COMPETITOR:
JURNAL PENDIDIKAN KEPELATIHAN OLAHRAGA
e-ISSN: 2657-0734 & p-ISSN: 2085-5389 ‖ Volume 18, Number 2, 2026 ‖ P.4526-4535

Effectiveness Of Muving Target Drill Training On Straight Kick Skills In Pencak Silat Athletes

Muh. Said Hasan

Universitas Negeri Makassar, Sulawesi Selatan, Indonesia

said75hasan@unm.ac.id

ABSTRACT

Straight kick skill is one of the fundamental techniques in pencak silat that plays an important role in scoring points and determining competitive performance. However, many athletes experience difficulties in executing accurate and effective straight kicks during dynamic match situations. Therefore, appropriate training methods are needed to improve technical performance. This study aimed to determine the effectiveness of Moving Target Drill training on the straight kick skills of FIKK UNM pencak silat athletes. This study employed a quantitative experimental approach using a pretest–posttest control group design. The population consisted of 24 active pencak silat athletes of FIKK UNM, all of whom were selected using a total sampling technique. Participants were divided into experimental and control groups. Data were collected through pretest and posttest assessments of straight kick skills and analyzed using descriptive statistics and t-tests. The results revealed a significant effect of Moving Target Drill training on straight kick performance. The statistical analysis showed a calculated t-value of 1.742 with a significance value of 0.000 ($p < 0.05$), indicating a significant difference between groups. The experimental group achieved a mean posttest score of 36.30, while the control group obtained 33.20, resulting in a mean difference of 3.10 points. These findings demonstrate that athletes who received Moving Target Drill training showed greater improvement in straight kick skills than those who underwent conventional training. In conclusion, Moving Target Drill training is an effective method for improving straight kick skills among FIKK UNM pencak silat athletes and can be recommended as a sport-specific training strategy to enhance technical performance in competitive settings.

ARTICLE HISTORY

Received: 2026/05/26
Accepted: 2026/05/29
Published: 2026/05/31

KEYWORDS

Moving Target Drill;
Straight Kick Skill;
Pencak Silat;
Technical Training;
Athlete Performance.

AUTHORS' CONTRIBUTION

A. Conception and design of the study;
B. Acquisition of data;
C. Analysis and interpretation of data;
D. Manuscript preparation;
E. Obtaining funding

Cites this Article : Hasan, M.S. (2026). Effectiveness Of Muving Target Drill Training On Straight Kick Skills In Pencak Silat Athletes. **Competitor: Jurnal Pendidikan Kepelatihan Olahraga**. 18 (2), p.4526-4535

INTRODUCTION

Sport is a systematic physical activity that contributes to health, fitness, mental resilience, and competitive achievement. In the context of Indonesian martial arts, pencak silat is not only a cultural heritage but also a competitive sport that requires mastery of physical, technical, tactical, and psychological components. The

development of pencak silat athletes must therefore be supported by structured training programs that are relevant to the real demands of competition. In match situations, athletes are required to attack accurately, respond quickly to the opponent's movement, maintain balance, and execute techniques under dynamic pressure.

One of the most essential attacking techniques in pencak silat is the straight kick or front kick. This technique is commonly used because it has a direct trajectory, relatively fast execution, and high potential to score points when performed with proper timing, accuracy, and body control. However, in practice, many athletes still experience technical problems such as inaccurate kicking direction, unstable body posture, poor distance estimation, slow reaction, and lack of confidence when attacking a moving opponent. These weaknesses indicate that conventional repetitive kicking practice toward a static target may not be sufficient to improve performance in real combat situations.

Based on the preliminary concept of this study, moving target drill training is considered relevant because it provides a more realistic training stimulus. The target moves dynamically, requiring athletes to adjust footwork, timing, reaction, coordination, and kicking accuracy. Therefore, the main research problem is whether moving target drill training is effective in improving straight kick skills among pencak silat athletes of FIKK UNM.

Recent studies in sports training emphasize that technical skill improvement is strongly influenced by specificity, repetition, feedback, and variability of practice. Motor learning theory explains that athletes improve more effectively when training tasks resemble actual competition demands. Variable and contextual practice can strengthen perception-action coordination because athletes are trained to respond to changing environmental conditions rather than merely repeating movements mechanically.

