THE EFFECTS OF BADMINTON SPECIAL SPEED TRAINING METHOD TOWARD SUCCESS SCORE AND TIME PERCEPTION PREDICTIVE SKILLS PERFORMANCE OF BADMINTON PLAYERS

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FACULTY OF SPORTS SCIENCE AND COACHING
SULTAN IDRIS EDUCATION UNIVERSIT

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SU ZHAN GUO

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ABSTRACT

Main aim of this study is to investigate the effects of badminton special speed training method (BSSTM) on Success Score (SS) and Time Perception Predictive Skills Performance (TPPSP) of landing of badminton players. Thirty badminton players were randomly divided into experimental group (G1) (n=15) and control group (G2) (n=15). The G1 adopted BSSTM, with G2 maintained badminton traditional speed training method (BTSTM). The intervention length was 3 months. Badminton serve machine was used to launch the shuttlecocks consistently, with stopwatch used for TPPSP. Between-group ANOVA for SS showed that between-subjects effects were reached at very significant level, that is F (5, 84) = .84, p = .01. The LSD for SS showed between G1 and G2 during pre-test was p = .93. The LSD for SS showed there were significant difference from G1 than G2 at posttest 1 (p = .03), during within G1 from posttest 1 to pre-test (p = .02), which was improvement effects during BSSTM toward SS. There was the retentive effects during BSSTM toward SS from within G1 posttest 1 to posttest 2 (p=.80). The TPPSP used MANOVA with Roy's Largest Root showed that there is a very significant multivariate effect for TPPSP between G1 and G2, that is, F(5, 84)=11.28^{c}, p =.000 < .001. LSD for TPPSP showed there were no significant difference following between G1 and G2 at pre-test (p >.05), and within G1 from posttest 1 to posttest 2 (p >.05), which was the retentive effect of BSSTM toward TPPSP. There were significant difference were following G1 than G2 during post-test 1 (p <.05), within G1 from pre-test to post-tests (p <.05), which was improvement effects during BSSTM toward TPPSP. It can be concluded that BSSTM showed superior training effect in comparison to BTSTM toward success score and time predictive of badminton landing.

KESAN LATIHAN KHAS KELAJUAN BADMINTON TERHADAP SKOR KEJAYAAN DAN PERSEPSI MASA JANGKAAN PRESTASI KEMAHIRAN PEMAIN BADMINTON

ABSTRAK

Matlamat utama kajian ini adalah untuk mengkaji kesan latihan khas kelajuan badminton (BSSTM) ke atas Skor Kejayaan (SS) dan Persepsi Masa Jangkaan Prestasi Kemahiran (TPPSP) mendarat pemain badminton. Tiga puluh pemain telah dibahagikan secara rawak kepada kumpulan eksperimen (G1) (n=15) dan kumpulan kawalan (G2) (n=15). G1 mengadaptasi BSSTM, dengan G2 mengekalkan kaedah latihan kelajuan tradisional (BTSTM). Tempoh masa intervensi adalah 3 bulan. Mesin servis badminton digunakan untuk melancarkan bulu tangkis secara konsisten, dengan jam randik digunakan untuk TPPSP. ANOVA antara kumpulan untuk SS menunjukkan bahawa kesan antara-subjek telah dicapai pada tahap signifikan, iaitu F (5, 84) = .84, p = .01. LSD untuk SS menunjukkan antara G1 dan G2 sewaktu pra-ujian adalah p = .93. LSD untuk SS menunjukkan terdapat perbezaan signifikan daripada G1 berbanding G2 pada pasca-ujian 1 (p = .03), sewaktu di kalangan G1 daripada pasca-ujian 1 ke pra-ujian (p = .02), dimana kesan peningkatan sewaktu BSSTM kepada SS. Terdapat kesan pengekalan sewaktu BSSTM terhadap SS daripada kalangan G1 pasca-ujian 1 kepada pasca-ujian 2 (p=.80). TPPSP menggunakan MANOVA dengan Roy's Largest Root menunjukkan terdapat kesan signifikan pelbagai variasi untuk TPPSP antara G1 dan G2, iaitu F (5, 84) =11.28 c, p =.000 < .001. LSD untuk TPPSP menunjukkan tiada perbezaan signifikan antara G1 dan G2 pada pra-ujian (p >.05), dan di dalam G1 daripada pasca-ujian 1 ke pasca-ujian 2 (p >.05), yang mana merupakan kesan pengekalan BSSTM terhadap TPPSP. Terdapat perbezaan signifikan bagi G1 berbanding G2 sewaktu pasca-ujian 1 (p <.05), di kalangan G1 daripada pra-ujian kepada to pasca-ujian (p <.05), yang merupakan kesan peningkatan sewaktu BSSTM terhadap TPPSP. Kesimpulannya BSSTM menunjukkan kesan latihan lebih baik berbanding BTSTM terhadap skor kejayaan dan persepsi masa jangkaan prestasi kemahiran mendarat.

