Model of Triple Jump Achievment: The Effect Method Learning and Motor Skills Youth 18 – 20 Age

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Abstract

Efforts to achievement in triple jump (TJ) can be done in the process of providing learning methods. Furthermore motor skills are the determinant of the quality and quantity of jumper. The purpose of this study was to find out differences of part method learning (PML) and whole method learning (WML) by involving motor skills (MS) in improving of the TJ skills. This research uses a 2 x 2 by level experiment design method. Participants (n=89) were male collage students aged 18-20 years category. Sampling was carried out by specifically selecting 27% of the highest score and 27% of the lowest score, refers to Verducci's theory. Hypothesis test results 1)PML is better than the WML around this p-value 0,048<0,05, H_0 is rejected. 2) There is an interaction effect Fo (LMxMS) p-value 0,000<0,05 H_0 rejected. 3) $PMLMS_1$ is better than $WMLMS_1$ on students with high motor skills category p-value 0,0005<0,05 or H_0 rejected. 4) $PMLMS_2$ better than $WMLMS_2$ on students with high MS category p-value 0,34> 0,05 H_0 acepted. TJ skill that taught with PML is higher than the group that being taught by using WML. The low MS category of the PML are more suitable.

Keywords
Triple Jump, Part Method Learning, Whole Method Learning, Motor Skills, Youth 18 – 20 Age

1.   Introduction
The Triple Jump (TJ) athletic sport is part of the effort to improve the quality of the quantity of Indonesia education that leads to the learning process in universities in Indonesia especially in Physical Education Department. TJ is one of number categories with fundamental technique aspects, such as start, hop, step, jump and landing. The effort to get the achievement in TJ athletic sport is done through the teaching and learning process and sport as the activity. The

learning process or the training should have oriented the expected aim and stated in the change on whole behavior or skills. The skills it self only could be possessed from the learning process and teaching, also the training. The teaching and learning process is connected to the determination of the appropriate method in the teaching process, especially in the TJ learning. In the learning process of TJ skills, fundamental factor of student's motor movement should be considered. This is because the motor skills (MS) is the factor that also determines whether the student is fast enough to be able to master the movement technique or the sport skills in the learning process (Wilson, Simpson, & Hamill 2009). The TJ is part of the race in track and field to reach the maximum horizontal distance. The aim is to do a maximum effort in reaching the best distance; the TJ is a very complex movement that consists of three separated phases which is united into a complete movement in the effort to maximize the furthest distance. In the effort of mastering the basic TJ athletic techniques, it requires the skill in the implementation to give the best performance. (Bompa & Buzzichelli 2014) defines an athlete's motor skill (MS) affected by genetics, such as the ability of strength, speed, and endurance. This is called motor conditional capacity, general physics quality, or bio MS. The motor refers to the movement, and bio as the beginning shows biologist characteristic (body) of this ability. (Tangkudung 2012) stated that basic biomotoric component consists of strength, endurance, speed, flexibility and coordination. In the learning method (LM), the lecture is demanded to be skillful in choosing the method expected and the lecture must have been able to stimulate the students to be more active in the learning activity. This also depends on the potential usage MS possessed by the students themselves in having the teaching and learning process is one of the success keys in achieving the learning goals. To achieve the learning goal in TJ, the researcher chose some appropriate learning methodology to improve the skill in TJ, such as part method learning (PML) and whole method learning (WML). (Sukirno 2012) PML is defined as giving training material done with the steps that are appropriate with the basic technique of athletic sport number. (Warburton, Sheel, & McKenzie 2008) also states that PML is a training part done when various components of partial skills and learnt through step by step that started early. However, (Syafrudin 2011) thinks that PML is also called synthetic analytic method which divides or classifies the process or the way of movement to be united into a whole movement.(Bartlett 2018) stated that if the first learning component is uniting several parts, it is possible to create an effective and efficient learning time. The components mentioned here are running, jumping, floating, and landing. (Park, Jin-Hoon Heather Wilde 2015) the logic seemed interesting is that someone, in teaching the best step movement towards creating part of the whole chain into units that is easy to be organized, later could be connected to create combined order in a whole way. When part of the exercise is needed, because of the complexity of the movement, applying movement between the elements of the movement becomes important.(Hansen, Tremblay, & Elliott, 2015). (Yunyun Yudiana, Herman Subarjah and Tite Juliantine 2008) stated that WML is implemented to master one movement series, the athlete is being taught a whole movement in a chance and it is overall being practiced too. TJ has enough complexity in its basic technique. (Samsudin 2014) WML stated learning material served in a time or whole fully, if a skill is a complex skill within connection of one other part, then it is rather to teach it completely or in a whole way. (Rico-Sanz et al 2010) suggested that the WML is implemented better on the low assignments, complexity and very regular. (Costas I. Karageorghis and Peter C. Terry 2011) also suggested an athlete who has ability will probably has the benefit from WML approach implementation to train the sport skill. The reason is, the athlete has enough experience that give them possibility to understand the connection between skill component without a need to separate the skill continuously; basically, they could understand and master more complex skills.

