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Prediction of hanging style long jump achievement reviewed from physical ability factor of male students

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Abstract
Long jump is a jump to achieve results as far as possible. This study aims to find out the truth about the factors of physical ability that include leg muscle power, abdominal muscle power, flexibility of strike, back flexibility, speed, and coordination of Eye and Foot in predicting the achievement of long jump style hanging on junior high school students.
This research used a quantitative approach with correlational research method. The population of this research is the students of SMP Negeri 2 Bulukerto, the sample is 100 students. The variables of this study consisted of independent variables, namely physical abilities that include leg muscle power, abdominal muscle power, strike flexibility, back flexibility, speed and coordination of eye and foot. The dependent variable is hang style long jump achievement. Data analysis technique used regression correlation analysis by testing the normality and linearity test prerequisite. Hypothesis testing using regression analysis and correlation of each predictor and multiple regression analysis and multiple correlation.
The results showed that when the physical ability factor simultaneously predicted the achievement of long jump style hanging, there would be an increase in the long jump performance of hanging force of 1.0925 for each increase of 1 unit of leg muscle power measurement, an increase of 0.0582 for each increase of 1 unit of measurement Stomach power, an increase of 0.306 for each increase of 1 unit of flexibility measurement of strike, an increase of 0.627 for each increase of 1 unit of measurement of back flexibility, an increase of 0.269 for each increase of 1 unit of velocity measurement, and an increase of 0.0184 for each increase of 1 unit of measurement of coordination of eye and foot.
The conclusion of this study is that the ability factor has a correlation and can predict the achievement of long jump hanging style.

Keywords: physical ability, prediction of long jump of hanging style.

Introduction
Physical Education Sport and Health is a lesson that cannot be separated from the whole learning material in school. Physical Education Sport provides a positive impact for students in cognitive development, affective and psychomotor formation. For this reason, physical and health education is included in the national education curriculum. Toho cholik M. & Rusli Lutan (2001: 2) stated, "Physical education is part of general education. Physical education can be defined as an educational process aimed at achieving educational goals through physical movement ". In the implementation of physical education, taught several kinds of sports according to the level of education.
Physical education is an integral part of overall education through various physical activities aimed at developing individuals organically, neurumoskuler, intellectual, and emotional. Physical activity in education has gained a touch of didactic-methodical so that it can be directed at the effort to achieve learning objectives. To achieve basic competence of physical education, the subject matter of physical education must be taught to the students. (Depdiknas 2004: 19-20) explained that, "The subject matter of physical education is grouped into six aspects, namely: (1) games and sports (2) development activities (3) self-test / gymnastics (4) rhythmic activities, (5) aquatic And (6) out-of-school activities ".
Athletics is one of the sports that must be given in schools, both from Elementary to High School level.

This is because athletics is the mother of all sports. This is in the opinion of Bahagia *et al*., (2005: 1) that; Why athletic sports should be taught in schools from Elementary School (SD), Junior High School (SLTP), Senior High School (SLTA). Even in some universities, athletics as one of the Basic General Courses (MKDU), because athletics is the mother or mother of all sports. The athletic movements are owned by most sports.

The elements in athletics are road, running, jumping and throwing. Long jump is one of the numbers in athletics that must be taught to Junior High School students. Long jump is a jump to achieve results as far as possible. The continuity of motion in the long jump is prefix, pedestal, position while floating in the air and position on landing. Inside the long jump consists of 3 kinds of styles namely; Long jump style of squat, long jump style of walking in the air and long jump style of hanging (hanging in the air).

The ultimate goal in doing the long jump is to achieve the longest jumping distance. To achieve the jump distance that as far as a jumper should have the physical ability and mastery of good technique. Therefore, Sharkey (2003: 37) regular activity establishes the function of the immune system, while exhausting marathon activity is suppressing immunity so regular activity contributes to health.

Physical prime is one of the important assets that an athlete must retain. Physical factors associated with ideal posture also relate to endurance, speed, flexibility, agility, motion coordination, and the strength of an athlete, both in training and in the game. Physical condition is a unified whole of the components that cannot be separated just like that, both improvement and maintenance (Sajoto, 1995: 810) [17].

Long jump is one of the interesting athletic numbers to be studied, because from year to year in the long jump race always happens record-breaking. In a long jump race, a jumper will rely on the hardest beam to land on the jumping tub as far as possible. According to Aip Syarifuddin (1992: 90) said that long jump is a form of jumping motion lifting the foot upward, forward in an effort to bring the weight (during the air) quickly and by doing repulsion on one foot to reach the distance As far as possible. Since the long jump includes the jumped number that is competed. It is necessary to practice the right method to improve the performance.

