



Correlation of blood muscle strength and waist flexibility to students' roundhouse kick skills in Putera Sekar (Pencak Silat) academy

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ABSTRACT

Background: Many fighters are not maximal in doing roundhouse kick, resulting in losses including causing injuries during the match, wasting energy because the shot that is shot does not hit the target.

Purpose: The aim of this study is know what extent the relationship between the explosive power of the leg muscles and the flexibility of the waist muscles on the skill of the roundhouse kick in the athletes of the Putera Sekar Kolat Tanah Abang Pencak Silat College.

Design and methods: This study used a correlation study method by examining the relationship between the explosive power of the leg muscles and the flexibility of the waist to the roundhouse kick skill. The samples in this study were 20 athletes who were still active in routine extracurricular activities. To process the required data from the flexibility test results (X1), anxiety test results (X2), and the scoring results of archery athletes, regression and correlation analysis techniques are used.

Results: There is a positive relationship between leg muscle explosive power and waist flexibility on roundhouse kick skill. According to the regression correlation analysis, it was obtained that the value of F_{count} was $1.973 > F_{table} 3.59$ and a significant value of $0.00 < 0.05$.

Keywords: roundhouse kick; blood muscle strength; waist flexibility

Introduction

Pencak Silat, one of Indonesia's original traditional martial arts sports, is now widespread in various countries in the world, especially Asia. This is because the Asian region is the closest region to Indonesia. Pencak silat is spread through the frequency and number of competitions both at the national and international levels. Pencak Silat is a self-defense system passed down by our ancestors as a culture of the Indonesian nation that needs to be preserved (Kriswanto, 2015).

In ancient times, Indonesian ancestors had a way of self-defense aimed at protecting themselves and maintaining their survival, their families and their groups. At that time the people were doing self-defense training for the purpose of fighting for food; life feels safe and secure; regardless of fear of threats; and the disturbance of his enemies, wild animals or natural threats. Pencak silat has existed since the days of the Srivijaya kingdom. This was proven by the number of swordsmen and soldiers who were proficient in martial arts. Raden Wijaya along with his warriors and soldiers with the potency of their tactics and self-defense abilities were able to defeat the Tartar army so that they could be pounded back to China. Furthermore, Raden Wijaya together with his warriors and soldiers founded the independent and sovereign Majapahit kingdom (Sudian & Putu, 2017).

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Pencak silat in Indonesia has many schools and schools that are scattered in various regions, almost every region has its own martial arts school. *Pencak Silat* is a style of martial arts that is taught, adhered to, and practiced by a school. For example, in Jakarta, the writer knew and had time to study the Rahmat and Sabeni traditions, these two schools are a typical *Betawi* tradition, where the name of the genre is the name of the ancestor who created the movement in the flow. Apart from these genres there are also schools, *Beksi*, *Cingkrin*, *Cimande*, and many other schools of Pencak Silat in Indonesia.

The basic movement of pencak silat is a planned, directed, coordinated and controlled movement, which has four aspects as a unit, namely the mental spiritual aspect, the aspect of martial arts, the aspect of sports, and the aspect of cultural arts. Thus, *pencak silat* is a sport that is quite complete to learn because it has four aspects which are a whole and cannot be separated (Sudian & Putu, 2017).

There are various kinds of techniques in *pencak silat*, but this time the author summarizes some of the techniques commonly used, namely punches, kicks, sweeps, dodging, and throws. Apart from these techniques, it also requires very full concentration and good breathing patterns. These techniques are commonly used in matches.

Pencak silat kick techniques commonly used in matches are front kicks, roundhouse kicks, T kicks, and back kicks (Hariono & Sugiharto, 2017). In a match, kicks may only be used to attack the opponent's body, no kicks in the head. To get the maximum kick requires good and correct technique. The physical aspects of *pencak silat* are very important, the movements of *pencak silat* involve the muscles of the body, so that they can affect both muscle power and cardiovascular endurance, speed, flexibility, balance, accuracy and the ability to make decisions briefly and precisely (Naharsari, 2008).

With the fulfillment of the components of the necessary physical conditions, it is hoped that the fighter can produce maximum kicks, so as to get the best results in competing. In a match, kicks have quite large points, namely 2 points, therefore if you can kick properly and correctly it will produce good results.

The number of fighters who do not meet the components of the necessary physical conditions so that the kicks produced are not optimal. For example, in roundhouse kicks, many fighters are not maximal in doing this kick, resulting in losses including causing injuries during the match, wasting energy because the shot that is shot does not hit the target.

Based on the author's observations as a coach, there are many mistakes when doing roundhouse kicks, including the strength on the pedestal so that the power generated is not optimal, improper body shape due to unmet flexibility in the body, lack of self-motivation so there is no will. to be better at each exercise, lack of attention to the material given so that mistakes often occur when doing, and much more.

This research needs to be limited considering that it may not be discussed in its entirety. The limitation of the problem in this study is the relationship between the explosive power of the leg muscles and the flexibility of the waist muscles on the skill of the roundhouse kick in the athletes of the *Putera Sekar Kolat Tanah Abang Pencak Silat* College.

