

This study employed a quantitative descriptive approach utilising a skills test survey method. This approach was selected as quantitative descriptive research systematically and accurately describes phenomena based on numerical data from field measurements (Sugiyono, 2019). This study offers descriptive information on athletes' conditions and presents a numerical analysis for objective evaluation. The skill test survey method is relevant as it enables researchers to gather real data on athletes' smash ability through standardised testing procedures. This research aims to assess athletes' smash skills to evaluate their mastery at Club PB Abadi Indralaya. According to Arikunto (2020), skill tests in sports research are crucial as they yield valid empirical data on the mastery level of specific techniques under investigation.

This study's population includes 18 active athletes from the PB Abadi Indralaya Club, comprising 10 males and 8 females, with an average age of 15.6 years. Population determination is essential as it serves as the research subject with specific characteristics relevant to the study's focus (Riduwan, 2020). The sampling technique employed is total sampling, utilising all members of the population as research samples. This technique was selected due to the small population, enabling researchers to gather more accurate and representative data without limiting the number of respondents (Sugiyono, 2021). Kurniawan (2022) states that total sampling is suitable for sports research with limited subjects, allowing each population member to provide valuable information for the results. The total sampling method in this study aims to yield comprehensive data on the smash ability of all athletes at Club PB Abadi Indralaya.

This study employed a badminton smash skill test adapted from the Badminton World Federation's evaluation standards. The skill test was selected for its ability to objectively assess the athlete's abilities via direct field measurements. Sukadiyanto and Muluk (2019) state that sports test instruments assess athletes' mastery of technical skills and inform training planning. The research data was collected through a badminton smash accuracy test in accordance with the technical skill measurement procedures used in previous studies (Edmizal, 2022; Iskandar, 2022). The test procedure is as follows.

1. The equipment used includes standard badminton courts, nets, rackets, shuttlecocks, meters, and result recording sheets along with the necessary stationery.

2. The test implementing officer consists of three people, namely one person as a cue or caller, one person who records the results of the smash, and one person who is in charge of performing serves or baits.
3. The test procedure begins with the participant (testee) taking a ready position in a predetermined place while holding a racket. After hearing the "ready" and "yes" cues, participants jumped and swung the racket to smash the shuttlecock that was fed 10 times.
4. The assessment was made based on the number of strokes that were successfully performed correctly from the 10 attempts. If the shuttlecock does not pass the net or goes out of the boundary of the playing field, then the experiment gets a value of zero (0).

This study employs descriptive and comparative statistical methods to analyse and compare the smash skills of badminton athletes at Club PB Abadi Indralaya. The results of the smash accuracy test, conducted 10 times for each athlete, were analysed by calculating the average score, median, mode, standard deviation, maximum, minimum, and score range to assess the smash ability of all athletes. The test results were categorised into five performance levels based on normative score conversion to aid in skill level interpretation (Suryadi et al., 2023).

3. RESULT AND DISCUSSION

Based on the results of the smash ability test conducted on 18 active athletes at Club PB Abadi Indralaya, score data was obtained with a range of 4 to 10 successful strokes from 10 attempts. The results of the descriptive analysis showed that the average smash ability of athletes was 7.11 with a standard deviation of 1.68, the highest score of 10, and the lowest score of 4.

Table 1. *Descriptive Statistics of Smash Test Scores of Badminton Club Athletes PB Abadi Indralaya*

Statistics	Overall (N=18)	Sons (N=10)	Female (N=8)
Red (Average)	7,11	7,50	6,62
Standard Deviation (SD)	1,68	1,38	1,50
Minimum	4	6	4
Maximum	10	9	8
Range (Max − Min)	6	3	4
Median	7	7	6,5
Mode	8	8	6

From the descriptive statistical table above, the data obtained is compiled in the form of a frequency distribution table. The data can be seen in the table below:

Table 2. *Frequency Distribution of Athlete Smash Ability Score (N=18)*

Shoes Smash	Frequency (f)	Percentage (%)
10	1	5,5
9	2	11,1
8	4	22,2
7	3	16,7
6	3	16,7
5	2	11,1
4	3	16,7
Sum	18	100

Before explaining the results of the classification of athletes' smash skills, it is necessary to establish assessment norms as a reference to determine the achievement category of each athlete based on the scores obtained from the test. This assessment norm is used to standardize the interpretation of results, so that the scores obtained can be categorized into levels such as Excellent, Good, Adequate, Poor, and Very Poor. The norm reference used in this study refers to the assessment norm formula according to Nurhasan (2001:268), where the categories are determined based on the average score (X) and standard deviation (S) of the entire research sample. With this assessment norm, every score obtained by athletes can be interpreted objectively, making it easier to analyze and further discuss the smash skills of athletes at Club PB Abadi Indralaya.

