



The Effect Of Heavy Bag Thrust And Medicine Ball Throw Training On Sideways Shot Put Performance Among Pegasus Athletic Club Athletes In West Nusa Tenggara

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Abstract

Objectives: This study aimed to determine the effect of heavy bag thrust and medicine ball throw training on sideways shot put performance among Pegasus Athletic Club athletes in West Nusa Tenggara.

Materials and Methods: This study used an experimental method with a two-group pretest–posttest design. The population consisted of 28 Pegasus Athletic Club athletes, while the sample consisted of 12 athletes selected through purposive sampling. The participants were divided into two groups: the heavy bag thrust training group and the medicine ball throw training group. Shot put performance was measured before and after the training intervention. Data were analyzed using normality tests, homogeneity tests, descriptive statistics, and paired sample t-tests with SPSS.

Results: The heavy bag thrust group showed an improvement from a pretest mean score of 6.068 to a posttest mean score of 6.478. The paired sample t-test showed a significant effect, $t(5) = -2.512$, $p = 0.006$. The medicine ball throw group also showed improvement, with the paired sample t-test indicating a significant effect, $t(5) = -2.462$, $p = 0.000$.

Conclusions: Heavy bag thrust and medicine ball throw training significantly improved sideways shot put performance among Pegasus Athletic Club athletes. Both exercises can be used as training alternatives to develop arm power, hip rotation, explosive movement, and throwing performance in shot put athletes.

Keywords: heavy bag thrust, medicine ball throw, shot put, arm power, athletics

Introduction

Athletics is one of the oldest and most fundamental sports because it consists of basic human movements such as running, jumping, walking, and throwing. In athletic throwing events, physical condition plays an important role in determining performance. One of the physical components that strongly supports throwing performance is muscular power, especially arm and upper-body power.

Shot put is one of the throwing events in athletics. Unlike other throwing events, the shot is not thrown but pushed from the shoulder using explosive force. The goal of shot put is to produce the farthest possible distance. Therefore, successful shot put performance requires strength, power, coordination, timing, technique, and body control.

In the sideways or orthodox shot put technique, athletes need to coordinate arm drive, hip



rotation, trunk movement, and leg support. The ability to generate explosive force from the upper body and transfer it through the trunk is very important. Athletes with better arm power and trunk rotation usually produce stronger pushing force and better shot put distance.

Heavy bag thrust and medicine ball throw are two forms of training that can be used to improve explosive upper-body power. Heavy bag thrust involves pushing a heavy bag repeatedly using both arms while also involving hip rotation. This exercise is useful for developing arm power, trunk rotation, and explosive pushing movement. Medicine ball throw is an external-load exercise that emphasizes arm power and explosive release movement, which is highly relevant to shot put performance.

Previous studies have shown that arm power contributes to throwing performance. Hernado, Soekardi, and Lestari (2017) reported that training methods and arm power influence shot put results. Mardius, Astuti, and Kibadra (2019) also found that arm explosive power contributes to shot put ability. Based on this background, this study was conducted to determine the effect of heavy bag thrust and medicine ball throw training on sideways shot put performance among Pegasus Athletic Club athletes in West Nusa Tenggara.

Materials and Methods

Study Design

This study used an experimental method with a two-group pretest–posttest design. The design was used to compare shot put performance before and after treatment in two training groups.

Study Participants

The population consisted of 28 athletes from Pegasus Athletic Club, West Nusa Tenggara. The sample consisted of 12 athletes selected using purposive sampling. The sample was divided into two groups: six athletes in the heavy bag thrust training group and six athletes in the medicine ball throw training group.

Study Organization

The study began with a pretest to measure the initial shot put performance of each athlete. After that, each group received its respective training intervention. The first group performed heavy bag thrust training, while the second group performed medicine ball throw training. After the training period, a posttest was conducted to determine improvement in shot put performance.

Research Instrument

The instrument used in this study was the shot put performance test. The test was used to measure the distance or result of the sideways shot put technique before and after the training program.

Statistical Analysis



Data were analyzed using SPSS. The normality test was conducted using the Kolmogorov-Smirnov test. The homogeneity test was used to determine whether the data variance between groups was homogeneous. A paired sample t-test was used to determine the effect of each training method on shot put performance. The significance level was set at $p < 0.05$.

Results

Normality Test

Table 1. Normality Test of the Heavy Bag Thrust Group

Group	Kolmogorov-Smirnov Z	Sig.
Heavy Bag Thrust	0.561	0.912

The normality test showed that the heavy bag thrust group had a significance value of 0.912, which was greater than 0.05. Therefore, the data were normally distributed.