Methods

This study used a correlation study method by examining the relationship between the explosive power of the leg muscles and the flexibility of the waist to the roundhouse kick skill. Correlation or correlational research is a study to determine the relationship and level of the relationship between two or more variables without any effort to influence these variables so that there is no manipulation of the variables. Quantitative descriptive method is a research method based on the philosophy of post positivism, used to examine natural

conditions, where research is a key instrument, the sampling of data sources is taken purposively and snowball (Sugiyono, 2010).

In this study, the population used was 50 students of the *Putera Sekar Kolat Tanah Abang Pencak Silat* School. The sampling technique used purposive sampling technique, namely selecting samples based on certain considerations. The samples in this study were 20 athletes who were still active in routine extracurricular activities.

To process the required data from the flexibility test results (X1), anxiety test results (X2), and the scoring results of archery athletes, regression and correlation analysis techniques are used.

Findings & Discussion

To facilitate understanding and reading, the results of the study are described first, followed by the discussion section. Result subtitles and discussion subtitles are presented separately. This section should be the largest part, at least 60% of the entire body of the article.

Result

The data description of the results of this study includes the lowest value, highest value, average and standard deviation of each of the Y variables. The complete data is described in the table 1

Table 1 Data Description

	N	Minimum	Maximum	Mean	Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Std. Error
Explosive power	20	40	50	45.50	.734
Flexibility	20	21	46	34.95	1.489
Roundhouse kick	20	83	96	89.05	.679
Valid N (listwise)	20				

The relationship between leg muscle explosive power (X1) and waist flexibility (X2) on roundhouse kick skill (Y) is expressed by the regression equation $y^{\wedge} = 75.075 + 0.048X1 + 0.344X2$. This means that each one-unit increase in the explosive power of the leg muscles will increase the roundhouse kick skill by 0.048 and each one-unit increase in waist flexibility will increase the roundhouse kick skill by 0.344 at a constant of 75.075.

Tabel 2 Multiple Linear Regression

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	17.962	2	8.981	1.973	.000 ^a
Residual	156.988	17	9.235		
Total	174.950	19			

- a. Predictors: (Constant), explosive power, flexibility
- b. Dependent Variable: sickle sick

The result of the correlation significance test above shows that $F_{count} = 1.973$ is meaningful because it is greater than $F_{table} = 3.59$ which means the coefficient $R_{y1-2} = 0.320$

is meaningful. Thus the hypothesis that there is a positive relationship between leg muscle explosive power (X1) and waist flexibility (X2) on roundhouse kick skill (Y) is supported by research data.

Tabel 2 Multiple Detemination Coefficient

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.320 ^a	.103	-.003	3.039

a. Predictors: (Constant), Explosive Power, flexibility

$$\begin{aligned} Kd &= (r)^2 (100\%) \\ &= (0.320) (100\%) \\ &= (0.103) (100\%) \\ &= 10.3\% \end{aligned}$$

From these calculations, it is concluded that the contribution of the explosive power of the leg muscles and flexibility of the waist to the roundhouse kick skill is 10.3%, while 89.7% is a variation of other factors related to roundhouse kick skill.

Discussion

Pencak silat is not only a tool for self-defense, but it can also be used to gain achievements. *Pencak silat* achievements can be achieved through competitions or *pencak silat* championships. *Pencak silat* competition category consists of competition category, single category, double category, team category.

The sparring category is a category that displays two fighters from different camps. The two of them face each other using elements of defense and attack, namely parrying / dodging / hitting / attacking the target and bringing down the opponent, using tactics and fighting techniques, endurance of stamina and fighting spirit, using rules and patterns of steps that take advantage of the wealth of techniques, to get the best score.

The single category is a category of martial arts competitions where a fighter demonstrates his skills in a single standard form correctly, precisely, and steadily, full of soul, empty-handed and armed.

The double category is a category that displays 2 (two) fighters from the same team, demonstrating the proficiency and wealth of their attacking techniques. The attack and defense movement is displayed in a planned, effective, aesthetic, steady and logical manner in a number of regular series, starting with empty hands and continuing armed and subject to the rules and regulations applicable to multiple categories.

Pencak silat matches have standard rules as fixed rules for each match (Iswana, 2019). The regulation was made based on the National Conference, where the regulation was made from several factors, especially safety factors.

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Pencak silat kick techniques commonly used in matches are front kicks, roundhouse kicks, T kicks, and back kicks. In a match, kicks may only be used to attack the opponent's body, no kicks in the head.

This time the writer wants to discuss the roundhouse kick, the roundhouse kick is done in a semicircle. A roundhouse kick is a kick executed in a trajectory from the side that curves like a sickle. The acquaintance is the back of the foot or the base of the toes.

To get the maximum kick, according to the author, good and correct technique is needed. Good and correct technique includes components of physical conditions, including speed, agility, strength, explosive power, flexibility and endurance.

Muscle is an organ / tool that is very important to allow the body to move, in carrying out this muscular system it cannot be ascertained by nerve work. So muscles, especially skeletal muscles, are a tool that controls active movement and maintains body awareness. In a state of rest, it is not at all loose but has a slight tension which is called tonus. Each person's tone varies depending on age, gender and body condition.

