

Exploration Of The Effectiveness Of Racket Shadow Training On Enhancing Footwork Agility In Badminton Athletes

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Abstract

This study aims to determine the effect of shadow racket training on improving agility in badminton among students participating in extracurricular badminton activities at MTs Al Gaotsyiah Kamal. Agility is one of the essential components of physical fitness in badminton, as the sport requires players to move quickly, accurately, and efficiently while being able to change direction rapidly. Therefore, an effective training method is needed to support students' movement skills, one of which is shadow racket training. The research involved 30 students selected through a total sampling technique from participants in the badminton extracurricular program. This study employed an experimental method with a pretest-posttest one-group design, which involved administering agility tests before and after the training intervention. The agility measurement instrument used was the shuttle run test. The shadow racket training program was implemented over multiple sessions with structured and consistent intensity. The results revealed a significant improvement in agility test scores after students completed the shadow racket training program. Data analysis indicated that shadow racket training contributed positively to enhancing students' speed and directional change response during play. These findings confirm that shadow racket training is an effective and practical method that is easy to apply and aligns with the developmental needs of school-level badminton athletes. Therefore, shadow racket training is recommended as an optimal training method to improve agility in school-based badminton programs.

Keywords: Shadow Racket, Agility, Badminton, Extracurricular, Physical Training

1 INTRODUCTION

Education is a human effort to maintain the continuity of life and culture. Through education, the dynamics of human life, which are diverse in nature, can be organized and directed toward positive change under various situations and conditions. Physical education functions as an educative process carried out through physical activities that serve as both the medium and the means of learning. A key characteristic of this process is the interaction between teachers and students within an educational social environment. Educators, possessing the authority and responsibility to guide students, influence them through learning experiences that encourage comprehensive behavioral development, covering cognitive, affective, and psychomotor domains.

According to Ki Hajar Dewantara, education is an effort to guide all innate potentials of children so that they may achieve optimal safety and happiness in life. Overall, education plays a crucial role in building civilization, improving quality of life, and shaping a society that possesses knowledge and moral values.

Sports education is generally delivered in formal settings such as schools through the subject of Physical Education, Sports, and Health (PJOK). In addition, sports education can also be obtained through extracurricular activities, sports clubs, and specialized training programs.

The primary objectives of sports education include improving physical health to help students maintain a healthy and fit body; developing motor skills by teaching fundamental

movements and techniques across various sports disciplines; and internalizing values of sportsmanship by fostering attitudes of honesty, discipline, and fairness.

Maintaining mental well-being helps reduce stress and improve emotional health. Sports education also enhances teamwork and leadership skills through team-based activities and competitive environments. With quality sports education, individuals not only become physically fit but also develop strong character and the ability to collaborate across various aspects of life. Extracurricular activities are learning programs conducted outside formal class hours with the aim of developing students' interests, talents, and skills in various disciplines. These activities are optional but highly encouraged, as they support students' overall personal development academically, socially, and emotionally.

Badminton is a racket sport played in both singles and doubles categories, where the objective is to hit the shuttlecock over the net into the opponent's court so that it cannot be returned. The game is played on a court with specific measurements and regulated by the Badminton World Federation (BWF). According to Marpaung & Manihuruk (2022), badminton requires players to think rapidly during the match and execute technique-based movements that enable them to strike the shuttlecock accurately toward the target.

Initial observations conducted at MTs Al Gaotsyiah Kamal in West Jakarta revealed that training patterns in the badminton extracurricular program still primarily focus on basic technical skills. Although mastering technical skills is essential, insufficient emphasis on agility results in slower reactions to opponents' shots, leading to a decline in overall performance. This situation indicates the need for a more structured and targeted training model that focuses on enhancing foot agility while remaining aligned with the fundamental demands of badminton.

Previous studies provide an important foundation for developing such a training model. Puriana (2016) found that agility is a crucial physical component that must be possessed by all athletes. With good agility, athletes can move efficiently when defending or attacking, and change direction quickly and accurately while maintaining body balance.

By implementing shadow racket exercises, it is expected that agility improvements will be achieved, particularly in responding to the fast-paced and sudden directional changes required in badminton. Furthermore, this training model is expected to contribute to the improvement of fundamental badminton skills, especially footwork agility, which plays a major role in responding effectively to opponents' attacks.

Therefore, the objective of this study is clear: to design, develop, and evaluate a modified shadow racket training model that not only reinforces basic technical skills but also enhances agility and practical performance among badminton extracurricular students at MTs Al Gaotsyiah Kamal. This training innovation is expected to serve as an evidence-based program that is applicable, easy for school coaches to implement, and aligned with the needs of badminton development at the school level.

2 RESEARCH METHODS

Experimental research is a type of study conducted to evaluate the cause-and-effect relationship between two or more variables by manipulating the independent variable (assumed as the cause) and observing its impact on the dependent variable (assumed as the effect). In experimental research, the researcher has full control over the experimental conditions and aims to minimize or regulate other variables that may influence the results. This study employs a pre-experimental design with a One-Group Pretest-Posttest approach, carried out in an extracurricular activity setting. The One-Group Pretest-Posttest design is used to observe changes experienced by a group after receiving a treatment or intervention.

