

The Effect Of Visual Reaction Drill Training On T-Kick Speed Of PSHT Students In Ngrawan Rayon, Berbek Branch, Nganjuk Branch

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Abstract

This research is motivated by the low T-kick speed of PSHT Rayon Ngrawan Ranting Berbek Cabang Nganjuk students, so a training method is needed to improve reaction speed and motor skills in kicking. The purpose of this study was to identify the impact of Visual Reaction Drill training on increasing T-kick speed in PSHT Rayon Ngrawan Ranting Berbek Cabang Nganjuk students. The approach used in this study is quantitative using an experimental method in the Pre-Experimental One Group Pretest-Posttest Design. A total of 30 students became the research sample taken through a total sampling technique. The treatment in the form of Visual Reaction Drill training was carried out in 16 sessions, including pretest, training program, and posttest. The instrument used was a 15-second T-kick speed test. Data analysis was carried out using descriptive statistics, normality tests, homogeneity tests, and Paired Samples t-test hypothesis tests using the SPSS program. The results showed an increase in the average T-kick speed from the pretest score which was initially 18.60 to 23.00 in the posttest, representing an increase of approximately 23.66% with an effect size of $d_z = 5.71$ (calculated as $t/\sqrt{n}$), indicating a very large practical effect according to Cohen's (1988) benchmarks. The Paired Samples t-test produces a value $t = -31,293$ with a significance level (2-tailed) $p < 0,001$ ($p < 0,05$), so that the hypothesis in this study is accepted. Thus, it can be concluded that Visual Reaction Drill training has a significant effect on increasing the speed of T kicks in PSHT Rayon Ngrawan Ranting Berbek Branch Nganjuk students.

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1. INTRODUCTION

Pencak Silat is a traditional martial art originating from the culture of the Indonesian archipelago and has evolved into a competitive sport competed at both the national and international levels. Beyond its function as a martial art, Pencak Silat also holds educational, cultural, mental-spiritual, and character-building values. Therefore, Pencak Silat is seen not only as a sport but also as an element of the nation's cultural heritage that needs to be preserved and further developed (Kumaidah, 2012).

In the pencak silat competition category, kicking techniques are one of the most effective forms of attack because they have a higher point value than punches if they hit the target legitimate targets. One frequently used kicking technique is the T-kick, a straight-trajectory kick that relies on speed, accuracy, body balance, and good motor coordination. Mastering the T-kick technique is a crucial factor in increasing an athlete's attacking effectiveness during a match (Pratama & Candra, 2021; Setyoko et al., 2022).

Kicking speed is influenced not only by leg muscle strength, but also by the athlete's ability to receive stimuli, process information, and provide a rapid motor response. The shorter the time it takes an athlete to identify a stimulus and produce a movement, the better their reaction ability

in a match situation (Schmidt & Wrisberg, 2019). Based on initial observations at PSHT Rayon Ngrawan, many students demonstrated technically correct T-kick performance, but had less than optimal execution speed when faced with situations that require a quick response. This was confirmed through a preliminary measurement using the 15-second T-kick speed test, which showed an average score of only 18.60 kicks, falling into the "sufficient" category and indicating considerable room for improvement toward a more competitive level of kicking speed. One form of training that can be used to improve reaction speed is Visual Reaction Drill (VRD), a training method that involves presenting varied visual stimuli, such as colored cues, hand signals, or specific target movements, to which the athlete must respond immediately with an explosive motor action. According to Schmidt & Wrisberg (2019), reaction time consists of three stages, namely stimulus identification, response selection, and response programming; VRD specifically targets the first two stages by repeatedly exposing athletes to unpredictable visual stimuli, thereby shortening the perceptual-cognitive processing time before movement execution. Through repeated practice, VRD is theorized to strengthen the neural pathways connecting visual perception and motor response, gradually converting a controlled, effortful reaction into a faster, more automated one (Schmidt & Wrisberg, 2019). This mechanism is particularly relevant to pencak silat, where the T-kick must often be executed as an immediate reactive response to an opponent's shifting position or momentary opening, rather than as a pre-planned movement. This aligns with Sulfa et al. (2024), who developed a reaction-speed training model specifically for pencak silat athletes and emphasized the need for structured, sport-specific stimulus-response exercises. Furthermore, Gavkare et al. (2013) demonstrated that trained athletes generally exhibit significantly faster auditory, visual, and whole-body reaction times than untrained individuals, underscoring reaction time as a trainable component of athletic performance rather than a fixed trait.

2. METHOD

This research uses a quantitative approach with an experimental method through a *Pre-Experimental One Group Pretest-Posttest Design*. The study involved one group of subjects without a control group to measure their performance before and after the intervention. The population and sample in this study consisted of 30 students of PSHT Rayon Ngrawan Ranting Berbek Branch Nganjuk (15 males and 15 females) who were selected using the technique of total sampling.

The intervention, in the form of Visual Reaction Drill training, was conducted over 14 core training sessions (a total of 16 sessions including pretest and posttest). The instrument used to measure the dependent variable was a 15-second T-kick speed test toward the target hand box / peaching pad. Data analysis was carried out with the help of the SPSS version 32 program, including prerequisite tests (Kolmogorov-Smirnov/Shapiro-Wilk normality test and Levene's homogeneity test) as well as hypothesis testing using a *paired samples t-test* at the level of significance $\alpha = 0.05$.

