



ISSN: 2456-0057

IJPNPE 2019; 4(1): 1695-1698

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www.journalofsports.com

Received: 04-11-2018

Accepted: 06-12-2018

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## Effects of 8 weeks theraband exercise program on upper body strength performances of adolescent boys

**Dr. E Saravanan and G Kannan**

### Abstract

The strength as a static measure avoids consideration of the complex interaction of force improvement and the speed of concentric and eccentric muscle actions. Thera-bands are the only the resistance workout bands encouraged through the American Physical Therapy Association (APTA). The purpose of this study was to find out the effect of thera-band programme on upper body strength. It has been scientifically accepted that any systematic training over a continuous period of time would lead to produce changes on athletic qualities. Methods: A total of twenty-four adolescent boys were selected as subjects at random from the CMS Matriculation Higher Secondary School, Coimbatore, Tamil Nadu, India. The age of the subjects ranged from 14 to 17 years. The study was restricted to selected thera-band exercises. The criterion variables selected for this study were upper body strength. The dependent variables which measures the strength was selected as criterion variables. Because as a result of creating high tension in the muscle particularly in the age of adolescent and which are directly related to the training method. The analysis was carried out through various techniques such as the dependent t-test, the univariate analysis of covariance (ANCOVA). All of the statistical analysis tests were computed at 0.05 level of significance ( $P < 0.05$ ). Conclusions: There was a significant improvement takes place on upper body strengths such as one RM bench press and pull-ups due to six weeks of thera-band training programme.

**Keywords:** Thera band exercise, strength, upper body strength

### Introduction

“Physical fitness is the capacity of the heart, blood vessels and muscles to function at optimal efficiency”. Physical fitness is one’s richest possession”. It cannot be purchased. It has to be earned through a daily routine of physical exercises (Frost Rouben, 1971) [3]. Strength as the ability to develop force against an unyielding resistance in a single contraction of unlimited duration. This definition of strength as a static measure avoids consideration of the complex interaction of force development and the velocity of concentric and eccentric muscle actions (Atha, 1981). Strength is operationally defining as the maximal force a muscle or muscle group can generate at a specified or determine velocity (Kunuttgen, HG., and Kraemer, 1987). Thera-Band resistance bands and tubing are low-cost, portable and versatile. Made of natural rubber latex, they are easily recognized by the trademark Thera-Band colours – yellow, red, green, blue, black and silver, as well as our other colours of tan and gold. Advancing through the sequential system of progressive resistance provides positive reinforcement and feedback for gauging results. Thera-bands are the only resistive exercise bands endorsed by the American Physical Therapy Association (APTA). These 6" wide latex bands come in different, color-coded resistance levels, distinguished by the thickness of the band:

The purpose of this study was to find out the effect of thera-band programme on upper body strength. It has been scientifically accepted that any systematic training over a continuous period of time would lead to produce changes on athletic qualities. Based on this concept and the research questions the following hypotheses were formulated and tested at 0.05 level of confidence. There was be a significant improvement on selected variables due to the effect of thera-band training. It was also hypothesised that the significant difference in post-test on selected variables between the experimental and control groups.

A total of twenty-four adolescent boys were selected as subjects at random from the CMS Matriculation Higher Secondary School, Coimbatore, Tamil Nadu, India.

The age of the subjects ranged from 14 to 17 years. The study was restricted to selected theraband exercises. As per the available literatures, the standardized tests were used to collect relevant data on the selected dependent variables. The criterion variables selected for this study were upper body strength.

**Methodology**

The subjects of this study comprised of twenty-four (n=24) students from CMS Matriculation Higher Secondary School, Coimbatore, Tamil Nadu, India during the academic year 2017-2018. The selected subjects were randomly assigned into two groups of twelve (n=12) each, such as experimental and control groups. Group I (n=12) underwent theraband training for a duration of six weeks and the number of sessions per week was confined to three alternative days, in addition to the regular schedule of the curriculum. Group II (n=12) acted as control, who was asked to refrain from any special training. Total duration of the training period is 8 weeks only and the 3 sessions per week will be administer for the experimental training groups.