The first stage, the initial test (pretest), was conducted to identify the real needs in the field. The researcher observed badminton extracurricular activities at Mts Al Gaotsyiah Jakarta and interviewed the coach. From this stage, it was revealed that agility training

conducted during practice sessions was relatively monotonous and mostly focused on basic techniques, resulting in students' agility not developing optimally.

The second stage, the intervention, involved implementing a racket shadow training model believed to enhance students' agility in playing badminton. This model was systematically applied over 16 training sessions, designed to be easily implemented in school environments with limited facilities and adapted to the characteristics of junior high school students.

The final stage, the posttest, was conducted to evaluate improvements from the trial results and assessments. The developed racket shadow training model was then refined and disseminated to optimize badminton performance, specifically in improving agility, so that it can be used by coaches and Physical Education teachers in other schools.

Data collection techniques included observation, interviews, questionnaires, documentation, and physical tests consisting of pretests and posttests. Data were analyzed using descriptive comparative methods by comparing scores before and after the application of the model, supported by expert evaluation and user responses to assess the product's validity, practicality, and effectiveness.

3 RESULT AND DISCUSSION

3.1 Result

Experimental research is a type of study conducted to evaluate the cause-and-effect relationship between two or more variables by manipulating the independent variable and observing its effect on the dependent variable. In experimental research, the researcher has full control over the experimental conditions and attempts to eliminate or control other variables that may influence the results.

The findings of this study present the percentage data of extracurricular students in mastering racket shadow techniques related to agility in badminton by using the shuttle run training method to improve the skills of badminton extracurricular participants at MTS Al Gaotsyah, West Jakarta. The sample in this study consisted of 30 badminton extracurricular students at MTS Al Gaotsyah, West Jakarta, including 14 male and 16 female students. Total sampling was used in this research, meaning the entire population was included as the research sample.

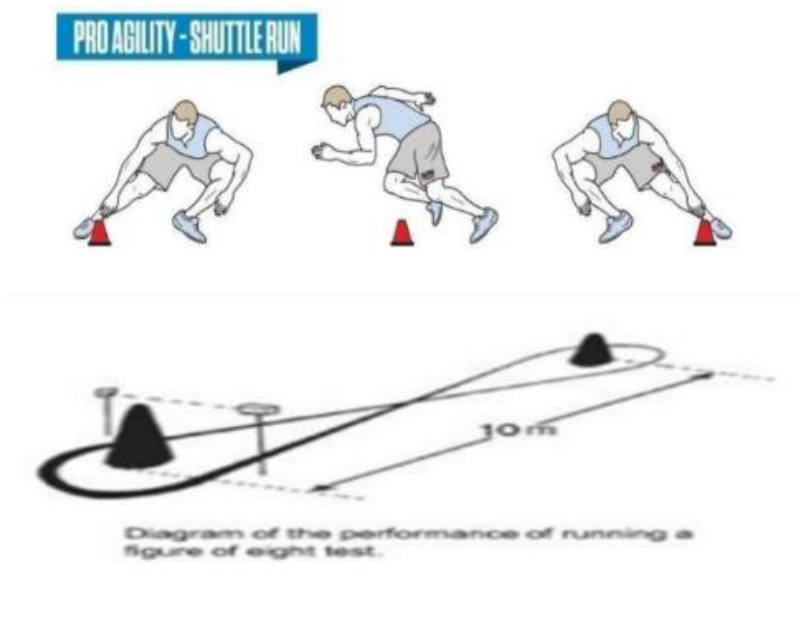
A general description of the sample characteristics is presented in the following table:

Descriptive Statistics

Keterangan	N	Minimum	Maximum	Mean	Std. Deviation
<i>Pretest shuttle run 1</i>	15	16.00	19.05	1354.13	697.839
<i>Pretest shuttle run 2</i>	15	17.00	19.06	1493.20	609.363
<i>Posttest shuttle run 1</i>	15	16.00	17.08	1366.73	552.642
<i>Posttest shuttle run 2</i>	15	15.00	17.08	1385.67	566.767

Based on the analysis of the pre-test and post-test data, it can be described that the average score of the pre-test in the Shuttle Run Group 1 was 1354.13, while the average pre-test score in Shuttle Run Group 2 was 1493.20. The standard deviation for the pre-test scores in Shuttle Run Group 1 was 697.839, whereas the standard deviation for Shuttle Run Group 2 was 609.363.

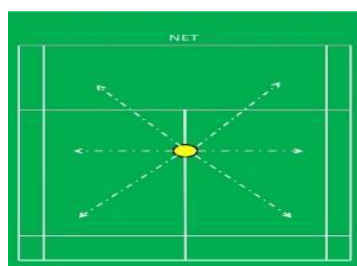
Furthermore, the minimum pre-test score in Shuttle Run Group 1 was 16.00, while the minimum score in Shuttle Run Group 2 was 17.00. The maximum pre-test score obtained by Shuttle Run Group 1 was 19.05, whereas the maximum score for Shuttle Run Group 2 was 19.06.



