The Influence of Ideas Exercise Model and Physical Fitness on Badminton Playing Skills

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Abstract: The study aims to determine the effect of IDEAS exercise model and physical fitness on badminton playing skills at athletes Association of Badminton SGS PLN Bandung West Java Province using experimental methods. The population is all athletes of badminton club members of SGS PLN Bandung, and random sample was used to the athletes aged between 11 to 15 years as many as 40 athletes. Based on result of research analysis, it can be concluded as follows: 1) Overall result of badminton playing skills at beginners follows the learning model of higher-than-minded ideas that follow the conventional learning model approach. 2) There is a difference in playing badminton skills of athletes who have high physical fitness, the result of playing skills using Ideas model than those learning with conventional approach learning model. 3) For athletes who have low physical fitness, the badminton playing skill with the learning model of ideas approach do not differ significantly with athletes who learn by using conventional models. 4) There is a positive interaction between the learning models with physical fitness on the badminton playing skills. Thus, in an effort to improve the training process in improving badminton skills should be able to use the exercise model of Ideas as a more organized, systematic and meaningful learning alternative.

1 INTRODUCTION

Sport coaching at an early age is the first step to create successful athletes. With the aim of achieving optimum performance, it is better to start coaching, giving planned, regular, programmed, systematic, and continuous training at the early age (Adam, 1991). Thus, it is desirable to not only train the outstanding athletes, but also it is important to foster and develop young talented athletes as early as possible, so that at their "golden age" the athletes are able to outshine as much as possible. To attain the optimal badminton achievement, it is required that the process of learning and training are done carefully, systematically, and continuously from the early age (Singer, 1980 and Schmidt, 1991). Hence, the coaches need the learning method and training that can be used as a guide for badminton coaches in Indonesia, in order to control the learning and training process to achieve the goal effectively and efficiently.

From the observation of the implementation of the learning process and the badminton game training in several organizations, it was found various issues on the learning models which were often done by the coaches that made varied training results (Grice, 1994). On the other hand, it was found the existence of different systems between coaching at one club with other clubs. Consequently, those issues encourage the researcher to find one training model especially on the training system aspect, which is considered as the standard model that internationally and nationally well known (Harsono, 1988).

In badminton learning, athletes often perform service moves, overhead strokes, drop shots, and smash by concentrating on more specific and separate elements of the skill, regardless of learning system. Although this conventional approach model of learning is supposedly able to improve basic technique skills, it has been widely criticized (Fischman, 1993). One of the critiques was stated by Griffin (1997): The result of skills that are taught

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before the athletes can understand the connection with the actual badminton situation can eliminate the essence of badminton game itself.

The Ideas approach is intended to encourage athletes to learn the skills of playing badminton coherently, planned, from the easy to the difficult level, from simple to complex, and from slow to fast (Dick, 1989). Accordingly, the learning will be more meaningful and the young athletes gain the improvement from every time they join badminton skills training (Bompa, 2000).

Based on the description that has been presented on the background issues, there were several questions that could be identified related to the learning model and factors that may affect badminton playing skills of the athletes, such as: whether the learning approach can affect badminton playing skills on the novice athletes, whether the approach of the ideas model can affect Badminton playing skills on the novice athletes, whether the learning approach can affect badminton playing skills on the novice athletes, whether the different characteristics of development and athletes' physical fitness can affect badminton playing skills on the novice athletes, is the physical fitness differences can affect badminton playing skills on the novice athletes, whether the learning model of the ideas approach can affect badminton playing skills on the novice athletes, whether the conventional learning model approach can affect badminton playing skills on the novice athletes (Bucher, 1995 and Davis, 1998). Based on the identification of those issues that have been raised, the formulations of the proposed research issues were, as follows:

- Are there any differences of badminton playing skills between the athletes who used the idea approach model with a conventional approach model on the novice athlete?
- On the athletes who have high physical fitness, are there any differences of badminton skills in the using of idea approach model and a conventional approach model?
- On the athletes who have low physical fitness, are there any differences of badminton skills in the using of idea approach model and a conventional approach model?
- Are there any interaction effects between the learning model and physical fitness on athletes' badminton playing skills?

2 METHODS

The research was carried out in 2016 to 2017. The research is generally intended to find information about the influence of ideas learning models and fitness approach on the athletes' skill of playing badminton at "Badminton Club SGS PLN Bandung."