A long jump is a jumping motion using a one-footed pedestal to get the distance as far as possible. The goal and the long-jump pedestal is to get as close as possible to a landing or jump. The jump distance is measured from repulsion to the nearest limit of the landing location generated by the body part. In the long jump there are a variety of styles commonly used by jumpers, the style of tuck (hang), hanging style, and the style of the road in the air (walking in the water). The difference between one jumping force and the other is marked by the state of attitude and the body of time floating in the air, so regarding prefix, pedestal, float and landing, that the three styles are the same principle. According to Aip Syarifudin (1992: 73), said that the basic technique in long jump is: (1) Prefix or square is the beginning movement to get the speed at the time will make a jump. The speed obtained from these prefixes is called horizontal velocity, which is very useful to help the force of repulsion upward, forward (on the long jump or jump jump). (2) Support is the change or movement of movement from horizontal movement to vertical movement is done quickly. The pedestal can be done well by using the left and right feet, depending on which leg is more dominant. (3) Hovering in the air. The attitude of the body in the air should be cultivated for as long as possible in the air and in a state of balance and most importantly at the time of this drift is against rotation of rotation arising from repulsion. In addition to getting the most economical and efficient landing position (4) Landing Attitude. Landing is the end of the long jump. The success in the long jump lies in the landing. On a smooth landing will affect the distance, safety and beauty.

In long jump numbers such as hanging style, it needs to be supported by components of good physical ability. M. Furqon H. (2002: 32) [16] stated "Component of physical condition of motion base consist of speed, strength, endurance, agility, elaboration, reaction time, power, coordination, and others". While Sudjarwo (1995: 41) argued, "Studying techniques in a particular sport is not possible before athletes have the physical ability to support the technique movement."

Based on some description about the physical abilities and skills that exist in the basket ball sport above, the researcher will conduct research with the title "PREDICTION OF HANGING STYLE LONG JUMP ACHIEVEMENT REVIEWED FROM THE PHYSICAL ABILITY FACTOR OF MALE STUDENTS". Physical ability factors include leg muscle power, abdominal muscle power, Ankle flexibility, back flexibility, speed, and coordination of eye and foot.

Method

This research was conducted in SMP Negeri 2 Bulukerto Wonogiri Regency. This study was conducted from July 2016 to December 2016.

The sampling technique used purposive random sampling technique with the sample that is the students who have qualified as the sample needed by the researcher.

Technique of the Data collection is done by observation, interview, and document analysis. To obtain valid data in this research used Test and Measurement.

Technique of the Data analysis in this study was using regression correlation analysis by testing the prerequisite test of normality and linearity test.

Result and Discussion

The results of a simple regression analysis of long jump performance of the up hanging style over leg muscle power resulted in the regression equation: $\hat{Y}$ = 3.55 + 0.31 X1. It showed that when there is change every one unit of measurement on the leg muscle power variables it will happen changes in variable achievement long jump style hanging by 0.31 meters. This showed that there is an increase in the variable skill achievement long jump style hanging each increase one unit of measurement of leg muscle power variables. *Fobtaibed* Significance test score of 9.07 and *Ftable* 3.9361, this indicated that the change in the variables of long jump style achievement hangs over a significant variable limb muscle power change (leg muscle power can be a predictor of long jump style achievement).

The result of simple regression analysis of long jump performance of up hanging style abdominal muscle power yields regression equation: $\hat{Y}$ = 3, 31 + 0,01 X2. This showed that when there is a change of every single unit of measurement on variable abdominal muscle power it will happen changes in variable achievement long jump style hanging by 0.01. It showed that there is an increase in the variable skill achievement long jump style of hanging each increase one unit of variable measurement of abdominal muscle power. The test score of significance *Fobtained* of 6.18 and *Ftable* 3.94, it showed that the change of the variables of long jump style achievement hangs over the

change of variable leg muscle power significantly (abdominal muscle power can be predictor of long jump style achievement of hanging).