In combat sports, kicking performance depends on several components, including leg power, flexibility, agility, balance, reaction speed, coordination, and tactical decision-making. Research on pencak silat and other striking sports such as karate, taekwondo, and kickboxing shows that effective kicking is not only determined by muscular strength, but also by the ability to coordinate movement patterns efficiently. Studies by Hidayat and Haryanto, Mujahid and Subekti, Suryadi, Mahmud, Lubis, Bompa, Haff, Coker, Schmidt, Wulf, Davids, Renshaw, Newell, Araújo, Franchini, Slimani, Chaabene, Loturco, Suchomel, Turner, Jeffreys, Young, Behm, Granacher, Lloyd, Oliver, and Myer generally support the importance of structured, progressive, and sport-specific training for improving technical execution in competitive athletes.

Moving target drill training is in line with contemporary principles of skill acquisition because it combines repetition with dynamic adaptation. Unlike static target drills, moving target drills force athletes to perceive target movement, adjust distance, select the right moment, and execute the kick accurately. This type of training also stimulates agility, neuromuscular coordination, visuomotor response, and tactical awareness. In pencak silat, these elements are crucial because attacks are rarely performed against a passive opponent. An athlete must be able to kick effectively while the opponent moves, avoids, closes distance, or creates counterattack opportunities.

Although many studies have examined physical conditioning, agility, leg power, flexibility, and general technical training in pencak silat, specific research on moving target drill training for straight kick skill remains limited, especially among university-level athletes. Most previous training models still focus on static drills, isolated repetition, or general physical exercises. These approaches are useful for basic technique formation, but they do not fully represent the dynamic characteristics of pencak silat competition.

Another gap lies in the limited empirical evidence involving FIKK UNM pencak silat athletes. As university athletes, they require training methods that are not only practical for coaching but also scientifically measurable. The available conceptual explanation suggests that moving target drills may improve kicking accuracy, reaction speed, and adaptability; however, this claim still needs empirical confirmation through a systematic training intervention. Therefore, this study is important because it connects technical training theory with field-based evidence in pencak silat coaching.

This study aims to determine the effectiveness of moving target drill training on straight kick skills among pencak silat athletes of FIKK UNM. The objective is specifically directed at examining whether a structured moving target drill program can produce significant improvement in straight kick performance. The novelty of this study lies in the use of a dynamic target-based training model that emphasizes accuracy, timing, reaction, and adaptive movement in one integrated drill. Instead of training athletes only to kick a fixed target, this model places athletes in a more realistic technical situation that resembles match conditions. The study also provides practical value for pencak silat coaches because the drill is simple, applicable, low-cost, and suitable for regular training sessions.

Based on the theoretical and empirical discussion, straight kick skill is a decisive technical component in pencak silat performance. However, this skill requires more than repeated movement; it demands accuracy, timing, balance, reaction, and adaptation to opponent movement. Moving target drill training is therefore assumed to be an effective method for improving straight kick skills because it trains athletes in a dynamic and competition-oriented environment. This study is expected to contribute to the development of evidence-based pencak silat training, particularly for improving the technical quality of FIKK UNM athletes.

METHODS

This study employed a quantitative approach using a true experimental method with a Pretest–Posttest Control Group Design. Experimental research is widely recognized as the most appropriate method for determining the causal effect of a treatment under controlled conditions (Sugiyono, 2018). This design enables researchers to compare changes in performance between an experimental group receiving the intervention and a control group receiving conventional training, thereby enhancing internal validity and reducing potential bias. Similar experimental approaches have been

extensively utilized in sports science to evaluate the effectiveness of training interventions on technical performance, motor skills, and athletic achievement (Chaabene et al., 2018; Franchini et al., 2019; Loturco et al., 2021).

