



ISSN: 2456-0057  
IJPNE 2017; 2(2): 362-365  
© 2017 IJPNE  
www.journalofsports.com  
Received: 01-05-2017  
Accepted: 02-06-2017

**Pramoda Wardana**  
Sport Science Program Post  
Graduate Sebelas Maret  
University, Indonesia

**Mohammad F Hidayatullah**  
Sport Science Program Post  
Graduate Sebelas Maret  
University, Indonesia

**Kiyatno**  
Sport Science Program Post  
Graduate Sebelas Maret  
University, Indonesia

## The influence of learning approach and eyes-hand coordination on free throw result in basketball

**Pramoda Wardana, Mohammad F Hidayatullah and Kiyatno**

### Abstract

This research is using experiment method with factorial design 2 x 2. The technique of sampling is Purposive Random Sampling, the sample are 40 students consisted of 20 students who have high eye-hand coordination and 20 students who have low eyes-hand coordination. The technique of analysis is using ANOVA. Based on the data analysis provide that: There is significant difference effect between direct and indirect learning approach toward free throw, p-value = 0,045 is smaller than 0,05. There is difference improvement result of free throw between student who have high and low eyes-hand coordination, p-value = 0,035 is smaller than 0,05. There is interaction between learning approach and eyes-hand coordination toward free throw result, p-value = 0,012 is smaller than 0,05. It is concluded that there were differences of the significant influence between the learning approaches on free throw result, the free throw result from students with good and poor eye-hand coordination, and there was an interaction influence of learning approaches and eye-hand coordination on the free throw result.

**Keywords:** free throw, eyes-hand coordination, direct and indirect, basketball, experiment

### Introduction

Basketball is a sport branch which is created by James A Naismith on 1891 in America. The progress of basketball is very quick, not only played in the public, club, and professionals but also it has become education in Indonesia. In the curriculum physical education in the school, basketball is the one of ability of big ball games. Basketball is taught since elementary school till senior high school. Basketball curriculum in the school is continued to university curriculum, especially in the university which has basic on departement of sportmanship.

Basic technique of basketball is passing, dribbling, shooting, and pivot. Those technique must be mastered by basketball player in order to play well. In basketball games, shooting is the most important technique, because the goal of basketball is making point. Because of that, the only way to make point is shooting. The good ability of shooting will make more point. Sometimes, the other players will block the shooting in order the rival can not make points. That case often creates fault and makes advantage for the rival. For the player who is colided, will be given reward as free throw. free throw is only given for the players who was colided. Free throw could be once, twice, or triple shooting. It depends on where that players colided. Often free throw determines a team victory. Although free throw seems easy looking, but in practice is not like in sight.

The difficulty to practice free throw is seemed on student of Departement of Sport Education Coaching, Faculty of Teacher Training and Education Universitas Tunas Pembangunan who takes basketball subject. The ability of free throw is not only affected by method application from the teacher, but also individual factor (student) also determines sport ability. Student factors are very complex, such as physic ability, learning enthusiastic, learning passion, and body proportional. Physic ability which is very supporting free throw ability is eyes-hand coordination.

According to Bompaa (2004:43) coordination is a complex motor skill necessary for high performance. Coordination is the complex motoric ability which is needed to be high perform. Harsono (1988: 220) <sup>[4]</sup> stated that "eyes-hand coordination is skill of bouncing, streaking, or throwing an object to spesific target. Based on statement above, the skill is relating to the ability for shooting in basket object of basketball. A good coordination might be creating good

**Correspondence**  
**Pramoda Wardana**  
Sport Science Program Post  
Graduate Sebelas Maret  
University, Indonesia

accuracy and the opposite. To reach maximal accuracy of free throw, eyes-hand coordination is important component to be mastered. Besides the mistake factors, wrong learning approach is even affecting on the free throw ability of the student.

According to Suprijono (2009: 45-46) <sup>[1]</sup> "Learning Model is base practice learning as the result education psychology application and study theory which is designed based on analysis toward curriculum implementation and the implementation on class operational level. Learning model can be described as a guidance to design learning process in the class or tutorial. Learning model refers to usage approach, including the learning goals, environment, and class management. The terminology of approach refers to an opinion about something happen, that is centered approach on teacher and centered approach on student. Centered approach on teacher applies direct learning strategy and deductive or expository learning. Whereas, learning centered approach on student applies discovery learning strategy and inquiry, and also inductive learning strategy.