2.1 Research Site and Time

This study was conducted on the novice athletes who were members of Badminton Club SGS PLN Bandung. The research was conducted at Buahbatu Regency Sport hall, in Terusan Buahbatu for two months (8 weeks), started from Wednesday 1 October 2014 to 30 November 2014, with the frequency of training 5 times a week, namely Monday, Tuesday, Wednesday, Friday and Saturday. The total numbers of meetings were 28 treatments. The first meeting was used for briefing, coach introductions, and group divisions, 26 experimental treatments, and one final meeting for badminton skills tests.

2.2 Research Method

The experiment method was used for this research. This was because the experimental method is a research method that can correctly test the hypothesis about causality. While the research design used factorial design 2 x 2. Researchers deliberately and systematically used the treatments to observe the effect of the treatments. The research design can be seen in the following table:

Tabel 1: The plan of factorial design 2X2.

Learning Model (A) / Physical fitness (B)	Ideas education (A1)	Conventional education (A2)
high (B_1)	$A_1 B_1$	$A_2 B_1$
Low (B_2)	$A_1 B_2$	$A_2 B_2$

The study involved two manipulated free variables, two independently controlled variables, and one dependent variable. The manipulated free variables consisted of (a) the approach of ideas, and (b) the conventional approach. The controlled free variable was high and low physical fitness (Burden, 1999). Whereas the dependent variable was the badminton playing skills. Subsequently, 2 x 2 factorial design was applied as a research design. The experimental units were grouped into cells in

such a way that the experimental units were relatively homogeneous. The sampling technique was done by using simple random sampling.

Data collection technique. In this study there were two instruments that were used for data collection, namely: (1) Physical fitness test, to measure high and low physical fitness, and (2) Measurement instruments in the form of badminton skill test, to measure badminton playing skills.

2.3 Research Instrument

Physical fitness. Physical fitness is the capacity of a person's movement skills to perform a variety of motor skills and overall physical activity. Based on that definition, the Physical Fitness was measured by a Physical Fitness Test in form of a 12 minute run (Burden, 1999).

Badminton Playing Skills. Badminton playing skills is the ability to produce some movement to the maximum state with little exertion of time and energy in playing badminton games. Based on this conceptual definition, the following operational definitions can be put forward: Badminton playing skills is the ability of a badminton player to display his/her movement skills effectively and efficiently in badminton games that can be observed through his/her performance of playing badminton skills that include the dimensions of position of the foot placement and movements, as well as the skills of hitting the feather ball. Those dimensions were used as the criteria. Each criterion had three categories to observe: Well (B) given score 3, Fair (C) given score 2, and Unfavorable (K) given score 1.

Table 2: Dimensions frameworks and skills of playing badminton indicators.

Variable	Dimension	Indicator	Score		
			1	**2**	**3**
Badminton Skills Test	Feet Position and Movement	Body Position			
		Feet Movement			
	Feather Ball Strokes Skills	Service			
		Lob			
		Drive			
		Dropshot			
		Netting			
		Smash			

The tests were done for three times. Every movements and strokes of the feather ball was observed by three judges and recorded on the provided format. It was, done by giving a check mark (v) on the available column. The check marks were used to determine which player performs the movement and technique of hitting the feather ball well, fair, or unfavorable. Tally measurements were expected to make it easier to observe the simultaneously exhibited performances.

Instrument Validity and Reliability. The validity instrument test which was used in this study was the content validity. Substantially, measuring instruments of physical fitness and playing badminton skills had fulfilled the requirements as a valid instrument. Instrument reliability testing was done by using internal consistency, through repetition of test (Retest Test). The way to see consistency of judges' judgment was done with inter-observer agreement. Referring to the notion of instrument reliability, the test of the reliability used equality between three independent judges or observers. From result of data processing, it was obtained the reliability coefficient of physical fitness test equal to 0.82. While for badminton playing skills test, it was obtained the reliability coefficient of badminton play skills test equal to 0.68. It can be stated that physical fitness tests and playing badminton skills tests had adequate levels of reliability. The instruments used have met the valid and reliable test requirements.

Data Analysis Techniques. The collected data of badminton playing skills was analyzed using variance analysis techniques (ANAVA) for the design of the factorial experiment, followed by further tests using the Tukey test. In line with Kirk, if the result of variance analysis shows the main effect between the independent variable to the dependent variable and the interaction (interaction effect) between the independent variables in relation to the dependent variable, the analysis is continued with Tukkey's HSD (honestly significant difference) test to assess the hypothesis for further research.

