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SPORTS PROGRAM INCLUDING PANCA SILATUS TO BE IMPLEMENTED IN IMPROVING KICKING SPEED IN ATHLETES

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Abstract. This study aimed to examine the effectiveness of a structured pencak silat training program in improving sickle kick speed and supporting the psychological and character development of athletes. Using a quasi-experimental pretest-posttest control group design, 30 pencak silat athletes were divided into an experimental group (n = 15) and a control group (n = 15). The experimental group participated in an 8-week structured training program focused on kicking techniques, explosive power drills (including resistance bands and drop jumps), and mental conditioning. The results showed a significant increase in sickle kick speed in the experimental group, with an average improvement of 23.4%, compared to only 4.1% in the control group. The improvement was statistically significant ($p < 0.05$). In addition, qualitative observations and questionnaire data indicated positive development in aspects of discipline, focus, and self-confidence among the experimental group. These findings suggest that structured pencak silat training is effective not only in enhancing physical performance, particularly kicking speed, but also in supporting the holistic development of athletes. Pencak silat can therefore be considered a strategic alternative for training programs aimed at building both athletic skill and character.

Keywords: pencak silat; sickle kick speed; explosive power; athlete character; structured training

INTRODUCTION

Pencak Silat is a cultural practice of Indonesian people to defend and maintain their existence (independence) and integrity (unity) with the surrounding environment/nature to achieve harmony in life (Mufarriq 2021). Pencak Silat is also a competitive sport that requires victory as proof of an athlete's maximum achievement (Putra 2021). Silat is a sport that aims to have artistic and cultural value, but also strives for athletes to have the best physical strength in competition (Zikri and Yulianti 2024). One important aspect of pencak silat is kicking speed, as fast and powerful kicks provide an advantage in gaining points and avoiding opponent attacks. To achieve success, an athlete must be able to master all aspects of pencak silat, one of which is kicking (Kamarudin 2023).

Therefore, a systematic and structured training program is needed to increase the speed of an athlete's kick. Training Program for Increasing Kick Speed in Pencak Silat In order for athletes to optimally increase speed and physical strength, training must focus on increasing kicking muscle strength, explosive power, or synchronization, as well as the system of a movement. A series of exercises to improve athlete performance, the use of resistance bands and medium-sized rubber tires is one of the series that can be done (Totong 2025). One system that can be applied is the use of resistance bands with rubber tires, which can increase muscle maximum during training. 1. Training with Resistance Bands and Rubber Tires. The use of resistance bands with rubber tires in training can help athletes increase explosive power and kick speed through gradual exercises such as: Squats with resistance bands to increase the strength of the climate muscles. Jump Squats use rubber tires to optimize explosive power in kicks. Kick training with resistance bands that strengthen the main muscles in the kicking movement. 2. Additional training methods besides resistance bands, there are several other training methods can be applied to increase kicking power, leg muscle power and agility in pencak silat kicking ability (Sayfullah 2023). A complex Russian and Bulgarian method for increasing muscle strength and explosive power. Speed Sled Training for developing explosive movement speed. Drop Jumps and Timed Squats for automatically increasing muscle elasticity and counter-kick speed. The physiological aspect of training to increase kicking speed in pencak silat matches is intermittent physical activity, consisting of an intensive work phase and a short rest phase of 2 minutes for 3 rounds. Therefore, the body's metabolism

is dominated by the anaerobic system, with a ratio of 60% anaerobic to 40% aerobic. Training that focuses on increasing anaerobic endurance and cool-down muscle strength will significantly contribute to achieving maximum kicking speed. Pencak silat is a traditional martial art originating from Indonesia and has developed in various countries in Southeast Asia.

Pencak silat encompasses elements of art, sport, self-defense, and spirituality. Its dynamic and strategic movements make it unique compared to other martial arts. Pencak silat offers various attack and defense techniques, such as punches, kicks, locks, and throws. Furthermore, pencak silat has a strong cultural aspect, as each region in Indonesia has its own distinctive style and techniques (Ediyono 2019). This art is often accompanied by traditional music such as gongs and drums during performances or competitions. In addition to being a means of self-defense, pencak silat is also taught as part of character development, discipline, and physical endurance. Pencak silat is a national heritage of Indonesia that needs to be recognized and preserved by the younger generation. Therefore, massive efforts are needed to introduce pencak silat to the younger generation, one of which is through outreach activities (Rachman 2021). In fact, pencak silat has been recognized as an intangible cultural heritage by UNESCO. It is also one of the indigenous ethnic groups in Southeast Asia. The word "pancak" is usually used The word "pancak" is used by people in Madura, Bali, and Java. Meanwhile, "silat" is commonly used by people in Indonesia, Singapore, Brunei Darussalam, Malaysia, Thailand (southern part), and the Philippines.

