

# Study on the Influence of Fast Moving Ability and Footwork on Badminton

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**ABSTRACT.** *As the basis of all the skills of badminton, footwork is particularly important, it is the soul of badminton. If you want to make flexible use of badminton techniques and tactics, you must have a solid footwork. The key of footwork lies in the athletes' ability to move quickly. The batting quality and initiative of athletes in the field are closely related to their own footwork and fast moving ability. The stronger the athletes' ability to move quickly, the more in place the hitting position on the field can be moved to avoid passive batting. It can make the batting movement of the player's hand more stable, let the ball fall on the opponent's court at the fastest speed, and put the opponent on the court. A more passive situation in the game. Good footwork can make athletes more coherent in the competition, reasonable use of footwork can also save physical strength and reduce energy consumption. Therefore, it is of great significance to improve the ability of fast movement and strengthen the practice of footwork for the improvement of sports technology.*

**KEYWORDS:** *Badminton; Fast moving ability; Footwork*

## 1. Introduction

For athletes, with a fast moving ability and a good footwork, you can take the multi-shot of the opponent in the game, and also take advantage of the energy consumption. For each player, the passive shot is always much more likely to be consumed than the active shot. The fast moving ability is also a comprehensive physical fitness of a badminton player. Badminton is a small ball project, which is based on a step-by-step approach to the quality of the ball [1]. How to improve the ball striking quality of the athletes is also the most important point in the competition, to speed up the speed of the ball, to enhance the rotation of the ball, and to increase the speed of the ball. It's a flexible way to move your opponent by taking the power of the ball and taking the initiative to change the point. However, the position of the desired ball striking point must depend on the athlete's good, fast and consistent footwork.

Through the analysis and research of badminton footwork, many rich research achievements have been formed, such as Wang Suping and Peng Min's [2] "the focus problems and principles of Badminton footwork Teaching", which solves a large part of the key points and difficulties of badminton footwork in the process of badminton footwork teaching, and shows unique views on the focus of badminton footwork teaching. So that many badminton enthusiasts can also use good footwork to deal with each incoming ball. Tang Zhiqiang [3] "lower extremity strength and footwork training methods of badminton players" focuses on how to develop the special strength that badminton players should have, badminton special sports. Which muscle groups should be developed? Is the large muscle group or the small muscle group? And the training methods of various development forces are introduced. Chen Qingfu's [4] "add-on multi-ball training method in the badminton technique practice" the teaching of the single technology in the training. The study provides a great and effective function, and through the multi-ball training in the training, the muscle memory is continuously strengthened. So that a good level can be played in the course of the game.

In the development of badminton, the rapid moving ability and the reasonable utilization degree of the footwork in the badminton competition have been gradually improved, and the research results of the relevant parts have also been formed in the movement speed of the badminton footwork. [5] For example: The importance of the fast footwork in the badminton sport. The speed of his movement is not the same for athletes who are different from each of the sports. In the game, the speed of the internet and the speed of return to the midfield are also affected. In this article, it is pointed out that the fast footwork is an important base guarantee in the game, it can make the player take a more favorable position of the ball and avoid being in The passive situation. The athlete's self-born condition is also very important, the athlete's lower limb with strong body ability has strong explosive force, flexible rotating body, agile footwork and rapid reaction capacity, the start-up is fast, the movement is fast and the return motion is fast.

The above literature shows that the research on the effect of the fast moving ability and the footwork on the badminton movement has a rich theoretical research result. This paper introduces a lot of methods to practice the badminton footwork, and also introduces some training methods about the speed of the badminton footwork, but the effect of the fast moving ability and the footwork on the badminton movement is very low. Therefore, the influence of the fast moving ability and the footwork on the badminton movement is studied, and the correlation between the two is found, and it is very important to improve the special sports level of the badminton players.

## **2. Research Object and Method**

### ***2.1 Study Object***

There are 14 badminton classes in the School of physical Education of Jiangxi normal University of Science and Technology.

### ***2.2 Study Methods***

#### ***2.2.1 Document Method.***

The literature research data on badminton fast movement ability and footwork are searched on the Internet in China. The literature is sorted out and analyzed, the research methods and ideas are used for reference, and the theoretical data needed by the research are integrated according to their own investigation and research direction.

