ISSN: 2349 - 4891

International
Journal of Recent Research and Applied Studies
(Multidisciplinary Open Access Refereed e-Journal)

Impact of Resistance Training and Plyometric Training in Series on Strength Endurance

N. Sankar[1] & Dr. P. Karthikeyan[2]

[1]*Research Scholar, Department of Physical Education, Annamalai University, Chidambaram, India.*
[2]*Associate Professor, Department of Physical Education, Annamalai University, Chidambaram, India.*

Received 19th August 2018, Accepted 14th September 2018

Abstract

The purpose of the study was to find out the effects of resistance training and plyometric training in series on strength endurance. To achieve this purpose of the study, thirty men students studying Bachelors of Physical Education at Department of Physical Education, Annamalai University, India were randomly selected as subjects during the year2018-19. They were divided into two equal groups of fifteen subjects each. Group I underwent resistance training parallel with plyometric training for three sessions per week for twelve weeks. And group II acted as control group who did not participate in any of the special training programme. Strength endurance was only selected as dependent variable. Resistance trainingand plyometric training in series was selected as independent variable. Strength endurance was measured by using bend knee sit ups. The data were collected at prior and immediately after the training programme on strength endurance. The collected data were analysed statistically by using analysis of covariance (ANCOVA). The .05 level of confidence was fixed to test the level of significance. The results of the study revealed that resistance training and plyometric training in series group significantly improved strength endurancewhen compared with control group.

Keywords: Resistance Training, Plyometric Training, Strength Endurance.

Introduction

Resistance training is a type of eccentric based training that produces rapid adaptations in the neuromuscular system. Synchronization, or improved neuromuscular recruitment and activation, produces consistent and early changes in strength that are unrelated to actual muscle size increases. While the popularity of free weights in many disciplines and varied sports has increased dramatically in the past decade.

In plyometrics a shortening (concentric) contraction that immediately follows a lengthening (eccentric) contraction will utilize the elastic energy stored in that muscle during the stretching. In turn the utilization of the elastic energy will result in greater force production in a shorter period of time, hence it provides the optimum relationship between speed and strength, which will ultimately manifest itself, as explosive power.

Plyometric training can take many forms, including jump training for the lower extremities and medicine ball exercises for the upper extremities. Each jump training exercises were classified according to the relative demands they placed on the athlete. All the exercises are progressive in nature, with a range of low to high intensity in each type of exercise.

Correspondence
Dr.P.Karthikeyan
Email: karthi_pe@yahoo.co.in

Methodology

The purpose of the study was to find out the effects of resistance training and plyometric training in series on strength endurance. To achieve this purpose of the study, thirty men students studying Bachelors of Physical Education at Department of Physical Education, Annamalai University, India were randomly selected as subjects during the year 2018-19. They were divided into two equal groups of fifteen subjects each. Group I underwent resistance training parallel with plyometric training for three sessions per week for twelve weeks. And group II acted as control group who did not participate in any of the special training programme. Strength endurance was only selected as dependent variable. Resistance training and plyometric training in series was selected as independent variable. Strength endurance was measured by using bend knee sit ups. The data were collected at prior and immediately after the training programme on strength endurance. The collected data were analysed statistically by using analysis of covariance (ANCOVA). The .05 level of confidence was fixed to test the level of significance.

The analysis of covariance on strength endurance of pre and post tests for resistance trainingand plyometric training in series group and control group was analyzed and presented in Table 1.

Table 1
Analysis of covariance on strength endurance of pre and post tests for resistance training and plyometric training in series group and control group

Test	Resistance and plyometric training in series group	Control Group	Source of Variance	Sum of Squares	Df	Mean Squares	Obtained 'F' Ratio
Pre Test							
Mean	37.60	37.27	Between	0.537	1	0.537	1.06
S.D.	0.80	0.998	Within	14.133	28	0.505	
Post Test							
Mean	40.73	37.40	Between	3.33	1	3.33	6.923*
S.D.	0.77	0.88	Within	13.47	28	0.481	
Adjusted Post Test							
Mean	40.42	37.39	Between	6.083	1	6.083	184.33*
			Within	0.897	27	0.033	

* Significant at .05 level of confidence.
(The table value required for significance at .05 level of confidence with df 1 and 28, 1 and 27 were 4.20 and 4.21 respectively).

The table 1 shows that the pretest means on strength enduranceof resistance and plyometric training in series group and control group were 37.60 and 37.27 respectively. The obtained 'F' ratio for pretest of 1.06 which was less than the table value of 4.20 with df1 and 28 required for significance at .05 level of confidence.

Further it shows that the postest means on strength enduranceof resistance and plyometric training in series group and control group were 40.73 and 37.40 respectively. The obtained 'F' ratio for posttest of 6.923 which was more than the table value of 4.20 with df 1 and 28 required for significance at .05 level of confidence.

The table I further shows that the adjusted posttest means on strength enduranceof resistance and plyometric training in series groupand control group were 40.42 and 37.39 respectively. The obtained 'F' ratio for adjusted posttest of 184.33 which was more than the table value of 4.21 with df1 and 27 required for significance at .05 level of confidence.

The results of the study indicated that there was a significant difference among the adjusted posttest means of resistance and plyometric training in series group and control group on strength endurance.

Conclusions

1. There was a significant difference exist among resistance trainingand plyometric training in series group and control group on strength endurance.
2. There was a significant improvement on strength endurancedue to resistance trainingand plyometric training.

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