

The Effect of Strength Muscle Toward Straight Kick On Pencak Silat

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Abstract : Pencak silat is one of the most popular sports in Indonesia. One technique used in this sport is a straight kick. This study examines the relationship between leg muscle strength and the ability to kick straight on pencak silat. The sample in this study is a total population sample of 20 people from one of the martial arts clubs in Yogyakarta. The instrument in this study used a leg muscle strength test by means of a vertical jump test and a straight kick ability test for pencak silat. Assessment of leg muscle strength tests is done by taking the best score from two vertical jump tests and is measured using a monogram. While the ability to test straight kick frequency is taken by the number of kicks for 30 seconds. The results of data analysis showed that leg muscle strength has a relationship with the ability to kick straight. Correlation value of 0.65 indicates a strong influence. Thus it can be concluded that the leg muscle strength greatly affects the ability of pencak silat athletes in making straight kicks.

Keywords : *muscle strength, straight kick, pencak silat*

Introduction

Pencak silat is a sport that is a result of Indonesia's original culture which is quite popular and popular with the public. This is evident from the many branches of martial arts martial arts schools such as the White Lotus College, Self Shield, Pencak Organization, and other universities that grow and develop. Pencak silat is basically a defense of Indonesian people to avoid disasters. Pencak has a meaning as a basic movement of martial arts that is related to rules and is used in learning. Whereas silat has the understanding as a perfect martial movement, sourced from pure holy spirituality, for personal safety or common well-being, avoiding yourself from reinforcements or disasters such as robbers, diseases or everything that is evil (Warianti, 1994; Jansen, 1984; Burke, Al-Adawi, Lee, and Audette, 2007). In every martial arts school has levels that are not the same for all elements. A martial arts school focuses on education and teaching of martial arts primarily, on self defense. While aspects of the arts and aspects of mysticism are not given. Whereas other martial arts schools focus on education and direction on aspects of art and mysticism while sports aspects are lacking (Konzak and Boudreau, 1984).

Pencak silat martial arts is one of the subjects in schools, starting from elementary school, junior high school, senior high school, to universities in the Health and Recreation Physical Education Study Program. One of the basic techniques in martial arts is the mastery of kick techniques and locking techniques (Woodward, 2009). In pencak silat matches, the straight kick technique is a technique that can give a number if the kick hits the allowed target and is carried out with the correct technique in accordance with the rules of the match (Bell, 2008). A straight kick is very effective when attacking an opponent by relying on maximum strength, speed and opportunity. Therefore, good physical abilities are needed, especially the strength of the muscles in the legs, which can support the ability to kick. The skill of a fighter in performing attack techniques using a straight kick is very beneficial to the athlete's foot when competing. The advantages of straight kicks are 1) movement is very fast and easy; 2) kicking power; and 3) the forward swing of the foot is very relaxed (Burke, Al-Adawi, Lee, and Audette, 2007).

Coaching and improving physical condition is a very important factor and starting to be prepared by an athlete to achieve maximum performance (Halliday, Resnick, and Walker, 2011). Physical conditions needed to do a straight kick are strength and speed. Physical condition is an integrated whole of components that cannot be separated just like the improvement or maintenance (Fox, Bowers, and Fons, 1993). Strength is a component of physical condition that is needed in almost all branches of sport to achieve maximum performance. In some sports movements, strength is one of the most important biomotoric abilities (Maupas, Paysant, Datie, Martinet, and Andre, 2002). Many sports movements can be done better and are very skilled when athletes have good strength abilities. Fox, Bowers, and Fons (1993) state that muscle strength is one of the crucial factors in implementing most sports skills. The strength intended in this study is the ability of a group of leg muscles to perform the action of kicking a ball with strength and speed (explosive power).

Regarding the understanding of leg muscle explosive power many definitions put forward by experts, among others, stated by Sajoto (1988) explosive power is the ability of a person to exert maximum power with effort exerted in the shortest time possible. Bompa (1994) also states that explosive power is one's ability to use explosive power. Muscle repulsion power when viewed from the characteristics of the sports branch can be classified into two types, namely cyclic explosive power and acyclic explosive power (Barnett and Shale, 2013). Cyclic explosive power is needed in sports that require repetitive movements, such as running, swimming and racing bicycles. While the acyclic explosive power is a strong and fast motion in one movement such as martial arts (kicking and hitting), movements on shot put, and javelin throwing.