The dependent variables which measures the strength was selected as criterion variables. Because as a result of creating high tension in the muscle particularly in the age of adolescent and which are directly related to the training method. Since strength an important role in almost all games and sports, the following dependent variables were selected for this study as strength parameters. Upper Body Maximum Strength was assessed by the 1 RM Bench Press and other

dependent variable selected was Pull ups was assessed by number of pull up in one minute was taken in to the measure of muscular strength. As an independent Variables of this study the Thera-band training was selected.

Light stretching is recommended before and throughout the routine as needed. Varying the sequence between upper and lower body exercises is fine especially for beginners. Chest Press, Biceps Curl, Triceps, Front Raise, Upper Back, Calf Raise, Rotator Cuff, Wrist, Lateral Pull Down and Lateral Raise. The repetitions had increased every two weeks with adding the repetition with the same time the intensity was modified and the rest between the exercise also reduced when the subjects well-versed with the exercises.

The data on maximum strength (upper body) was collected by administrating 1 RM bench press, pull ups and pushups respectively. The pre and post tests data were collected on selected criterion variables prior to and immediately after the training programme. In both the cases the tests were administered in a day in the morning and evening sessions.

**Statistical Technique**

The data was collected from the experimental and control groups two days before and after the experimental treatment. The analysis was carried out through various techniques such as the dependent t-test, the univariate analysis of covariance (ANCOVA). All of the statistical analysis tests were computed at 0.05 level of significance (P<0.05).

**Analysis and interpretations of the data**

**Table 1:** The summary of mean and dependent ‘t’ test for the pre and post tests on 1rm bench press of experimental and control groups

Test	Group	Mean		t-value
		Pre-Test	Post Test	
1 RM test	Experimental Group	48.25	55.78	3.85*
	Control Group	46.11	46.58	0.12
Pull ups	Experimental Group	8.08	11.22	3.29*
	Control Group	6.33	6.4	0.12

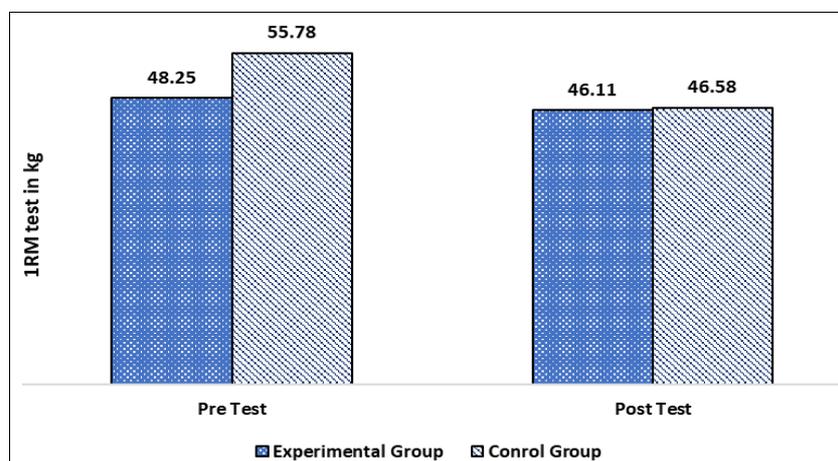
\* Significant at 0.05 level. Table Value required for significant at .05 level with df 22 is 2.07.

The table I shows that the obtained ‘t’- ratio value between pre and post test means of experimental group on 1RM bench press is 3.85 which is greater than the table value of 2.07 required for significant at .05 level of significance with df 1, 12. Therefore, it was concluded that the experimental group had significantly improved the 1RM bench press. However, control group showed insignificant improvement on 1RM bench press.

Table I also showed that, the obtained ‘t’- ratio value between

pre and post test means of experimental group on pull-ups is 3.29 which is greater than the table value of 2.07 required for significant at .05 level of significance with df 22. Therefore, it was concluded that the experimental group had significantly improved the pull-ups. However, control group showed insignificant improvement on pull-ups.

Mean values for the pre and post tests on 1RM bench press and pull ups of experimental and control groups were graphically represented in figure I & II.