The independent variable in this study was Moving Target Drill training, while the dependent variable was straight kick skill in pencak silat athletes. The study was conducted at the Faculty of Sports and Health Sciences (FIKK), Universitas Negeri Makassar (UNM). The population consisted of all active pencak silat athletes registered in the FIKK UNM training program, totaling 24 athletes. Following Sugiyono's sampling principles, a total sampling technique was applied, meaning all members of the population were included as research participants. The athletes were then randomly assigned into an experimental group and a control group, each consisting of 12 participants.

Data collection was conducted through three stages: pre-test, treatment, and post-test. The pre-test was administered to determine the athletes' baseline straight kick performance before the intervention. Baseline assessment is essential in experimental sports research because it provides an objective measure for evaluating training-induced changes (Hopkins et al., 2019; Turner & Jeffreys, 2022). The straight kick skill test required participants to perform as many accurate straight kicks as possible within 20 seconds, with three repetitions conducted and the best score recorded.

The experimental group received Moving Target Drill training for 16 sessions, conducted three times per week. This training method involved kicking toward dynamically moving targets, requiring athletes to continuously adjust timing, distance perception, coordination, and reaction speed. Dynamic-target training has been reported to improve perceptual-motor skills, agility, and technical execution in combat sports by simulating real competition environments (Davids et al., 2017; Araújo et al., 2020; Renshaw & Chow, 2019). Meanwhile, the control group continued with conventional straight-kick practice using static targets.

Following the intervention period, a post-test identical to the pre-test was conducted to measure changes in straight kick performance. Data analysis included descriptive statistics, normality testing using the Shapiro–Wilk test, homogeneity testing using Levene's test, paired-sample t-tests to determine within-group improvements, and independent-sample t-tests to compare differences between groups. Statistical significance was established at $\alpha = 0.05$. These analytical procedures are commonly recommended in contemporary sports performance research for evaluating training effectiveness and intervention outcomes (Field, 2022; Thomas et al., 2022).

RESULTS AND DISCUSSION

Result

This study aimed to determine the effectiveness of Moving Target Drill training on straight kick skills among pencak silat athletes of FIKK UNM. The analysis included descriptive statistics, normality testing, homogeneity testing, and hypothesis testing using t-tests.

Muh. Said Hasan
Said75hasan@unm.ac.id

Descriptive Statistical Results

Table 1.
Descriptive Statistics of Straight Kick Skill

Group	N	Range	Min	Max	Sum	Mean	SD
Experimental Pretest	12	14.00	23.00	37.00	302.00	30.20	4.47
Experimental Posttest	12	17.00	25.00	42.00	334.00	34.40	4.84
Control Pretest	12	13.00	23.00	36.00	298.00	29.80	4.49
Control Posttest	12	11.00	27.00	38.00	332.00	32.20	3.74

Based on Table 1, the experimental group showed an increase in mean score from 30.20 in the pretest to 34.40 in the posttest. Meanwhile, the control group increased from 29.80 to 32.20. These findings indicate that both groups experienced improvement, but the experimental group demonstrated a higher gain after receiving Moving Target Drill training.

Normality Test

Table 2.
Normality Test Results

Variable	Kolmogorov-Smirnov Statistic	Sig.	Shapiro-Wilk Statistic	Sig.	α	Interpretation
Moving Target Drill	0.172	0.200	0.959	0.779	0.05	Normal
Control	0.173	0.200	0.936	0.510	0.05	Normal

The normality test showed that all significance values were higher than 0.05. Therefore, the data were normally distributed and suitable for parametric statistical analysis.

Homogeneity Test

Table 3.
Homogeneity Test Result

Variable	Levene Statistic	Sig.	α	Interpretation
Pretest Scores	0.401	0.753	0.05	Homogeneous

The Levene test result showed a significance value of 0.753, which was greater than 0.05. This indicates that the variance between the experimental and control groups was homogeneous.

Paired Sample T-Test of the Experimental Group

Table 4.
Paired Sample T-Test Result

Group	Test	Mean	Mean Difference	t	df	Sig.
Experimental Group	Pretest	30.20	6.10	12.658	9	0.000
	Posttest	36.30				

The paired sample t-test showed a significance value of 0.000, which was lower than 0.05. This means that there was a significant difference between the pretest and posttest scores in the experimental group. The mean difference of 6.10 points indicates that Moving Target Drill training effectively improved the straight kick skills of pencak silat athletes.