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ABBREVIATIONS

BSSTM: Badminton Special Speed Training Method

BTSTM: Badminton Traditional Speed Training Method

TMOSS: Test Method of Success Score

SS: Success Score

TPPSP: Time Perception Predictive Skills Performance

HR: Heart Rate

RPE: Rating of Perceived Exertion

BPEQ: Basic Physical Education Quality

APPENDIX

CHAPTER 1

INTRODUCTION

1.1 Introduction

Badminton is one of the most popular sports in the world. Badminton game is both an Olympic game and world championships. Nowadays, badminton is not only a high social popularity but also has a large number of participants. No matter in neighborhoods, primary schools, high school and universities, badminton is the main competition and fitness activity. In the meantime, badminton has high exercise value and strong competition. Badminton spreads the Olympic spirit, principles and sports morality. Such as competition, cooperation, unity, justice, friendship is an indispensable norm and activity of society, and has extensive educational significance. In addition, more and more people think that badminton is way of healthy sports. Although badminton has become a popular sports, due to its exquisite skills, fast flying speed and rhythm, drop points of difference route are uncertain characteristics (Xiao, 2005). So, badminton players need to have the physical education quality of reaction speed, action speed and moving speed. However, these physical quality is developed in teaching and training course. The special speed quality be regarded as the core content of physical education quality of badminton players. The special speed quality include reaction speed, action speed and movement speed. The fast reaction speed and movement speed is to finish the condition of the batting action. Badminton players completed the quality of striking action came from the rapid reaction speed. However, each sport has own sports characteristics. Especially displacement speed and

movement speed are closely related to characteristics of self-sports (Zhang, 2005).

The technical factors of badminton include body position, stroke position, batting point and basic batting action. The body position and batting position are main factors that affect the batting quality. Whether to choose the correct batting point and the body position is directly related to the batting quality. The batting point depend on time-space predicting and fast footwork movement. Badminton players need to predict the time of dropt point from shuttle flies speed, and then fast starting, the footwork movement, and make fast action of striking. On the other hand, the completion of technical action also depends on the ability to predict the landing point. So, it is a very important that the time predictive of badminton players was improved through training intervention. In the badminton competition, some outstanding players show the technical and tactical characteristics of winning quickly. Fast attack has become the key technical style of winning badminton competition. Therefore, coaches should grasp the core element of badminton special speed training, badminton training methods should grasp the characteristic of techniques and tactics to build training contents. At the same time, the key points of teaching and training should be combined with the special technical characteristics of badminton. The research on badminton project is mainly manifested in the characteristics of badminton athletes' physical fitness and sports technology (Zhan, 2003). In China, the technical style of badminton is defined as "fast, hard, accurate and alive" as these four words. Fast speed is the soul, in a sense, speed quality is the core of badminton special physical fitness training. Badminton competition is to decide the victory or defeat with different forms of speed competition. Badminton player must start fast, move fast, hit the ball fast, and occupy the favorable return position. In order to winning create good conditions of successful score. Therefore, the special speed quality training mainly revolves around the improving the reaction speed, displacement speed, batting action speed and endurance speed (Wang, 2011). Badminton is carried out in a certain space range. Badminton players must maintain a certain balance, the essence of which is the balance of time. If one side keeps speeding up, and the other keeps the same speed, then the one who keeps the original speed is forced to keep up with the other side. With the rapid development of badminton technology, the demand for increasing speed is more prominent. As offensive technology has been widely used and continuously improved, and the style of

technology has developed in a rapid and comprehensive way. It is an important problem in badminton training to study how to improve badminton special speed (He, 1999).

The researcher investigated the current situation of athletes' physical quality in university in China, the results found that many coaching still adopted the traditional speed training method on badminton course teaching. Face with the deficiency of badminton teaching and training in Chinese university, this study puts forward the importance of the effect of badminton specialized speed training on success score and time perception predictive skills performance of drop point of badminton players. In the meantime, previous studies on the timing and special prediction of badminton landing point are almost blank. In order to further investigate how to develop badminton players' success score and time perception skills performance, the author puts forward the research proposition of the effect of badminton special speed training method on success score and time perception predictive skills performance of drop point of badminton players. The aim is to investigate what training methods can improve badminton players' ability of success score and time prediction of drop point. In the current research, a new badminton special speed training method is constructed. The training process is focused on the combination training of fast footwork movement and hitting the ball to the landing position. On the one hand, and for the development of badminton players hit the ball control ability and the favorable time and position, on the other hand is the development skills of time prediction of drop point of badminton players. So, study on the skills performance of drop shot time predicting of badminton players has been become a hot issue.

1.2 Background of the Study

In recent years, the development of the concept of new curriculum reform in Chinese university. It particularly emphasizes the educational concept of "health first" and "student-based". The physical education teaching reform have also become an important part of the curriculum reform in Chinese universities. The new physical curriculum reform should mainly emphasize the teaching and training method reform. Firstly, the physical education method reform emphasize the improvement of the

teaching and training effect, and the improvement of the successful score of the special sports quality. Secondly, the physical education method reform emphasize the improvement of the innovative spirit and practical ability of students in the process of the physical teaching and training. Therefore, at present, the creation of new teaching and training methods in teaching reform will become one of the key tasks of teaching reform (Yang & Zhang, 2008).

In order to overcome the deficiency of the traditional physical education teaching and training method in development of the effect of the cultivation of dimension consciousness, emotion, attitude, the perception predictive ability and sports control ability. Teacher or Coach should create new teaching methods and design teaching content in class depend on the characteristics of sports technique and tactics. At the meantime, the tradition physical teaching and training ignore an important to train the time perception predictive ability in the process of sports technology teaching and training. So, in the current course of the new curriculum reform needs to be a comprehensive renovation in the educational method. In particular, it is necessary to develop athletes' speed quality, sports skills performance in combination with the characteristics of special sports (Wang & Li, 2002). This study carried out the effect of badminton special speed training method on successful score and time perception predictive skills performance of drop point of badminton players. The following parts focus on the background of this study and the present development of badminton special training methods.