**Fig 1:** Bar diagram showing the Upper body Maximum Strength in kilograms

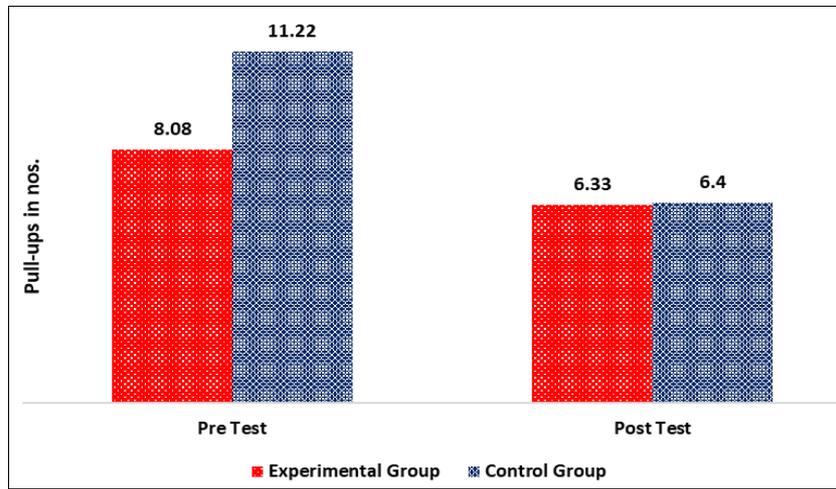


Fig 2: Bar Diagram Showing the muscular strength in Numbers

Table 2: Analysis of covariance (ancova) on 1rm bench press and pull ups of experimental and control groups

Adjusted Post Test Means		Source of Variance	Sum of Squares	df	Mean Square	F - ratio
Experimental Group	Control Group					
55.13	46.22	Between	25.24	1	25.24	4.62*
		Within	114.65	21	5.93	
11.25	6.52	Between	24.25	1	24.25	9.39*
		Within	54.25	21	2.58	

\* Significant at 0.05 level. (The table value required for significance at 0.05 level with df 1 and 21 is 4.32).

Table II shows that the adjusted post test mean values on 1RM bench press of experimental and control groups are 55.13 and 46.22 respectively. The obtained f-ratio of 4.62 for adjusted post test means is greater than the table value 4.32 with df 1 and 21 required for significance at 0.05 level of confidence. The results of the study indicate that there is a significant difference exists between the adjusted post test means of experimental and control groups on 1RM bench press.

Table II shows that the adjusted post test means values on pull ups of experimental and control groups are 11.25 and 6.52 respectively. The obtained f-ratio of 9.39 for adjusted post test means is greater than the table value 4.32 with df 1 and 21 required for significance at 0.05 level of confidence. The results of the study indicate that there is a significant difference exists between the adjusted post test means of experimental and control groups on pull ups.

**Discussion on Findings**

The result of study indicates that there was significant difference exists between the adjusted post test means of experimental and control group on selected upper body strength parameter such as one RM bench press and pull ups due to thera-band training. It is inferred from the literature and from the result of the present study. That systematically designed training develops dependent variables are very importance quilts for better performance in almost all sports and games. Hence it is concluded that systematically designed training may be given due recognition and implemented properly in the training programs of all the discipline in order to achieve maximum performance. Muscular strength increases as a result of activating a large number of fast twitch motor units.

Colado and Triplett (2008) [2] reported that the elastic band strength training program had positive effects on the strength and body composition. Chang *et al.* (2012) [1] used resistance band training program during 8-week, and observed significant increases in lower extremity strength and function

parameters. The fact that the elastic band provided more active contraction by increasing the power, strength, and muscle activities in first stage of the eccentric phase, and in last stage of the concentric phase of the contraction (Israetel *et al.*, 2010) [5]. It is considered that the results of present study may occur due to the above information.

**Conclusions**

On the basis of the findings of the data, the following conclusions may be drawn. There was a significant improvement takes place on upper body strengths such as one RM bench press and pull-ups due to six weeks of thera-band training programme. Further it was also concluded that there were significant differences exists between experimental and control groups on one RM bench press and pull-ups.

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