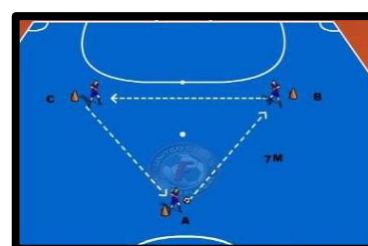
3.1.1 Expert Validation

The results of this validation indicate that the training model can be implemented, provided that several minor revisions are made. These revisions primarily involve clarifying technical instructions for the movement execution and organizing the training sequence to ensure a more systematic flow. Overall, the experts evaluated the product within the "good" to "very good" category, allowing it to proceed to the trial phase.

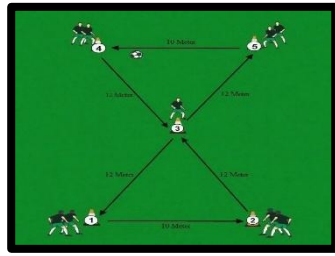
The trial was conducted at MTS Al Gaotsyiah, West Jakarta, involving 30 badminton extracurricular students, consisting of 14 male and 16 female participants. The results demonstrated a significant improvement in agility, measured using the shuttle run test. This improvement highlights the effectiveness of the shadow racket training model in helping students perform exercises more efficiently compared to the previous training method. The findings suggest that this training model successfully enhances student agility and provides a more structured and beneficial approach to badminton practice in school settings.



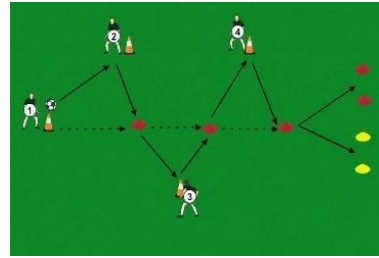
Example of Shadow Racket Test



Example of Shuttle Run Exercise



Example of Shuttle Run with Shuttlecock Drill



Example of Zig-Zag Shuttle Run Drill

Figure 2. Training Model Design

Overall, the results of this study demonstrate that the shadow-racket training model is valid, practical, and effective for implementation in school-based badminton extracurricular programs, particularly in enhancing students' footwork agility.

3.2 Discussion

According to Purwanto (2012), agility is the ability to change direction or body position quickly while simultaneously performing other movements. For children, agility is an essential component of physical fitness that must be possessed. Without agility, a child is considered not to be in a normal physical condition or may even be experiencing illness. Agility for children is a natural capability aligned with their developmental characteristics. Saputra and Yennes (2018) state that agility is the body's ability to change direction rapidly without experiencing balance disturbances or loss of stability.

Thus, this study provides empirical evidence that structured training can have a positive impact on skill development. This supports the idea that physical and technical exercises contribute to improvement during training and competition. In this context, agility training does not stand alone; rather, it is designed to reinforce sport-specific skills required in gameplay.

3.3 Implikasi

In this study, the researcher applied agility measurement techniques and documented the results as a method of data collection. The shuttle run test is one form of physical fitness exercise aimed at improving speed, agility, and endurance. This exercise is performed by running back and forth between two points at a specific distance, typically emphasizing quick changes of direction.

Shuttle run exercises are commonly used in various sports, such as soccer, basketball, and badminton, because they help athletes develop the ability to stop, turn, and accelerate quickly. The distances typically used in shuttle run tests are 5 meters, 10 meters, or 20 meters, depending on the training objective. This test is also widely used as a component of physical fitness assessments to measure an individual's agility.

This aligns with the principle that emphasizes the interconnection between physical, technical, tactical, and mental components in sports development. Practically, the training model developed in this study offers several advantages: 1 Easy to implement in schools with limited facilities. 2 Does not require special equipment—only a court and cones are needed. 3 Increases student motivation, as movement variations make the practice more engaging. 4 Effective in improving agility in badminton performance.

With these advantages, this training model can be adopted by badminton coaches in other schools as part of regular development programs.

4 CONCLUSION

Based on the results of the research conducted regarding the effect of shadow racket training on foot agility in badminton among extracurricular students of MTS Al Gaotsyah, West Jakarta, it can be concluded that there is an influence of shadow racket training on foot agility in badminton. This conclusion is based on the significance value of $0.706 < 0.05$. This study is limited to examining the effect of shadow racket training on foot agility. Future researchers are expected to conduct studies on other training methods that may influence agility, such as shuttlecock throwing drills, hanging shuttlecock drills, weighted shadow racket training, and other similar training variations. For future researchers interested in further studying foot agility, it is recommended to compare shadow racket training with other training methods to obtain more comprehensive information regarding the most effective exercise to improve foot agility in badminton. Future studies are also advised to be conducted in major badminton clubs that implement structured and systematic training programs, so that the research results become more relevant and representative.

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