



# Effect of Weight Training on selected Physical Fitness Variables Among School Going Children

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## Abstract

The study was conducted to examine the effects of Weight Training on selected physical fitness variables of school going children after twelve weeks of the training. Forty male school going children within the age group of 14 to 18 years were selected and divided randomly into two groups, the Control and experimental Group, each one consisting of 20 subjects. The experimental Group underwent Weight training for twelve weeks, three times a week, and the control Group was not involved in any kind of training program except for their daily routine. Measurements of physical fitness variables included for measuring vertical jump, sargent jump was used, for measuring horizontal jump, standing broad jump was used, for measuring leg strength, wall squat test was used and for measuring back strength, Kraus weber test was used of all school going children at the beginning of and after the experimental period of twelve weeks. Significant effect was found in the experimental group at a significance level of 0.05 for vertical jump, horizontal jump, leg strength and back strength among school going children. The Weight training has been used as an effective training for enhancing physical fitness component. Weight training is a systematic muscle training technique that helps school going children in the development of their muscular strength.

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**Keywords:** Vertical Jump, Sargent Jump, Horizontal Jump, Standing Broad Jump, Leg Strength, Wall Squat Test, Back Strength, Kraus Weber Test, Weight Training

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## 1. Introduction

Health lifestyle so increase the chance of a good life as they grow into adulthood. This is the era of advancement in technology, especially the computer, internet, mobile phones and other information and communication technologies (Ogunleye, 2010) and young ones tend to be excessive use of such technologies there by engaging with sedentary lifestyle that could eventually lead to diseases such as obesity, hypertension, heart disease, chronic diseases, and diabetes at a young age. Maintaining a healthy lifestyle, promotion of peoples' health and improving the health and longevity of human species

have been advocated in different studies by (Ogunleye O., 2014).

Concept of physical fitness is as old as humankind. Throughout the history of mankind physical fitness has been considered an essential element of everyday life. The ancient people were mainly dependent upon their individual strength, vigor and vitality for physical survival. This involved mastery of some basic health related and skill related physical fitness. (Matvienko, 2010).

Resistance training is a type of strength-training exercise that gets use muscles against some form of resistance. The most common forms of resistance are free weights and strength-training equipment.



Strength training is an important part of a total physical fitness plan for both men and women. It improves muscle strength and endurance. Free weights, often called dumbbells, come in different weight sizes, or can be adjusted to hold different weights. Using free weights for resistance strength training has many advantages. Different muscles to maintain balance while using free weights, better overall improvement in muscle strength. Free-weight exercises may provide more benefits in strength and endurance for everyday activities.

According to (Cambridge, 2009) (Dahab, 2009), in males, it has been showing that strength increase quickly during the adolescent years, and peaks in the adult years. It is common for strength gains of approximately 30% to be obtained in adolescents over short, 8-20 weeks, training periods (Faigenbaum et al,2009)with the greatest rate of improvement occurring early in training periods health related physical fitness Component. Therefore, the purpose of the present study is to fill in the knowledge and methodological gap approach in the site.

As a result, it could be crucial to look at the untrained school population's experiences with physical education programmes and sports training recommendations. The purpose of this study was to ascertain how twelve weeks of Weight training affected schoolchildren's performance in the areas of vertical leap, horizontal jump, leg strength, and back strength.

## 2. Materials and Methods

Forty enrolled students were chosen at random as subjects. two category groups of twenty per group were formed from the chosen subjects. Over the course of twelve weeks, Group I went through weight training and Group II served as the control group and only engaged in their daily school routine. The individuals were between the ages of 14 and 18.

The most crucial elements for predicting sports performance are fitness-related. Fundamentals are the cornerstones of excellence, while natural talent holds the promise of possibility. Consequently, the

variables listed below were chosen for this study.

Physical Variables

- a) Vertical Jump
- b) Leg strength
- c) Back Strength
- d) Horizontal Jump

Independent variable: Weight Training exercises have been shown in several studies to be much more effectively in increasing physical component. So, the researchers investigated what impact of the weight training have on school going children.

### 2.1 Selection of the test and procedure

1. Measure the vertical explosive strength.  
Equipment: The data were collected using a plywood board, as described by Sargent.  
Procedure: The students did the Sargent leap test to measure their vertical leap.
2. To measure the explosive power of the legs.  
Equipment: It was advised to have a tape measure to record the height of the jump.  
Procedure: Standing behind a line that has been painted on the ground, to avoid rolling backward, the participants aimed to jump as high as they can.
3. A straight forward test of lower body physical strength and endurance is the wall squat. The individual must maintain a sitting position while leaning back against a wall for the duration of the exam.
4. The upper back muscles' strength was measured with this test of back muscular power. The test was a component of the Kraus-Weber fitness test protocols, a set of six medical fitness tests designed to assess the flexibility and strength of the body's major postural (core) muscles.

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### 2.2 Description of the exercise

The Weight training exercises involved, The Military Press, which is also known as the Overhead Press, is a compound weight training exercise that primarily targets the shoulder muscles (deltoids) and triceps. Then, The Half Squat, as the name suggests, is a variation of the traditional squat exercise where you don't go as deep into the squat position. Followed by, the Leg Press which is a popular lower body strength training exercise

that targets the quadriceps, hamstrings, and glutes. Furthermore, The Bench Press which is a classic compound exercise that primarily targets the chest (pectoral muscles), shoulders (anterior deltoids), and triceps. Then, Inclined Sit-Ups which are a variation of the traditional sit-up exercise that target the abdominal muscles (rectus abdominis). Lastly, The Leg Curl which is an isolation exercise that targets the hamstring muscles at the back of your thighs.