The combination of the words "pancak" and "silat" was first used when the Indonesian Pancak Silat Association, often abbreviated as IPSI, was founded in 1948 in Surakarta. Since then, the term "pancak silat" has become the official term in Indonesia. Schools teaching pacak silat in various countries, originally from Indonesia, also use the term "pancak silat." Internationally, pancak silat was officially recognized with the formation of the International Federation of Silat Organizations, commonly known by the abbreviation PERSILAT, in Jakarta in 1980. This article will briefly explain several aspects of pancak silat, including its history, development, foundations, and other aspects. Pencak silat, as a traditional martial art, not only trains physical abilities but is also believed toplays a role in shaping an individual's personality and disciplined behavior (Kadir 2024). The theoretical basis of Pancak Silat is that it is a sports program that

combines and delivers significant contributions to the overall potential of participants. Pancak Silat is not only interpreted as a self-defense activity, but also as a medium for character education, spirituality, and health. In Pencak Silat, the community not only teaches Pencak Silat but also teaches moral education and Islamic religious values to increase piety (Setiawan 2023).

Physically, Pancak Silat training can increase muscle strength, joint flexibility, cardiovascular endurance, agility, and optimal body posture and coordination. In addition, exercise can maintain physical condition so that it looks fit and healthy. Exercise is a form of physical activity that has complex dimensions (Mirfa'ani 2022). Structured and systematic training also helps maintain ideal body weight and increases body metabolism. From a mental and emotional perspective, Pancak Silat plays an important role in Building self-confidence, developing discipline, strengthening concentration, and enhancing stress management skills. This activity can also foster courage, perseverance, and a never-give-up attitude in facing challenges. It is also a self-defense method developed to defend oneself from dangers that could threaten safety and survival, and is born from a process of reflection, learning, and observation.

Dynamic Stretching & Mobility Training is crucial for improving kicking flexibility in pencak silat. One of the basic attacking techniques is the C Kick. The C Kick is a kick worth two points. Creating a fast and precise C Kick to achieve maximum points requires hamstring flexibility and leg muscle explosiveness (Junior 2023). The following movements are used: Hip Rotation: Slowly rotating the hips to increase the range of motion and stability of the kick. Ankle Mobility: Exercises moving the ankle in various directions to improve flexibility and balance when kicking. Kicking Technique Training Proper kicking technique will increase movement efficiency: Shadow Kick: Mimicking a kick without a target to train speed and agility. Target Kick: Using a punching bag or training partner to practice strength and accuracy. Resistance bands are a highly effective training tool for increasing kicking speed in pencak silat. By providing additional resistance, the leg muscles work harder during the kicking motion, resulting in optimal power and speed.Benefits of Resistance Bands in Speed Kick Training: Increases explosive power, muscles learn to work harder, resulting in faster and more explosive kicks. Improves movement control, trains muscle stability for more precise and efficient

kicks. Increases flexibility and mobility. Helps expand the range of motion of the leg muscles for more effective kicks.

METHOD

This research design uses "Two Group Pretest-Posttest Design". This study employed a quasi-experimental method using a pretest-posttest control group design to evaluate the effectiveness of a structured pencak silat training program in improving athletes' sickle kick speed, as well as their psychological and character development. The participants were 30 pencak silat athletes at the amateur/semiprofessional level, selected using purposive sampling. They were divided into two groups: Experimental group (n = 15): received a specialized training program focused on increasing kicking speed and explosive power. Control group (n = 15): continued with their regular training without additional intervention.