In recent years, with the popularity and development of badminton, the research on training method of badminton is more and more extensive, which is mainly represented in badminton special speed training method. However, judging from the present situation of badminton education in primary and secondary schools, the level of badminton sports skills of universities students, there is a serious lack of combination of badminton special speed and badminton special technical training in teaching (Wang, 2008). The researcher needs to change ideas, research topic should base on the characteristics of badminton special speed, which be developed the research boundary from the research dimension. So, this study carried out the effect of badminton special training method on score success and time predicted skills performance of drop point

of badminton players. Main purpose of study is to investigate whether there is a significant effect of badminton special speed training method on success score and time perception predictive skills performance of drop point of badminton players. In addition, a high-level badminton game, the athletes have to complete a variety of fast start and stop, turn around, fast movement, jump, swing racket and stroke in the process of attack and defense (Grice, & Grice, WA, 2008). These fast speed skills action must be realized through the badminton special speed training. So the skills performance of badminton special speed become an important influence factor on success score of badminton players. In the meantime, the outstanding results of badminton players also dependent on time-space predicted of drop point of badminton shuttle flying. But, in fact, the performance ability of badminton special speed and time predicted skills must depend on the long-term systematic special speed training.

Nowadays, badminton have become an important course in college and university. At the same time, the badminton teaching and training in universities has become one of an important ways to promote the development of sports, which is also the guarantee of implement the national fitness (Zhang, 2012). However, there are few researches on badminton training method in universities. Colleges and universities have not established a three-dimensional teaching and research system. In actually teaching, people often ignore the important of training method on the starting speed, speed of footwork movement and batting of badminton players. In this case, Insufficient special speed training can lead to the slow of starting reaction and moving pace in the formal match, which makes his body unable to move to the favorable position of the return shot, resulting in the deformation of the arm movement when hitting the ball, and then the decline of the batting quality (Xiao, 2005).

Badminton is a combination of athletes, rackets and shuttle, which has its own characteristics compare to others sports events. The space speed of badminton flying is very fast on a limited badminton court. Therefore, badminton players should not only have good speed quality but also have the ability to predict the time of landing. At present, the research on the training method of badminton speed has been developed in sports field. With the popularization and development of badminton, badminton has become a necessary course in colleges and universities. On the one hand, the

development of badminton research has become one of the main tasks in current physical education teaching and training system construction (Gao & Kang, 2009). On the other hand, it is a very important work to design a set of the effective badminton special speed training methods. Colleges and universities should fully combine the characteristics of sports, construct a new training content system from the dimension of teaching methods and training methods, and constantly improve the teaching and training effect. In the training content, the special quality and the technical action study are combined to improve the practice effect. At the same time, the teaching and training contents should also be combined with the training method of space-time perception prediction.

1.3 Problem Statement

Badminton is not only one of the most popular sports but also one of the fastest developing sports in the universities. 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 researchers had been conducted in badminton (Lee, J., et al., 2019 & Nadzalan, A.M., et al., 2018). 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 (B, L., 2015). 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 (Xiao, 2005). 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 (Grice, T., 2008). 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 is the core factor to win (Xu, B., 2015 & Chandrakumar, N. et al., 2015). 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 (Poliszczuk, T. and C. Ramesh, 2009). 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. Main aim is 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

1.4 Objectives of the Study

The purpose of the study is the starting point and foothold of thesis. The purpose of thesis writing is also the specific purpose to be achieved at the end of the subject. It is

also the predetermined goal to be achieved in this paper. In other words, the research goal is based on the target positioning of the research topic. In the process of determining the expected purpose of this study. First of all, the effect of badminton special speed training method on success score should be investigated. This study expects whether the newly established badminton special training method is more effective than the traditional speed training method. In order to provide practical and theoretical guidance for the future badminton special speed training system. Next, the effect of badminton special speed training method on the time perception predictive skills performance of badminton players should be investigated. This study expects whether the newly established badminton special training method is more effective than the traditional speed training method. The realization of this expected research goal can improve the constructive practical guiding value of how badminton training methods can develop athletes' time prediction ability in the future.

After setting the expected objectives for this study. The author understood the current situation of badminton special speed quality training of university students in Xi'an city, Shan Xi province. In China University, the research on the training method of badminton special speed is still insufficient, the application of the badminton special speed training method is unsystematic in university. Therefore, this study puts forward title of the effects of badminton special speed training method on badminton scoring success and the time perception predictive skills performance of badminton players. In terms of the training intervention of badminton special training method， this study to achieve research objectives, this study takes the badminton special speed training method as the research object, evaluates contents included the success score and time prediction skill performance of drop point of badminton players. The experimental subject is elite badminton player who is randomly sampled, and the experimental object is tested for the basic sports quality in the pre-test, and the conditions of the experimental object are strictly controlled. Meanwhile, this study adopted that comparison research method, through the mean of successful score of the experimental group compare with control group at pre-test and posttest, and further investigate the effect of badminton special speed training method on success score of badminton players. It provides the reference value for the construction of badminton special speed training method system in the future. In addition, through the mean of through the mean

of time perception predictive skills performance of drop point of the experimental group compare with control group at pre-test and posttest. It is expected that the results of the study will be able to enough to investigate the effect of badminton special speed training method on the threshold of landing time prediction. In order to investigate the degree of maintaining effect of badminton special speed training on success score and the time prediction of drop point of badminton players, two post-tests were used in the expected results of the study. In view of the above description, the specific objectives of the currently study 1 and study 2 is stated follows.