To increase strength, a person is not enough to exercise muscle strength alone, but must also train the speed of movement. This is because the two elements are inseparable. In the formula $\text{Strength} = F \times T$, where force is power, T is time (Soekarman, 1989). To get great strength when kicking, the player must start or swing his foot back before making a kick that is accompanied by a swing of the leg from back to front. From some of the opinions expressed above, it can be concluded that in principle strength is the utilization or mobilization of muscle power or a group of muscles in doing explosive work (Osternig, James, and Bercades, 1999).

Anatomically the legs include the legs, calves, and thighs on the condyle coxae, which are the most widely used body parts in locomotion, and support the body in several upright positions (Kobayashi et al., 2013). Because of this function, the limb is very important role in all the appearance of motion during the move. At the time of going to do a straight kick then the movement that occurs in the legs is flexion when bending the legs down and the extension when refusing the legs to jump to do a straight kick (Kwak and Cho, 2017). Thus the muscles used when doing a straight kick are composed of upper leg muscles and lower leg muscles. While the

muscles of the upper limbs function are together with the lower limbs helping the extension and flexion movements when going to kick straight. The muscles that are intended are Gluteus medius, gluteus maximus, coxigy, semi membranous, semi tendinosus, gracialis, vastus lateralis, and vastus medialis (Toskic, Lilic, and Toskic, 2014).

The ability to kick straight is one of the kick techniques that also determines success to achieve maximum performance in the martial arts sport. According to Sajoto (1988), stating that to achieve good performance in sports, it is necessary to have biomotor ability elements such as speed, endurance strength, strength, accuracy, flexibility, and balance. In learning or practicing kicks many exercises are needed, including straight kicks (kicks made in the initial position where one foot steps forward and the foot in the motion to kick is the front leg). Straight kicks are often used to get points when faced with. To make a good straight kick requires the existence of an element of physical conditions needed to make these movements in order to support the implementation of movement properly and correctly. When doing a straight kick before the foot is swung sideways then starting with the knees bent (Weston, 2019). This is very important in the speed of the kick especially if the opponent is in a short distance position. Then also in the kick, the body position straight ahead and foresight to maintain balance and attack from the opponent. Straight kick is an attack that uses one foot and leg, the trajectory is forward with the body facing forward with the imposition of the base of the toes inside, with the target between the solar plexus and the chin. To produce strength and a perfect straight kick the foot is swung forward to the maximum extent then flung at the target focus (Song and Kim, 1986). Other physiological factors that influence the ability of the kick besides anatomically are physical factors. According to Sajoto (1988), to achieve the prime condition an athlete needs discipline in sports activities. So it can be concluded that in the martial arts sport can not be separated from physical and mental abilities. Where the role of the two things above is the most basic basis for athletes owned by every athlete.

To achieve sporting achievements, is a business that is really needed in a mature manner with a coaching program through early nursery efforts and performance improvement through related science approaches (Mackenzie, 2005). To deal with this it is necessary to know the factors that can affect an athlete's sport. According to Pasau (1986), the determinants of prime achievement in sports can be classified in biological aspects, psychological aspects, environmental aspects and supporting aspects. In general, in improving basic technical abilities of each branch of sport is strongly supported by physical abilities. Skill in kicking ability, it requires some very basic physical components, such as strength. Fox (1981) states that the strength of the ability of muscles to hold a load in a particular strength is the result of the maximum loading that can produce someone, from this opinion the type of muscle strength required to get the maximum kick results. Strength (strength) is a component of a physical condition that concerns the ability of an athlete when using his muscles to receive work in a certain time. Therefore, since athletes are required to have other elements in each appearance. According to Sukarman (1989), strength is the ability to maximize to fight force. Likewise Surayen (1985) states that strength is a number of uses of the maximum strength of a muscle or group of muscles in a particular endeavor. Meanwhile, according to Asrif (1985), muscle strength is the maximum amount of power that is moved by a muscle or group of muscles in an effort to withstand a load or an obstacle. Speed, Balance, Accuracy, Flexibility (Flexibility), Agility, Coordination (coordination), in connection with that, to improve physical abilities in general, must be adapted to the physical abilities of each person and activity activities (Papakitsos, 2001). According to Fox (1981), stating that physical exercise must begin with stretching in a warm-up then continued with actual exercise regularly, systematically and continuously.

