

# The Contribution of Leg Muscle Power to the Accuracy of Wide Kick Direction of Football Athlete at Universitas Islam Riau

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## ABSTRACT

The purpose of this study was to determine the contribution of leg muscle power to the accuracy of kick toward the goal in Riau Islamic University Football Association's athletic feed. The sample in this study were 24 athletes. The data obtained were then searched for the relationship of the contribution of limb muscle power variable to the kick accuracy variable using Product Moment. Based on calculations using the product moment, it can be explained that  $r_{count}$  has a value of 0.5303. This value if seen in the correlation coefficient table is sufficient. To test the hypothesis whether there is a correlation between leg muscle power and the accuracy of kicking a ball, the correlation of "R" is used on the product moment ( $r_{xy}$ ) at a significant level of 5%, it shows that  $r_{count} = 0,5303$  at a significant level of 5%  $r_t = 0.396$  thus  $r_{count} \geq r_{table}$  or  $0.5303 \geq 0.396$ . This means that the correlation of variable X with Y or the relationship of leg muscle power to the accuracy of kicking the ball is significant, so the tested hypothesis is accepted. Based on the calculations above, the leg muscle power relationship to the accuracy of kicking the ball of Riau Pekanbaru Islamic University Football Association athlete is 28.12%. While the remaining 71.88% is influenced by other factors.

**Keywords:** *Leg muscle power, wide kick direction, football athlete*

## 1. INTRODUCTION

One of the basic techniques that can be mastered in soccer is the technique of kicking the ball to the target. Kicking a ball to a target is a technique in an effort to kick the ball to the goal (goal) correctly. One mastery during the game, also depends on the ability to kick the ball to the target.

The skill of kicking the ball to the target is an important factor in the game of football, this is because the mastery of kicking the ball to a good target, the mastery of the ball from the opponent will be able to do well too. Therefore, in mastering the skills of kicking the ball to the target also needed various supporting factors such as speed, leg muscle power and also the body's resistance.

Power of the leg muscles is the ability of the legs to produce maximum strength. With good and maximum limb muscle power and well trained, it produces good and maximum abilities. Therefore, a person's leg muscle power can be trained properly through programmed and intensive training. In football sports, supporting factors are needed from athletes, including stable and well coordinated leg muscle power. Physical leg muscle power is needed in this soccer sport, because to be able to master the game it also requires leg muscle power.

In addition to leg muscle power and intensive training programs to get maximum ability about kicking the ball to the target, it is also necessary to motivate athletes to do exercises that can support mastery of basic football techniques, especially the technique of kicking the ball to the target. Motivation of athletes is very necessary in an effort to generate enthusiasm from the athlete himself in carrying out an activity.

In addition to getting the basic skills of football techniques also needed facilities and infrastructure, because without adequate facilities and infrastructure the basic techniques of football are difficult to master. Thus the facilities and infrastructure are one of the supporting factors in mastering basic football techniques.

Football Team of Riau Islamic University Pekanbaru is one of the clubs in the city of Pekanbaru. Based on observations made at the athletes of the Football Team of the Riau Islamic University in Pekanbaru, there are still obstacles in kicking the ball to the target. When the athlete kicks the ball towards the goal it is always not right so the ball sometimes bounces or does not enter. In addition, during training athletes experience fatigue so that it causes less optimal, besides when carrying the ball easily captured by the opponent, which is caused by lack of agility.

This of course athletes will be difficult to control the ball which in the end will be easily controlled by the opponent.

In addition to the above constraints, the lack of intensive training conducted by athletes causes athletes to look rigid in the game which causes leg muscle power and mastery of basic techniques, especially in kicking the ball towards the goal is not good and optimal. Supporting facilities and infrastructure such as ball and field are also obstacles in playing the game. Where conditions exist that the ratio of the number of balls is still not in accordance with the number of athletes.

Power is one element of the physical condition that is very dominant in human life that is related to movement and human activity. Without having human strength it is not possible to be able to sustain life properly and naturally. Elements of other physical conditions are speed, endurance, flexibility, agility, balance and coordination. Power is the power of muscle contraction that is achieved in a maximum effort (Ismaryati: 2008).

Based on the description, it can be explained that the element of strength has an important role in sports activities. This is because power is the driving force and also functions as an injury prevention. Thus, if this power can be trained intensively, it will produce strength as the optimal driving force.