1.4.1 Objectives of Study 1

1.4.1.1 To investigate whether there is significant differences in the effect of badminton special speed training method (BSSTM) on success score of badminton players from pre-test to posttests.

1.4.1.2 To investigate whether there is the retentive effect of the badminton special speed training method (BSSTM) on successful score of badminton players from posttest 1 to posttest 2.

1.4.2 Objectives of Study 2

1.4.2.1 To investigate whether there are significant differences in effects of badminton special speed training method (BSSTM) on time perception predictive skill performance of drop point of badminton players from pre-test to posttests.

1.4.2.2 To investigate whether there is the retentive effect of the badminton special speed training method (BSSTM) on time perception predictive skill performance of drop point of badminton players from posttest 1 to posttest 2.

1.5 Research Questions

Choosing a research problem is the starting point of a research activity. It is more important to put forward a research problem than to solve a research problem, because it requires creative imagination to raise new problems and marks the true progress of science. The research problems put forward in this study are based on the theory of badminton special speed training and the theoretical model of time perception prediction. At the same time, the research proposition is also closely related to the success of the previous research. In the my master study stage, the author once studied the topic "experimental study on long jump technology teaching by spatial-temporal cognitive teaching method and procedural teaching method", which laid a certain practical foundation for the current research proposition.

Research questions refer to the specific questions that educational research needs to answer. When determining the research problem, we should first make clear the operation and feasibility of the study variables. In this study, the independent variables included badminton special training method and badminton traditional speed training method, and the dependent variables evaluated included badminton players' success score and landing time prediction skill performance. At present, whether there is an influence relationship between the research variables, through the investigation of the previous research status, the previous research on the impact of badminton special speed training on the success of the game has made some progress. Previous studies found that badminton special quality training can improve the competition result of badminton players. In addition, previous studies on the time mechanism of tennis players found that the time prediction of expert tennis players was better than that of novice players. Although some research results have been obtained the progress, but, there are some defects in research design and research condition control. At present, in this study, the definition variable of badminton success score is put forward for the first time. In this study, the success score refers to the number of successful times that badminton players hit the target position, and the research variable of successful score is innovative and feasible. As long as the study can control the serve, the problem can be solved. Of course, the serve machine or an expert serve is used in the successful score variable test, and the number of times the player hits the target position is recorded

within the specified time. This test method has controllability, thus ensuring the reliability of the data collection of the research variables. In the test of predicting the skill performance of badminton landing time, the self-observation method of the experimental object is adopted. The reliability of the data collection method for the prediction of landing time is proved. Therefore, the collection of variable data in this study is authentic and reliable. In other words, the variables in this study are operable.

In determining the feasibility of the study variables, the evaluation variables of the study are further clarified. At present, the evaluation variables include badminton player's successful score and time prediction skill performance of drop point of badminton players. Therefore, the current research is divided into study 1 and study 2. Based on the purpose of the current research and the determination of research variables. In this study 1 and study 2, the following research questions have been raised.

1.5.1 Research Questions of Study 1

RQ1. Is there an significance difference in the effect of badminton special speed training method (BSSTM) compare to badminton traditional speed training method on successful score of badminton players at pre-test and posttest?

RQ2. Is there an significance difference in the retentive effect of badminton special speed training method (BSSTM) on successful score of badminton players from posttest 1 to posttest 2?

1.5.2 Research Questions of Study 2

RQ1. Are there any significance difference in the effect of the badminton special speed training method (BSSTM) compare to badminton traditional speed training method (BTSTM) on time perception predictive skill performance of drop point of badminton players at pre-test and posttest?

RQ2. Are there any significance difference in the retentive effect of the badminton special speed training method (BSSTM) on time perception predictive skill performance of drop point of badminton players from posttest 1 to posttest 2?

1.6 Research Hypotheses

The operational hypothesis of the study refers to the predictive judgment or assumption of the characteristics of the subjects and the relationship between imaginations, which is a tentative solution to the problem. The function of operational research hypothesis is first of all to guide the investigation and research. With the research hypothesis, the focus and main direction of the study can be clarified, the research task can be concrete, and the data to be collected can be clarified. The research hypothesis can also provide the basis for research design and sampling. Secondly, the hypothesis can associate abstract concepts (or variables) with concrete empirical facts. The hypothesis of the study is a tentative explanation of the specific relationship between these concepts. Third, the research hypothesis can explore new theoretical knowledge.

The hypothesis is made up of concepts that are stated in a testable form and predict specific relationships between two variables. The operational hypothesis proposition of this study is mainly based on the previous research results, and proposes the causal relationship between independent variables and dependent variables, in which the independent variables are badminton special speed training methods and badminton traditional speed training methods, and the dependent variables are success scores and time perception to predict skill performance. At present, the hypothesis is that independent variables have significant differences on dependent variables.

Based on previous research findings collected the result: (a) A preliminary study on the training method of badminton athletes' special speed (Li. & H. 2011). This previous study have selected 40 badminton professional athletes for experimental subjects, intervention method adopt the badminton special training method. Training length was one semester, method of special speed training was used the reaction speed, displacement speed and speed endurance. The results of research have found that the

special speed quality of badminton players were improved greatly significant. In the meantime, previous study have found that badminton players achieved excellent game score in the school badminton games. So, the previous study have shown the speed is the key factor in winning in badminton games. (b) Study used the fixed line of training method of striking ball in badminton teaching course (Ma, 2016). In this master's thesis, the results have shown that the fixed pace training improves the displace speed, batting action speed.

