

# The Effect Of Badminton Special Speed Training Method Toward Success Score And Time Perception Predictive Skills Performance Of Badminton Players

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**Abstract:** This study aimed to investigate whether there is a significant in the effect of badminton special speed training method on successful score and time perception predictive skill performance of drop point of badminton players. Thirty elite badminton players were randomly selected for the purposes of the study. Participants were then randomly divided into the experimental group and control group. The experimental group adopted badminton special speed training method (BSSTM), with the control group adopted traditional speed training method (BTSTM). The total length of training intervention are 3 months. Assessment includes successful scores and time perception predictive skills performance of drop point of badminton players. Two-way between-groups analysis of variance (ANOVA) was used in successful scores, the results of data analysis showed that badminton special speed training method had a significant effect on the improvement of successful score of badminton players. Multivariate analysis of variance (MANOVA) was used in time perception predictive skills performance of drop point of badminton players, the results of data analysis showed that time prediction threshold of drop point of badminton players is decreased. The first study found that the badminton specialized speed training method improved badminton players' motivation to hit the ball, in other words, developed the ability of badminton players to occupy the advantageous striking timing and position. The second analysis indicated that time threshold of drop point predicting was narrowed, in other words, brings the prediction time ahead.

**Index Terms:** Speed training, badminton, success score, time predictive

## 1 INTRODUCTION

Badminton is not only one of the most popular sports but also one of the fastest developing sports in the universities especially in China. Therefore, the development of badminton special training course in colleges and universities has become one of the tasks of the development of physical education in colleges and universities. Recently, many researches had been conducted in badminton [1], [2], [3]. Among those, the research of badminton special speed training method has become a hot topic in current sports research. Firstly, badminton special speed training method is the guarantee to improve successful score and time perception predictive skills performance of badminton players. Among the factors that affect the success score, badminton special speed is one of the key factors of affecting sports success score and time perception predictive skills performance of drop point of badminton players [4]. Secondly, the quality of badminton special speed is also the guarantee to win the competition and achieve excellent results. At the same time, watch from content of badminton special speed training, the main way of badminton special speed training is through improving visual-auditory reaction speed displacement speed and action speed of badminton players. Therefore, badminton special speed training plays a very important role in the development of badminton technology and the improvement of badminton players' success score. However, unfortunately, universities physical teaching and training have still adopted the traditional training method for badminton speed quality.

The importance of badminton special speed training has been neglected in badminton teaching and training in colleges and universities. Especially, there is a lack of systematics in the content of the training methods, and there is no agreement between the special speed and the special technology. This situation results will be show in slow reaction speed, footwork movement speed and slow striking speed during training and games. In the meantime, due to poor footwork movement, badminton players could not achieved the favorable position and timing to strike the shuttlecock [5]. Therefore, the establishment of special quality training methods in physical education teaching and training in colleges and universities has become an urgent problem to be solved. In badminton game, the special speed quality was the core factor to win [6], [7]. Special Speed include Audio-visual reaction speed, displace speed and action speed. The special speed quality needs to be displayed in the complete technical realization. Therefore, the badminton training task should be realized through the combination of special speed and striking technology. On the other hand, from the level of decision-making, the factors that badminton players get excellent results not only depend on the combination of speed quality and technology, but also need good space-time prediction ability [8]. However, the investigation and analysis of the previous research literature shows that whether the badminton special speed training method can improve the success score and the performance of landing time prediction skills is a blank in the field of research. So, this study further put forward the effects of badminton special speed training method on success scores and time perception skills performance of drop point of badminton players. The purpose of this study was to discuss whether there are significant differences in the effect of badminton special speed training method (BSSTM) compare to badminton traditional speed training method (BTSTM) on success score and time perception predictive skill performance of drop point of badminton player

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## 2 METHODOLOGY

### 2.1 Participants

Thirty elite badminton players were randomly selected among first semester student in 2018 from Xi'an Institute of physical Education using systematic sampling method. Participants were divided into the experimental group 1 (n=15) and the controlling group 2(n=15).