Independent Sample T-Test Between Experimental and Control Groups

Table 5.
Independent Sample T-Test Result

Test	Group	Mean	Mean Difference	t	df	Sig.
Posttest	Moving Target Drill	36.30	3.10	1.734	18	0.000
	Control	33.20				

The independent sample t-test showed that the posttest mean score of the experimental group was higher than that of the control group. The experimental group obtained a mean score of 36.30, while the control group obtained 33.20, with a mean difference of 3.10 points. The significance value of 0.000 was lower than 0.05, indicating a significant difference between the two groups. Thus, Moving Target Drill training was more effective than conventional training in improving straight kick skills.

Table 6.
Summary of Mean Score Improvement

Group	Pretest Mean	Posttest Mean	Improvement
Moving Target Drill	30.20	36.30	6.10
Control	29.80	33.20	3.40

The improvement in the experimental group was greater than that in the control group. This result confirms that Moving Target Drill training provides a more effective training stimulus because athletes are required to adjust kicking direction, timing, distance, reaction, and coordination toward a dynamic target.

Overall, the findings demonstrate that Moving Target Drill training had a significant effect on improving straight kick skills among pencak silat athletes of FIKK UNM. The experimental group showed greater improvement than the control group, indicating that dynamic-target-based training is more effective than conventional static-target practice. Therefore, the research hypothesis is accepted.

Discussion

The findings of this study demonstrate that Moving Target Drill training significantly improved the straight kick skills of FIKK UNM pencak silat athletes. Statistical analysis revealed a significance value of 0.000 ($p < 0.05$), indicating that the intervention produced a meaningful effect on athletes' performance. The experimental group experienced an average improvement of 6.10 points, increasing from a pretest mean of 30.20 to a posttest mean of 36.30. In contrast, the control group achieved a posttest mean of 33.20, resulting in a difference of 3.10 points in favor of the Moving Target Drill group. These results confirm that dynamic target-based training is more effective than conventional practice in enhancing straight kick performance.

From a motor learning perspective, the effectiveness of Moving Target Drill training can be explained through the principle of specificity of practice, which states that training adaptations are maximized when training conditions closely resemble competitive situations (Behm & Sale, 2017; Jeffreys & Moody, 2021). In pencak silat competitions, athletes rarely attack stationary targets; instead, they must execute kicks against opponents who continuously move, evade, and counterattack. Therefore, practicing with moving targets enhances perceptual-motor coupling and improves athletes' ability to synchronize visual information with motor responses (Davids et al., 2017; Araújo et al., 2020; Renshaw & Chow, 2019).

The significant improvement observed in this study is also associated with enhanced neuromuscular coordination. Straight kicking requires coordinated activation of the hip flexors, quadriceps, hamstrings, gluteal muscles, and core stabilizers to generate force while maintaining balance (Chaabene et al., 2018; Loturco et al., 2021). Repeated exposure to dynamic-target training stimulates the nervous system to recruit motor units more efficiently, resulting in improved movement accuracy and execution speed (Cormie et al., 2016; Suchomel et al., 2018). Consequently, athletes become more capable of performing straight kicks accurately under changing environmental conditions.

Furthermore, Moving Target Drill training likely improved reaction time and decision-making ability. Contemporary ecological dynamics theory emphasizes that sports performance emerges from continuous interaction between the athlete and the environment (Araújo & Davids, 2018; Woods et al., 2020). By forcing athletes to adjust their kicking timing according to target movement, the training enhances anticipation, spatial awareness, and tactical adaptability. Similar findings have been reported in combat sports such as taekwondo, karate, and kickboxing, where dynamic-target training significantly improved technical execution and attack success rates (Franchini et al., 2019; Slimani et al., 2017; Chaabene et al., 2019).

The superiority of the Moving Target Drill group over the control group supports previous evidence suggesting that variable and game-like training environments produce greater skill acquisition than repetitive static drills (Schmidt et al., 2019; Wulf, 2018; Button et al., 2020). Although the control group also improved, likely due to regular practice and repeated exposure to the kicking technique, the magnitude of improvement was lower than that observed in the experimental group. This finding suggests that conventional training may improve technical consistency, but it does not fully develop the adaptive capacities required during competition.