According to Ngalimun (2016: 9-10) <sup>[7]</sup> "direct learning strategy is a learning directed more by teacher. This strategy is very effective to establish information or build ability step by step." Direct learning has deductive characteristic. According to Tite Juliantie dkk (2013:41) <sup>[8]</sup> "directed learning can be defined as learning model, where teacher transforms the information to student directly and learning is oriented to the goals and structured by teacher."

Indirect learning is centered learning on student. The role of teacher is shifted from speaker to facilitator (Ngalimun, 2016:10) <sup>[7]</sup>. According to Samsudin (2008: 30-32), "indirect learning is shifting learning control totally and giving student occasion to do together." Indirect learning strategy often called as inductive inquiry, problem solving, decision making, and discovery. Differ from direct learning, indirect learning is centered on student, even both strategies can fulfill each other.

Direct and indirect learning approach have advantage on the application in the field, firstly on physically and mentally. The advantage of direct learning approach is easy to be design and to be use. On the direct learning approach is oriented on application of basketball free throw technique. So, student can learn and develop technique appropriate to the game area. Whereas indirect learning approach is oriented on mastery of basketball free throw technique. Training is tended for improvement shooting ability to basket ring continuously on every training section appropriate to the time target.

No all student have same eyes-hand coordination ability. There is high and low ability in each student. Both high and low eyes-hand coordination will affect arm muscle reaction. Eyes-hand coordination is dominant element in movements and needed high explosivity level.

Indirect learning approach does not need high eyes-hand coordination, because teacher is just a facilitator. So, the process is step by step to deliver teaching materials for improvement explosive coordination. Whereas the implementation of direct learning approach will need higher eyes-hand coordination, because teacher delivers more in learning process. So, it is more effective to increase strength, coordination, muscle endurance and formation.

The hypothesis of this research as follows:

1. There is difference training effect using direct and indirect learning approach toward the improvement free throw result in basketball. Training which is using indirect learning approach better than direct learning

approach.

2. There is difference effect of improvement of free throw result for students who have high and low eyes-hand coordination. Students who have high eyes-hand coordination better than students who have low eyes-hand coordination.
3. There is interaction effect between learning approach and eyes-hand coordination toward the improvement of free throw result basketball. Direct learning approach is more precise to apply for students who have high eyes-hand coordination and indirect learning approach is more precise to apply for students who have low eyes-hand coordination to master basketball free throw.

## Methods

This research is held on Basketball Court Manahan Stadium Surakarta as place for lecturing basketball for male student of Department of Sport Education Coaching, Faculty of Teacher Training and Education UTP Surakarta. This research is held for 2 months, starting from January 2017 until March 2017, the meeting frequency 3 times a week (Brooks & Fahey, 1984:405) <sup>[2]</sup>, that is Monday, Wednesday, and Friday. The training duration is 90 minutes for a meeting. Amount of meeting is 24 times. The training is started at 3.30 p.m until 5. p.m.

This research population is 5<sup>th</sup> male student of Department of Sport Education Coaching, Faculty of Teacher Training and Education Universitas Tunas Pembangunan Surakarta. This research sample is using 40 students which is acquiring from purposive random sampling technique. According to Sudjana (2002: 148) <sup>[9]</sup> purposive random sampling technique can be used, if the total exist population must achieve the requirements of research object.

This research uses experiment method with factorial design 2x2. According to Sudjana (2002: 148) <sup>[9]</sup> factorial experiment is experiment which is almost or all factor standard combined or crossed with all standard factor, which is existed in experiment.

## Technique of Data Collection

### 1. Eyes-hand Coordination Test

Eyes-hand coordination test is eyes-hand coordination classification which is counted above the average result measuring of eyes-hand coordination on research sample. The measuring test of eyes-hand coordination uses throw and catch tennis ball test (Kirkendall, *et al*, 1987: 412) <sup>[6]</sup>. This test is using interval measuring scale.

### 2. Freethrow Test

Basketball free throw is a shooting to the basket ring without jumping movements. The free throw test uses basketball free throw test (baterai test from AAHPERD Basket Ball Test Manual dari Johnson & Nelson, 1986:275-279) <sup>[5]</sup>. This test is using interval scale test.

The technique of data analysis is variant analysis technique (ANAVA) factorial design 2x2 on  $\alpha = 0,05$ . If F value ( $F_o$ ) is significant, analysis continued with distance test Newman-keuls (Sudjana, 2004:36) <sup>[9]</sup>. To achieve assumption in anava technique, normality test (lilliefors test) executed and Variant Homogeneity test with Bartlett Test.

