



## Forehand Smash Test Model for Junior Badminton Athletes

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### Abstract

To determine how much the exercise program success rate, a valid and reliable test tool is needed. In this study, the researcher aims to develop a smash skill test model in badminton. The method in this study is a development research method with a sample size of 121 athletes. The steps taken in this research include (1) preliminary study (literature study and field study), (2) planning (conducting analysis), (3) initial draft design, (4) validation of the draft, (5) testing of group products minor and revisions, (6) large group trials and revisions, (7) final results. This study involved academicians and badminton practitioners with an "excellent" rating, which reached an average score of 3.66. This result research is a product of the development of a smash skill test model in badminton. This study concludes that the smash skill test's resulting form is valid and reliable, with a validity score of 0.688 and reliability of 0.870.

### How to Cite

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## INTRODUCTION

One of the sports in the world that is currently in great demand is badminton. Badminton is a type of sport for two or four players using a light racket and shuttlecock, a cork ball equipped with feathers to stabilize it (Chandigarh 2011). Following the BWF estimates, the game is played by over 200 million people worldwide, and over a thousand players participate in various competitions and tournaments around the world (Alam et al., 2010). According to (Herman Subarjah 2009), This game has developed from ancient times until now and will continue to grow as a sporting phenomenon that has succeeded in attracting public attention for various purposes or interests, both in the parts of increasing fitness, meeting recreational needs, increasing achievement as well as meeting economic needs, prestige and others.

Becoming a reliable badminton player is not easy. It requires extraordinary passion and perseverance in undergoing the training process from time to time. According to (Herman Subarjah 2016), To achieve maximum badminton performance, a systematic, tiered, and continuous training process is required and carried out with heart and diligence from an early age. (Özgun and Hotaman 2020) also added that the best performance in badminton depends not only on the physical and physiological components but also on the ability to use various hitting techniques. In badminton, there are several basic technical exercises to be mastered well, such as holding a racket, hitting shuttlecocks, and footwork control techniques. (Ngadiman and Kusuma 2020). The same is explained by (Chandigarh 2011), that the essential thing that badminton players need is the perfection of skill.

One of the hitting techniques in the badminton game that we often encounter to kill the opponent is the smash technique. According to (Junanda, Rusdiana, and Rahayu 2019), Smash is the type of blow that is the hardest and sharpest and aims to kill the opponent as quickly as possible. In the game of badminton, the smash is the most crucial thing (Mulyono 2013). Many studies have studied how to hit fast and hard smashes in the game (Ilhamdi, Sasaki, and Hadi 2015). Several studies that examine the smash hit include: (Hung 2020). Hung studied the effect of different stroke exercises on the smash action of badminton players. Three conditions of punch training are considered: shadowing, target attack, and smashing. The main finding of this study is that in the smash condition, movement

in the frontal plane is increased, which results in a higher load on the joints of the lower limbs.

The second is research from (Mangun, Budiningsih, and Sugianto 2017). Mangun et al. studied how to develop a smash skill training model in badminton for doubles athletes. The t-count = 11.194, df = 39, and p-value = 0.00 < 0.05, which means that there is a significant difference in athletes' smash training before and after treating the smash training model in badminton for double athletes. Based on this information, it can be said that the smash training model in badminton for doubles athletes that have been developed can effectively improve skills in badminton for doubles athletes.

Third (Junanda, Rusdiana, and Rahayu 2019). Junanda et al. studied the comparison of vertical jump and front parabolic jump on accuracy and maximum speed when performing the jump smash technique. From the results of data analysis obtained several conclusions. First, there is a significant difference between the vertical jump and the forward parabolic jump on the accuracy of the shuttlecock. Second, there is a significant (significant) difference between the vertical jump and the forward parabolic jump on the shuttlecock speed, where the forward parabolic jump has better results than the vertical jump.

Then the fourth is research from (Zhang et al. 2016). Zhang et al. Conducted a study to 1) quantitatively describe the kinematic characteristics of forehand strokes using a 15-segment full-body biomechanics model, 2) examine and compare kinematic differences between novice and skilled players a focus on trunk rotation. The results confirmed that skilled players used more rod rotations than beginners. First, more rotation of the trunk causes more excellent elongation in the pectoralis major (PM) during the movement's preparatory phase, which helps produce explosive muscle contractions. Second, the more fantastic range of motion (ROM) induced by rod rotation facilitates whip-like control sequences (proximal to distal) between body segments responsible for increasing racket speed.

