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## The implementation of training method toward the improvement of push strike ability viewed by motor ability of hockey player in Tulungagung Regency

**Ardhi Mardiyanto Indra Purnomo and Mokhammad Firdaus**

### Abstract

This research used experimental research with factorial design 2x2. The sample of the research was 20 players. The researchers used purposive random sampling as the technique of collecting sample. There were two independent variables in this research, manipulative variable: distributed practice training method and massed practice, and attributive variable: good and less of motor ability. The dependent variable was push strike ability. The technique of collecting data used ANAVA 2x2 with the significance  $\alpha = 0.05$ .

The result of the research showed that the first hypothesis proven by  $F_{\text{calculate}} = 73.51 > F_{\text{table}} = 4.11$  indicated that there is significant influence between both of the training methods. The second hypothesis proven by  $F_{\text{calculate}} = 225.39 > F_{\text{table}} = 4.11$  indicated that there is significant improvement toward push strike. The third hypothesis proven by  $F_{\text{calculate}} = 186.67 > F_{\text{table}} = 4.11$  indicated that there is significant influence between training method and motor ability.

**Keywords:** training method, push strike, motor ability.

### 1. Introduction

Nowadays, accomplishing the sport achievement needs time and process during long time period of training because the achievement cannot be accomplished in a short period of time. One of sports developed in this time is hockey. In hockey, the players need to know the good technique during the play. The basic technique in playing hockey is the control competence which must be authorized by the players. The basic technique in playing hockey includes: the grip, dribbling, stopping, and passing. Generally, those fourth basic techniques influence the achievement of the players. If the players have good technique, they can perform well during competition and also improve their achievement.

The push strike is often used as short pass, particularly in indoor hockey which used more push pass because the hard strike is not allowed. The push strike is a strike which done by pushing the ball into the stick and pushed it strongly and precisely into the target.

Basically, the player's ability cannot be separated by the way how the player adapt in controlling the competence or the motor ability. The motor ability is one of internal conditions which distinguish the individual in the improvement of motor ability. It can be concluded that distributed practice training method is one of training method which the implementation of the activities divided into several times. Whereas, the massed practice training method is a training method which is done continuously without having time to break. (Lankor, 2007: 98) <sup>[3]</sup>.

### 1.1 The Research Questions

Based on the problem of the research presented, the researchers formulated the research question to be:

1. Is there any different influence of distributed practice and massed practice training method toward the improvement of push strike in hockey?
2. Is there any different influence of the improvement of push strike in the player with high motor ability and low motor ability?
3. Is there any influence of the interaction training method by motor ability toward the

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improvement of push strike in hockey?

**1.2 The Purpose of the Research**

Based on the research questions, the purpose of the research were formulated to identify:

- 1 The different influence between distributed practice and massed practice training method toward the improvement of push strike.
- 2 The different influence of the improvement of push strike in the player with high motor ability and low motor ability.
- 3 The influence of interaction between training method and motor ability toward the improvement of push strike.

**1.3 The Significance of the Research**

This research is expected to be beneficial in some people:

1. Theoretically, this research is expected to help the reader in enriching knowledge about distributed practice and massed practice training method toward the improvement of push strike which has already existed.
2. This research is expected to be beneficial for the lecturers or coaches in organizing the appropriate training method by considering the player’s motor ability. It also can help the players to adapt quickly with the model and training program given by the coaches.
3. Practically for the following researchers, the result of this research can be used as comparison when the researchers would like to conduct the research about distributed practice training method, massed practice, and motor ability toward the improvement of push strike.

**2. Material and Methods**

This research was quantitative research with factorial experiment as the design of the research. The design of factorial experiment was 2x2. The subject of the research was 25 hockey players in Tulungagung. This research used purposive random sampling and 20 players were chosen as the sample. The samples were divided into two experimental groups which consisting of 10 players in each group. This research was conducted in SMA 1 Kedungwaru in Tulungagung.