Research Method

This research method is a descriptive method with a correlational design. Thus, researchers can determine the relationship of leg muscle strength with the ability to kick straight in martial arts. The population in this study were all students in one martial arts club in the city of Yogyakarta, amounting to 20 people. The sample is determined using total sampling technique. Because of the relatively small population, the entire population is sampled. Thus the sample in this study is a total population sample of 20 people, consisting of 16 men and 4 women. The research instruments used in this study were a leg muscle strength test and a straight kick ability test. The tools used in the implementation of this test are tests to measure the leg muscle strength of the vertical jump test and are measured with a monogram (Kirkendal, 1980). The straight kick test is a straight kick for 30 seconds (Said, 1984). After the data collected from the two variables studied are then the authors test and analyze the data using the product moment statistical formula (Hadi, 1988; Borg and Gall, 1983).

Results and Discussion

The results of the descriptive statistical analysis in question are the mean, standard deviation, maximum value and minimum value of each study variable. The descriptive statistical results of the research variables can be seen in Table 1. The data in Table 1 can be seen that the average leg muscle strength (variable x) is at a lift of 59.4 kg. While the maximum strength is 84 kg and the minimum strength is 32 kg.

Table 1: Statistical Description of Leg Muscle Strength (x), and Straight Kick Ability (y)

Variable	Mean	SD	Max	Min
x	59.4	11.45	84	32
y	32.23	4.02	44	26.5

To see the relationship between leg muscle strength and straight kicking ability can be seen in Table 2. Based on the data in Table 2, it is known that the correlation coefficient between leg muscle strength and straight kick capability is 0.65. To find out the significance of the relationship of leg muscle strength with a straight kick, the price of the correlation coefficient obtained is compared with the value of the product moment correlation table at a significant level of 0.05 and the number of samples 20. Data in the table shows that the value of $r_{table} = 0.444$. Correlation coefficient value of variables x and y is 0.65 greater than the value of r_{table} , 0.444. These results if included in the correlation map the relationship between the two variables are in the high correlation category. The coefficient of determination between the two variables (r^2) also shows a figure of 0.42, in other words 42% of the frequency of straight kicks is determined by leg muscle strength. The magnitude of the contribution percentage illustrates the relationship between leg muscle strength and significant straight kick capability.

Table 2 Correlation Test Results for Leg Muscle Strength (x) with Straight Skill Ability (y)

Correlation	Correlation coefficient (r)	Coefficient of Determination (r^2)	Correlation Table Value (r table) (0.05:20)
x with y	0.65	0.42	0.444

The existence of a strong relationship is caused because when kicking, one leg will be lifted, meaning that only one leg is holding the weight of the body to be able to keep the body in a stable position. Although in doing a straight kick must be with explosive and strong movements. In addition to producing straight kick frequencies with strong kick quality, fast and strong leg movements are needed. In this case to produce a quality kick, it requires a combination of speed and leg muscle strength. Thus it is clear that leg muscle strength has an important role in making straight kicks in pencak silat. This is reinforced by the opinion of Wahjoedi (2001) which states that strength is the body's ability to allow a muscle or group of muscles to work explosively. Explosive means having explosive power. This includes making straight kicks in pencak silat.

Conclusion

The ability to kick straight in pencak silat is greatly influenced by the strength of leg muscles. This is based on the results of statistical analysis using the correlation test, where the correlation value obtained is 0.65. This correlation value is included in the category of strong relationships. In addition, the coefficient of determination (r^2) also shows the number 0.42, meaning that leg muscle strength contributes to a person's ability to make straight kicks as much as 42%. Therefore, it improves the quality of the straight kick, it is necessary to exercise leg muscle strength.

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