



ISSN: 2456-0057

IJPNPE 2022; 7(2): 265-267

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Received: 04-06-2022

Accepted: 11-07-2022

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## Effect of different intensities of resistance training with yogic packages on shoulder muscular strength and cardio-respiratory endurance among untrained students

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### Abstract

The purpose of the study is to find out the effect of varied intensities of resistance training with yoga practice on shoulder muscular strength and cardio-respiratory endurance among untrained college male students. To achieve the purpose of the present study forty five male students studying in various departments and colleges of Dhanalakshmi Srinivasan group of institutions, Perambalur, Tamil Nadu, in the age group of 18 - 25 years were selected as subjects. They were divided into three groups, in which, Group - I (n=15) underwent low intensity resistance training with yoga practice, group - II (n=15) underwent medium intensity resistance training with yoga practice and group III (n=15) acted as control, who did not participate any special training apart from their regular routine activities. The subjects were tested on selected criterion variables such as shoulder muscular strength and cardio-respiratory endurance at prior to and immediately after the training period. For testing the shoulder muscular strength and cardio-respiratory endurance was measured by push-ups test and Cooper 12 minutes run/walk test respectively. The analysis of covariance (ANCOVA) was used to find out the significant difference if any, between the experimental groups and control group on selected criterion variables separately. Since there were three groups involved in the present study, the Scheffé S test was used as post-hoc test. The result of the study shows that there was a significant improvement in shoulder muscular strength and cardio-respiratory endurance after the low intensity resistance training with yogic practice and medium intensity resistance training with yogic practice.

**Keywords:** Resistance training, yoga exercises, shoulder muscular strength and cardio-respiratory endurance

### Introduction

Resistance training is also known as training for strength development or weight training, has turn into one of the main popular forms of exercise for improving an individual's fitness and for conditioning athletes. The resistance training which contracts the muscle against an external resistance, causes increase in tone, strength, mass and muscular endurance or endurance. Some equipment's like dumbbells, own body weight, rubber exercise tubing, weight training which enables the muscles to contract. There are varieties of resistance training which includes, medicine balls, weight machines, free weights, own body weight and resistance bands. Resistance exercise is in the form of resistance bands, weight machines, free-weights, and even own body weight of an athlete, which apply a load/overload to a particular muscle or group of muscle, and force the muscles to adapt and grow stronger.

Yoga also described as wisdom in skilful living or work amongst action, synchronization and control. Yoga is not for human being who attracts too much, nor for his/her who suffer himself/herself. It is not neither for sleep, nor for stays awake. By altering in taking food and taking rest, by regulating the work and by accordance in sleep and wake, yoga demolishing all pain and sorrows". An Indian's unique contribution to physical education is yoga. Both may be measured as to two bullocks hitched to shaft as they are for the well-judged combination of the education of the mind and the body.

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## Methodology

The purpose of the study is to find out the effect of varied intensities of resistance training with yoga practice on shoulder muscular strength and cardio-respiratory endurance among untrained college male students. To achieve the purpose of the present study forty five male students studying in various departments and colleges of Dhanalakshmi Srinivasan group of institutions, Perambalur, Tamil Nadu, in the age group of 18 - 25 years were selected as subjects. They were divided into three groups, in which, Group - I (n=15) underwent low intensity resistance training with yoga practice, group - II (n=15) underwent medium intensity resistance training with yoga practice and group III (n=15) acted as control, who did not participate any special training apart from their regular routine activities. The subjects were tested on selected criterion variables such as shoulder muscular strength and cardio-respiratory endurance at prior to

and immediately after the training period. For testing the shoulder muscular strength and cardio-respiratory endurance was measured by push-ups test and Cooper 12 minutes run/walk test respectively. The analysis of covariance (ANCOVA) was used to find out the significant difference if any, between the experimental groups and control group on selected criterion variables separately. Since there were three groups involved in the present study, the Scheffé S test was used as post-hoc test.