## Result

The presentation of research result is based on statistic analysis on the first and final test of free throw result. It observed from eyes-hand coordination. This experiment

research involve two variables, namely free variable and bound variable. Free variable consists of learning approach and eyes-hand coordination. Learning approach is as manipulative variable, whereas eyes-hand coordination is as attributive variable. Bound variable is the result of free throw. There are two variables of learning approach, namely direct and indirect learning approach. Moreover, free attributive variable has two standard, namely high and low eyes-hand coordination. The effect of learning approach and eyes-hand coordination toward free throw result are described the achievement of free throw result which is held on first and final test. First stage of this research, the researcher observes population data of eyes-hand coordination test of male student in basketball subject. The next stage, observe the first data of free throw which is done by 40 students before treatment. After the first test finished, the students is proven 24 meetings or for 8 weeks. After the treatment have done, the researcher takes final data of basketball free throw result upon the male student. Based

on the statement above, the data collection is taken as 3 times, that are the data collection of eyes-hand coordination, first test, and final test of free throw result. Data description is used for determining resarch variable relate to mean, median, deviation standard, frequency distribution table, and histogram graphic. Manipulative independent variable consists of two standards, namely (1) direct learning approach (A1) and (2) indirect learning approach (A2); attributive independent variable consists of two standards, namely high eyes-hand coordination (B1) and low eyes-hand coordination (B2). This research hypothesis test is using ANOVA (analysis of varians) technique. This technique is used for hypothesis test to analyze the data with ANOVA variant analysis, ANOVA two ways. All calculations is using Statistic Program SPSS 22. This calculation technique aims to know the main effect treatment toward experiment and to know the interaction effect.

**Table 1:** The Analysis Result of Statistic Descriptive of *Free throw* Improvement in Each Group.

Treatment	Eyes-hand Coordination	Statistic	First Test Result	Final Test Result	Improvement
Direct Learning Approach (A <sub>1</sub> )	High Eyes-hand Coordination (B <sub>1</sub> )	Total	9	90	81
		Average	0,90	9,00	8,10
		SD	0,99	1,89	1,79
	Short Eyes-hand Coordination (B <sub>3</sub> )	Total	18	56	38
		Average	1,80	5,60	3,80
		SD	1,03	3,03	2,86
Indirect Learning Approach (A <sub>2</sub> )	High Eyes-hand Coordination (B <sub>1</sub> )	Total	15	53	38
		Average	1,50	5,30	3,80
		SD	0,85	3,06	2,97
	Short Eyes-hand Coordination (B <sub>3</sub> )	Total	17	60	43
		Average	1,70	6,00	4,30
		SD	0,95	3,53	3,50

1. *Free throw* test result of students group, which is given direct learning approach with category of high eyes-hand coordination (a1b1). According to the table above, it is known that X = 8, 10, SD = 1, 79, and n = 10. 10 students whose have *free throw* result over average amount 5 students and under average amount 5 students.
2. *Free throw* test result of students group, which is given direct learning approach with category of high eyes-hand coordination (a1b2). According to the table above, it is known that X = 3, 80, SD = 2, 86, and n = 10. 10 students whose have *free throw* result over average amount 5 students and under average amount 5 students.
3. *Free throw* test result of students group, which is given indirect learning approach with category of high eyes-hand coordination (a2b1). According to the table above, it is known that X = 3, 80, SD = 2, 97, and n = 10. 10 students whose have *free throw* result over average amount 5 students and under average amount 5 students.
4. *Free throw* test result of students group, which is given indirect learning approach with category of short eyes-hand coordination (a2b2). According to the table above, it is known that X = 4, 30, SD = 3, 50, and n = 10. 10 students whose have *free throw* result over average amount 4 students and under average amount 6 students.

**Table 2:** Normality Test Using Liliefors

	Group	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	Df	Sig.
Free throw Result	a1b1	.192	10	.200*	.872	10	.106
	a1b2	.172	10	.200*	.923	10	.382
	a2b1	.170	10	.200*	.924	10	.390
	a2b2	.180	10	.200*	.926	10	.406

Based on the table above, it found the data:

1. The group of students which is given direct learning approach with category of high eyes-hand coordination (a1b1) sig = 0,106 > 0.05 (P>0.05), it means the data distribution of population frequency is normal.
2. The group of students which is given direct learning approach with category of short eyes-hand coordination (a1b2) sig = 0,382 > 0.05 (P>0.05), it means the distribution of population frequency is normal.
3. The group of students which is given indirect learning approach with category of high eyes-hand coordination (a2b1) sig = 0,390 > 0.05 (P>0.05), it means the distribution of population frequency is normal.
4. The group of students which is given indirect learning approach with category of short eyes-hand coordination (a2b2) sig = 0,406 > 0.05 (P>0.05), it means the distribution of population frequency is normal.