The result of simple regression analysis of long jump performance of up hanging style the flexibility of strike yield regression equation: $\hat{Y}$ = 2,35 + 0,11 X3 It shows that when there is change every one unit of measurement on the variable of strike flexibility it will happen change of variable achievement style long jump Of 0.11. It showed that there is an increase in the variable skill achievement long jump style hanging each increase one unit of measurement variable flexibility of strike. The test value of significance *Fobtained* of 29.98 and *Ftabel* 3.94, it showed that the variable change of the long jump performance of the hanging style over the variable change of the flexibility of strike is significant (the flexibility of the strike can be a predictor of the long jump style achievement of hanging).

The result of simple regression analysis of long jump performance of up hanging style back flexibility resulted in regression equation: $\hat{Y}$ = 3.54 + 0,01 X4 It shows that when there is change every one unit of measurement on variable of back flexibility it will happen change of variable achievement of long jump style hang Of 0.01. This showed that there is an increase in the variable skill achievement long jump style hanging each increase of one unit of variable measurement of back flexibility. The test value of significance *Fobtained* of 7.16 and *Ftable* 3.94, it showed that the variable change of the long jump style achievement hangs over the variable change of significant back flexibility (back flexibility can be a predictor of long jump style achievement).

The result of simple regression analysis of long jump performance of up hanging style speed produce regression equation: $\hat{Y}$ = 5,19 -0,13 X5 It showed that when there is change every one unit of measurement at variable of speed hence will be changed of variable achievement long jump style hanging force equal to 0, 13. It showed that there is an increase in the variable skill achievement long jump style hanging each increase one unit of variable speed measurement. The significance test score of *Fobtained* is 5.84 and *Ftable* 3.94, it showed that the variable change of the long jump style achievement hangs over the variable change of the velocity (the velocity can be a predictor of long jump style achievement).

The result of simple regression analysis of long jump performance of up hanging style Foot co-ordination resulted in regression equation: $\hat{Y}$ = 3,65 + 0,02 X6 It showed that when there is change every one unit of measurement on eye coordination variable hence will change variable of achievement of long jump Hanging force of 0.02. This showed that there is an increase in the variable skill achievement long jump style hanging each increase one unit of measurement variables eye coordination. The value of significance test *Fobtained* of 10.03 and *Ftabel* 3.94, it showed that the change of variables of long jump achievement style hang over the change of variables of significant foot coordination (ankle coordination can be predictors of long jump hanging style achievement).

Conclusion

There is a significant positive relationship between leg muscle power and long jump style. Thus leg muscle power can predict the achievement of long jump hanging style significantly. If there is an increase in standing broad jump measurement of one meter in leg muscle power will increase the jump performance of long hanging style by 0.31 meters.

There is a significant positive relationship between stomach muscle power and the achievement of long jump hanging style. Thus abdominal muscle power can predict the achievement of long jump hanging style significantly. If there is an increase in sit up measurements of one repeat on the abdominal muscle power, there will be an increase in long jump style achievement by 0.01 meters.

There is a significant positive relationship between the flexibility of strike and the long jump style achievement. Thus the flexibility of strike can predict the achievement of long jump hanging style significantly. If there is an increase in the measurement sit and reach test of one centimeter on the flexibility of strike it will increase the jump performance of the hanging style by 0.11 meters.

There is a significant positive correlation between back flexibility and long jump style achievement. Thus the flexibility of the back can predict the achievement of long jump hanging style significantly. If there is an increase of bridge up test measurement of one centimeter on the flexibility of the back it will be an increase in performance long jump hanging style by 0.01 meters.

There is a significant positive correlation between speed with the achievement of long jump hanging style. Thus the flexibility of the back can predict the achievement of long jump hanging style significantly. If there is an increase in 30 meter measurements at a marked speed with a 1 second drop, there will be an increase in jumper jumping style achievement of 0.13 meters.

There is a significant positive correlation between the coordination of eye and foot with the achievement of long jump hanging style. Thus coordination of aye and foot can predict the achievement of long jump hanging style significantly. If there is an increase in the measurement of the wall volley test score of one repeat on the coordination of eye and foot, there will be an increase in the long jump performance of the hanging force by 0.02 meters.

There is a positive correlation between all physical ability component with the long jump style achievement of 0.74 if there is an increase in all components of physical ability simultaneously it will increase the long jump hanging style by 0.31 for every one meter increase of leg muscle strength, An increase of 0.01 meters for each one-time increase in abdominal muscle, increased by 0.11 meters for each one centimeter increase in flexibility of strike, an increase of 0.01 meters for each one centimeter increase in back flexibility, an increase of 0.01 for each increase One second of speed, and an increase of 0.02 for every increase, one time test of coordination of eye and foot.

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