

## INFLUENCE OF FREQUENCY MODULATION IN RESISTANCE TRAINING ON STRENGTH ENDURANCE AMONG COLLEGE MEN STUDENTS



**Kumaraguru S\***



**Elayaraja M\*\***

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\*Research Scholar, Dept. of Physical Education and Sports, Pondicherry University- INDIA

\*\*Associate Professor, Dept. of Physical Education and Sports, Pondicherry University- INDIA

E.Mail: kumaraguru.drsi@gmail.com

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### Abstract:

One of the main goals of exercise training is to improve adaptations and performance in the training. There are more kinds of exercise that effect to the physical fitness. The aim of the study was to emphasize influence of frequency modulation in resistance training on strength endurance among college men students with the help of 45 men students and aged between 18-21 years. The respondents were split into Group I (3days in a week), Group II (5days in a week) and control group. The group I and group II named as treatment groups underwent resistance training program for 12 weeks. The strength endurance was measured by push-ups and sit-ups before and after training. The collected data was analyzed by using (ANCOVA) analysis of covariance. The findings of the present study assert that the strength endurance has significantly improved in the experimental group than in the control group. Further, the 5days in a week resistance training facilitated the better improvement in strength endurance compared to 3days in a week resistance training group after the 12 weeks of training.

**Keywords:** Resistance Training, Frequency & Strength Endurance.

### Introduction:

Resistance training is also known as strength or weight training has become one of the most popular forms of exercise for enhancing and individuals physical fitness as well as for conditioning athletes. Strength training is known to develop muscular strength, power, muscular hypertrophy and even muscular endurance. It is the most important motor ability in sports as it is a direct product of muscle contractions. All movements in sports are caused by muscle contractions and therefore, strength is a part and parcel of all motor abilities, technical skills and tactical actions. Strength and strength training assume high importance for achieving good performance in all sports (Singh, 1991). There are positive effects of strength training on muscles, bones, joints, heart, circulatory system, metabolism and nervous system.

The number of times per week that the athlete trains is the measure of frequency, Once a regular exercise has been established and the workouts have become enjoyable, the frequency of workouts may be extended to more than 3 to 5days per week.

**Objective of the Study:**

- The main objective of the study was to investigate the influence of frequency modulation in resistance training on strength endurance among college students.

**Methodology:**

The purpose of the study was to find out the influence of frequency modulation in resistance training on strength endurance among college men students. 45 men students were randomly selected and aged between 18-21 years. The selected respondents were split into Group I (3days in a week), Group II (5days in a week) and control group. The group I and group II named as treatment group underwent training program for three days per week especially on Mondays-Wednesdays-Friday: Group II underwent resistance training for five days per week especially on Mondays-Tuesday-Thursday-Friday-Saturday for 12 weeks of resistance training as well as the control group did not underwent any training program. The training programme consists of whole body workout that trained the entire muscle group. The number of exercises, intensity, repetition, and set were manipulated every four weeks as the training progressed. The strength endurance was measured by push-ups and sit-ups before and after training. The collected data was analyzed by using (ANCOVA) analysis of covariance.

**Hypothesis:**

- It is hypothesis that there would be a significant difference among three days in week resistance training, five days in a week resistance training and control groups on selected strength parameters.

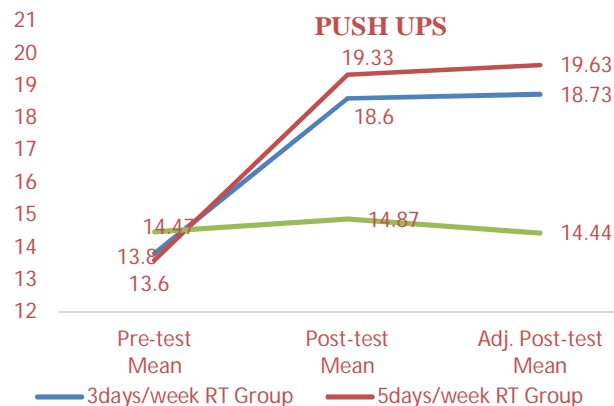
**Analysis of the Data & Results of the Study:**

Analysis of Covariance for Push-Ups of 3 Days/Week Resistance Training, 5 Days/Week Resistance Training and Control Groups.

	3days/week RT Group	5days/week RT Group	Control Group	Source of Variance	Sum of squares	df	Mean Square	'F' Ratio
<b>Pre-test Mean</b>	13.80	13.60	14.47	B	6.18	2	3.09	1.02
<b>S.D</b>	1.78	1.50	1.92	W	127.73	42	3.04	
<b>Post-test Mean</b>	18.60	19.33	14.87	B	172.13	2	86.07	24.32*
<b>S.D</b>	2.29	1.29	1.92	W	148.67	42	3.54	
<b>Adjusted post Mean</b>	18.73	19.63	14.44	B	220.77	2	110.38	78.30*
				W	57.80	41	1.41	

\*Significant at 0.05 level.





