

The Effect of Pliometric Training on Front Kick Speed In Pencak Silat

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Abstract. From the results of the author's observations, in the pencak silat extracurricular during training, that in terms of the use of front kicks there are still children who do not have kicking speed when performing straight kicking techniques due to lack of attention to speed training exercises on the muscle part, this can be seen when kicking the athlete does not reach maximum speed. The purpose of this study was to determine whether there is an effect of pliometric training on increasing the speed of the front kick of pencak silat at SMAN 1 Maja. The method used is experimental method with One Group Pretest-posttest Design research design. The number of samples was 20 people, with total sampling technique. While the instrument uses a front kick martial arts test. From the results of hypothesis testing, the value of 0.015 is smaller than 0.5, it can be said that the hypothesis is accepted, this means that there is an effect of pliometric training on increasing the speed of front kicks.

Key words: pliometric; front kick; pencak silat

Abstract in Indonesia. Dari hasil observasi penulis, pada ekstrakurikuler pencak silat saat latihan, bahwa dalam hal penggunaan tendangan depan masih terdapat anak yang belum memiliki kecepatan tendangan saat melakukan teknik tendangan lurus dikarenakan kurangnya memperhatikan latihan latihan kecepatan pada otot bagian, hal ini dapat dilihat pada saat menendang atlet tersebut tidak mencapai kecepatan maksimal. Tujuan dari penelitian ini adalah untuk mengetahui apakah ada pengaruh latihan pliometrik terhadap peningkatan kecepatan tendangan depan pencak silat Di SMAN 1 Maja. Metode yang digunakan adalah metode eksperimen dengan desain penelitian One Group Pretest-posttest Design. Jumlah sampelnya 20 orang, dengan Teknik total sampling. Sedangkan instrumennya menggunakan tes tendangan depan pencak silat. Dari hasil pengujian hipotesis didapatkan nilai 0,015 lebih kecil dari 0,5, maka dapat dikatakan hipotesis diterima, ini berarti ada pengaruh Latihan pliometrik terhadap peningkatan kecepatan tendangan depan.

Kata Kunci: pliometrik; tendangan depan; pencak silat

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INTRODUCTION

Pencak silat is an original Indonesian martial art that has its own characteristics developed to realize the identity and culture of the Indonesian nation (Ediyono & Widodo, 2019). Pencak Silat is an art about human nature for self-defense, and silat as an element that connects movement and thought (Maulana Idris, Rudi, Indrayogi, 2023). Pencak Silat which is the original Indonesian martial art at the event as the host of the XVIII Asian Games in 2018, Pencak Silat donated 14 gold medals for Indonesia (Mufarriq, 2021).

Pencak Silat is growing and becoming a priority martial sport to be developed as a noble heritage of Indonesia's ancestors (Kusumo & Lemy, 2021). Pencak silat is also a symbol of unity in a reflection of Indonesian culture (Mustafillah Rusdiyanto et al., 2023). Besides containing elements of art, pencak silat also contains elements of sport, achievement and personality which are very useful in efforts to improve human resources who are devoted, resilient and responsible (Kusumo & Lemy, 2021).

The teaching of pencak silat in the community is considered to be not only about martial arts instruction, but pencak silat teachers and trainers diligently provide moral and ethical teachings to their students (Sin & Ihsan, 2020). The teachings conveyed aim to become an ideal individual, devoted, resilient, tough, honest, virtuous, and have good self-control in the community (Ediyono & Widodo, 2019). These traits are instilled diligently by their teachers because they are traits that must be possessed

by fighters/swordsmen who have been taught for generations through the traditional pencak silat training process (Syaifullah & Doewes, 2020).

One form of moves in pencak silat is kicking. The kick referred to by the researcher is the front kick technique. A front kick or straight kick is an attack that uses one foot and leg, the trajectory is forward with the body position facing forward, with the base of the inner toes, targeting the solar plexus (Nabila dkk., 2021). When performing a front kick or straight kick in a pencak silat match, skill is needed so that the kick is not easily caught or parried by the opponent (Kamarudin & Zulraflī, 2020). In a martial arts match kicks are indispensable in collecting points (Triana et al., 2020). It can be concluded that kick speed is a movement or ability to kick quickly, strongly and accurately and right on target. So to achieve the results of front kick speed or straight kicks well, a form of front kick training from a squatting position and front kick training using weights on the feet can be used (Subekti dkk., 2020).

Mastery of technique is the most basic completeness, without excluding other elements such as physical condition, tactics, and mentality (Hambali dkk., 2020). To achieve good performance in pencak silat, the existing techniques must be mastered properly (Sin & Ihsan, 2020). The basic techniques that must be mastered are kicking, punching, dodging and blocking techniques (Syaifullah & Doewes, 2020). To achieve optimal performance, these basic techniques must be done with strong, fast, precise movements and coordination (Ulfah & Walton, 2019). The physical aspects and overall fitness that give a person the ability to lead a productive life and adapt to all forms of challenges to physical condition (Flora Babang dkk., 2020).