The leg is a tool used for moving. In Anatomy, the parts of the human body are divided into 2 (two), namely upper limbs and lower limbs. Limbs including the lower limbs. The limb is made up of several bones. The leg bones include the femur, patella, tibia and fibula, and the leg. The bones are all connected to one another. The connections between these bones are called joints. Joints are the place / axis of movement of bones to move. The movement of each joint varies depending on the axis

Power or often called explosive power is the ability to move which is very important to support activities in every sport. The ability of this power / explosive power will determine the results of a good motion. For example, if a person has good explosive power will produce a strong kick, or a sprinter will produce faster run if he has better explosive power. For that we need to know what explosive power is, explosive power is the result of a combination of force and chance.

The explosive power component is very important in roundhouse kicks, because based on the authors' conclusions, in some of the explanations above, the authors conclude that the explosive power of the leg muscles is the ability of a group of muscles to carry out an effort of movement and to overcome the load in maximum speed and strength. So in the process of taking a kick, it is necessary to have the explosive power of the leg muscles to get the maximum roundhouse kick.

The flexibility of the waist is also important according to the author, because *pencak silat* really requires flexibility in almost every part of the body. Because one of the body parts used for the roundhouse kick is the waist. Flexibility of the waist is the ability to move the joints at the waist to the maximum, so this component is very important according to the author in roundhouse kicks

When we talk about flexibility, we usually refer to the space for movement of the joints of the body. The flexibility of a person is determined by the extent of the space for movement of his joints. So the limitation of flexibility is the ability to carry out movements in the joint space. Apart from the space for joint movement, flexibility is also determined by the elasticity of the muscles, tendons, and ligaments around the joints. Thus a flexible person is a person who has wide space for movement in his joints and has elastic muscles.

Flexibility which is the limit to the maximum possible range of motion in a joint. Flexibility is useful for the efficiency of movement in carrying out motion activities and prevents the possibility of injury. This ability is required by all players. Flexibility is the ability of the various joints in the body to move as widely as possible. Or it can also be interpreted that flexibility is the area of movement of a joint, and it can also be interpreted that flexibility is the capacity to move in the joint space.

From several definitions it can be concluded that flexibility is the ability of the joint to perform movement in the maximum joint space. Flexibility shows the maximum amount of joint movement in accordance with the possible movement (range of movement). People who have good flexibility are people who have a wide range of motion in their joints and have elastic muscles. Examples in volleyball play the role of (1) reducing the likelihood of injury, (2) helping to develop speed, coordination and agility, (3) helping develop technical

skills, (4) helping movement efficiency, children with high flexibility use less energy with children low flexibility, (5) helps improve posture.

Flexibility is very important for everyone, especially for athletes in sports, especially sports that require a lot of joint motion, such as gymnastics, diving, athletics, ball games, fencing, wrestling and many other sports. Likewise, flexibility is important for people of all ages, especially older people, because as a person gets older, their joints, ligaments and tendons will also stiffen, reducing their flexibility. This allows balance to be less controlled and fall more easily. Therefore, it is increasingly important to train flexibility for the elderly.

With better flexibility, a basketball player will be able to move more agile, a hurdle runner will be able to take a better stance over the goal so that his sailing becomes more economical, a swimmer will be able to perform leg and arm movements more efficiently. Likewise, athletes in hockey, volleyball, wrestling, soccer, badminton, and athletes from other sports, their achievements will depend a lot on the flexibility of the space for movement of their joints. App for a gymnast, jumper and ballet dancer.

The waist is the part of the human body that is located between the stomach and the hips. It is the narrowest part of the torso in proportionate people. Waist line refers to the horizontal line where the waist line is the narrowest, or to the general appearance of the waist.

Conclusion

Based on the theoretical basis and research results, the conclusions of this study are: There is a positive relationship between the explosive power of the leg muscles on the roundhouse kick skill. According to the Product Moment correlation analysis, the t_{count} is $1.778 > t_{table}$ 1.740 and a significant value of $0.00 < 0.05$, it can be concluded that H_0 is rejected and H_1 is accepted, which means that "Limb Muscle Explosive Power (X1) has a significant positive relationship to Skills. Roundhouse kick (Y).

There is a positive relationship between waist flexibility and roundhouse kicking skills. According to the Product Moment correlation analysis, the t_{count} value is $2.501 > t_{table}$ 1.740 and a significant value is $0.00 < 0.05$, it can be concluded that H_0 is rejected and H_1 is accepted, which means "Waist Flexibility (X1) has a significant positive relationship to Roundhouse Kick Skills. (Y). Thus it can be said that the better the flexibility of the waist, the better the roundhouse kick skill.

There is a positive relationship between leg muscle explosive power and waist flexibility on roundhouse kick skill. According to the regression correlation analysis, it was obtained that the value of F_{count} was $1.973 > F_{table}$ 3.59 and a significant value of $0.00 < 0.05$, it could be concluded that H_0 was rejected and H_1 was accepted, which means "Limb Muscle Explosive Power (X1) and Waist Flexibility (X2) there is a significant positive relationship to Roundhouse Kick Skills (Y).

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