The technique of collecting data used in this research was test and measurement of some variables as follows: the level of player’s motor ability needed was obtained by using Borrow Motor ability Test which consisted of 6 test items; Standing broad jump, Soft ball throw, Zig-zag run, Wall pass, Medicine ball-put, and The 60 yard dash. The data of push strike ability in hockey used was modification of test competence in doing push strike. (Researchers team FKIP-IKIP Medan (1982:18). The technique of data analysis was used to examine the hypothesis of the research by using two-way variant with the standard significance  $\alpha = 0.05$ . If F score obtained was ( $F_0$ ), thus the significance analysis was continued into expansion test. Newman-Keuls (Sudjana, 2006:36) [8]. To complete the assumption in ANAVA technique, prerequisite analysis including normality test (Liliefors test) and homogeneity test (Bartlet test) needed to be done (Sujana, 2006:261-264) [8]. After doing prerequisite analysis, hypothesis test by using two-way ANAVA, then continued into Newman-Keuls expansion test.

**3. Result and Discussion**

Based on the result of the research done by measuring the motor ability, the result was elaborated as follow:

**Table 1:** The description of push strike ability in each groups based on training method and motor ability.

	Level	Motor Ability		Total	Average
		Good	Less		
Training Method	Distributed Practice	2	3		
		2	4		
		4	4		
		3	3		
		4	2		
	Total	15	16	31	
	Average	3.0	3.2		3.1
	Massed Practice	4	5		
		5	3		
		5	4		
3		3			
4		2			
Total	21	17	38		
Average	4.2	3.4		3.8	
The total	36	33	69		
The average	3.6	3.3		3.45	

The average of good motor ability was 3,0. The average of less motor ability was 3,2. Thus, the average of training method with the good and less motor ability was 3,1. Whereas, the average of implementation of massed practice training method with good motor ability was 4, 2. The average of less motor ability was 3, 4. Thus, the average of massed practice training method with good and less motor ability was 3, 8. The last average obtained by the implementation of distributive practice and massed practice training method with good and less level of motor ability was 3, 6 and 3,3. Thus, the combination of the average of two training methods with good and less level of motor ability was 3, 45.

**Table 2:** The description of the average and deviation standard of push strike ability result in hockey of each group based on the training method and motor ability.

Treatment	Arm Muscle Power Classification	Statistic	Improvement
Distributed practice training method	Good	Total	15
		Average	3,0
		SD	0,0
	Less	Total	16
		Average	3,2
		SD	0,28
Massed practice training method	Good	Total	21
		Average	4,2
		SD	0,26
	Less	Total	17
		Average	3,4
		SD	0,10

**3.1 Normality test**

The following was the result of normality test from the data obtained in each group:

**Table 3:** The Summary of Normality Test

Group Treatment	N	M	SD	$L_{calculate}$	$L_{table 5\%}$	Conclusion
KP <sub>1</sub>	5	3.0	1.00	0,312	0.337	Normal Distribution
KP <sub>2</sub>	5	3.2	0.83	0.304	0.337	Normal Distribution
KP <sub>3</sub>	5	4.2	0.83	0.145	0.337	Normal Distribution
KP <sub>4</sub>	5	3.4	1.14	0.298	0.337	Normal Distribution

**3.2 Homogeneity test**

Homogeneity test in this research was used to examine the similarity of the variants between group 1 and group 2.

Homogeneity test was done by using Bartlet test. The following was the result of the test of two groups:

**Table 4:** The Summary of Homogeneity Test

$\Sigma$ Group	N <sub>i</sub>	$SD^2_{gab}$	$\chi^2_o$	$\chi^2_{table 5\%}$	Conclusion
4	5	0.925	2.406	7.81	Homogeneous variants

**3.3 Hypothesis test**

This test was done by using Newman-Keuls expansion test which taken by using some steps in average test after ANAVA.

Note:

The sign \* is significant with < 0.05.

**Table 5:** The Average Score Summary of The Improvement of Push Strike Ability based on the Implementation of Distributed Practice, Massed Practice, and Motor Ability.