3 RESULTS AND DISCUSSION

3.1 Results

Hypothesis Testing Research. The research hypothesis testing was conducted by using two way variance analyses (ANAVA). The data that have been collected before the first analysis was tested, which included normality test using Liliefors test, and homogeneity test by using Bartlett test. Furthermore, the difference of badminton playing skill among four groups of novice athletes, which were treated differently, was analyzed by Tukey test. The reason for the advanced test was to use the

Tukey test because the data amount that each group held was equal. Analysis of two way variance was used to test the main effect of learning model and attribute variable of the novice athlete's physical fitness (simple effect) towards the dependent variable, which was badminton playing skills. Furthermore, the results of data analysis were conducted by using ANAVA.

Difference of Badminton Playing Skills Athletes who followed the Ideas Approach Model and who followed the Conventional Approach Model

Based on the calculation of variance analysis, it was obtained the value of Fh between column A is 5.48, which was larger than Ft of 4.11 at the level of significance $\alpha = 0.05$ (Fh = 5.48> Ft = 4.11) with dk numerator V1 (a-1) (b-1) = 1, dk denominator V2 ab (n-1) = 2 x 2 (10-1) = 36. This means that the null hypothesis (H0) is rejected. It can be stated that there is a difference in badminton playing skills between athletes who followed the learning model of the ideas and athletes that followed the conventional learning model approach. It turned out that the athletes' badminton playing skills that followed the learning model approach was higher (good) than the athletes who followed the conventional learning model approach.

This means that the overall research hypothesis states that there are any differences between the learning model of the ideas approach and the conventional approach to learning models of badminton playmaker skills which had been tested. Because, generally, both of the learning models proved that badminton playing skills test result of ideas learning model of approach is higher than the result of conventional learning model approach.

To know the difference level, a further test was done by using Tukey test. Based on the further test conducted by using Tukey test, the value of q = 3.41 is greater than q table (qt) = 2.86 or q> qt at significance level $\alpha = 0.05$, with dk 2:36 (closest 40), so H0 is rejected. Thus, it can be concluded that there is a significant difference between the learning model of the ideas approach and the conventional learning model approach.

3.1.1 Differences of Playing Badminton Skills on Athletes Groups which Have a High Physical Fitness between Model Learning Ideas Approach and Model Conventional Approach

Based on the calculation of variance analysis, it was obtained the value of q = 5.23 that is greater than qt = 3.79 or q = 5.23> qt = 3.79. Consequently, the null hypothesis (H_0) is rejected. This means that the result of badminton playing skill athletes who have high physical fitness that followed the ideas learning model approach is higher (well) to than those who followed the conventional approach learning model ($X_{A1B1} = 161.9 > \bar{X}_{A2B1} = 150.3$).

3.1.2 Differences of Playing Badminton Skills on Athletes Groups which Have a Low Physical Fitness between Model Learning Ideas Approach and Model Conventional Approach

Based on the calculation of variance analysis, it was obtained that the value of q = 1.32 is smaller than qt = 3.79 or q = 1.32 <qt = 3.79, it means the null hypothesis (H_0) is accepted. Therefore, the result of badminton athletes playing skills which have low physical fitness who followed the learning model of ideas approach were not better than those who followed the conventional approach learning model ($X_{A1B2} = 136.2 < \bar{X}_{A2B2} = 136.7$). From the result of analysis of research data to test this hypothesis, it was obtained the average value of badminton playing skills of athletes who have low physical fitness which followed the learning model of the approach of ideas and conventional learning model approach does not differ significantly.

3.2 Discussion

Based on the results of the analysis of research data, it was stated that the research hypothesis about the difference of influence between the learning model of ideas and conventional approaches failed to be rejected. This means that the ideas learning model approaches was higher in achieving the goal of learning badminton play skills of the novice athletes compared to the conventional approach learning model.

The results of the analysis were in line with the theories that suggest that the ideas learning model approach was directed to improve badminton playing skills by combining the comprehension of playing skills and to encourage athletes to appreciate skill values in the game contexts (Don, 2010). Learning model of ideas approach, among others, had advantages such as the form of badminton playing practice skills that were presented with a priority on the playing patterns and its implementation was similar or resemble to the real badminton situation. In addition, the practice environment situation was always changing, so the ability of athletes to anticipate the movement of the feather ball and the direction of the punch were

trained. Thus, it would certainly affect the mastery of badminton playing skills, because skill tests were conducted in the form of tests that resemble badminton games. As for its form of the test was rallying continuously as much as six strokes to the opponent field and conducted as many as three times trial and which had a certain value.

The ideas learning model the approach emphasized more on the function of badminton playing skills in badminton situations. It means, the productivity of playing skills took precedence over the process of doing the technique. With more emphasis on the function of playing skills, the athletes were required to be always creative and sensitive in the badminton games (Dick, 1989 and Magill, 1993).