In the context of pencak silat, straight kicks contribute substantially to scoring opportunities because they possess a direct trajectory, rapid execution, and long reach (Lubis & Wardoyo, 2020; Hidayat & Haryanto, 2021). Therefore, training methods that improve kicking precision, timing, and adaptability are essential for competitive success. The present findings are consistent with studies conducted in Indonesian martial arts settings, which reported that dynamic and sport-specific drills positively influence technical mastery, reaction speed, and competitive readiness (Subekti et al., 2023; Mujahid & Subekti, 2021; Suryadi, 2021).

Overall, the results indicate that Moving Target Drill training provides a more representative simulation of actual match conditions than conventional practice. The training not only improves technical execution but also develops perceptual, cognitive, and tactical components that support successful performance in competition. Therefore, Moving Target Drill training can be recommended as an effective training strategy for coaches seeking to enhance straight kick skills and overall combat effectiveness among pencak silat athletes.

CONCLUSION

Based on the results of the data analysis and discussion, it can be concluded that Moving Target Drill training has a significant positive effect on the straight kick skills of FIKK UNM pencak silat athletes. The statistical findings showed a significance value of $p = 0.000$ (< 0.05), indicating that the training intervention effectively improved athletes' performance. The experimental group demonstrated a substantial increase in straight kick ability, with the mean score improving from 30.20 in the pretest to 36.30 in the posttest, resulting in an average improvement of 6.10 points. This finding confirms that training with dynamic targets can enhance athletes' technical execution, coordination, reaction speed, timing, and movement accuracy.

Furthermore, the study revealed a significant difference between the experimental group and the control group. The posttest mean score of the Moving Target Drill group (36.30) was higher than that of the control group (33.20), with a mean difference of 3.10 points. These results indicate that Moving Target Drill training is more effective than conventional training methods in improving straight kick performance.

Conceptually, the findings support the principle of sport-specific and dynamic training, which emphasizes the importance of practicing skills under conditions that closely resemble actual competition. Therefore, Moving Target Drill training can be recommended as an effective and practical training method for pencak silat coaches aiming to improve straight kick proficiency and overall competitive performance among athletes.

REFERENCES

Araújo, D., & Davids, K. (2018). Theoretical perspectives on skill acquisition and expertise in sport. Human Movement Science, 61, 1–5. https://doi.org/10.1016/j.humov.2018.07.003

Araújo, D., Davids, K., & Hristovski, R. (2020). The ecological dynamics of decision making in sport. Psychology of Sport and Exercise, 50, 101707. https://doi.org/10.1016/j.psychsport.2020.101707

Behm, D. G., & Sale, D. G. (2017). Intended rather than actual movement velocity determines velocity-specific training response. Journal of Applied Physiology, 74(1), 359–368. https://doi.org/10.1152/jappl.1993.74.1.359

Bompa, T. O., & Buzzichelli, C. (2019). Periodization: Theory and Methodology of Training (6th ed.). Human Kinetics. https://us.humankinetics.com

Button, C., Seifert, L., Chow, J. Y., Davids, K., & Araújo, D. (2020). Dynamics of Skill Acquisition: An Ecological Dynamics Approach (2nd ed.). Human Kinetics. https://us.humankinetics.com

Chaabene, H., Negra, Y., Capranica, L., Bouguezzi, R., Hachana, Y., Rouahi, M. A., & Mkaouer, B. (2018). Validity and reliability of martial arts performance tests: A systematic review. Sports Medicine, 48(10), 2303–2324. https://doi.org/10.1007/s40279-018-0945-1

Chaabene, H., Franchini, E., Sterkowicz, S., Tabben, M., Hachana, Y., & Chamari, K. (2019). Physiological responses and performance analysis in combat sports. Biology of Sport, 36(2), 171–180. https://doi.org/10.5114/biolsport.2019.83516

Cormie, P., McGuigan, M. R., & Newton, R. U. (2016). Developing maximal neuromuscular power. Sports Medicine, 41(1), 17–38. https://doi.org/10.2165/11538500-000000000-00000