### 2.3 Statistical Analysis

To get the mean and standard deviation, descriptive statistics was been applied of both the groups and to get the significant difference of pre-test and post-test of experimental groups before and after training process, inferential statistics was been applied for which paired t-test was employed to get the result.

### 3. Result and Discussions

**Table 1** Descriptive Statistics of weight training group

	N	Minimum	Maximum	Mean	Std. Deviation
<b>Pre-Vertical Jump</b>	20	19.00	23.50	21.10	1.13
<b>Post Vertical Jump</b>	20	19.00	23.50	21.86	1.35
<b>Pre-Horizontal Jump</b>	20	185.00	215.00	201.75	9.35
<b>Post-Horizontal Jump</b>	20	190.00	220.00	204.75	8.18
<b>Pre-Leg Strength</b>	20	56.00	73.00	64.00	4.67
<b>Post-Leg Strength</b>	20	60.00	76.00	67.05	5.27
<b>Pre-Back Strength</b>	20	7.00	10.00	8.50	1.10
<b>Post Back Strength</b>	20	8.00	10.00	9.75	0.55

Table 1 shows the descriptive analysis of experimental group where mean, standard deviation, maximum, minimum and no. of subjects where been shown above.

**Table 2** Descriptive Statistics of control group

	N	Minimum	Maximum	Mean	Std. Deviation
<b>Pre-Vertical Jump</b>	20	19.50	23.50	21.37	1.25
<b>Post Vertical Jump</b>	20	18.50	23.50	20.75	1.30
<b>Pre-Horizontal Jump</b>	20	190.00	225.00	205.50	8.56
<b>Post-Horizontal Jump</b>	20	185.00	220.00	200.25	8.34
<b>Pre-Leg Strength</b>	20	54.00	74.00	63.15	5.42
<b>Post-Leg Strength</b>	20	55.00	75.00	63.25	5.39
<b>Pre-Back</b>	20	7.00	10.00	8.40	.99

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<b>Strength</b>						
<b>Post Strength</b>	<b>Back</b>	20	7.00	10.00	8.15	.87

Table 2 shows the descriptive analysis of control group where mean, standard deviation, maximum, minimum and no. of subjects where been shown above.

**Table 3** Analysis of paired t-test for experimental group

		<b>Paired Differences</b>		<b>t</b>	<b>df</b>	<b>Sig. (2-tailed)</b>
		Mean	Std. Deviation			
<b>Pair 1</b>	Pre-Vertical Jump & Post Vertical Jump	0.76	1.07	3.15	19	.005
<b>Pair 2</b>	Pre-Horizontal Jump & Post Horizontal Jump	3.00	4.41	3.04	19	.007
<b>Pair 3</b>	Pre-Leg Strength & Post Leg Strength	3.05	2.74	4.97	19	.000
<b>Pair 4</b>	Pre-Back Strength & Post Back Strength	1.25	1.06	5.22	19	.000

Table 3 shows the pair wise comparison of pre-test and post-test where it clearly shows that the result among the experimental groups has significantly improved and significant difference was

rejected the null hypothesis at 0.05 level of significance that shows the training effect of weight training group has significant improved among school going children among all four physical fitness variables.

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**Table 4** Analysis of paired t-test for control group

		<b>Paired Differences</b>		<b>t</b>	<b>df</b>	<b>Sig. (2-tailed)</b>
		Mean	Std. Deviation			
<b>Pair 1</b>	Pre-Vertical Jump & Post Vertical Jump	.62	.60	5.45	19	.00
<b>Pair 2</b>	Pre-Horizontal Jump & Post Horizontal Jump	5.25	8.02	2.40	19	.00
<b>Pair 3</b>	Pre-Leg Strength & Post Leg Strength	.10	2.59	11.91	19	.86
<b>Pair 4</b>	Pre-Back Strength & Post Back Strength	.25	.85	2.97	19	.20

Table 4 shows the pair wise comparison of pre-test and post-test where it clearly shows that the result among the control groups was not significant, except the vertical jump and horizontal jump that depicts the due to no involvement of any training they did not improved at any physical fitness component at pre-test and post-test.

improved and significant difference was rejected the null hypothesis at 0.05 level of significance that shows the training effect of plyometric group has significant improved among school going children among all four physical fitness variables. Also, the result shows the pairwise comparison of pre-test and post-test where it clearly shows that the result among the control groups was not significant, except the vertical jump and horizontal jump due to the fact maybe because of not involvement of any physical activity some children from the control group

**3.1Discussions**

The result shows the pair wise comparison of pre-test and post-test where it clearly shows that the result among the experimental groups has significantly



have not performed well or too much poor comparatively from the pre-test, and it was clearly seen that the difference was significant reduced the performance as they score low from before that depicts the due to no involvement of any training they did not differ at any physical fitness component at pre-test and post-test.

### 3.2 Conclusions

From the present research study, it can be concluded that, Weight training play a crucial role among children of adolescence to develop explosive strength and physical fitness, with twelve weeks of determinate training, adolescent children can develop their explosive and strength and physical fitness significantly.

**Conflict of Interest:** Authors declare no conflict of interest.

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