Table 3. *Norms of Assessment of Badminton Athletes' Smash Ability*

No	Scale	Formula (Score Limit)	Score Range	Category
1	1	X + 1,8S = 7,11 + 1,8(1,68)	10,13 ≥ 9–10	Excellent
2	2	X + 0,6S = 7,11 + 0,6(1,68)	8,11 – 9,0	Good
3	3	X – 0,6S = 7,11 – 0,6(1,68)	6,11 – 7,0	Medium / Fair
4	4	X – 1,8S = 7,11 – 1,8(1,68)	4,13 – 6,0	Less
5	5	≤ X – 1,8S = ≤4,13	0 – 4	Very Less

Information:

- X = 7.11 (average smash ability test score)
- S = 1.68 (standard deviation)
- The score range is rounded to realistic values on a scale of 0–10.

Based on the table of standards for assessing the smash ability of badminton athletes that has been made previously, we can group 18 athletes into the percentage value category of each category.

Table 4. *Results of Athlete Smash Ability Classification*

Category	Number of Athletes (f)	Percentage (%)
Excellent	3	16,7
Good	7	38,9
Enough	5	27,8
Less	2	11,1
Very Less	1	5,5
Sum	18	100

Based on the classification of abilities, the results show that 3 athletes (16.7%) fall into the very good category, 7 athletes (38.9%) into the good category, 5 athletes (27.8%) into the fair category, 2 athletes (11.1%) into the poor category, and 1 athlete (5.5%) into the very poor category. Based on these results, it can be concluded that the majority of athletes from Club PB Abadi Indralaya have a smash ability in the good category, indicating a relatively adequate mastery of the overhead strike technique.

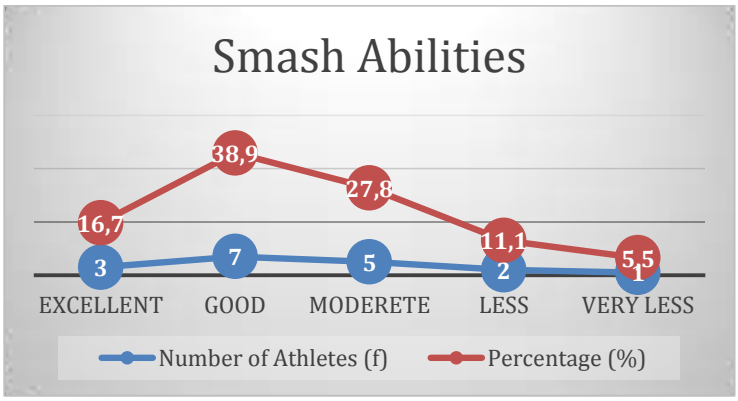

Figure 1. *Diagram Hasil kemampuan Smash Atlet Club PB Abadi Indralaya*

When viewed by gender, the average smash score for male athletes is 7.50, while the average for female athletes is 6.62. The results of the comparison test using the Independent Samples t-test showed a value of $t = 1.54$; $p = 0.14$ ($p > 0.05$), which means there is no significant difference between the smash ability of male and female athletes. However, descriptively male athletes tend to have slightly better smash skills than female athletes, which can be caused by differences in arm muscle strength and upper body explosiveness. This result is in line with the opinion of Purnama, A. R., et al. (2024). who stated that the ability to hit hard in badminton is greatly influenced by the strength of the shoulder and arm muscles which are generally more dominant in male athletes.

Overall, the results of this study show that the athletes' smash skills are at a good level, but there are still variations in performance between individuals. Factors such as mastery of basic

techniques, muscle strength, movement coordination, and frequency of exercise are thought to play a role in the difference in these outcomes. This finding is in line with the opinion of Kamaruddin et al., (2025) who affirms that the quality of an effective smash is determined by a combination of strength, speed of the racket swing, and punctuality when hitting the shuttlecock. In addition, according to PB PBSI (2019), the ability to do a good smash also depends on the perfection of swing technique and body position at the time of contact with the shuttlecock.

Thus, it can be concluded that the practice of smash techniques at Club PB Abadi Indralaya has given positive results in improving the athlete's ability, although there is still a need to improve the aspect of strength and coordination of movements so that the results of the punches are more consistent and accurate. The results of this study can be used as evaluation material for coaches to design more specific training programs, such as plyometric exercises and directed smash techniques, to improve the effectiveness of punches in real match situations.

4. CONCLUSION

Based on the results of the research on the smash ability of badminton athletes at Club PB Abadi Indralaya, it can be concluded that the level of smash ability of the majority of athletes is in the good (38.9%) category, followed by the fair (27.8%) and very good (16.7%) categories. This shows a relatively adequate mastery of the top punch technique, although there is a variation in ability between individuals. Descriptively, the average smash score of male athletes (7.50) is slightly higher than that of female athletes (6.62). However, the comparison test showed no significant difference between the smash abilities of male and female athletes. Factors that affect differences in abilities include mastery of basic techniques, arm and shoulder muscle strength, movement coordination, and frequency of exercises. The combination of these factors determines the effectiveness and accuracy of a smash punch. The results of the study confirm that smash technique training at Club PB Abadi Indralaya has had a positive impact on athletes' abilities. However, improved explosive strength training, coordination, and smash target training are needed to make punching abilities more consistent and accurate. Thus, this research can be the basis for coaches to design more specific and targeted training programs, in order to improve the performance of athletes' smash in real match situations.

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