Power of leg muscles is one component of physical fitness. To maintain leg muscle power remains good, it is necessary to do intensive and programmed exercises. Exercising leg muscle power can vary such as jumping up and down the bench, going up stairs, doing leg presses, doing forms of games or matches with the ball while squatting and so on. Other variations of training can also be in the form of games with balls, relay races, swimming, riding bicycles to gubung, cross country and so on (Harsono: 1989). That is, power leg exercises can be done in various ways such as jumping over benches, going up stairs, doing leg press and so on. These exercises are useful for maximizing the ability of leg muscle power to the fullest.

Power of leg muscles is needed in football games. Football games are team games played by individuals (Batty, 2008). Furthermore, it can be explained that football is a soccer match played by two teams of 11 people each. The target of this match is to set in the opponent's goal and the winner is the highest goal entry (Midgley, 1990; 193). In football games, of course there are techniques that must be mastered by each player. In soccer sports there are several basic techniques that can be mastered, namely:

Kicking *a ball (shooting)* is touching, pushing or kicking a ball. Kicking is the most dominant characteristic of soccer. In order to become a quality soccer player, a player needs to develop his skills in kicking a ball. The purpose of kicking a ball in this case

is to feed, shoot to make a goal happen and to drive or sweep in order to thwart an attack or play an opponent (Mukholid, 2007;2).

*Ball control (passing)* is one technique in the game of football that is used to stop the arrival of the ball by using one of the limbs. The purpose of controlling the ball is to adjust the tempo of the game, divert the pace of the game and make it easier to pass or pass (Mukholid: 2007).

Dribbling is to kick (touch, push) the ball slowly while walking or running. The purpose of dribbling is to bring the ball towards the opponent's goal, pass the opponent and slow down or adjust the rhythm of the game (Mukholid: 2007).

Headings must wear the forehead and the eyes must always be open (never blindfolded). Usually used to give feedback to friends or to make goals (Kosasih: 1993). Every soccer player must absolutely have the skill in heading the ball, especially taking the ball that soars above the head. This is necessary because to seize a high ball is not possible with feet (Suparman, 1994). Things that must be considered in heading the ball are: 1) The eyes are not processed closed, because to see the direction of the ball; 2) The ball must be about the forehead, not to hit the crown because it is very dangerous; 3) The movement of heading the ball must be followed by the movement of the whole body; and 4) The technique of heading the ball is done by standing up and jumping (Suparman, 1994;56).

## 2. METHOD

The population in this study were all athletes registered in the Football Association of Riau Islamic University Pekanbaru, which numbered 24 people. In connection with the population that is not so large and within the limits of ability, the authors determine the entire population to be sampled (total sampling). Thus the sample in this study was 24 athletes.

In this study there are two variables studied, namely the independent variable and the dependent variable. The independent variable is leg muscle power while the dependent variable is the accuracy of kicking the ball towards the goal by using bait in foot ball games. The data collection techniques in this study, namely: a) Observation, used to make observations directly to the research location to obtain information and data objectively; b) The interview method, is a direct question and answer to the respondent relating to leg muscle power and the accuracy of kicking the ball towards the goal by using bait in football sports; c) Literature is to get theories related to leg muscle power and the accuracy of kicking a ball towards goal in soccer sports; d) Tests and Measurements (test leg muscle power and shooting tests). The time of the study was conducted on March 6, 2013 until March 10, 2013.

**Leg Muscle Power Test**

To test the leg muscle power, the Kalamen Power Test was used (Arsil & Aryadie Adnan: 2010). The purpose of this test is to measure the power of the legs. The requirements that are needed are: 1) Stairs made specifically for this purpose. The stairs were increased by 12 steps. The height of each ladder is 17.4 cm; 2) Weight weighing; and 3) An automatic timer that can walk and stop when the testicles step on a certain ladder.

The steps for implementing this test are: 1) Test standing 6 meters in front of the bottom of the stairs, then run as short as possible up the stairs; 2) The first three steps are passed at once; 3) The timer will run when the testicles step on the third step and stop when the testicles step on the 9th step; 4) Record the travel time to per hundred seconds; 5) Testee may do 3 replications; 6) and from the best travel time is calculated by the formula:

Information:

