

The Effect of Circuit Training on the Speed of Crescent Kicks among Tapak Suci Pencak Silat Athletes in Baureno District

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ABSTRACT

The crescent kick speed of Tapak Suci Martial art athletes in Baureno District is currently suboptimal; consequently, the kicks are often easily anticipated and caught by opponents during matches. This study aims to determine the effect of circuit training on improving the crescent kick speed of Tapak Suci Martial art athletes in Baureno District. The study employs a quantitative approach using an experimental method with a One-Group Pretest-Posttest Design. The population consists of active Tapak Suci Martial art athletes in Baureno District. The sample comprises 10 male athletes aged 14–17 years. The instrument used involves testing and measuring crescent kick speed over a 10-second duration. The treatment consists of a circuit training program conducted over four weeks (16 sessions), featuring a variety of exercises: sit-ups, back-ups, split jumps, ladder drills, jump rope, and shuttle runs. Data analysis utilizes parametric statistics specifically the Paired Sample t-Test processed via SPSS version 26, following a prerequisite normality test (Shapiro-Wilk method). The results indicate an increase in the mean kick speed from the pre-test to the post-test. The mean speed for right-leg kicks increased from 15.80 to 18.30, while the mean speed for left-leg kicks increased from 15.00 to 17.50. The Paired Sample t-Test results show a significance value (2-tailed) of 0.000 ($p < 0.05$) for both right and left kicks. Based on these results, it can be concluded that circuit training has a significant effect on improving the crescent kick speed of Tapak Suci martial art athletes in Baureno District. This training method is effective and is recommended for implementation by coaches to develop the athletes' physical conditioning components and kicking speed.

Keywords: circuit training, crescent kick, martial arts, tapak suci

Authors' Contribution: a – Study Design; b – Data Collection; c – Statistical Analysis; d – Manuscript Preparation; e – Funds Collection

INTRODUCTION

Sports are physical activities undertaken to maintain and improve health and physical fitness. Through sports, individuals can keep their bodies healthy and fit, enabling them to perform daily activities optimally. As times change, the objectives of engaging in sports have become increasingly diverse, ranging from maintaining fitness and achieving competitive success to serving as a means of recreation and competition. One sport that has developed extensively in Indonesia is martial arts.

Martial arts is a martial arts system used for self-defense against various threats to safety (Kholis, 2017). Fundamentally, martial arts represents a blend of spiritual, mental, and physical aspects of human beings as God's creations, reflected in values encompassing spirituality, art, martial arts, and sport (Mihmidati & Wahyudi, n.d.).

Training is a structured process aimed at improving physical condition (Hadjarati et al., 2022). Therefore, enhancing the capabilities of martial art athletes requires a training process

that is systematic, planned, and continuous. Training consists of a series of activities designed to improve an athlete's physical, technical, tactical, and mental abilities, thereby enabling them to achieve optimal performance (Riyanto & Oktariyanda, 2023). Speed is a key component of physical fitness in martial art. Athletes with good movement speed can more easily execute attacking techniques and anticipate an opponent's attacks (Misno, 2021).

Martial art competitions comprise several categories conducted according to official regulations established by the Indonesian Martial art Association (IPSI). In these categories, two practitioner (martial artists) face each other to execute attacks and defensive maneuvers using techniques permitted in competition (IPSI, 2012). The Crescent Kicks (sickle kick) is a kicking technique performed along a curved trajectory resembling a sickle. To execute an effective sickle kick, an athlete requires good physical conditioning, particularly regarding speed, muscle strength, balance, coordination, and agility (Dwindi Rusdiani et al., 2024).

Observations of Tapak Suci martial art athletes in Baureno District revealed that the speed of their sickle kicks was not yet optimal. Circuit training is one method that can be used to enhance athletes' physical capabilities. It involves performing exercises at several stations in sequence, aiming to develop various physical fitness components simultaneously.

Based on this background, the Tapak Suci martial art athletes in Baureno District show good potential for development. However, their sickle kick speed requires improvement to support competitive success. Therefore, the researcher is interested in conducting a study titled "The Effect of Circuit Training on the Sickle Kick Speed of Tapak Suci Martial art Athletes in Baureno District."

METHODS

This study employs a quantitative approach using an experimental method. This method is used to compare conditions before and after the intervention specifically, the administration of circuit training to determine the difference. The study population consists of Tapak Suci students/cadres in Baureno District. The sample comprises 10 athletes aged 14–17 years. A total sampling technique was used to ensure maximum accuracy in the research results. The research instrument involved performing crescent kicks. Participants executed 10 kicks in each of three attempts, with the best result recorded.

Data analysis utilized descriptive statistics to determine the mean and standard deviation. A normality test was conducted to assess whether the data followed a normal distribution. Subsequently, hypothesis testing was performed to determine the effect of circuit training on the crescent kick speed of Tapak Suci martial art athletes in Baureno District. Data processing was carried out using SPSS 26 software with a significance level of 0.05.

RESULTS

Descriptive statistical results indicate the mean, standard deviation, and variance for Tapak Suci athletes in Baureno District. The results were higher following the intervention. A summary of the descriptive results is presented in Table 1.