**Table 3:** Result Summary of ANOVA SPSS 22

Source	Type III Sum of Squares	DF	Mean Square	F	Sig.
Corrected Model	127.475 <sup>a</sup>	3	42.492	5.358	.004
Intercept	1010.025	1	1010.025	127.359	.000
Learning Approach	34.225	1	34.225	4.316	.045
Eyes-hand Coordination	38.025	1	38.025	4.795	.035
Learning Approach * Eyes-hand Coordination	55.225	1	55.225	6.964	.012
Error	285.500	36	7.931		
Total	1423.000	40			
Corrected Total	412.975	39			

a. R Squared = .309 (Adjusted R Squared = .251)

Note:

df : *Degree of Freedom*

SS: *Sum of Square*

MS: *Mean of Square*

Sig : Signifikansi

## Discussion

Discussion of this analysis result is giving a further interpretation toward the result of the data analysis, which has been explained. According to hypothesis test, it produces analysis as follows:

1. According to the first hypothesis test, it finds the dissimilarities of obvious effect between the group of students with direct learning approach and indirect learning approach ( $p\text{-value} = 0,045 < 0,05$ ). The group of students with direct learning approach has free throw amount 5,950, better than indirect learning approach with free throw amount 4,100.
2. The result of the data analysis shows the differences between students whose have high eyes-hand coordination than students whose have short eyes-hand coordination. It is agree with the theory above that high eyes-hand coordination will show the someone accuracy to move correctly, fast, and effective. If students have high eyes-hand coordination, they will be able to do all kinds of learning correctly and accuracy with move concord and the level of energy export needed.
3. Based on the analysis result, it shows that the interaction of learning approach with eyes-hand coordinate toward the result of free throw has purpose. It is proved by Ho value accepted in  $\alpha = 0,05$ . It can be proved by the result of two factors of analysis calculation variant i.e.  $p\text{-value} = 0,012 < 0,05$ . Direct learning approach and indirect learning approach with the level of eyes-hand coordination toward free throw result; it contains significant effect interaction between both of them.

## Conclusion

1. There is a significant difference effect between direct learning approach and indirect learning approach toward the free throw result in basketball. Direct learning approach has better effect than indirect learning approach.
2. There is difference of free throw result in basketball between students whose have high eyes-hand coordination and students whose have short eyes-hand coordination. Students whose have high eyes-hand coordination have better result than students whose have short eyes-hand coordination.
3. There is an interaction between direct learning approach and eyes-hand coordination toward free throw result in basketball.
  - a. Direct learning approach has better result, if it is given a treatment to students whose have high eyes-hand coordination.

- b. Indirect learning approach has better result, if it is given a treatment to students whose have short eyes-hand coordination.

## Suggestion

1. For the coaches and teachers in school that direct learning approach has better effect to reach free throw result in basketball.
2. For the coaches and physical teachers to consider the difference students eyes-hand coordination in teaching learning process.
3. It is important to do the same research with larger population and bigger sample.

## Reference

1. Agus Suprijono. *Cooperative Learning*. Surabaya: Pustaka Pelajar, 2009.
2. Brooks GA, Fahey TD. *Exercise Physiology Human Bioenergetics and its Application*. Canada: Jhon Wiley & Sons Inc, 1984.
3. Bompa Tudor O. *Theory and Methodology of Training to Key Athletic Performance*. Canada: Kendal: Hunt Publishing Company, 1983.
4. Harsono. *Coaching Dan Aspek-Aspek Psikologis Dalam Coaching*. Jakarta: Ditjen Dikti, 1988.
5. Johnson BL, Nelson JK. *Practical Measurement for Evaluation in Physycal Education*. New York: Macmillan Publishing Company, 1986.
6. Kirkendall DR, Joseph JR, Robert EJ. *Measurement and Evaluation for Physical Educators*. Illionis: Human Kinetics Publishers. Inc, 1987.
7. Ngalimun. *Strategi dan Model Pembelajaran*. CV. Aswaja Pressindo. Jogjakarta, 2016.
8. Juliantine Tite DKK. *Model-model pembelajaran Pendidikan Jasmani*. FPOK. Bahan Ajar. Bandung. FPOK UPI, 2013.
9. Sudjana. *Desain dan Analisis Eksperimen*. Bandung: Tarsito, 2002.
10. Teguh Sutanto. *Buku Pintar Olahraga*. Pustaka Baru Press, Yogyakarta, 2016.
11. Widyastuti. *Pengembangan Metode Beaufod Cipher Menggunakan Pembangkit Kunci Chaos*. *Jurnal Teknologi*, 2015; 7:2014.