Analysis of covariance for Sit-ups of 3 days/week resistance training, 5 days/week resistance Training and control groups.

	3days/week RT Group	5days/week RT Group	Control Group	Source of Variance	Sum of squares	df	Mean Square	'F' Ratio
<b>Pre-test Mean</b>	17.46	17.67	16.80	B	6.18	2	3.09	1.16
<b>S.D</b>	1.30	1.98	1.52	W	111.47	42	2.65	
<b>Post-test Mean</b>	20.67	22.33	16.33	B	287.78	2	143.89	40.83*
<b>S.D</b>	1.23	2.72	1.30	W	148.00	42	3.52	
<b>Adjusted post Mean</b>	20.56	22.09	16.69	B	220.37	2	110.19	47.65*
				W	94.81	41	2.31	

\*Significant at 0.05 level.

The required table value at 0.05 level of significance for 2 & 42, 2 & 41 degrees of freedom is 3.22.

It is observed from the above table that the pre-test means of 3days/Week resistance training, 5days/Week resistance training and control group value consist of 17.46, 17.67 and 16.80 respectively. The obtained "F" ratio 1.16 is lesser than the required table value 3.22 for 2 & 42 degrees of freedom at 0.05 level of significance. As a result, there is no significant change

between the control and experimental groups in sit-ups before the training program. The post-test means of 3days/Week resistance training, 5days/Week resistance training and control group includes 20.67, 22.33 and 16.33 respectively. The obtained “F” ratio 40.83 is greater than the required table value 3.22 for 2 & 42 degrees of freedom at 0.05 level of significance.

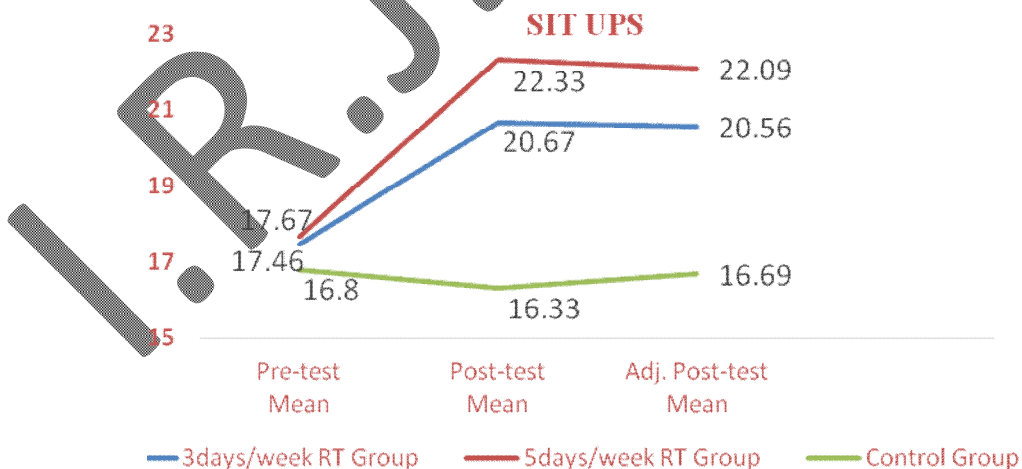
The adjusted post-test means of 3days/Week resistance training, 5days/Week resistance training and control group yielded the result 20.56, 22.09 and 16.09 respectively. The obtained “F” ratio 47.65 is greater than the required table value of 3.23 for 2 & 41 degrees of freedom at 0.05 level of significance.

Scheffe's post hoc test to measure ordered adjusted Sit-ups means between the experimental and control groups.

3days/week RT Group	5days/week RT Group	Control Group	Mean Difference	C.D
20.56	22.09		1.53	1.41
20.56		16.69	3.87	
	22.09	16.69	5.40	

The above table shows that the Scheffe’s post hoc method for the 5days/week resistance training group (adj. mean = 22.09) has significantly outperformed the 3days/week training group (adj. mean = 20.56) in sit-ups with adjusted mean differences of 1.53 (CD =1.41). In addition, the two experimental groups namely 3days/week resistance training, 5days/week resistance training groups significantly outperformed the control group (adj. mean =16.69) in sit-ups with adjusted mean difference of 3.87 and 5.40 (CD = 1.41) respectively.

Line diagram showing the mean values of sit-ups of 3 days/week resistance training, 5 days/week resistance training and control groups.



### Discussion:

The findings of the present study assert that the strength endurance has significantly improved in the experimental group than in the control group. In addition, the 5days/week resistance training facilitated the better improvement in strength endurance compared to 3days/week resistance training group after the 12 weeks of training. As a result, there was less difference in strength endurance for three days in a week training group than the five days in a week group. This is because of decrease in volume of mitochondrial and delays in the oxidation activities of enzymes. Moreover, this study unveils that a higher weekly training frequency increased strength endurance to a greater extent than the lower frequency among college men students. The above finding confirms with the studies by (Farinatti et al., 2013; Benton et al., 2011; De Villarreal et al., 2008; Campos et al., 2002; Hoffman et al., 1990).

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