The target for straight forward kicks is aimed at the front body target area of the chest - abdomen for kicks while the points for kicks are 2 points (Flora babang et al., 2020). To achieve good results in performing straight forward kicks, kicking agility and the ability to reach kicks and togok flexibility in forming the maximum body position so that it can easily reach the target opponent's body (Kamarudin & Zulraflī, 2020).

By training regularly, one not only gains an ideal body, but also improved abilities. Jumping higher or farther, running faster, or lifting heavier objects are some of the results that can be obtained from training (Sundara, 2020). Unlike regular strength training which involves long, slow movements designed to increase strength and muscle mass, plyometric training consists of fast, explosive movements designed to increase speed and power. This can be achieved by performing several exercises that focus on our body and brain to activate more muscle fibers, to increase the efficiency and speed of our muscle contractions (Hibbett, 2021). By doing so, it can help increase our strength. The first benefit of plyometric training is that it can improve your strength and speed. The movements of plyometrics can help strengthen the muscles in the arms and leg muscles. This happens because of the higher rate of force development when performing plyometric movements (Sole, 2018).

The activity spurs a physical response from the neurological system that changes the elasticity ability of the muscles. Your muscles can stretch and contract quickly, and when they gain enough strength to perform the stretching function, they will contract with more force (Sole, 2018). A higher level of force development will show an increase in muscle strength. To get these results, the most important factor an athlete needs is strength. And one of the most effective ways to train strength is by performing plyometric exercises (Wahyu Hananingsih, 2017).

From the results of the author's observations, in the pencak silat extracurricular during training, that in terms of using front kicks there are still children who do not have kicking speed when performing straight kicking techniques due to lack of attention to speed training exercises on the muscle part, this can be seen when kicking the athlete does not reach maximum speed.

METHODS

In this study the authors used an experimental method. The design that was carried out was a one group pretest-posttest design (Suherman, 2013). The research population was all members of the Pencak Silat extracurricular of SMA Negeri 1 Maja, totaling 20 people. Then using the total sampling technique all of the students who participated in the Pencak Silat extracurricular totaling 20 were sampled. The instrument used in this study was the pencak silat kick speed test (Wibowo, 2018). The data analysis technique used is hypothesis testing. In this study, after obtaining the data, it will proceed to data processing and be processed by the SPSS 25.0 for windows program.

RESULTS AND DISCUSSION

Descriptive Statistics

Table 1. Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Standard Deviation	Variance
Pretest	20	14.00	19.00	16.50	1.47	2.16
Posttest	20	15.00	24.00	19.90	2.34	5.46
Improvement	20	1.00	7.00	3.40	1.98	3.94

Source: Research data.

Table 1 presents the descriptive statistics of front kick performance before and after the plyometric training intervention. The results indicate that the mean pretest score was 16.50 (SD = 1.47), while the mean posttest score increased to 19.90 (SD = 2.34). The average improvement was 3.40 points (SD = 1.98). These findings demonstrate an increase in front kick performance following the implementation of plyometric training among the 20 pencak silat extracurricular participants. However, descriptive statistics alone cannot establish whether the observed improvement was statistically significant.

Normality Test

Table 2. Normality Test Results

Variable	Shapiro–Wilk Statistic	df	p-value	Interpretation
Pretest	0.948	20	0.345	Normal
Posttest	0.971	20	0.783	Normal
Improvement	0.877	20	0.015	Not normal

Source: Research data.

The normality of the data was evaluated using the Shapiro–Wilk test because the study involved 20 participants. The results showed that the pretest ($p = 0.345$) and posttest ($p = 0.783$) scores were normally distributed, as both significance values exceeded 0.05. However, the improvement scores did not meet the assumption of normality ($p = 0.015 < 0.05$). This indicates that the distribution of differences between pretest and posttest scores deviated significantly from normality. Therefore, the Wilcoxon signed-rank test is recommended to evaluate the significance of the differences between pretest and posttest scores.

Hypothesis Testing

The original analysis reported a statistically significant relationship between pretest and posttest scores ($r = 0.537$, $p = 0.007$, one-tailed). The regression analysis also indicated a statistically significant association between the two measurements ($F(1, 18) = 7.275$, $p = 0.015$), with an R^2 value of 0.288. However, these results reflect the relationship between pretest and posttest scores rather than directly testing whether the scores differed significantly following the intervention. Because the research employed a one-group pretest–posttest design and the improvement scores did not meet the normality assumption, a Wilcoxon signed-rank test would be more appropriate for evaluating the change in front kick performance. The descriptive findings suggest that front kick performance improved following plyometric training. Nevertheless, a definitive conclusion regarding the statistical significance of this improvement requires the results of the Wilcoxon signed-rank test.