There are so many studies that examine the smash hit in badminton. However, research is still rare on the development of evaluation models applied to this sport. So the researchers focused on developing a test model that can measure the level of smash technique skills and accuracy of strokes in junior badminton athletes. It is hoped that this research will be helpful for badminton coaches and athletes to conduct tests and measurements. So later it can be used as a reference because the test instrument is equipped with test

implementation procedures and the final results of the test assessments.

**METHODS**

This research is a type of development research with a procedural development model because it contains descriptive. This study describes a procedure that describes the steps that must be followed in producing a product file. This study involved three experts: badminton experts/players, two badminton coaches, and three badminton academic experts. Research into it on ten badminton teams in Semarang City and Wonosobo Regency with a sample of 121 athletes in the age category 10-17 years. The sampling technique was determined by purposive sampling. The procedure for developing the badminton smash test model are (1) Preliminary study (literature study and field study), (2) Planning (analysis), (3) Initial design draft, (4) validation draft, (5) Small group product test, and revision, (6) Large group trial and revision, (7) Final results.

**RESULTS AND DISCUSSION**

In a large-scale test, this research was carried out at badminton clubs in Semarang and Wonosobo from April to August 2018. The number of trial samples was 121 athletes. The age category of the samples ranges from 10 to 17 years. A recap of the samples of athletes used in this study can be seen in the column **Table 1** below.

**Table 1.** Large-scale Test Samples

Semarang Badminton Club	Sampel	Wonosobo Badminton Club	Sampel
Matahari Terbit	17	Bina Satria Tangkas	8
Bintang Perkasa	11	Tunas Perkasa	7
Garuda Junior	19	Indoraya	11
Gatra Pino	18	Baker	10
Cplusco	13	ABS	7

**Experts Judgment**

In assessing the quality of the badminton skills test instrument for athletes, the experts assessed the material quality aspects of the badminton smash test model with an average score of 3.66, which was included in the "good" criteria. (Sugiyono 2010). For more details, see the **Table 2** below.

**Table 2.** Expert Validator Assessment Table

Rated aspect	Expert Rating			Average
	1	2	3	
The accuracy of the content of the test model	3	4	4	3.66
Appropriateness of components and aspects assessed	4	4	4	4
Clarity of test instructions	4	3	3	3.33
Make it easier to provide evaluation	3	3	3	3
Giving new knowledge about evaluation	4	4	4	4
It can be applied in all badminton clubs	4	4	4	4
Average	3.66	3.66	3.66	3.66

(Source: Research 2018)

**Test Development Results**

The Purpose of the Forehand Smash. Testis to measure the level of skill of athletes in doing smash. This test aims to hit the ball accurately to the right and left of the opponent's playing field. As previously explained by(Pritama, Sugiharto, and Rahayu 2014), the smash practice target is to get used to the smash hit with the correct technique and produce a steep shot.

Tools and Equipment: Badminton court, rackets, shuttlecocks, stationery and scoring blanks, technical implementers, score takers, ball drop supervisors, ball passing controllers over the net, and feeders.

**Field Description Figure 1:**

The field is lined on the right and left with the size:

Value 1: 169 cm from the centerline (area 1)

Value 2: 20 cm from line No. 1 (area 2)

Value 3: 30 cm from line No. 2 (area 3)

Value 4: 40 cm from line No. 3 (area 4)

Operating procedure; Testeestand in a rectangular line measuring 120 cm x 181 cm, located in the middle of the field. The feeder stands on the other side while giving the testee stomach feed 12 times. The testee hits a smash with a pre-determined target area, namely on the right or left side of the field.

Assessment Guidelines. The assessment is carried out by combining the value of the ball's fall and the value of the technique carried out by the testee. Accuracy Test Assessment Guidelines; There is no value for strokes where the shuttle does not hit the target. The shuttlecock that falls

on the target is scored according to the predetermined value. If the shuttlecock falls between two lines, it is considered to have entered the highest value. The technical value is obtained from the attitude of the athlete when doing the test. The accuracy value is the number of values obtained from 12 trials, six on the right and six on the left. The total value is the sum of the technical value and the accuracy value.