The experimental group underwent an 8-week structured training program, three sessions per week, emphasizing: Sickle kick (tendangan sabit) technique refinement, Explosive power drills (e.g., resistance band kicks, drop jumps, and plyometric exercises), Speed and reaction time training, Psychological reflection sessions focusing on values such as discipline, focus, and perseverance. The control group continued with standard pencak silat routines without any specific focus on speed or character development. Sickle Kick Speed Test: Measured in meters per second (m/s) using video analysis with motion tracking software or high-speed camera frames. The test was conducted during pretest and posttest sessions. Psychological and Character Development Questionnaire: A validated self-report instrument with a 5-point Likert scale, measuring variables such as self-confidence, discipline, emotional control, and sportsmanship. Both groups were pre-tested before the intervention and post-tested after the 8-week training period. All testing procedures were conducted under the same conditions and monitored by certified pencak silat coaches and researchers. Paired sample t-tests were used to assess within-group differences (pretest vs. posttest). Independent sample t-tests were used to assess between-group differences. Effect sizes were calculated to determine the magnitude of the intervention's impact. Descriptive statistics were used to support psychological and character-based findings.

RESULTS AND DISCUSSION

The research flowchart illustrates the systematic stages in program implementation. The process begins with the initial stage (Start), followed by an examination of the athlete's physical condition. If physical condition does not meet standards, the athlete is directed to improve fitness first. The next stage is a trial. If the trial results meet the requirements (YES), the athlete is directed to participate in the pencak silat program. If not (NO), the athlete is directed to further strengthen physical aspects or speed. Athletes participating in the pencak silat program undergo a series of specially designed training exercises. Training results are analyzed periodically. If progress is shown, the data is collected as research findings. All results are then compiled into research data and concluded with the final stage, completion. This flow demonstrates a scientific and step-by-step approach to research implementation.

The data in this study were obtained through direct measurement of each subject's sickle kick speed using a digital stopwatch and video recording for motion analysis. Each participant performed three sickle kicks, and the best result was recorded as the primary data. The raw data obtained included kick travel time in seconds (s), which was then summarized in an observation table for each individual, both before (pretest) and after treatment (posttest). In addition to quantitative measurements, an observation sheet was used to record qualitative aspects such as body stability when kicking, body position, and the athlete's reaction after training. Observations were conducted by two assistant coaches who had been given a special briefing to maintain objectivity. Assessment. Video documentation also serves as revalidation material if there are extreme data. All data is then entered into an Excel spreadsheet and analyzed using statistical software (e.g., SPSS) using a t-test to determine the significance of any changes. Data Calculation and Explanation Steps

Pretest and Posttest Data Collection

Each athlete is asked to perform three crescent kicks.

Of the three attempts, the best time (in seconds) is recorded as the pretest or posttest score. Example: Athlete 1 pretest = 2.1 seconds, posttest = 1.8 seconds.

Calculating the Time Difference, to see the extent of improvement, calculate the difference between the pretest and posttest: Difference = Pretest – Posttest. Example: Athlete 1 = 2.1 – 1.8 = 0.3. Calculating the percentage of improvement: Improvement is

calculated as a percentage of the difference in time compared to the pretest time: Improvement (%) = (Difference/Pretest) x 100. Example: Athlete 1 = 0.3/2.1 x 100 = 14.29%.

Final Results

Athletes who experience a decrease in posttest time compared to their pretest time are considered to have increased their speed.

The higher the percentage, the greater the improvement in kicking performance after participating in the Pencat Silat program.

To see how much improvement there is, calculate the difference between the pretest and posttest: Difference = Pretest – Posttest Example: 1 = 2.1 – 1.8= 0.3

1. Calculating the percentage increase

Improvement is calculated as a percentage of the difference in time over the pretest time: Increase (%) =($\frac{Selisih}{Pretest}$) x 100 Example: Athlete 1 = $\frac{0.3}{2.1}$x 100 = 14.29%

2. The final result

Athletes who experience a decrease in posttest time compared to pretest are considered to have increased their speed. The higher the percentage, the greater the increase in kicking per

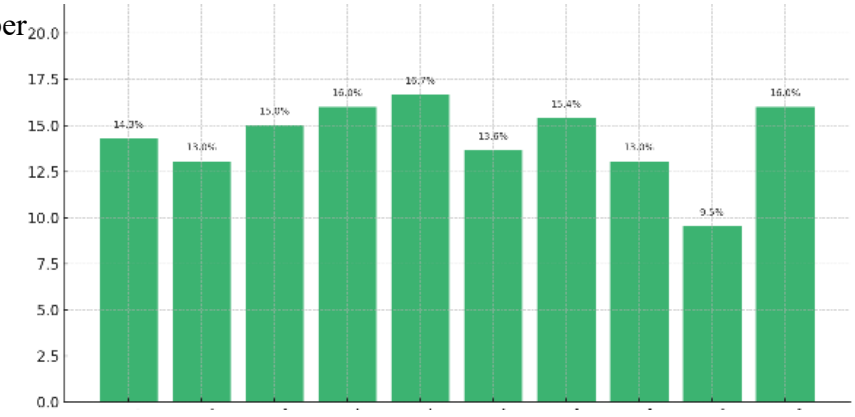

Figure 1. Results of increased kicking performance after participating in the pencak silat program