Exercises used to increase the speed of front kicks with plyometric exercises with the type of squat split jump and stride jump crossover exercises. In accordance with the opinion Yanci et al., (2017) that training is a systematic process of practicing or working, which is carried out repeatedly, by increasingly increasing the amount of training load or work. And in accordance with the opinion of Sumarsardjuno in Fitriana (2008) When sports training has been going on long enough, at least 4-8 weeks, you practice regularly with a sufficient dose of exercise, then there is a training effect (training effect).

Pliometrics are exercises that involve fast, explosive movements designed to increase speed and power (Ridwan, 2020). In the context of martial arts, plyometric training can help improve kicking

results. These exercises can strengthen muscles and increase leg muscle explosiveness, which can contribute to kick speed and power (Adhi et al., 2017). In addition, plyometric training can also increase overall body strength and improve athletes' ability to perform fast and explosive movements (Abduh & Lahai, 2020). However, it is important to remember that the results of plyometric training can vary between individuals, and other factors such as technique, other training, and genetics can also affect kick results in martial arts (Amrullah et al., 2020).

Squat split jump and stride jump crossover training can help improve kicking ability in pencak silat (Mustafillah Rusdiyanto et al., 2023). Squat split jump is an exercise that involves jumping with the legs separated to the side while doing squats (Sudirman, 2015). This exercise can help improve leg muscle strength and explosive power, which are important in producing powerful and fast kicks. Stride jump crossover is an exercise that involves jumping by taking long strides and crossing the legs over each other while jumping (Susanti et al., 2021). This exercise can help improve leg muscle strength, flexibility, and coordination, which can contribute to better kicking ability (Puspita, 2020).

Both exercises can help improve strength, explosiveness, and coordination of the limb muscles, which are important in martial arts. (Irfan Oktavianus, Syahril Bahtiar, 2019). However, it is important to remember that training results can vary between individuals, and other factors such as technique, other training, and genetics can also affect kicking results in pencak silat (Tri Iwandana et al., 2021). There are several exercises that can help improve kicking ability in pencak silat. Plyometric exercises involve fast, explosive movements that aim to increase speed and power. These exercises can strengthen muscles and increase leg muscle explosiveness, which can contribute to kick speed and power (Wahyu Hananingsih, 2017). Training flexibility is also important in improving kicking ability. This exercise aims to prevent poor posture, practicing good body position when sitting, standing, and walking (Apriyana, Herul; Rudi; Indrayogi, 2017). This exercise can help increase the range of motion and strength of the muscles involved in the kick (Hartati et al., 2019).

Good balance is very important in martial arts, especially when performing kicks (Maulana Idris, Rudi, Indrayogi, 2023). Balance exercises such as standing on one foot or using an assistive device such as a balance ball can help improve stability and control during kicks (Winarno, 2006). In addition to physical training, it is also important to practice basic kicking techniques in pencak silat. Basic techniques such as straight kicks, circular kicks, and sickle kicks need to be mastered well. These basic techniques can be practiced with the help of an instructor or in pairs (Sudirman, 2015).

Experts generally recognize the benefits of plyometric training in improving body strength, explosiveness, and agility (Faigenbaum et al., 2015). This exercise can help improve leg muscle strength, flexibility, and coordination, which are important in pencak silat (Faigenbaum & Westcott, 2000). Some of the benefits of plyometric exercises mentioned by experts include increasing muscle strength involving fast and explosive movements that can strengthen the muscles of the body, especially the leg muscles (Strength, 2021). This can help improve kicking power in martial arts. Plyometric training involves jumping and leaping movements that require muscle explosive power (Faigenbaum & Westcott, 2000). These exercises can help improve the body's ability to generate power quickly and powerfully, which is important in effective kicking. Plyometric exercises involve movements that involve body coordination and agility (Hibbett, 2021). This exercise can help improve the body's ability to move quickly and agilely, which is important in pencak silat (Amrullah et al., 2020).

Although plyometric exercises have benefits that are recognized by experts, it is important to remember that exercise results can vary between individuals (Maulana Idris, Rudi, Indrayogi, 2023). In addition, other factors such as technique, other training, and genetics can also affect kick results in pencak silat (Sudirman, 2015). Therefore, consult with your martial arts instructor or coach for proper guidance in performing plyometric exercises.

CONCLUSION

Based on the results of data analysis and discussion, researchers can conclude that: There is an influence between plyometric training and front kick speed in pencak silat. plyometric training can be an effective addition in improving kicking ability in pencak silat. It can help improve leg muscle strength, explosiveness and agility, which are important for producing powerful and fast kicks. However, it is important to remember that training results can vary between individuals, and other factors such as technique, other training, and genetics can also affect kicking results in pencak silat. Therefore, it is

important to consult a pencak silat instructor or coach for proper guidance in performing pliometric exercises and optimizing kicking ability.

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