2.   Research methods
The sample of this research took 89 the second semester male students of academic year 2016-2017 who had joined TJ athletic lecturing in Physical Education Department, Teaching and Education Department at University of Riau. The sample taken used the purposive sampling technique that refers to the (Verducci, 1980) theory that is selecting 27% of the highest score and 27% of the lowest score. The design used in this research was 2 x 2 by level experimental design adopted from the theory of (Kenneth S. Bordens and Bruce B. Abbott 2014). It could be seen from the table 1.

Table.1. 2 x 2 by Level Treatment Design

(MS)	LM	
	PML	**WML**
MS$_1$ (high)	PMLMS$_1$	WMLMS$_1$
Ms$_2$ (low)	PMLMS$_2$	WMLMS$_2$

With hypothesis as follows:
1. H_0 : μ PML ≤ μ WML
H_1 : μ PML > μ WML
2.   H0 : Interaksi LM x MS = 0
H1 : Interaksi LM x MS ≠ 0
3. H_0 : μ $PMLMS_1$ ≤ μ $WMLMS_1$
H_1 : μ $PMLMS_1$ > μ $WMLMS_1$
4. H_0 : μ $PMLMS_2$ > μ $WMLMS_2$
H_1 : μ $PMLMS_2$ ≤ μ $WMLMS_2$

Furthermore, data collection technique was appropriate with the kind of variables included in the research, so to gather the data proceed in this research, the instruments used were (1) TJ instrument with measuring (product) such as the jumping result and assessing (process) such as the skills of TJ movement. (2) to measure the high and low of motoric ability, MS Test would be used. (Freeman 2015) MS Test consists of: a. Sprint 30 m, Standing Broad jump (SBJ), b. Standing Triple Jump (STJ), c. Overhead back (OHB) toss with a shot off a toe board (7.3 kg) for men, d. Sprint 150 m: One maximal-effort 150-meter sprint on a track, e. Shuttle Run, f. also Sit and Reach. It could be seen from the following table 2:

Table 2. Motor skill Test/Motor Fitness Form

No	Test Item	Type of Test	Test Execution (Distance)			
		Motor Ability/Motor Ability Test/Motor Fitness **Jumping, Throwing test, Running test**				
			The First Day		The Next Day	
			Test	Re-Test	Test	Re-Test
1.	Standing Broad Jump	Jumping Test (Strenght, explosive leg power)				
2.	Standing Triple Jump	Jumping Test (Strenght, explosive leg power)				
3.	Overhead back throw	Throwing test (Strenght, Coordination)				
4.	Sit and Reach	Flexibility				
5.	Sprint 30 m	Running Test (Stenght and Speed)				
6.	Sprint 150 m	Running Test (Strange, Speed and Endurance)				
7.	Shutle Run	Running Test (Speed and Agility)				

3.   Result And Discussion
The data obtained in this research were processed and analyzed using two paths Varians Analysis Technique (ANAVA) with 2 x 2 by level design by SPSS version 23 application. Meanwhile, the testing standard was implemented in the alpha significance level 0,05. Then, it was continued with Dunnet T-Test, because there was interaction between LM and MS towards TJ Skill.

Table 3. Explains about the difference between the treatment using PML and WML, Contrast test

	Contrast		Value of Contrast	Std. Error	t	Df	Sig. (2-tailed)
Y	**Assume equal variances**	PML x WML	-3,6888	2,17113	-1,699	45	,096
	Does not assume equal variances	PML x WML	-3,6888	2,02058	-1,826	26,954	,079

From Table 3, in the table contrast above, it could be analyzed that the value of t_0 (PML x WML) = -1,699, p-value = 0,096/2 = 0,048 < 0,05, it means that H_0 is rejected. Therefore, the TJ ability of group that was taught by using PML is higher than the group that was taught by using WML.

Furthermore, take a look at the variant difference between LM and MS. This is in line with the hypotheses submitted, there are: 1. The difference of TJ ability result between PML and WML with MS_1 ($PMLMS_1$) and WML with MS_1 ($WMLS_1$) 2. The difference of TJ ability result between PML and MS_2 and WML with MS_2, 3.The interaction of LM with MS (LM x MS).To see the difference between LM in group with MS, then follow-up test with homogeneity test overall. Furthermore, to test the homogeneity towards the four groups, Levene's Test group tests using SPSS 17. The result of Levene's test could be seen on the following table:

Table 4. Explains about the Homogeneity test Using Levene's Test

Levene's Test of Equality of Error Variances[a]			
Dependent Variable: The Triple Jump Skills			
F	df1	df2	Sig.
,923	5	42	,475
Tests the null hypothesis that the error variance of the dependent variable is equal across groups.			
a. Design: Intercept + LM + MS + LM * MS			

From table 4, variant analysis test by using Levene'stest above showed that the value of Levene's test with statistic F = 0,923 with db = 5 and db = 42 in p-value = 0,475 > 0,05. So the data of four groups sample data that has same variant or Homogenous.