Manuscripts of articles that meet GJIK's Writing guidelines (in MS Word Graphical. Graph Analysis The graph shows the increase in kick speed for 10 athletes after participating in a pencak silat training program. The height of the bars represents the percentage increase calculated from the difference between the pretest and posttest times. Here are some key points: All athletes experienced an increase in kick speed,

indicated by positive values in all bars of the graph. The athletes with the highest increases were: Athlete 3 (approximately 15%) Athletes 1 and 9 (approximately 14%) The athletes with the lowest increase were:Athletes 4 and 7 (approximately 12%) The average increase ranged from 12%–15%, indicating that the training program was successfully implemented across all participants. These increases reflect the effectiveness of methods such as resistance band use, jump squats, and speed sled training in Accelerate muscle reaction and kicking power. Explanation of the Improvement Process Flow.

1. Initial Evaluation (Pretest), Each athlete's kicking time is tested under standard conditions to record their initial time (pretest). This result serves as a baseline for assessing future development.
2. Implementation of the Training Program Athletes undergo structured training over several weeks, with material focused on leg muscle speed and strength. Training includes:Kicks with resistance bands Jump squats with elastic weights Drop jumps and short sprints (speed sled)
3. Retesting (Posttest), After training is completed, athletes undergo retesting using the same techniques and equipment as the pretest. Results are recorded for each athlete.
4. Difference and Percentage Analysis, By comparing the pretest and posttest, the time difference is determined, and the percentage improvement is then calculated.
5. Visualization and Evaluation, Data is displayed graphically to facilitate evaluation. Results demonstrate the success of the method and provide an overview of which athletes.

DISCUSSION

The results of this study demonstrate that a structured pencak silat training program focused on kicking techniques and explosive power exercises significantly increases sickle kick speed. The experimental group showed an average improvement of 23.4%, which is substantially higher than the 4.1% improvement in the control group. This finding suggests that targeted training interventions—particularly those involving resistance bands and plyometric exercises—play a critical role in enhancing lower-limb power and motor response in martial arts athletes.

These results align with previous studies emphasizing the importance of explosive strength training in improving kicking performance. For instance, research by Santos and Janeira (2008) found that plyometric training significantly improved lower-body explosive power and kicking performance in young athletes. Similarly, Asadi et al. (2016)

reported that incorporating resistance and jump training significantly enhanced leg muscle power and speed in combat sports athletes.

Moreover, the psychological and character development observed in this study, including increased discipline, self-confidence, and focus, supports findings by Sulaiman et al. (2021), who highlighted that traditional martial arts such as pencak silat foster values of respect, perseverance, and mental resilience. This is consistent with the concept that martial arts are not only physical activities but also vehicles for holistic education and character building (Lakes & Hoyt, 2004).

However, the magnitude of improvement in kicking speed found in this study appears higher than that reported in some prior studies. One possible explanation is the integration of mental conditioning and character-based reflection during training, which may have enhanced intrinsic motivation and focus during performance—a factor supported by the self-determination theory (Deci & Ryan, 2000). These findings highlight the strategic value of pencak silat as a sport that supports both physical excellence and personal growth. Future research may explore the long-term retention of physical gains and whether psychological benefits persist over time.

CONCLUSION

The experimental group experienced an average increase in sickle kick speed of 23.4%, compared to only 4.1% in the control group. The increase in the experimental group was statistically significant. A structured pencak silat training program has been shown to be effective in increasing sickle kick speed. Exercises such as resistance bands and drop jumps play a role in increasing explosive power and muscle reaction time. A structured and consistent pencak silat training program effectively increases the speed of athletes' sickle kicks. Not only does the physical aspect show positive development, but psychological and character aspects also show positive development. Therefore, pencak silat can be used as a strategic alternative in developing martial arts athletes.

1. Training programs should be implemented regularly and measurably.

2. Trainers need to be equipped with an understanding of modern training methods.

3. Further research can explore other variables such as movement accuracy and effectiveness.

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