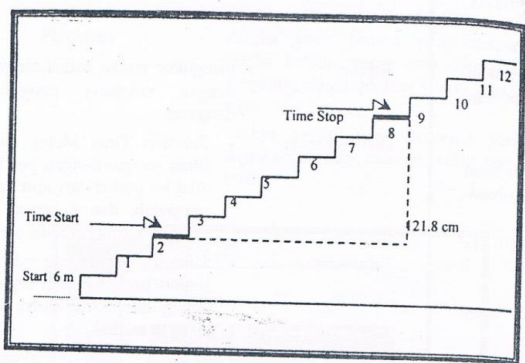
P =Power

W =Weight (in Kg)

D = Vertical height from steps 3 to 9

t =Travel time from stairs 3 to 9 (in seconds)

For more details, see the following picture:



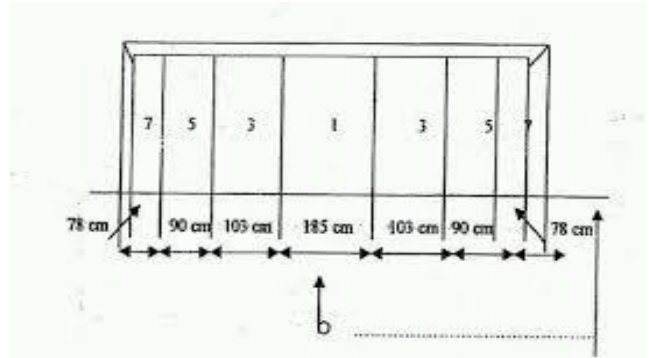
**Picture1.** Margaria Kalamen Power Test  
Source: (Arsil & Aryadie Adnan: 2010).

**Targeted shooting/kicking test (shooting)**

The purpose of this test is to measure the ability to shoot/kick the target (shooting). Tools and equipment needed are: 1) ball; 2) stopwatch; 3) wall that has a flat surface/goal; 4) Board; 5) Lime; 6) blank; 7) Stationery.

The implementation and assessment are: 1) The ball is placed at a point 13 meters from the goal right in the middle of the goal; 2) Initial commencement is given cue; 3) When the shot is taken when the shooter's feet hit the ball until the ball hits the wall/goal; and 4) Score of the shot, the number on the goal charged by the ball. When the ball hits the lines between the boxes in the goal, the highest score is recorded as the score.

For more details, see the following picture:



**Data Analysis Techniques**

To analyze data about the contribution of leg muscle power to the accuracy of kicking the ball to the target by using bait, the formula "r" product moment is used below (Riduwan: 2007):

$$P = \frac{W \times D}{t} \tag{1}$$

$$r_{xy} = \frac{(n \cdot \sum xy) - (\sum x)(\sum y)}{\sqrt{[(n \cdot \sum x^2) - (\sum x)^2][n \cdot \sum y^2 - (\sum y)^2]}} \tag{2}$$

Information :

r = Correlation coefficient value

n = Number of samples used

x = independent variable value score

y = Value value of the dependent variable

**3. RESEARCH RESULTS AND DISCUSSION**

**Data on Athlete's Foot Muscle Power at the Pekanbaru University Football Association in Pekanbaru**

Data obtained from athlete's leg muscle power by using standing broadjump. Based on the results of the analysis it can be explained that 10 athletes (40.00%) scored 1.28-1.32; as many as 3 athletes (12.00%) scored 1.33-1.37; 4 athletes (16.00%) scored 1.38-1.42; as many as 5 athletes (20.00%) got a score of 1.48-1.55; while the average leg muscle explosive power is 1.38. For more details, see the following table:

**Table 1.** Data Frequency Distribution of Athlete's Foot Muscle Power of the Football Association of Riau Islamic University Pekanbaru Based on Processed Data.

No	Skor	F	Presentasi
1	1,28 – 1,32	10	40,00
2	1,33 – 1,37	3	12,00
3	1,38 – 1,42	4	16,00
4	1,43 – 1,47	5	20,00
5	1,48 – 1,55	3	12,00
		25	100,00

Source: Data olahan, 2013

**3.1. Accuracy of Kicking**

The precision of kicking in this study is the athlete's ability to punch the ball correctly at the target that has been determined and measured using the number of scores obtained three times the kick, then recapitulation is carried out to analyze the data. Based on the results of the analysis it can be explained that the accuracy of kicking the ball is 3 athletes (12.00%) getting a score of 12.00-13.60; as many as 5 athletes (20.00%) scored 13.61-15.20; 2 athletes (8.00%) got a score of 15.21-16.80; 8 athletes (32.00%) scored 16.81-18.40; and as many as 7 athletes (28.00%) scored 18.41-20.00 with an average of 16.72. For more details, see the following table:

**Table 2.** Frequency Distribution of Kicking Accuracy.

No	Score	F	Percentage
1	12.00 – 13.60	3	12,00
2	13,61 – 15,20	5	20,00
3	15,21 – 16,80	2	8,00
4	16,81 – 18,40	8	32,00
5	18,41 – 20,00	7	28,00
		25	100,00

Source: Data Olahan, 2013

By obtaining data from leg muscle power and precision of kicking the ball, then processed according to statistical techniques with *product moment*, to find out whether there is a relationship or correlation of these two variables which is the main problem in this study.