Variable	A <sub>1</sub>		A <sub>2</sub>	
	B <sub>1</sub>	B <sub>2</sub>	B <sub>1</sub>	B <sub>2</sub>
The result of pretest	4.800	4.200	4.000	4.000
The result of posttest	7.800	7.400	8.200	7.400
Improvement	3.000	3.200	4.200	3.400

Note:

- A<sub>1</sub> = Distributed Practice training method
- A<sub>2</sub> = Massed practice training method
- B<sub>1</sub> = The player group with good motor ability
- B<sub>2</sub> = The player group with less motor ability

Based on the result of the analysis, it could be continued into hypothesis test as follows:

**3.3.1 Hypothesis test 1**

From the research done by the researchers, the research finding showed that the implementation of distributed practice and massed practice training method had different ability. It could be proven by the  $F_{calculate} = 73.51 > F_{table} = 4.11$ .

**3.3.2 Hypothesis test 2**

The research finding showed that the player with good motor ability was different from the player with less motor ability. It could be proven by  $F_{calculate} = 225.39 > F_{table} = 4.11$ . It meant that the null hypothesis (Ho) was rejected.

**3.3.3 Hypothesis test 3**

The research finding showed that interaction between the implementation of distributive practice and massed practice training method was significant. It could be proven by the analysis of two factors-two variants  $F_{calculate} 186.67 > F_{table} 4.11$ . It meant that the null hypothesis (Ho) was rejected.

The research analysis showed that the player with motor ability had better improvement in push strike ability by using the implementation of massed practice training method than the player with motor ability and got the implementation of distributed practice treatment. The player who had good motor ability had the improvement of push strike ability if they were trained by using massed practice training method. And the player with less motor ability was also appropriate if they were trained by using massed practice training method. Based on the research finding, it showed that there was interaction between the implementation of massed practice training method with motor ability. It can be proven by the alteration of the test result which was not aligned and had centre between the two lines. By the finding of the research, motor ability had the influence toward the implementation of massed practice training method.

**Table 6:** The Summary of the Variant Analysis Result for the Implementation of Training Method (A<sub>1</sub> and A<sub>2</sub>)

Variation Source	Dk	JK	RJK	F <sub>o</sub>	F <sub>t</sub>
A	1	77.716	77.717	73.515	4.11
Error	14	14.8	1.057		

**Table 7:** The Summary of the Variant Analysis Result for Motor Ability (B<sub>1</sub> and B<sub>2</sub>)

Variation Source	Dk	JK	RJK	F <sub>o</sub>	F <sub>t</sub>
B	1	476.55	238.27	225.39	4.11
Error	14	14.8	1.057		

**Table 8:** The Summary of Two-Factors Variant Analysis Result

Variation Source	Dk	JK	RJK	F <sub>o</sub>		F <sub>t</sub>
Average						
Treatment	1	238.05	238.05			
A	1	77.71	77.71	73.51	*	4.11
B	2	476.55	238.27	225.39	*	3.18
AB	2	394.68	197.34	186.67	*	3.18
Error	14	14.8	1.05			
Total	20					

**Table 9:** The Summary of Newman-Keuls Expansion Test Result after Variants Analysis

KP		A2B2	A1B1	A2B1	A1B2	RST
	Average	3.400	3.000	4.200	3.200	
A2B2	3.400	-	0.400 *	0.800 *	0.200 *	1.328
A1B1	3.000		-	1.200	0.200	1.600
A2B1	4.200			-	1.000	1.765
A1B2	3.200				0.000	1.889

**4. Conclusion**

Based on the finding of the research and the data analysis, it can be concluded that:

- 4.1 There was a significant influence between distributed and massed practice training method toward the improvement of test result in push strike ability. The implementation of massed practice training method was better than distributed practice training method.
- 4.2 There was significant improvement of push strike ability

in hockey between the player with good and less motor ability. The improvement of the push strike ability of the player with good motor ability was better than the player with less motor ability.

- 4.3 There was significant influence between the implementation of massed practice training method and motor ability toward the improvement of push strike ability. The implementation of massed practice training method was appropriate to be used for the player with good or less motor ability.

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