This study based on the results of previous study, theory of special speed training method and theoretical model of time perception. The current study is assumed that badminton special speed training method has a significant influence on success score, and it is also assumed that the special speed training method of badminton has a significant effect of prediction skill performance of drop point of badminton players. In addition, it is suggested that the hypothetical badminton special speed training method has the effect of maintaining the intervention results of success score and time perception prediction skill performance of drop point. So, the current study put forward four operational hypothesizes in the study 1 and the study 2. The specific research assumptions are described as follows:

1.6.1 Operational Hypotheses of Study 1

H_0 (1). There is a significance difference in the effect of badminton special speed training method (BSSTM) compare to badminton traditional speed training method (BTSTM) on successful score of badminton players at pre-test and posttests.

H_0 (2). There is the retentive effect of badminton special speed training method on successful score of badminton players from posttest 1 to posttest 2.

1.6.2 Operational Hypotheses of Study 2

$H_{o\ (1)}$. There are a significance difference in the effect of the badminton special speed training method (BSSTM) compare to badminton traditional speed training method (BTSTM) on time perception predictive skills performance of drop point of badminton players at pre-test and posttests.

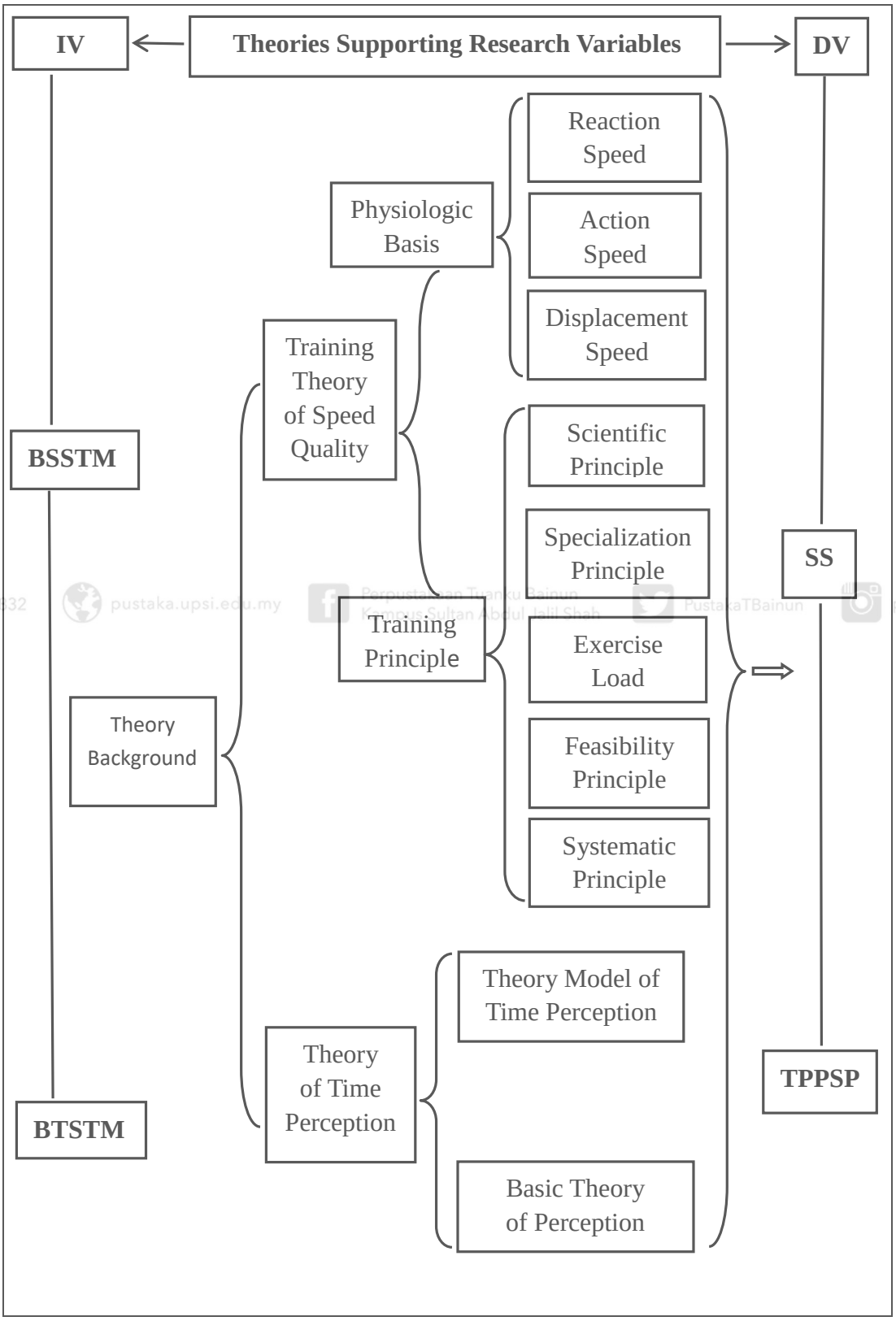
$H_{o\ (2)}$. There are the retentive effect of the badminton special speed training method (BSSTM) on time perception predictive skill performance of drop point of badminton players from posttest 1 to posttest 2.