## Analysis of data

The data collected prior to and after the experimental periods on shoulder muscular strength and cardio-respiratory endurance on low and medium intensity resistance training with yoga practice and control group were analyzed and presented in the following

**Table 1:** Analysis of covariance and 'f' ratio for shoulder muscular strength and cardio-respiratory endurance on low and medium intensity resistance training with yoga practice and control group

Variable Name	Group Name	Experimental Group - I	Experimental Group- II	Control Group	F ratio
Shoulder muscular strength	Pre-test Mean $\pm$ S.D	32.07 $\pm$ 2.37	31.33 $\pm$ 2.16	32.13 $\pm$ 2.56	0.51
	Post-test Mean $\pm$ S.D.	35.93 $\pm$ 2.66	3.20 $\pm$ 2.18	30.93 $\pm$ 2.40	11.35*
	Adj. Post-test Mean $\pm$ S.D.	35.738	35.649	30.680	65.35*
Cardio-respiratory endurance	Pre-test Mean $\pm$ S.D	1176.67 $\pm$ 18.00	1173.00 $\pm$ 18.88	1182.33 $\pm$ 11.78	0.33
	Post-test Mean $\pm$ S.D.	1189.33 $\pm$ 18.79	1184.67 $\pm$ 15.41	1177.33 $\pm$ 16.99	11.18*
	Adj. Post-test Mean $\pm$ S.D.	1190.359	1189.831	1172.161	54.26*

Significant at .05 level of confidence.

(The table value required for significance at .05 level of confidence with df 2 and 42 and 2 and 41 were 3.22 and 3.23 respectively).

(Experimental Group - I = Low Intensity Resistance Training with Yogic Practice Group Experimental Group - II = Medium Intensity Resistance Training with Yogic Practice Group)

The obtained,, F\*\* ratio value of 11.35 and 11.18 for post-test scores of low intensity resistance training with yogic practice, medium intensity resistance training with yogic practice and control groups was higher than the required table value of 3.22 for significance with df 2 and 42 at .05 level of confidence. The above statistical analysis indicates that there

was a significant improvement in shoulder muscular strength and cardio-respiratory endurance after the training periods. Further to determine which of the paired means has a significant improvement, Scheffé S test was applied. The result of the follow-up test is presented in Table 2.

**Table 2:** Scheffé s test for the difference between the adjusted post-test mean of shoulder muscular strength and cardio-respiratory endurance

Adjusted Post-test Mean of shoulder muscular strength				
Experimental Group- I	Experimental Group - II	Control Group	Mean Difference	C I at .05 level
35.738		30.680	5.059*	1.162
35.738	35.649		0.089	1.162
	35.649	30.680	4.969*	1.162
Adjusted Post-test Mean of cardio-respiratory endurance				
1190.359		1172.161	18.198*	4.60
1190.359	1189.831		0.528	4.60
	1189.831	1172.161	17.67*	4.60

\*Significant at .05 level of Confidence.

(Experimental Group - I = Low Intensity Resistance Training with Yogic Practice Group Experimental Group - II = Medium Intensity Resistance Training with Yogic Practice Group)

## Conclusions

The result of the study shows that there was a significant improvement in shoulder muscular strength after the respective training programme. Meera and Mohanakrishnan (2017) [5] found that core strength training has helped to improve the muscular strength. Vishnu Raj (2018) [8] and Manju Dua and Dolly (2017) [4] found that the yogic practice has improved the shoulder muscular strength significantly.

It was also found from the result of the study that there was a significant improvement in cardio-respiratory endurance after the low intensity resistance training with yogic practice and medium intensity resistance training with yogic practice. Prasad and Singh (2017) [1] found that resistance training has

improved the cardio-respiratory endurance and the same was reduced after the detraining period. Kuppan and Muthuraj (2019) [3] found that the cardio-respiratory endurance was improved due to the resistance training. There was a significant improvement in cardio-respiratory endurance after the yoga practice (Ghuman and Kuldeep Singh, (2014) [7].

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