In the conventional approach learning model, the form of badminton playing practice that was presented did not resemble the real badminton game situation. In addition, the exercise environment situation was relatively stable, so the athletes did not need to anticipate the feather ball and the direction of the strokes. Because, the direction of the feather ball, which was fed by the coach, was already known and in a fixed place. The practice situation was different from the actual badminton games situation, so it was certainly difficult for athletes in the mastery of badminton skills. In learning of badminton playing skills, athletes who had low physical fitness turned out did not differ significantly, both through the approach of ideas and conventional approach the results (Gay, 1981).

4 CONCLUSIONS

Based on the results of hypothesis testing and the discussion of research results, it can be concluded as follows:

- The overall result of badminton playing skill of the novice athletes who followed the ideas learning model of was higher than the athletes that followed the conventional learning model approach.
- There was a difference of the playing badminton skills. The athletes groups which had high physical fitness badminton playing skills that used ideas learning models had higher result than those who followed the conventional approach learning models.
- For athletes who had low physical fitness, the athletes' skills of badminton playing who trained with the ideas learning model approach did not differ significantly with athletes who trained by using conventional approach model.
- There was a positive interaction between the learning model and physical fitness of badminton skills.

Suggestion. The below statements are suggestions for badminton playing skills improvements in early childhood:

Advice to badminton sport practitioners. It is recommended that physical education teachers and novice badminton trainers to determine the learning model which needs to adjust to the characteristics and conditions of the athletes' ability. Furthermore, it is necessary to pay attention to other factors such as physical fitness as a support of playing skills.

Suggestions to experts and policy makers in the field of physical education and sports. It is suggested to create various models of learning for children of primary school age. The ideas learning model approach is only one of many learning models. Therefore, there is no single best model that can be used to achieve learning objectives. Combining several models that are tailored to the conditions and characteristics of children at the early age would be the best way to solve the problem of motor skills learning.

Suggestions to researchers in the field of physical education and sports. The researchers who intend to continue or replicate the research with the aim to assure the findings and develop it further, it is advisable to have a tighter control throughout the series of experimental processes. Control of independent variables out of the variables that are studied should be strict and thorough, so that the threat of internal and external validity can be avoided maximally.

REFERENCES

Adam, C. W., 1991. *Foundations of Physical Education, Exercise and Sport Sciences*. Philadelphia: Lea and Febiger.

Badminton World Federation. 2011. *Badminton Coach Education, Tutors'Manual*, Level 1, Badminton World Federation, Amoda Building, Kuala Lumpur.

Bompa.Tudor O. 2000. *Total Training for Young Champions*, Champaign: Human Kinetics,

Bucher A. Carles, Wuest, D A., 1995. *Foundation of Physical Education and Sport.* St. Louis: Mosby.

Burden P. R., Byrd D. M., 1999. *Methods for Effective Teaching*. Boston: Allyn and Bacon.

Davis Pat, 1998. *Play The Game Badminton*. London: A Ward Lock Book.

Dick Frank W. 1989. *Sports Training Principles*. London A and C Black.

Don R. Kirkendall, Joseph J. Gruber, Robert E. Johnson. 2010. *Measurement and Evaluation for Physical Educator*, (Dubuque Iowa: Wim C.Brown Company Publisher.

Fischman M G, Oxendine J B., 1993. Motor Skill Learning for Effective Coaching and Performance. In Williams, J. M. *Applied Sport Psychology, Personal Growth to Peak Performance*. London: Mayfield Publishing Company.

Gay. L. R. 1981. *Educational Research: Competencies for Analysis and Application*, Second Edition. Columbus, Ohio: Charles E. Merrill Publishing, Company.

Grice Tony, 1994. *Badminton for the College Student*. Boston, Massachusetts: American Press, Four Edition.

Griffin, Linda L., Mitchell, Steven A., Oslin, Judith. 1997. *Teaching Sport Concepts and Skills: A Tactical Games Approach*. Champaign, Illinois.

Harsono, 1988. *Coaching dan Aspek-Aspek Psikologis dalam Coaching*. Bandung: C.V. Tambak Kusuma.

Magill, R. A., 1993. *Motor Learning, Concept and Application.* Dubuque: WM. C. Brown Publisher.

Schmidt Richard, A., 1991. *Motor Learning and Performance.* Illonois: Human Kinetics Books.

Singer Robert N., 1980. *Motor Learning and Human Performance, an Application to Motor Skills and Movement Behaviors*, Third Edition. New York, London: Macmillan Publishing Co., Inc., Collier Macmillan Publishers.