**Table 3.** Smash Technique Assessment

	Stage/Step	Score	
		B	S
Preparation	Shake hand grip ready position		
	Raise your shoulders and move your right leg back		
	Racket head position facing up		
	Focus your weight on the hind legs		
Implementation	Transfer the weight to the front leg		
	Keep balance with the hand that is not holding the racket.		
	Wrist cocks racket back.		
	Then swing the racket to hit the shuttlecock as high and hard as possible.		
	The arms that do not carry the racket help speed up the rotation of the body		

Advanced Swing back and forth across the body  
Return to the starting position and head to the center of the field

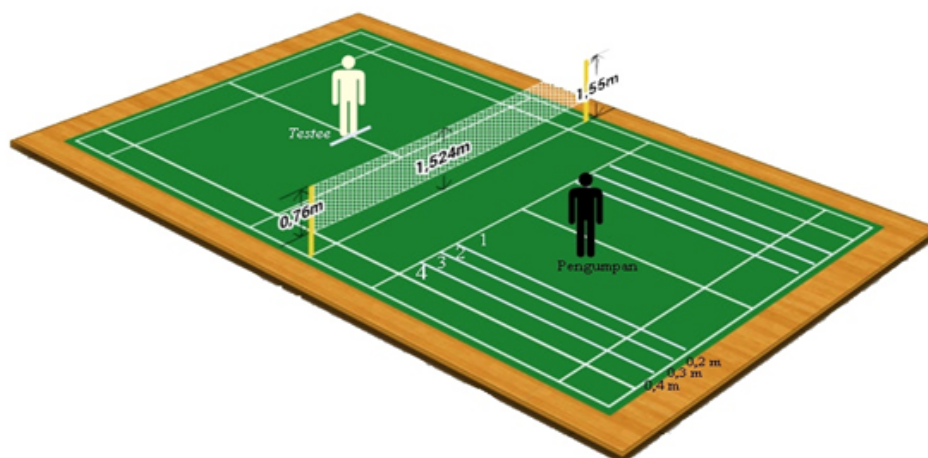
**Total value**

If the testee does it correctly, then it gets a value of 1. However, if the testee does not do or is wrong, then it does not get a number or zero.

**Table 4.** Forehand Smash Test Norms Table

Age / Sex		Very good	Good	Enough	Less
(11-12 years old)	Female	37	32 - 36	27 - 31	26
	Male	39	33 - 38	23 - 32	26
(13-14 years old)	Female	40	34 - 39	29 - 33	28
	Male	39	35 - 38	31 - 34	30
(17-18 years old)	Female	40	35 - 39	30 - 34	29
	Male	47	41 - 46	36 - 40	35

Based on the three experts, namely badminton academics, badminton coaches, and badminton players, the results obtained are excellent scores with 3.66. The score was obtained during a consultation on the manufacture of a smash test instrument product in the field. Some of the subjects that become instrument assessments include: the accuracy of the content of the test model, appropriateness of components and as-



**Figure 1.** Forehand Smash. Test Field (source: research document)

pects assessed, clarity of test instructions, make it easier to provide evaluation, giving new knowledge about evaluation, and can be applied in all badminton club. More details can be seen in **Diagram 1**.

The data above shows that the test instrument developed is proven to be valid and reliable. So that the developed test can be used as a reference in conducting tests for junior badminton athletes. Because, in the game of badminton, the smash is the most crucial thing (Mulyono 2013).

The addition of an instrument for assessing the implementation process in conducting tests can motivate athletes to study more diligently, starting from how to hold a racket well and practice accuracy. So that this theory is in line with the theory presented by (Herman Subarjah 2016), To achieve maximum badminton performance, a systematic, tiered, and continuous training process is required and carried out with heart and diligence from an early age. The same is explained by (Chandigarh 2011), that the essential thing that badminton players need is the perfection of skill.

## CONCLUSION

The conclusion in this research and development is that the badminton smash test model developed is proven to be valid and reliable. According to expert judgment, this test proved to be more effective for measuring badminton skills for junior athletes in the area/non-training area with an average score of 3.66.

## REFERENCES

Alam, Firoz, Harun Chowdhury, Chavaporn Theppadungporn, and Aleksandar Subic. 2010. "Measurements of Aerodynamic Properties of Badminton Shuttlecocks." *Procedia Engineering* 2(2): 2487–92. <http://dx.doi.org/10.1016/j.proeng.2010.04.020>.

Chandigarh, P U. 2011. "Effects of Different Feedback Methods on Badminton Skills Learning." *Journal of Human Kinetics* 11(3): 245–48.

Grace, Tony. 2008. *Badminton Steps to Success*. 2nd ed. United States: Human Kinetics. [www.HumanKinetics.com](http://www.HumanKinetics.com).

Hung, M H. 2020. "The Applications of Landing Strategies in Badminton Footwork Training on a Backhand Side Lateral Jump Smash." *Journal of Human Kinetics* 73(1): 19–31. <https://www.scopus.com/inward/record.uri?partnerID=HzOxMe3b&scp=85089193675&origin=inward>.