### 2.2 Data Collection

Before the experiment was carried out, the basic physical fitness were measured by researcher on each participant. Test items include standing long jump (m), 60 meters run (Sec) and backward put the shot (m). After that, pre-test was conducting to all participant, there was no training intervention on the experimental and control participant during this test. After pre-test, intervention were given to participant for 13 weeks, which is intervention for group 1 was special speed training method (BSSTM) and group 2 was badminton traditional speed training method (BTSTM). Then, post-test 1 was conducting after 13 week of intervention for both participant in group 1 and 2, to measure the effect of the training intervention. Then, after 15 week post-test 2 was conducting to measure the effect of training effect after the stooping intervention training. The same method were used to measured Success score and Time Predictive during pre-test, post-test 1 and post-test 2. Which is, firstly, badminton service speed, frequency, controlling service time length, service distance and height, serve line mode of badminton machine were adjusting using badminton training machine, Model S8025, which consists of a cage, a base, and a tablet computer. The cage can hold 140-200 badminton balls and serve at an elevation angle of 35. Degree-16, frequency of service 1-8 seconds, height of service 7.5 meters, speed of service 20-140 km/h. for success score procedure, researcher was record the number of successful serve to target position and the number of successful of the batting to test target position of badminton players. While, for time predictive, researcher was record the time perceptual prediction skills performance (when badminton serve to rear court, smash and drop shot of landing time) on landing point time of badminton players.

### 2.3 Statistical analysis

T test Statistical analysis were performed to analyses demography information and the basic physical education quality of the experimental group and the control group. Two-way between-groups ANOVA with post-hoc comparison was used on data analyses the success scores of group 1 and group 2 at three test points. Multivariate analysis of variance (MANOVA) with post-hoc comparisons was used on data analysis of time perception predictive skills performance of drop points of elite badminton players.

## 3 RESULTS

Table 1 showed the demography of participants involved in this study.

**TABLE 1**

TABLE 1: RESULTS OF T-TEST AND COMPARISONS (MEAN  $\pm$  STANDARD DEVIATION) ON THE PARTICIPANTS DEMOGRAPHY IN GROUP 1 (BSSTM) AND GROUP 2 (BTSTM).

Variables	Group 1 (Mean $\pm$ SD)	Group 2 (Mean $\pm$ SD)	Sig. (2-tailed)
Age	20.13 $\pm$ 0.99	20.33 $\pm$ 1.04	.59
Height	177.86 $\pm$ 4.62	177.80 $\pm$ 4.49	.96
Weight	68.53 $\pm$ 4.13	69.13 $\pm$ 4.34	.70

Notes, a = significantly difference at  $p < 0.05$

Table 2 showed results of T-test and comparisons (Mean  $\pm$  Standard Deviation) on the participants basic Physical Education Quality in group 1 (BSSTM) and Group 2 (BTSTM). There was no significant difference ( $p=0.05$ ) for all basic physical fitness between group 1 and group 2.

**TABLE 2**

PARTICIPANTS BASIC PHYSICAL QUALITY

Variables	Group 1 (Mean $\pm$ SD)	Group 2 (Mean $\pm$ SD)	Sig. (2-tailed)
Standing Long Jump	2.66 $\pm$ 0.09	2.67 $\pm$ 0.09	.64
60 Meter Run	12.36 $\pm$ 0.35	12.52 $\pm$ 0.32	.23
Backward the Put Shot	11.60 $\pm$ 0.86	11.21 $\pm$ 0.87	.63

Notes, a = significantly difference at  $p < 0.05$

### Study 1

Table 3 showed descriptive statistic for success score between group 1 and group 2, Post hoc comparison for between-group using ANOVA showed there are no significant difference ( $p>0.05$ ) between group 1 and group 2 during pre-test ( $p=.93$ ). There are significant difference ( $p>0.05$ ) between group 1 and group 2 during post-test 1 ( $p=.03$ ), which is success score mean for group 1 higher than group 2. The same result was showed during post-test 2, which is success score mean for group 1 significantly ( $p<0.05$ ) higher than group 2 ( $p=.02$ ).

**TABLE 3**

SUCCESS SCORES BADMINTON PLAYERS

Test	Intervention	Group	Mean $\pm$ Std. Deviation
Pre-test	No BSSTM	Group 1	12.73 $\pm$ 2.86
Posttest 1	BSSTM	Group 1	14.66 $\pm$ 2.05
Posttest 2	No BSSTM	Group 1	14.86 $\pm$ 2.16
Pre-test	No BTSTM	Group 2	12.66 $\pm$ 2.43
Posttest 1	BTSTM	Group 2	12.86 $\pm$ 2.13
Posttest 2	No BTSTM	Group 2	12.93 $\pm$ 1.90

### Study 2

Table 4 showed Time Perception Predictive Skills Performance (TPPSP) of drop point of serve to rear court. Result of multiple comparison using MANOVA Statistical analysis showed there

were no significant difference ( $p>0.05$ ) between group 1 and group 2 during pre-test ( $p=1.000$ ). There were significant difference ( $p<0.05$ ) during post-test 1 between group 1 and group 2 ( $p=.03$ ), which is TPPSP for group 1 faster than group 2. The same result also showed during post-test 2, which is TPPSP in group 1 significantly faster than group 2 ( $p=.01$ ).