1.7 Theoretical Framework of Research

The theoretical framework is usually used to support research variables and the study itself; further arrive to solve research objectives and to build method dimensions to measure Success score and time perception predictive skill performance from these theoretical framework. Past study of various researchers such as theory of badminton special speed training method. Theoretical framework of the relative this thesis include training theory of Speed quality and time perception theory model (Zakary & Block, 1997). Training theory include the physiological basis of speed quality and training principles of speed quality. Time perception theory model include the biological model, cognitive model and time distance model of time perception; besides, research variables is independent variables and dependent variables. Independent variances is badminton special speed training method and badminton traditional speed training method, dependent variances include success score and time perception predictive skill performance (Wang, 2012) of badminton player. Theoretical background included theory of speed training and time perception predictive skills performance that all play vital roles in the development of this model on this current study (shown in Figure 1.1).

Figure 1.1

Theoretical Framework Supporting Research Variables



Note：SS = Success Score，TPPSP = Time Perception Predictive Skills Performance

1.8 Conceptual Framework of Research

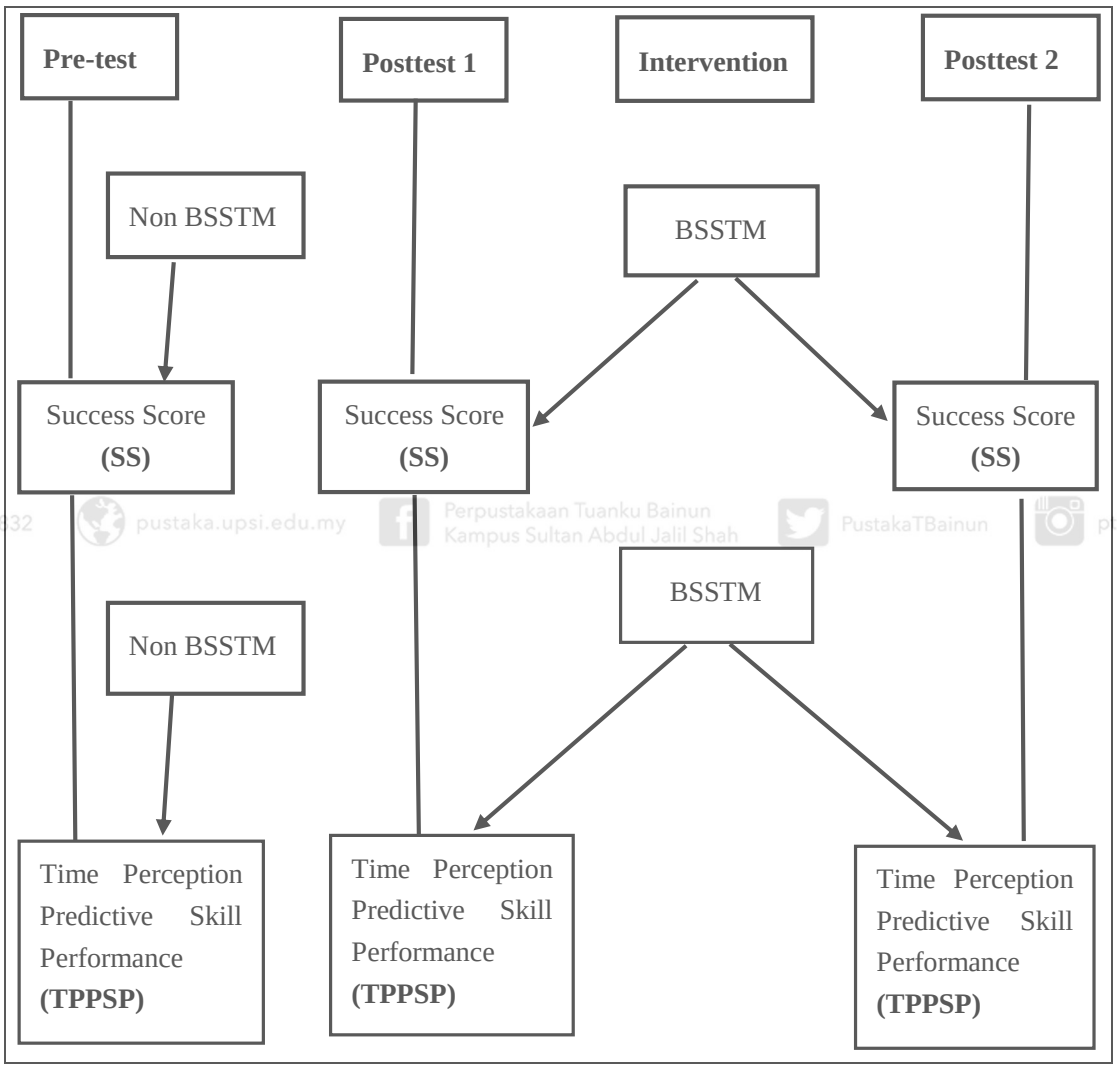
Based on the theoretical Framework supporting research variables in Figure 2.3, the conceptual framework for this study was established and shown in Figure 2.4. The conceptual framework for this study integrated badminton special speed training method (BSSTM), badminton traditional speed training method (BTSTM), Chinese elite badminton players, three test points (pretest, posttest 1 and posttest 2), success score (SS) and time perception predictive skills performance (TPPSP). On the other hand, the study 1 of current study really objects to investigate whether there are significant difference in the effect of badminton special speed training method compare to badminton traditional speed training method on success scores (SS) of Chinese elite badminton players at three different test time points; The study 2 of current study really objects to investigate whether there are significant difference in the effect of badminton special speed training method compare to badminton traditional speed training method on time perception predictive skills performance (TPPSP of drop point of serve to rear court, smash and drop shot) of Chinese elite badminton players at three different test time points.