3. RESULTS AND DISCUSSION

The collection of initial ability data (pretest) and final ability data (posttest) resulted in descriptive statistical data visualization that showed a real trend of increasing kicking speed performance.

Table 1. Descriptive Statistics of Pretest and Posttest Results

Test Conditions	N	Mean	Median	Modus	Standard Deviation	Minimal	Maximal
Pretest	30	18,60	19,00	19,00	2,159	14	22
Posttest	30	23,00	23,00	23,00	2,212	18	27

Based on the frequency distribution results, during the pretest, the largest percentage was in the "sufficient" category, namely 14 students (46%). After being given the Visual Reaction Drill training program, during the posttest, the distribution of scores experienced a positive shift towards the "good" category with 20 students (66%) and "very good" with 8 students (27%).

Table 2. Results of Data Analysis Prerequisite Tests

Prerequisite Test	Variable / Method	Statistic Value	Mr. (p)	Conclusion
Normality Test (Shapiro-Wilk)	Kick Speed Pretest	0,950	0,174	Normally Distributed
	Kick Speed Posttest	0,972	0,584	Normally Distributed
Homogeneity Test (Levene's)	Based on Mean	0,002	0,968	Variance Homogeneous

After the prerequisites are met, hypothesis testing is carried out using a *Paired Samples t-test* to determine the significance of the impact of the treatment.

Table 3. Results of Paired Samples t-test Analysis

Comparison	t-count	df	Sig. (2-sided p)	Hypothesis Decision
Pretest - Posttest	-31,293	29	< 0,001	H ₀ Rejected / H ₁ Accepted

The results of the analysis show a t-count value of 31.293 with a significance value of $p < 0,001$. Because $p < 0,05$, it was concluded that there was a significant influence of Visual Reaction Drill training on the speed of the T kick. This success was based on the mechanism of reducing the latency time of the central nervous system in processing visual stimuli into automated motor actions (muscle memory) (Schmidt & Wrisberg, 2019).

These findings are consistent with previous research by Agustina et al. (2022), who found that Hurdle Drill training significantly improved T-kick performance in pencak silat athletes, and with Hardovi et al. (2022), who reported that a combination of Standing Jump and Interval Sprint training improved both T-kick strength and speed. However, unlike these plyometric- and strength-based approaches, the Visual Reaction Drill applied in this study specifically targets the perceptual-cognitive component of movement, namely the speed of stimulus recognition and decision-making, rather than muscular power output alone. This suggests that T-kick speed can be improved through at least two distinct training pathways, strength/power-based conditioning and perceptual-reactive training, with the present study contributing evidence for the effectiveness of the latter, an aspect that has received comparatively less attention in previous pencak silat conditioning research. This is further reinforced by Mardius et al. (2023), who found that reaction speed has a significant positive effect on sickle kick accuracy among Pencak Silat Perisai Diri athletes, indicating that perceptual-reactive ability, not only physical conditioning, is a key determinant of kicking performance across pencak silat techniques. In addition, the kinematic analysis by Syaifullah & Maghribi (2023) of world-champion pencak silat athletes' front-kick technique highlights that superior kick execution stems from an integration of neuromuscular timing and technical precision, both of which can plausibly be enhanced through reactive stimulus training such as VRD. This complements the findings of Ihsan et al. (2022), who showed that explosive leg power and flexibility are likewise important determinants of sickle kick performance, together suggesting that comprehensive pencak silat conditioning programs should combine strength-based, flexibility-based, and perceptual-reactive training

components.

It should also be noted that this study employed a One Group Pretest-Posttest Design without a control group. While this design is adequate for detecting within-subject changes following the intervention, it does not fully rule out the influence of extraneous factors such as maturation, repeated testing effects, or concurrent regular pencak silat training that students may have continued to undergo outside the Visual Reaction Drill program. Consequently, the increase in T-kick speed observed in this study cannot be attributed solely and unambiguously to the Visual Reaction Drill treatment. Future research is recommended to include a control or comparison group to strengthen the internal validity of the causal claims regarding the effectiveness of Visual Reaction Drill training.

4. CONCLUSION

This study concluded that providing Visual Reaction Drill training had a real and significant effect on increasing the T-kick speed of PSHT Rayon Ngrawan Ranting Berbek Branch Nganjuk students. This was indicated by an increase in the average score from 18.60 (sufficient category) to 23.00 (good category), as well as the significant results of the t-test $p < 0,001$.

These findings imply that pencak silat trainers can incorporate Visual Reaction Drill exercises into regular training programs as a practical strategy to enhance athletes' T-kick speed, particularly by integrating varied and unpredictable visual stimuli during drills to simulate the reactive demands of actual sparring situations. Trainers are encouraged to schedule Visual Reaction Drill sessions progressively, starting with simple single-cue drills before advancing to multi-cue or randomized stimulus drills, in order to systematically build athletes' perceptual-reactive capacity alongside their technical kicking skills.

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