



The Effect of Weighted Pull-Up Training on Front Punch Speed in Pencak Silat Athletes

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ABSTRACTS

This study investigates the impact of weighted pull-up exercises (bending) on the front punch speed of PSHT Indralaya Indah Pencak Silat athletes. Speed is a vital component in martial arts, requiring targeted resistance training to improve explosive upper-body power. The research utilized an experimental approach with a pretest-posttest one-group design. The participants included 10 male athletes, aged 12–16 years, who underwent a structured intervention across 16 training sessions. Data were collected via standardized punch speed tests and analyzed using a t-test. Analysis revealed a substantial increase in performance, with the average punch frequency rising from 58.7 in the pretest to 90.4 in the posttest. The statistical results showed a t-value () of 31.66, significantly higher than the table value () of 1.833. These results confirm that the alternative hypothesis () is accepted. Weighted pull-up exercises are highly effective in increasing front punch speed. Given the significant gains observed, this training method is a suitable and recommended addition to Pencak Silat athletic conditioning programs to optimize competitive performance.

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INTRODUCTION

Pencak silat is an Indonesian cultural heritage that combines art, sports, martial arts, and spirituality (Candra, 2021). Pencak silat is a form of Indonesian culture, pencak silat is a self-defense that aims to avoid and save oneself (Muhtar, 2020). One of the basic techniques in pencak silat is front punches, which require high speed for effectiveness in matches (Pratama

et al., 2024). Speed in attacks such as punches is crucial because the faster the movement, the more difficult it is for the opponent to anticipate (Muhammad, 2021).

The basic techniques that really need to be learned in silat training are the techniques of step patterns, stances, defending and attacking. Attacks in pencak silat are divided into two, namely using punches and attacks using kicks (Hasyiyati & Winarno, 2021). Pencak silat is not only famous for fighting enemies, but there is such a thing as an art match, one of which is a single move. Single moves are part of physical activity in sports that are contested, single moves are divided into two single moves, empty hands and weapons (Handayani, Lanos, Ihsan, et al., 2023).

The art in pencak silat is also a method of fighting that philosophically teaches physical and spiritual education so as to help its connoisseurs to appreciate the noble moral values in society, the norms of pencak silat conceptually. (Handayani, Lanos, Manullang, et al., 2023). Pull up exercises, especially those combined with weights (bending), are a potential method to increase the speed and strength of the arm muscles used when performing punches (Pokhrel, 2024). This study aims to answer this need by examining the effect of pull up exercises with bending specifically on front punch techniques.

METHOD

The research design employed in this study was a quantitative experimental approach utilizing a Pretest-Posttest One-Group Design. This framework allowed for the measurement of the athletes' punch speed before and after a specific intervention to determine the effectiveness of the training. Following the design proposed by Sugiyono (2019), the study utilized the formula , where represents the pretest value, represents the weighted pull-up treatment, and represents the posttest score. The population for this research consisted of Pencak Silat athletes from PSHT Indralaya Indah. Given the specific demographic requirements, a total sampling technique was used, resulting in a sample of 10 male athletes aged 12–16 years.

The intervention consisted of a structured weighted pull-up program conducted over 16 sessions, with each meeting lasting 45 minutes. During these sessions, athletes utilized pull-up bars, benches, and external weights (bending) to increase resistance. The training protocol required participants to hang from a bar with a shoulder-width, palms-forward grip. From a straight-arm position, they performed maximum repetitions, lifting their bodies until the chin cleared the bar before descending back to a full hang. This process was designed to build the explosive upper-body power necessary for high-velocity striking.

Data collection was carried out through a standardized front punch speed test, where athletes were positioned 50 cm from a punching pad in a stable stance. The primary measurement was the number of successful hits achieved within 60 seconds, recorded using a stopwatch and managed by a team consisting of a supervisor, assistant, and recorder. These results were then categorized based on a five-tier evaluation scale ranging from "Poor" (45–58 hits) to "Excellent" (90 hits and above). To ensure statistical validity, the resulting data were analyzed using the Liliefors test for normality and the Levene test for homogeneity, followed by a paired sample t-test to determine the significant impact of the weighted pull-up exercises on punch speed.

The research location is at PSHT Indralaya Indah which is located in Indralaya district, Ogan Ilir regency, South Sumatra province. The experimental research method is a research method used to determine the influence of dependent variables or outcomes under controlled conditions (Sugiyono, 2021). This study uses an experimental quantitative approach with a one-group pretest-posttest design (Sugiyono, 2023). The subjects of the study were 10 male athletes of PSHT Indralaya Indah who were between 12–16 years old. The treatment was in the form of pull up exercises with bending 1 kg on each wrist, carried out for 16 sessions.