Based on calculations using a *product moment*, it can be explained that rcount has a value of 0.5303. This value if seen in the coefficient of correlation is classified as Enough.

To test the hypothesis whether there is a relationship between leg muscle power and the accuracy of kicking the ball, correlation is used "R" on *product moment* ( $r_{xy}$ ) atthesignificant level of 5% turned out to show  $r_{counted} = 0,5303$  at the significant level 5%  $r_t = 0,396$  therefor  $r_{count} \geq r_{table}$  atau  $0,5303 \geq 0,396$ . This means

that the correlation of variable X with Y or the relationship of leg muscle power to the accuracy of kicking the ball is significant, so the hypothesis tested is accepted. With the test rules as follows:

If  $r_{hitung} \geq r_{tabel}$  then significant  
 If  $r_{hitung} \leq r_{tabel}$  then it is not significant

Meanwhile, to find the magnitude of the relationship between leg muscle power and the accuracy of kicking the athlete's ball, the Football Association of the Riau Islamic University in Pekanbaru used the formula:

$$\begin{aligned}
 KP &= r^2 \times 100\% \\
 &= 0,5303^2 \times 100\% \\
 &= 0,2812\% \\
 &= 28,12\%
 \end{aligned}$$

Based on the above calculation, the relationship of leg muscle power to the accuracy of the soccer athlete's football at the University of Riau Islamic University Pekanbaru is 28.12%. While the remaining 71.88% is influenced by other factors such as strength, flexibility, and other factors not examined in this study.

Based on the results of testing the data analysis above, it can be explained that there is a significant relationship between the variable X and the variable Y, namely between the power of the leg muscles to the accuracy of kicking the ball. Thus it can also be stated that leg muscle power contributes sufficiently to the accuracy of the driving ball of Athletes at the Football Association of Riau Islamic University in Pekanbaru.

The magnitude of the relationship between leg muscle power to the accuracy of kicking the athlete's football Football Association, Riau Islamic University Pekanbaru shows sufficient value. The adequacy of the relationship of leg muscle power to the precision of kicking the ball is caused by other factors which also affect the accuracy of kicking the ball with the foot, training program and so on. With good leg strength, the direction of the ball can be directed and can be controlled. Furthermore, with good flexibility can also provide flexibility for athletes to kick the ball flexibly, so that the ball becomes controlled and not too far from the foot. The accuracy of the movement of the ball with the foot so that the ball is not easily captured by the opponent. The art of mastering the ball is more perfect so that it can be controlled properly. An intensive training program will be able to support the athlete's sense of the basic techniques that will be used in soccer games and exercises based on the training program that has been made.

The results of the study explain that leg muscle power is significant in contributing to the accuracy of kicking the athlete's football at the Football Association of Riau Islamic University in Pekanbaru. The adequacy of this relationship based on the research conducted is

due to: 1) Athletes are still not maximal in doing exercises related to the lower leg muscles so that athletes look less precise; 2) Athletes lack focus and concentration in making a kicking ball towards the target so the results are also not maximal; and 3) In soccer, the intensity of training must be maintained, so that if the intensity of this exercise cannot be maintained, the results will also be minimal for mastering basic techniques such as kicking the ball in soccer games.

#### **4. CONCLUSION AND RECOMMENDATIONS**

Based on the results of data analysis and interpretations that have been put forward in the interpretation of the data, the results of the study can be concluded that there is a significant contribution between the power of leg muscles to the accuracy of kicking.

The suggestions that can be given are: 1) The trainer should not only train about football skills but also train about physical conditions such as leg muscle power; 2) The athlete should pay more attention to the accuracy of kicking the ball and also the power of the leg muscles to kick more precisely and produce better abilities; and 3) To the next researcher, it should be used as a guide to be able to use variables other than leg muscle power so that the contribution given to the accuracy of kicking the ball can be more significant.

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