In this study, the experimental subjects are 30 boys of Chinese elite badminton athletes in China sports university, 30 boys will be divided to 15 boys of experiment (group 1) and 15 boys of controlling group (group 2). The independents are two different training intervention methods of badminton special speed training method (BSSTM) and the badminton traditional speed training method (BTSTM). Dependent of study 1 is success scores, dependents of study 2 are time perception predictive skills performance (TPPSP) - time perception predictive skills performance (TPPSP) of serve to rear court, time perception predictive skills performance (TPPSP) of smash and time perception predictive skills performance (TPPSP) of drop shot. The length of the intervention training was 12 weeks and passed three different test time points (pre-test, post-test 1 and delayed post-test 2). Consequently, as it can be comprehended from Figure 1.2, the dependent variables are success score and time perception predictive skills performance of Chinese elite badminton players. Independent variables are described as the main factors that training intervention method of badminton special speed training method (BSSTM) and badminton traditional speed training method

(MTSTM) of Chinese elite badminton players to improve and develop their success score (SS) and time perception predictive skills performance TPPSP of drop point of badminton players.

Figure 1.2

Conceptual Framework of the Study



1.9 Research Significant

Combined with problem statement, proposes assessments variables include success score and time perception predictive skills performance. So, based on contents of the assessment variables, and proposes two studies. The first study could discussed the

effect of badminton special speed training method on success score of badminton players. The second study could discussed the effect of badminton special speed training method on time perception predictive skills performance of drop point of badminton players. In addition, the effect of badminton special speed training method (BSSTM) training intervention compare to badminton traditional special speed training method (STSTM) on success score and time perception predictive skills performance. On the one hand, this study can further reveal the research theory and practical significant of badminton special speed training method. The results of study can show the practice guidance value for the teaching and training method in the future. On the other hand, the research of badminton special speed training method can promote the development of badminton teaching and training practice. The difference between these two training methods on time perception predictive skills performance will further be discussed in research findings. The research of badminton special speed training method can improve and develop theory system of badminton training.

This study combines the uncertain characteristics of badminton. The design of training content is based on the effect of speed training method on success score and prediction of landing time of badminton players. Badminton special speed include audio-visual reaction speed, displacement speed and action speed. Badminton special techniques include a variety of footwork technology and a variety of batting techniques. In training intervention methods of this study, coaches should grasp the key techniques, adopted the effective training methods of badminton special speed, and further improve to success score and time predictive ability of landing point of badminton players. First of all, this study discussed the effects of badminton special speed training method compare to traditional speed training method on success score, and further confirm the intervention effect of badminton special speed training method on success score. The research provided practical and theoretical guidance for the construction of training method system. Secondly, through the comparative study of badminton special speed training method and traditional speed training method to predict badminton landing time, through the combination of hitting to landing point position and various batting techniques, the results further confirm the influence of badminton special speed training method on the landing time prediction.

1.10 Delimitation of the Study

Each project has its own research boundary. In this study, the boundary of this study is to determine the variables of research question and the reasonable employment of the researcher method. In the implementation process of the study to determine the boundary is a indispensable, because the determining the boundary of research can impact the research variables, further affect the expected the research purpose and results.

The boundary of this research paper is to determine the factors of research problems and research variables. According to social skills and academic achievements (Fabio & Del, 2012). In the research topics, independent variable is the training method of badminton special speed, the dependent variable is badminton success score and time perception predictive skills performance, time perception predictive skills performance include three kinds of variables, that of them is the predictive time of the landing point of service to rear court, smash and drop shot. At same time, the experimental research procedure is also further determine research subjects, this study subjects are elite badminton players of Chinese physical university, the experiment subjects will sample from population of physical university, the experiment subjects be divided the experimental group and controlling group. Badminton special speed training method be adopted on the intervention of the experimental group, badminton traditional speed training method be adopted on the intervention of the controlling group. Research design adopted three test point, that is pre-test, posttest 1 and delay posttest 2, through the mean comparison of success scores and time perception predictive skills performance of three test points, the study find that whether there are significant difference of the effect of badminton special speed training method compare to badminton traditional speed training method on success scores and time perception predictive skills performance.

1.11 Operational Definition

The definition of operation is to define and explain variables or indicators with

perceptual, measurable things, events, phenomena and methods. In order to ensure the understanding of the definitions in the research process of thesis, all operational definitions based on the context of the study are listed below:

1.11.1 Badminton Special Speed

Badminton special speed refers to the ability of the muscles perform in their reaction action, batting action and displacement action in the shortest possible time. Badminton special speed is one of the most important sports abilities in badminton sports or badminton game. It usually shows the three forms of reaction speed, action speed and displacement speed (Uffe & Søren, 1990).

(i) Reaction Speed

Reaction speed refers to the ability of human body to respond quickly to various signal stimuli. Such as the response speed of badminton footwork starting, defense conversion speed.

(ii) Action Speed

Action speed refers to the ability of the human body complete a single action quickly. Such as speed of the batting clear and the return the ball, stroke speed and footwork starting speed, action speed of smashing and action speed of dropping shot to complete.

(iii) Displacement Speed

Displacement speed refers to the ability of human body to move quickly in unit time. Such as the displacement speed of footwork movement and displacement speed of batting action of badminton (Yu & Zhao, 2012).