RESULT AND DISCUSSION

The data collected were data generated after conducting a front punch test for 60 seconds, which was obtained from 10 study subjects, consisting of 10 male students who were given the treatment of pull up exercises with weights in their hands, with varied pull up exercises. Before being given training, a Pretest is carried out first to find out the speed of the front punch of pencak silat athletes. After the Pretest, training was carried out for 14 meetings.

In the Pretest, the average front stroke performed by an athlete for 60 seconds was 58.7, the highest score was 62, while the lowest score was 55. In the posttest, the average front stroke carried out got a score of 90.4, the highest score was 96 and the lowest was 87, indicating that the athlete showed improvement. Pretest and posttest results, Pretest results show the average speed of the front stroke of the punch with a mean score of the Pretest of 58.7, after the treatment of pull up exercises with bending for 14 times the posttest score increased significantly with the mean value of the posttest to 90.4. The average difference from the mean of the Pretest and Posttest was 31.7. Pull up exercises show significant influence on the speed of the front stroke.

The data obtained from the normality test and the hypothesis test showed normal results based on the Liliefors test from the normality test formula obtained as a result of the Pretest Lcal data value 0.1185 and Ltable 0.258. The posttest data is Lcal 0.1538 and Ltable 0.258. So both at the time of Pretest and posttest the data is normal because the Calculus < Ltable. So the Pretest and posttest values are distributed normally. The t-test shows a Thcount value of 31.66 while

Ttable is 1.833. Because the $T_{count} > T_{table}$, the hypothesis test H_a is accepted. Based on the hypothesis test, there is an effect of pull up exercises with bending on the speed of the front punch of pencak silat. And the homogeneity test reads Because the $p\text{-value} > 0.05$, there is no significant difference in variance between the pretest and posttest groups. That is, the data is homogeneous.

This increase can physiologically be explained as pull up exercises with loads that train the muscles, arms, shoulders, upper back, and muscle endurance that are urgently needed in the front punch movement of pencak silat. Additional bending provides an addition to give the muscle more stimulation to work harder, so that when bending is released, the punch movement becomes faster because it feels lighter to perform punches.

The results of this study have important benefits for coaches and pencak silat athletes of PSHT indralaya indah, for trainers the pull up training method with bending can be used as part of a training program for athletes in the future to increase the speed of athletes' punches. The pull up training method with bending also does not cost a lot of money and complex facilities, while for athletes, the pull up training program with bending is a new exercise so that the training is not monotonous so that the athlete does not get bored.

This training program can improve the performance of athletes when competing because fast and accurate punches in the match have a great chance of earning points. In pencak silat, a fast attack is also more difficult to anticipate and be blocked by the opponent when in the match. This study strengthens the results of previous research. (Saputra et al., 2018) This training program can improve the performance of athletes when competing because fast and accurate punches in the match have a great chance of earning points. In pencak silat, a fast attack is also more difficult to anticipate and be blocked by the opponent when in the match. This study strengthens the results of previous research.

The data from the statistical calculation of the t-test was obtained as 31.66 while the Ttable was 1.833 obtained from the distribution table T. the hypothesis testing criteria were accepted if H_a $T_{hitung} > T_{table}$ and rejected by H_o if $T_{hitung} < T_{table}$ were rejected. Based on the t-test above the $T_{count} > T_{table}$, there was a significant difference between the results of the Pretest and the posttest after the treatment of the pull exercise with bending, thus the hypothesis test H_o was rejected and the hypothesis test H_a was accepted, statement from the Hypothesis H_a test "There is an effect of pull up exercises with bending on the speed of the front punch of pencak silat PSHT indralaya indah". Weight-lifting exercises can provide stronger muscle stimulus, engaging the arm, upper back, and shoulder muscles, (Kristina et al., 2022). When the load is released, the muscles are able to produce faster movements due to adaptation to the previous load (Handayani et al., 2022). The results of this study support previous studies by Saputra et al. (2018) which shows pull up and push up exercises improve straight punches in

junior high school students. However, this study is more specific to the use of weights (bending), which has not been widely researched before.

CONCLUSION

Based on the results and research and data analysis that has been carried out regarding the effect of pull up exercises with bending on the speed of the front stroke of pencak silat in PSHT indralaya indah athletes, there is a significant effect of the treatment of pull up exercises with bending on the increase in stroke speed in athletes. This can be proven through Pretest and Posttest data which shows an increase in the average score from 58.7 to 90.4 with a difference of 31.7.

This training program also helps to provide benefits to the trainer, in developing strength and speed training methods and effectively. This training program is not only for coaches but for athletes with varied training and by using weights not only to improve physical ability but also to maintain the athlete's spirit of training with new methods.

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