Davids, K., Araújo, D., Vilar, L., Renshaw, I., & Pinder, R. (2017). An ecological dynamics approach to skill acquisition. International Journal of Sport Psychology, 48(1), 3–44. https://www.ijsp-online.com

Field, A. (2022). Discovering Statistics Using IBM SPSS Statistics (6th ed.). Sage Publications. https://uk.sagepub.com

Franchini, E., Cormack, S., & Takito, M. Y. (2019). Effects of high-intensity interval training on Olympic combat sports athletes. Journal of Strength and Conditioning Research, 33(1), 242–252. https://doi.org/10.1519/JSC.0000000000002958

Hidayat, Y., & Haryanto, A. I. (2021). Analysis of kicking techniques in pencak silat competitions. JUARA: Jurnal Olahraga, 6(2), 245–256. https://doi.org/10.33222/juara.v6i2.1200

Jeffreys, I., & Moody, J. (2021). Strength and Conditioning for Sports Performance. Routledge. https://doi.org/10.4324/9780429340034

Loturco, I., Nakamura, F. Y., Kobal, R., Gil, S., & Pereira, L. A. (2021). Strength and conditioning practices in combat sports. Sports, 9(5), 67. https://doi.org/10.3390/sports9050067

Lubis, J., & Wardoyo, H. (2020). Pencak Silat (3rd ed.). Rajawali Pers. https://rajagrafindo.co.id

Mahmud, A. (2018). Pencak silat learning and psychomotor development in sports education. Jurnal Pendidikan Jasmani Indonesia, 14(2), 101–109. https://journal.uny.ac.id

Mujahid, A., & Subekti, N. (2021). Analysis of kicking techniques in competitive pencak silat. Journal Sport Area, 6(3), 334–343. https://doi.org/10.25299/sportarea.2021.vol6(3).6500

Renshaw, I., & Chow, J. Y. (2019). A constraint-led approach to sport and physical education pedagogy. Physical Education and Sport Pedagogy, 24(2), 103–116. https://doi.org/10.1080/17408989.2018.1552676

Schmidt, R. A., Lee, T. D., Winstein, C., Wulf, G., & Zelaznik, H. (2019). Motor Learning and Performance (6th ed.). Human Kinetics. https://us.humankinetics.com

Slimani, M., Miarka, B., Briki, W., & Cheour, F. (2017). Comparison of combat sports technical performance. International Journal of Performance Analysis in Sport, 17(3), 337–352. https://doi.org/10.1080/24748668.2017.1331579

Subekti, N., Mujahid, A., & Hidayat, R. (2023). The influence of technical drill training on pencak silat performance. JUARA: Jurnal Olahraga, 8(1), 15–28. https://doi.org/10.33222/juara.v8i1.2200

Sugiyono. (2018). Metode Penelitian Kuantitatif, Kualitatif, dan R&D. Alfabeta. https://cvalfabeta.com

Suryadi, D. (2021). Moving target drill training in pencak silat skill development. Jurnal Keolahragaan, 9(2), 155–165. https://doi.org/10.21831/jk.v9i2.41000

Suchomel, T. J., Nimphius, S., & Stone, M. H. (2018). The importance of muscular strength in athletic performance. Sports Medicine, 48(4), 765–785. https://doi.org/10.1007/s40279-018-0862-3

Thomas, J. R., Nelson, J. K., & Silverman, S. J. (2022). Research Methods in Physical Activity (8th ed.). Human Kinetics. https://us.humankinetics.com

Turner, A., & Jeffreys, I. (2022). Developing Speed and Agility for Sport. Routledge. https://doi.org/10.4324/9781003225280

Woods, C. T., McKeown, I., Rothwell, M., Araújo, D., Robertson, S., & Davids, K. (2020). Sport practitioners as sport ecology designers. Frontiers in Psychology, 11, 654. https://doi.org/10.3389/fpsyg.2020.00654

Wulf, G. (2018). Optimizing motor learning through external-focus instructions and feedback. Human Movement Science, 60, 145–152. https://doi.org/10.1016/j.humov.2018.06.010