Table 1. Descriptive Statistical Result

Information		Mean	Standard Deviation
Right	Pre-test	15,80	1,229

	Post-test	18,30	0,949
Left	Pre-test	15,00	1,700
	Post-test	17,50	1,080

Based on the descriptive statistics in the table above regarding right- and left-leg kicks, the analysis of right-leg kicks shows a pre-test mean of 15.80 and a post-test mean of 18.30. For left-leg kicks, the analysis shows a pre-test mean of 15.00 and a post-test mean of 17.50.

Table 2. Nomality Test

Shapiro Wilk				
Variabel	N	Sig	Note	Status
Pretest- Right	10	0,124	P>0,05	Normal
Posttest - Right	10	0,287	P>0,05	Normal
Pretest - Left	10	0,258	P>0,05	Normal
Posttest- Left	10	0,383	P>0,05	Normal

Normality tests indicate that all data yielded p-values greater than 0.05. The results were 0.389 for the right-kick pre-test and 0.287 for the right-kick post-test, while the left-kick pre-test and post-test results were 0.87 and 0.124, respectively; thus, it can be concluded that all research data are normally distributed.

Table 3. Paired-Samples t-Test Results

Paired T-test			
Variable	Sig (2-Tailed)	Note	Status
Right Kicks	0,000	P<0,05	Has a significant impact
Left Kicks	0,000	P<0,05	Has a significant impact

Hypothesis testing was conducted using a paired-sample t-test, yielding results of 0.000 < 0.05 for right kicks and 0.000 < 0.05 for left kicks. These results indicate a significant difference between the pre-test and post-test outcomes. Thus, circuit training has a significant effect on increasing the crescent kick speed of Tapak Suci martial art athletes in Baureno District.

DISCUSSION

According to Harsono (2006), circuit training is a training method designed to develop various elements of physical fitness such as strength, endurance, speed, stamina, and other physical capabilities in an integrated manner. The training is conducted across several stations performed sequentially, involving different types of activities.

In this study, the circuit training program was implemented over a period of one month, comprising a total of 16 sessions. The exercises included sit-ups, back extensions, split jumps, ladder drills, jump rope, and shuttle runs. Prior to the training program, all subjects underwent an initial test (pre-test) to measure their crescent kick speed. Measurement involved counting the number of crescent kicks landed on the target within a 10-second interval across three trials, with the best result being recorded. Upon completing the training program, the subjects underwent a final test (post-test) using the same procedure to assess changes in crescent kick performance following the intervention.

The research results indicate that the obtained data are normally distributed, thereby meeting the requirements for hypothesis testing. Normality test results show that all significance values exceed 0.05. Thus, the research data satisfy the assumptions of parametric statistics. Furthermore, the Paired Sample t-Test results reveal a significance value of 0.000 for both right and left kicks. Since this value is less than 0.05, it indicates a significant effect resulting from the circuit training intervention. These findings demonstrate that the implemented training program successfully improved the crescent kick speed of Tapak Suci martial art athletes in Baureno District.

These results align with studies by (Risa Agus Teguh Wibowo, Jasmani , Iwan Arya Kusuma, Pipit Fitria Yulianto & Suwanto, 2023), which state that circuit training has a significant impact on improving crescent kick speed among martial art athletes. Consequently, circuit training serves as an effective training method for enhancing the crescent kick speed of martial art athletes.

The findings are consistent with the theory that circuit training is a method capable of simultaneously improving various elements of physical fitness. When an athlete's physical condition improves, technical skills requiring movement speed such as the crescent kick also undergo positive development. Therefore, circuit training can be adopted as an alternative training program to enhance crescent kick speed in martial art athletes.

CONCLUSION

Based on the research findings, data analysis, and hypothesis testing conducted, it can be concluded that circuit training has a significant effect on improving the speed of the Crescent Kicks among Tapak Suci martial art athletes in Baureno District. The improvement in Crescent Kicks kick speed following the intervention demonstrates that circuit training is an effective method for developing the physical fitness components that support Crescent Kicks kick performance specifically leg movement speed, coordination, agility, and muscular explosive power. Therefore, circuit training can serve as an alternative training method in the development of martial art athletes to enhance kicking technique capabilities.

AUTHOR CONTRIBUTIONS

All authors contributed to the topic selection and drafting of the article.

DECLARATION

This manuscript was prepared by the authors without the involvement of artificial intelligence in the research design, data collection, analysis, or interpretation process. The authors are fully responsible for the accuracy, originality, integrity, and overall content of the manuscript. All authors have reviewed and approved the final version of the manuscript and agree to be accountable for all aspects of the research.

TRANSPARENCY STATEMENT

Research data is available to the relevant author upon reasonable request.

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CONFLICT OF INTEREST

Related to this article publication, there were no interest conflicts.

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ETHICAL CONSIDERATIONS

This research was conducted in accordance with the applicable principles of research ethics to uphold academic integrity and responsibility. The entire research process, from data collection and processing through to data analysis, was carried out systematically whilst maintaining confidentiality, objectivity and respect for those involved in the research. The researcher is responsible for ensuring that all research procedures are carried out transparently and in accordance with applicable standards of scientific ethics.

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