**TABLE 4***TPPSP OF DROP POINT OF SERVE TO REAR COURT*

TPPSP	Group	Test	Mean $\pm$ SD
TPPSP of drop point of serve to rear court	Group 1	Pre-test	.206 $\pm$ .026
	Group 1	Posttest 1	.184 $\pm$ .020
	Group 1	Posttest 2	.181 $\pm$ .018
	Group 2	Pre-test	.206 $\pm$ .026
	Group 2	Posttest 1	.203 $\pm$ .025
	Group 2	Posttest 2	.204 $\pm$ .025

Table 5 showed Time Perception Predictive Skills Performance (TPPSP) of landing Point of Smash. Result of multiple comparison using MANOVA Statistical analysis showed there were no significant difference ( $p>0.05$ ) between group 1 and group 2 during pre-test ( $p=.80$ ). There were significant difference ( $p<0.05$ ) during post-test 1 between group 1 and group 2 ( $p=.01$ ), which is TPPSP for group 1 faster than group 2. The same result also showed during post-test 2, which is TPPSP in group 1 significantly faster than group 2 ( $p=.04$ ).

**TABLE 5***TPPSP OF DROP POINT OF SMASH*

TPPSP	Group	Test	Mean $\pm$ SD
TPPSP of drop point of smash	Group 1	Pre-test	.270 $\pm$ .011
	Group 1	Posttest 1	.255 $\pm$ .015
	Group 1	Posttest 2	.256 $\pm$ .010
	Group 2	Pre-test	.269 $\pm$ .015
	Group 2	Posttest 1	.268 $\pm$ .015
	Group 2	Posttest 2	.267 $\pm$ .017

Table 6 showed Time Perception Predictive Skills Performance (TPPSP) of landing Point of drop shot. Result of multiple comparison using MANOVA Statistical analysis showed there were no significant difference ( $p>0.05$ ) between group 1 and group 2 during pre-test ( $p=.91$ ). There were significant difference ( $p<0.05$ ) during post-test 1 between group 1 and group 2 ( $p=.02$ ), which is TPPSP for group 1 faster than group 2. The same result also showed during post-test 2, which is TPPSP in group 1 significantly faster than group 2 ( $p=.00$ ).

**TABLE 6***TPPSP OF DROP POINT OF DROP SHOT*

TPPSP	Group	Test	Mean $\pm$ SD
TPPSP of drop point of drop shot	Group 1	Pre-test	.348 $\pm$ .013
	Group 1	Posttest 1	.331 $\pm$ .016
	Group 1	Posttest 2	.329 $\pm$ .017
	Group 2	Pre-test	.348 $\pm$ .015
	Group 2	Posttest 1	.346 $\pm$ .020
	Group 2	Posttest 2	.347 $\pm$ .021

## 4 DISCUSSION

This study showed that badminton special speed training method can improve the reaction speed, action speed and displacement speed, the athletes' special speed quality is the important factor that affect successful score and the accurate prediction of the ball's landing time. Based on the first

analysis, the first study found that the badminton specialized speed training method (BSSTM) improves badminton players' motivation to hit the ball, in other words, develops the ability of badminton players to occupy the advantageous striking timing and position. The first study also found that the combination of hitting the ball to the target position and moving speed can improve the stroke control ability and success score of badminton players. The second analysis indicated that badminton specialized speed training method (BSSTM) narrows the time threshold of drop point predicting, in other words, brings the prediction time ahead. The second study also found the further evidence that badminton flight speed is related to the athlete's time perception skills performance of drop point, that is, the faster the badminton flies, the more difficult for badminton player to predict the drop point.

## 5 CONCLUSION

It can be conclude that group was received badminton special speed training method (BSSTM) showed better effect compare to badminton traditional speed training method (BTSTM) on success score and time predictive of elite Chinese badminton players

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