

The Effect of Weight Training with Compound Set Method on Strength and  
Endurance among UNY Archery Athletes

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Paper 89

## Background Study

The usage of compound set method for weight training is a kind of weight training that implements two different types of equipment in sequence without any resting time when switching tools. This compound set method aims to drill the similar part of muscles using different tools. This research expects to determine how much the impact of weight training with compound set methods can give to the strength and endurance among archery athletes at Yogyakarta State University (UNY). The methodology of this research is using the methodology of experiment with one group of pre-test and post-test design. The study population was UNY archery athletes selected via purposive sampling. The instrument used to measure muscle strength is the hand grip strength test. Meanwhile, to measure the upper, lower, and middle body for the endurance of muscular test, four kinds of test items were used namely bench jump, modified dips (man), modified push-ups (woman), bent-leg curl-ups and abdominal crunches. The data analysis technique used the normality test to find out regardless of whether the information has a normal distribution along with the variation of homogeneity test to measure the variant similarity of the experimental group data. Based on the *t*-test analysis results for hypothesis testing, *t*-value was found at 14.532 with a significance value of 0.000 ( $p < 0.05$ ). This can be concluded that weight training using the compound set method to increase the strength of UNY archery athletes has a significant effect. As for muscle endurance, the *t*-test analysis results obtained *t*-value of 13.396 with a significant value of 0.000 ( $p < 0.05$ ). This showed that weight training using the compound set method to increase the endurance of archery athletes UNY has a significant effect. Therefore, the usage of compound set method can give the maximum progress to a trained group of muscles, so the possibility to increase the muscular endurance is very potential.

## Material and Method

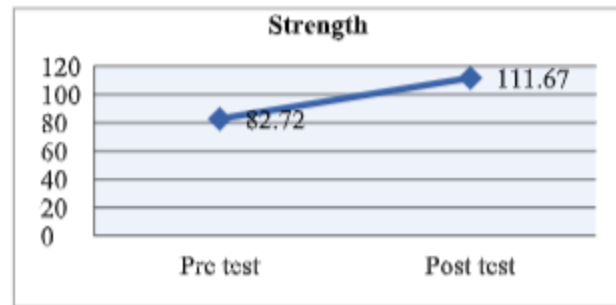
Weight training is a program designed to increase muscle strength and endurance through a series of progressive weight training that burdens the muscular system and causes physiological development. Weight training is also called resistance training is one type of exercise that uses weights as a means to provide excitatory motion to the body. Initially weight training was developed to train muscles with the aim of enhancing muscle strength, endurance and hypertrophy. However, in its development weight training can be designed to increase the endurance of the heart's lungs and improve body composition. Weight training will increase muscle strength, muscle endurance, neuromuscular coordination, and bone density (help prevent osteoporosis), and can help for type 2 diabetes, improve heart health by lowering blood pressure and has a positive effect on controlling cholesterol and lipoprotein levels.

Weight training must be done well so that the objectives of the training can be properly achieved. One of the important thing that needs to be implemented is to find the right method of weight training. The method of weight training that can be followed include the super set method, compound set, trixet, giant set, pyramide system, and drop set (Stoppani, 2006).

## Result

Std. Dev.	23.07	27.79
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The results of the analysis of the strength data at the pre-test score was 47.00 and the highest score was 112.86. In the post test the lowest score was 72.16 and the highest score was 142.12. The mean value of strength at pre-test was 82.72, and post-test was 111.67, so that the strength increase was obtained at 28.95. Increased strength after weight training using the compound set method is illustrated by Figure 1.



**Figure 1:** Comparison of the Average Pre Test and Post Strength Test

Next, the descriptive analysis of muscle endurance data are shown in Table 2.

**Table 2.** Descriptive Analysis of Muscle Endurance Data

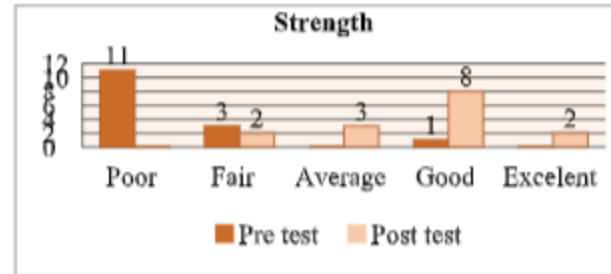
Observation	Pre-test	Post-test
Min.	5.00	8.00
Max.	10.00	14.00
Mean	7.06	11.26
Median	6.00	11.00
Mode	6.00	10.00
Std. Dev.	1.86	1.90

The results of the analysis of the muscle endurance data of the pre-test recorded the lowest score of 5.00 and the highest score of 8.00. In the post-test, the lowest score was 8.00 and the highest score was 14.00. The mean value of muscle endurance data pre-test was 7.06 and

**Table 3.** Classification of Strength Data

Category	Pre-test		Post-test	
	Frequency	%	Frequency	%
Excellent	0	0.0	2	13.3
Good	1	6.7	8	53.3
Average	0	0.0	3	20.0
Fair	3	20.0	2	13.3
Poor	11	73.3	0	0.0
Total	15	100.0	15	100.0

The majority of pre-test strength data in the poor category was 11 people (73.3%). In the majority of post-test in the good category of 8 people (53.3%), this shows an increase in strength after weight training using the compound set method. The results of the classification of strength data is shown in Figure 3.



**Figure 3:** Classification of Strength Data

The results for muscle endurance classification are shown in Table 3.

**Table 4:** Classification of Muscle Endurance Data

Category	Pre-test		Post-test	
	Frequency	%	Frequency	%
Excellent	0	0.0	5	33.3
Good	3	20.0	7	46.7
Average	4	26.7	3	20.0
Fair	8	53.3	0	0.0
Poor	0	0.0	0	0.0
Total	15	100.0	15	100.0