Ilhamdi, Muhammad, Minoru Sasaki, and Muhammad Hadi. 2015. "Local Euler Angle Pattern Recognition for Smash and Backhand in Badminton Based on Arm Position." *Procedia Manufacturing* 3(Ahfe): 898–903. <http://dx.doi.org/10.1016/j.promfg.2015.07.125>.

Junanda, Hendya A., Agus Rusdiana, and Nur I. Rahayu. 2019. "Shuttlecock Speed and Accuracy In Jump Smash With Jump." *Journal of Applied Sports Science* Vol. 1, N.(October): 17–23.

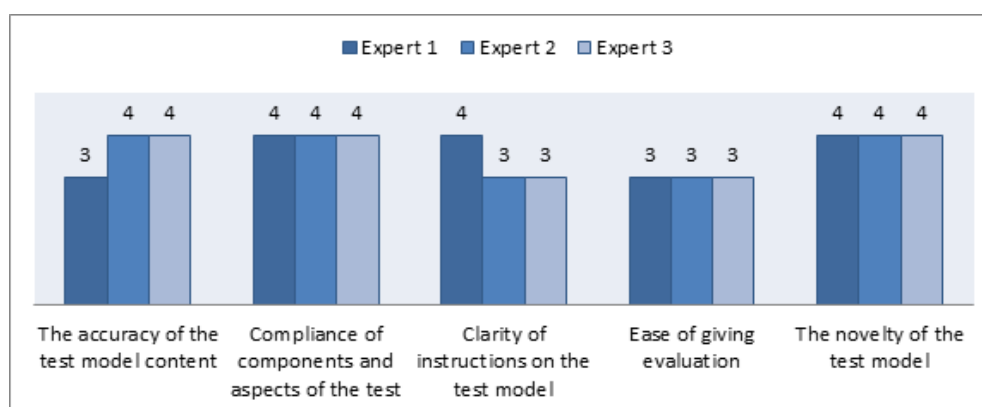
Mangun, Fajar Arie, Marlinda Budiningsih, and Achmadi Sugianto. 2017. "Smash Training Model in Badminton for Doubles Athletes." *Rehearsal for Journal of Sports Science* 8(2): 78–89.

Mulyono, Ranu WA 2013. "The Effect of Leg Press on Increasing Vertical Jump in Badminton Players in Publication Manuscripts." Muhammadiyah Surakarta university. <http://eprints.ums.ac.id/25565/>.

Ngadiman, Ngadiman, and Indra Jati Kusuma. 2020. "The Design of a Supporting Device for Badminton Footwork Practice Based on Microcontroller Technology." *21(Icshpe 2019)*: 92–94.

zgür, Beyhan, and Fatih Hotaman. 2020. "Relationship between Some Motoric and Technical Performance Characteristics of U17 Turkish National Badminton Players." *Journal of Physical Education and Sport* 20(3): 2205–12.

Pritama, Noviudin MA, Sugiharto Sugiharto, and Setya Rahayu. 2014. "The Effect of Smash Training Methods and Hand-Eye Coordination Using Direct and Indirect Baits in Badminton."



**Diagram 1.** Expert Judgment

- Journal of Physical Education and Sportsical 3(1): 46-50.
- Subarjah, Hermain. 2009. Badminton Game. Bandung: FPOK UPI.
- Subarjah, Herman. 2016. "The Effect Of Motor Skills And VO2 Max To The Achievement In Playing Badminton." *Man In India* 96(8): 2593-2605.
- Sugiyono. 2010. Educational Research Methodology Quantitative, Qualitative, and R&D Approaches. Bandung: Alfabeta, CV.
- Sukmadinata, Nana Syadiah. 2013. Educational Research Methods. Bandung: Rosdakarya Youth.
- Williyanto, Septian, Nasuka Nasuka, and Doni Wira Yudha Kusuma. 2018. "The Development Of Badminton Skills Test Instruments for Athletes in Age Groups of Children, Cub, Teenager and Youth Article Info." *Journal of Physical Education and Sports JPES* 7(1): 50-54. <https://journal.unnes.ac.id/sju/index.php/jpes/article/view/23235>.
- Zhang, Zhao, et al. 2016. "The Influence of X-Factor (Trunk Rotation) and Experience on the Quality of the Badminton Forehand Smash." *Journal of Human Kinetics* 53(1): 9-22