#### ***2.2.2 Teaching Experiment Method***

Through the experimental group, 14 students in badminton class of Grade 15 Institute of physical Education were randomly divided into two groups. According to the teaching method of this study, the experimental group gradually increased the strength of each training class and badminton related special gait exercises, while the control group adopted traditional methods such as explanation, demonstration, unarmed imitation and so on.

Experiment time: one semester (17 weeks).

Experimental test: in the first week before the experiment, the physical quality and gait movement speed of the two groups were tested, and it was found that there was no significant difference between the two groups, which indicated that the grouping was reasonable. In the last week of completing the specified teaching tasks in the two teaching groups, three test methods were analyzed by randomly matched "ten" X "meter" zigzag site movement speed test results, and the learning effects of the two groups were tested.

#### ***2.2.3 Mathematical Statistics Method***

The statistical analysis of data is carried out by using the computer Excel form.

## **3. Investigation and Analysis**

### ***3.1 Analysis of the Main Embodiment of Badminton's Ability to Move Fast***

In the current world trend of badminton technology development, the speed of surfing the Internet is fast, the playing method is fierce, and most of them are mainly offensive. Many excellent badminton players use the ability of fast movement to suppress their opponents through the coherence of one beat, the ability of fast movement to seize the high point and the pressure, the first to surf the Internet, and to attack first. For this kind of technical and tactical playing with fast attack as the mainstream, we must take corresponding measures to strengthen the defensive ability of the athletes, at the same time, we must also improve their own speed, strive for the initiative, and improve the ability to kill each other. In order to achieve the above requirements, we must improve the ability to move quickly.

#### ***3.1.1 Fast Mobility is the Key to Good Footwork***

The grip, serve, batting and footwork are the four basic technical parts of badminton, the technique is the premise, the footwork is the foundation. In badminton competition, the structure of the footwork is divided into four parts: start, move, hit in place, and return. When starting, both feet take off slightly up at the same time,

adjust the body center of gravity, conducive to the direction of the ball to move. Accurate judgment, quick response is the premise of rapid start. In this link, we should especially strengthen the practice of reaction speed and improve the ability of judgment. When moving, the change from the center position to the batting position is called moving.

### 3.1.2 Impact of Rapid Mobility on Batting

There are three main features of badminton movement: reaction speed, movement speed and displacement speed. Speed of reaction in the game for the opponent in the moment after the shot on their feet and the body reaction speed, and how to deal with the ball. Speed of movement. It's for the whole movement of the upper limbs. such as the speed of action to buckle the ball. It is characterized by the badminton player's skill, the tactical movement must sometimes be faster, but sometimes must be fast moderately, may say is the relative "slow movement".

### 3.2 Training Method Design for Fast Moving Ability of Badminton

Through the analysis of the characteristics of badminton sports and the above overview of the fast movement of badminton sports, this study designed a special footwork practice method, and combined with the strength of the quality of the exercise and the special speed of the exercise.

#### 3.2.1 Special Exercise of Footwork

In the experimental group, through the step-step practice of each stage, the teaching and practice of the experimental group are selected from the basic to the synthesis through the special step-step teaching at each class, and the experimental group is used for teaching and practicing the experimental group by selecting a suitable badminton special step method in different stages, The left and right network exercises and the full-field back-and-right take-off footwork of the whole field and the left and right defense exercises.

#### 3.2.2 Training Methods of Strength Exercise and Special Speed Exercise

Table 1 Methods Selected for Strength Training in Footwork for Badminton Students

training classification	Action name	load	training objective
Thigh muscle group	Weight bearing leg flexion and extension	12-15RM/12 x 4	Develop thigh muscle strength.
	Weight-bearing quick-squat	12-15RM/12 x 4	
calf muscle group	Weight-bearing heel	12-15 RM/12 x 4	Develop the strength of calf muscle group
	Weight bearing straight leg jump	12-15 RM /12 x 4.	