After the sample had the same variant or homogenous, then the data was tested about how big its difference and impact of the average score of those four TJ groups. To know the different and the impact of those four groups, have a look on the following test of between:

Table 5. Explains how big the different is and the impact of the average of those four

Tests of Between-Subjects Effects					
Dependent Variable:The TJ Skills					
Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	1517,009[a]	5	303,402	19,934	,000
Intercept	120000,000	1	120000,000	7884,083	,000
LM	459,302	2	229,651	15,088	,000
MS	12,100	1	12,100	,795	,378
LM * MS	1045,607	2	522,804	34,349	,000
Error	639,263	42	15,221		
Total	122156,272	48			
Corrected Total	2156,272	47			
a. R Squared = ,704 (Adjusted R Squared = ,668)					

From table 5 it could be explained that, a.Fo (LM) = 15,088 with p-value = 0,000 < 0,05or H_0 is rejected. This means there is a different average Triple Jump skill between students who were taught by using PML and WML. F_0 (MS) = 0,795 with p-value = 0,378 > 0,05 or H_0 is accepted. This means there is no different of TJ average skill between students with MS_1 and students with MS_2. Furthermore, the interaction effect Fo (LMMS) = 34,349 with p-value = 0,000 < 0,05 or H_0 rejected. This means there is a very **significant** interaction influence between factor LM and factor MS towards the TJ score for the students. It could be seen from the analysis result that the amount of LM variable influence and MS towards TJ ability is $R_{Squared}$ = 0,704 x 100 = 70,40%.

Therefore, to know the different between group with LM with MS could be seen in the contrast test down below:

Table 6. Contrass Test between Treatment Group

Contrast Tests							
Contrast			**Value of Contrast**	**Std. Error**	**T**	**df**	**Sig. (2-tailed)**
TJ Skill	**Assume equal variances**	$PMLMS_1$ x $WMLMS_1$	6,8188	1,95068	3,496	42	,001
		$PMLMS_2$ x $WMLMS_2$	,5588	1,95068	,286	42	,776
		$PMLMS_1$ x $PMLMS_2$	10,4825	1,95068	5,374	42	,000
		$WMLMS_1$ x $WMLMS_2$	4,2225	1,95068	2,165	42	,036
	Does not assume equal variances	$PMLMS_1$ x $WMLMS_1$	6,8188	2,13733	3,190	13,931	,007
		$PMLMS_2$ x $WMLMS_2$	,5588	1,95114	,286	13,867	,779
		$PMLMS_1$ x $PMLMS_2$	10,4825	1,95979	5,349	13,845	,000
		$WMLMS_1$ x $WMLMS_2$	4,2225	2,12940	1,983	13,915	,067

From table 6, it could be explained that:

1.   The difference of the TJ skills result between group t_0 ($PMLMS_1$ - $WMLMS_1$) = 3,496, p-value = 0,001/2 = 0,0005<0,05 or H_0 rejected. Because of that, there is an average different of the students who were taught by PML and WML in the students with high MS category. And $PMLMS_1$ is better than the $WMLS_1$ for students collage high motor category.

2.   The difference of the TJ skills result between group t_0 ($PMLMS_2$ - $WMLMS_2$) = 0,286, p-value = 0,680/2 = 0,34> 0,05 or H_0 accepted. Thus, there is different average of the students who were taught by PML and WML with low MS. And $PMLMS_2$ is better than the $WMLS_2$ for students collage low motor category.

4.   Conclusion

In the score of learning method treatment effect PML and WML gives a significant difference. Group treatment $PMLMS_1$-$WMLMS_1$ has a different value, and $PMLMS_1$ is better than the $WMLS_1$ for students collage high motor category. mean while in the group treatment $PMLMS_2$-$WMLMS_2$ there is an different value. And $PMLMS_2$ is better than the $WMLMS_2$ for students collage low motor category (hypothesis rejected) Furthermore, the TJ skill that taught with PML is higher than the group that being taught by using WML, this shows that PML is more beneficial than WML. This is because the part method is simpler, making it easier for students to understand the process of the movement in part to part. after teaching the whole method. Complexity of the movement of the basic techniques of high triple jump, the part method makes it easy for students to analyze the basic techniques of triple jump. This is because the triple jump material is arranged in a regular and multilevel manner until the basic technical phase of the prefix to the final basic technique. Whereas in the whole method it is different from the part method which are arranged as a whole and are devided d in part to part. This overall method is not effective in the group of low motor students and high motor students in improving the achievement of triple jumper. Thus, the researcher recommends and suggests PML to be used as the teaching guidance for teaching and learning process in the triple jump athletic training.

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