1.11.2 Badminton Special Speed Training Method (BSSTM)

In this study, the badminton special speed training method (BSSTM) refers to an effective speed training method combined with badminton special skills (Xiao，2005 & John Edwards, 1977). That is to say, in the training process of badminton special speed, badminton special speed training method is mainly embodied in the audio-visual reaction speed, starting speed, batting speed, changing direction speed and displacement speed.

1.11.3 Badminton Traditional Speed Training Method (BTSTM)

Badminton traditional speed training method (BSSTM) refers to an effective speed training method combined with the general sports speed quality of badminton players. The general sports speed quality do not combine the sports special skills, it commonly embodied the training method of displacement speed. In the training process of badminton traditional speed training method, badminton traditional speed training method mainly include the training method of the starting running reaction speed the footwork displacement speed. Such as the training method of exercise speed of various running and jumping (Li, 2015 & Lei, 2017).

1.11.4 Badminton Success Score (SS)

Success score of badminton players refers to the successful scores that the athlete completes of the number times of goal of technical action under the requirements of the test rules. The successful score is mainly affected by the requirements of the test rules and the skill level of the athlete himself（Grice，2008). For example: 30 good forehand short serves = 10 points. The number times of successful scores of badminton players is different from that of badminton player’s game achievement. The results of badminton competitions are determined by the match rules, the competitive level of the opposing athletes and the performance level of the athletes themselves. But, the success scores of badminton players only depends on the athlete's own technical performance level and the requirements of the test rules. In this study, the successful scores is the successful times of the athlete batted ball

to target position under the requirements of the test rules. The details of the success score are stated in Chapter 3.

1.11.5 Time Perception

Study on the temporal and spatial perception is always a hot topic in field of psychology, especially in recent years, it has also been the research of physical sports science attention. The general definition of the temporal perception refers to the perception ability of time perception of athlete's on the continuity and sequence of objective things and events. In the psychology study, time perception is relative with activities, people's emotions, and motivation attitude, also related to the sports properties and the scene with excitement. The existing research on time perception divided the tow definitions that of them are time perception and time judgment. In previous studies, Fraisse (1984) pointed out what characteristics of time perception, he believes that time perception should be less than 5 seconds in the perceived time points. At the same time, he thinks the background of time judgment is the characteristics of time perception formed in long time memory, and time perception is in working memory of the psychological processes. Through search the literature that from 2000 to 2015 in the literature. The research content about the time perception there have been some changes, including introduction of the new scientific research. In this study, research of time perception predictive skills performance of badminton players accepted the opinion that Fraisse believes that time perception should be less than 5 seconds in the perceived time points. By consulting a large number of previous literature and research literature in nearly ten years, it is founded that there are two kinds of definitions of "time perception": "time perception" and "time estimation" or time judgment. Among which, the representative research literature is psychology principle put forward by William James at the earliest. James called perception of "Present" as" Specious Present", which can last for a few seconds. In addition, Fraisse put forward the concept of time perception in 1981, he believed that time perception mainly processes the time within 5 seconds, while processing of the time longer than 5 seconds involves the memory processing, belonging to time estimation. After Chinese scholars: Chen and Huang (2010) of proposed the concept of time interval perception and sequence perception. They

believed that time perception is the temporal interval perception and temporal order perception of the individual's continuity when an objective time that simultaneously acts on sense organs directly. Temporal order perception refers to the individual's sequential perception of the objective event directly acting on the sense organ, while the time interval perception refers to the duration of an individual to two consecutive object events or an event in no more than five seconds.

All in all, in this study, the time perception research paradigm adopts the time point within 5 seconds. Single flying of the badminton is deemed as a continuous dynamic event, and the badminton games is deemed as the overall stimulate information source.

1.11.6 Time Perception Predictive Skills Performance (TPPSP)

Time perception predictive skills performance of athletes refers to the ability of athletes accuracy estimate time on dropping point of moving objects or the displacement time of moving objects. In this study, time perception predictive skills performance of badminton players refers to the predictive time of badminton players on the landing point of service to rear court, smash and drop shot. Second, the performance of athletes' time perception prediction skill refers to the ability of the athletes to judge the landing time of the moving objects in advance. In previous studies, it was found that the time perception prediction ability of the expert athletes had an advantage phenomenon, that is, the prediction time of the expert athletes was significantly shorter than that of the novice athletes (Wang, 2012). The study 2 will investigate whether there is a significant effect of badminton special speed training method on TPPSP of elite badminton players.

1.12 Summary

The main features of badminton games are uncertainty and rapid change (Michael & Guillaume, 2015). Such as badminton flight speed and falling position are uncertain. Therefore, it is important that badminton special speed training method be adopted on

elite badminton players. 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. Moreover, people pay more attention to the training practice of the badminton special speed quality training method and the time perception predictive skills performance. In particular, the effect research of badminton special speed training method (BSSTM) on successful score and time perception predictive skills performance of badminton players has become a hot topic in current research. Main aim of this study is to investigate whether there is the difference of the effect of the training intervention of the newly building badminton special speed training method (BSSTM) compare with badminton traditional speed training method (BTSTM) on success scores and time perception predictive skills performance of Chinese elite badminton players. This chapter mainly have been stated the researcher background, researcher questions statement, researcher objectives, researcher significant, operational hypotheses, operational definition, delimitation of study and current conclusion. The following chapter will elaborate on related theoretical framework and literature review of the research.