Table 2. Normality Test of the Medicine Ball Throw Group

Group	Kolmogorov-Smirnov Z	Sig.
Medicine Ball Throw	0.744	0.637

The medicine ball throw group had a significance value of 0.637, which was greater than 0.05. Therefore, the data were normally distributed.

Homogeneity Test

Table 3. Homogeneity Test Result

Variable	Levene Statistic	df1	df2	Sig.
Shot Put Result	1.548	1	10	0.242

The homogeneity test showed a significance value of 0.242, which was greater than 0.05. This means that the variance of both groups was homogeneous.

Heavy Bag Thrust Group

Table 4. Descriptive Statistics of the Heavy Bag Thrust Group

Test	N	Mean	Standard Deviation
Pretest		6.068	0.579
Posttest		6.478	0.524

The mean score increased from 6.068 in the pretest to 6.478 in the posttest.

Table 5. Paired Sample t-Test of the Heavy Bag Thrust Group

Pair	Mean Difference	df	Sig.
Pretest–Posttest	-0.410	-2.512	0.006

The paired sample t-test showed a significant difference between pretest and posttest scores. This indicates that heavy bag thrust training had a significant effect on shot put performance.

Medicine Ball Throw Group

Table 6. Descriptive Statistics of the Medicine Ball Throw Group

Test	N	Mean	Standard Deviation
Pretest		5.033	0.225
Posttest		5.690	0.353

The mean score increased after the medicine ball throw training intervention.

Table 7. Paired Sample t-Test of the Medicine Ball Throw Group

Pair	Mean Difference	df	Sig.
Pretest–Posttest	-0.657	-2.462	0.000

The paired sample t-test showed a significant difference between pretest and posttest scores. This indicates that medicine ball throw training had a significant effect on shot put performance.

Discussion

The results of this study showed that both heavy bag thrust and medicine ball throw training improved sideways shot put performance among Pegasus Athletic Club athletes. The improvement in both groups indicates that explosive upper-body training is important for developing shot put performance.

The heavy bag thrust group showed an increase in mean score from 6.068 to 6.478. This improvement may be caused by the characteristics of heavy bag thrust training, which involves repeated explosive pushing movements using the arms, shoulders, trunk, and hips. This movement pattern is similar to the pushing action in shot put. Therefore, the exercise may help athletes improve arm power, hip rotation, and coordination during the final pushing phase.

This finding supports Hernado, Soekardi, and Lestari (2017), who stated that training methods and arm power affect shot put results. In shot put, arm power is one of the main physical components because the athlete must push the shot explosively from the shoulder. When arm and trunk power



improve, the athlete can generate greater force during the release phase.

The medicine ball throw group also showed a significant improvement. Medicine ball throw training emphasizes explosive arm movement, trunk activation, and force transfer from the lower body to the upper body. This is relevant to shot put because the athlete must transfer force from the legs and hips through the trunk and finally to the pushing arm. Mardius, Astuti, and Kibadra (2019) also found that arm explosive power contributes to shot put ability, especially in techniques that require strong upper-body propulsion.

The findings are also in line with Shallaby (2010), who reported that plyometric exercises can improve physical and skill performance in sport. Although the study was conducted in a different sport context, the principle is relevant because plyometric and explosive exercises are designed to improve power production. In shot put, explosive power is needed to produce a strong and fast pushing action.

The results also support the study by Ratnasari (2015), which found that plyometric and weight training models had significant effects on javelin throwing performance. This shows that throwing events in athletics require specific power training to improve performance outcomes. Heavy bag thrust and medicine ball throw can therefore be considered appropriate training forms for shot put because both exercises develop explosive movement patterns.

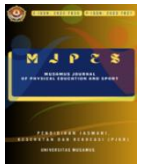
In addition, the findings are consistent with Sobihin (2021), who reported that medicine ball training had a significant effect on throwing performance in student athletes. Medicine ball exercises can improve strength, power, flexibility, coordination, and readiness of the throwing muscles. This supports the present study, where medicine ball throw training improved shot put results.

Overall, both training methods were effective. Heavy bag thrust may be more specific to the pushing movement because it trains the athlete to push against resistance using arm and trunk power. Meanwhile, medicine ball throw may be useful for developing explosive release, coordination, and power transfer. Coaches can combine both exercises in shot put training programs to improve upper-body power and throwing performance.

Conclusions

Based on the results of the study, heavy bag thrust training had a significant effect on sideways shot put performance among Pegasus Athletic Club athletes in West Nusa Tenggara. Medicine ball throw training also had a significant effect on shot put performance.

Therefore, both heavy bag thrust and medicine ball throw training can be recommended as training methods to improve shot put performance. These exercises are useful for developing arm power, trunk rotation, explosive pushing ability, and coordination in the sideways shot put technique.



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