Table 2 Methods Selected for Special Speed Training in Footwork for Badminton Students

training classification	training method	training objective
Sensitive practice	Look at the gait practice of gesture command (30*4). Rope ladder practice (4*6)	Improve the reaction degree of athletes' nervous system and develop the reaction speed of gait movement
speed of action	1, One-minute double-swing rope (3 group); 2, Fast and High Frequency close step around obstacles practice (20*2); 3, Practice of turning hips and swinging legs(20*4).	The slow-and-slow rhythm is used to carry out the small-step running, the high-lifting leg, the front cross-jump, the left and right cross-jump exercises, and the action speed is improved.
displacement speed	1, high-lift leg (40*4); 2, Fast running over obstacles requires athletes to bypass a number of obstacles in 20 meters at the fastest speed (40*6);	In order to improve the displacement speed of badminton footwork, the speed of kick off the ground is increased.

3, short-range round-trip (20*4).
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### 3.3 Test and Analysis of Teaching Effect

In order to verify the timeliness of the teaching method designed in this study, at the end of the experiment, the moving speed of the “+” × “\*” zigzag site of the students in the experimental group and the control group was tested. The test results are as follows:

#### 3.3.1 Analysis of Moving Speed Test Results of “+” × “\*” Zigzag Site

In order to test the teaching effect of the two groups of students, the “+” × “\*” zigzag site movement speed test method was designed in this study. The experimental group and the control group were tested according to the “+” × “\*” zigzag site in turn, and the results were recorded for discussion and analysis.

Table 3 “+” × “\*” Movement Speedometer Before and after the Experiment in the Experimental Group ( $n \leq 42$ )

experimental group		1	2	3	4	5	6	7	average value
Before the experiment	×	20	19	21	22	23	23	24	21.7
	+	19	18	19	20	20	21	20	19.6
	*	41	39	40	44	45	45	46	42.8
After the experiment	×	16	16	17	18	19	18	19	17.5
	+	15	14	16	17	16	17	17	16
	*	39	37	37	38	38	39	40	38.2

Table 4 Control Group Before and after the Word “+” “\*” Moving Speed Table ( $n = 42$ ).

control group		1	2	3	4	5	6	7	average value
Before the experiment	×	22	20	19	19	20	21	22	20.4
	+	18	19	20	18	17	19	20	18.7
	*	43	44	41	43	46	44	40	43
After the experiment	×	20	19	19	18	18	19	20	19
	+	17	17	17	15	16	18	18	16.8
	*	42	42	40	40	45	42	39	41.2

Table 5 Comparison of Data between Experimental Group and Control Group Before Experiment

project	group	mean value	T value	P value
×	experimental group	21.7	0.35	0.085
	control group	20.4		
+	experimental group	19.6	0.70	0.483
	control group	18.7		
*	experimental group	42.8	0.43	0.195
	control group	43		

Table 6 Comparison of Data between Experimental Group and Control Group after Experiment

project	group	mean value	T value	P value
×	experimental group	17.5	0.47	0.006**
	control group	19		
+	experimental group	16	1.24	0.032*
	control group	16.8		
*	experimental group	38.2	0.59	0.012*
	control group	41.2		

From the above experimental results, it can be concluded that the results of the experimental group are better than those of the control group ( $P < 0.05$ ). Through the above special gait training, badminton special strength training and special speed training, the experimental group has a fast increase in speed strength and a coherent

pace in the process of running, which can promote the improvement of speed.

#### **4. Conclusion**

Based on the characteristics of badminton, this paper designs several special footwork exercises for badminton, supplemented by special strength exercises for badminton and some training methods for special speed exercises for badminton.

Through This Special Training Method of Badminton, the Footwork Speed of Athletes Has Been Significantly Improved in Badminton Competition.

Because the experimental group used the special badminton footwork exercise and the special badminton strength and speed exercise, the experimental group was significantly better than the control group under the footwork test, and the results of the experimental group were better than those of the control group.

For professional athletes or amateur badminton enthusiasts, in order to have faster badminton mobility and fast, coherent and reasonable footwork, it is necessary not only to improve the running skills, but also to improve the strength of the muscles of all parts of the lower extremities. Carry on the targeted training to the strength speed and the endurance speed. Otherwise, the improvement of speed will be limited and affected to a considerable extent.

In Order to Improve the Walking Speed of Badminton, It is Necessary to Develop the Flexibility and Coordination of Athletes, So That the Upper and Lower Extremities of Athletes Can Be Coordinated and Concentrated.

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