



ISSN: 2456-4419

Impact Factor: (RJIF): 5.18

Yoga 2017; 2(1): 150-152

© 2017 Yoga

www.theyogicjournal.com

Received: 19-01-2017

Accepted: 18-02-2017

Dr. Aranga Panbilnathan

Assistant Professor Department
of Physical Education and
Sports Sciences, Annamalai
University, Annamalai Nagar,
Chidambaram, Tamil Nadu,
India

Effects of conventional resistance training and ballistic training on back strength of physical education students

Dr. Aranga Panbilnathan

Abstract

The purpose of the study was to analyze the effects of conventional resistance training and ballistic training on selected strength (Back strength) parameters. To achieve this purpose of the study, forty five men students studying bachelor's degree in the department of Physical Education and Sports Sciences, Annamalai University were selected at random as subjects from a population of 200. The age of the subjects, ranged from 18 to 24 years. The subjects were randomly divided into three groups and each group comprised of fifteen (N = 15) subjects. Group-I underwent conventional resistance training, group-II underwent ballistic training and group-III acted as control. All the subjects of three groups were tested on selected criterion variable at prior to and immediately after the training programmer. The analysis of covariance (ANCOVA) was used to analyses the significant difference, if any, among the groups. Since, three groups were compared, whenever, the obtained 'F' ratio for adjusted post-test was found to be significant, the Scheffe's test was applied to find out the significant paired mean differences, if any. The level of significance was set at 0.05 level of confidence, which was considered as an appropriate. There was a significant increase in maximum strength for both conventional resistance training and ballistic training groups as compared to control group. There was a significant increase in leg strength for conventional resistance training group as compared to ballistic training group.

Keywords: Resistance training, ballistic training, maximum strength, back strength

1. Introduction

Sport is an activity that is governed by a set of rules or customs and often engaged competitively. Sports commonly refer to activities where the physical capabilities of the competitor are the sole or primary determinant of the outcome (winning or losing), and motor sports where mental acuity or equipment quality are major factors. Sport is commonly defined as an organized, competitive and skillful physical activity requiring commitment and fair play. Some view sports as differing from games based on the fact that there are usually higher levels of organization and profit involved in sports. Accurate records are kept and updated for most sports at the highest levels, while failures and accomplishments are widely announced in sport news.

Physical fitness is one aspect of total fitness. The term has been defined in different ways. Physical fitness is a prime requisite in order to get the optimum in life and to live most and serve best in this modern world. A sound body and a sound mind are every one's most precious possessions.

Physical fitness is the combination of strength, flexibility, agility, power speed and endurance. It is the ability to enjoy our lives and achieve our goals without undue fatigue or stress under vigorous physical activity. It is only means of developing optimum level of performance.

Training means a systematic scientific programme of conditioning exercise and physical activities designed to improve the physical fitness and skills of the players or athletes participating and it involves periodic assessment of the athlete's status and progress. Most kind of training needs regular repeated and collective repetition of some of the original movement.

Correspondence

Dr. Aranga Panbilnathan

Assistant Professor Department
of Physical Education and
Sports Sciences, Annamalai
University, Annamalai Nagar,
Chidambaram, Tamil Nadu,
India

2. Materials and methods

2.1 Statistical technique

The collected data were statistically analyzed for significant difference if any, by applying Analysis of Covariance (ANCOVA) among the groups. Since, three groups were compared, whenever, the obtained 'F' ratio for adjusted post-test was found to be significant, the Scheffe's test was applied to find out the significant paired mean differences, if any. The level of significance was set at 0.05 level of confidence, which was considered as an appropriate.

2.2 selection of subjects

Forty five men students studying bachelor's degree in the department of Physical Education and Sports Sciences, Annamalai University were selected at random as subjects from a population of 200. The age of the subjects, ranged from 18 to 24 years. The subjects were randomly divided into three groups and each group comprised of fifteen (N = 15) subjects. Group-I underwent conventional resistance training,

group-II underwent ballistic training and group-III acted as control.

2.3 selection of variable

In the present study, the investigator selected the maximum Strength variable namely Back strength. The selected criterion variable was measured by using Back Lift with dynamometer.

Analysis of the data

The influence of conventional resistance training and ballistic training on each criterion variables were analysed separately and the results are presented below.

Maximum strength (Back Strength)

The analysis of covariance for the pre and post-tests scores of conventional resistance training group, ballistic training group and control group have been analyzed and the results are presented in table-I.

Table 1: Analysis of covariance of the data on maximum strength (back strength) of pre post and adjusted post-tests scores of conventional resistance training ballistic training and control groups

Test	Conventional resistance training group	Ballistic training group	Control Group	SOV	Sum of squares	DF	Mean Squares	'F' ratio
Pre Test								
Mean	81.80	81.66	81.66	B	0.178	2	0.089	0.162
S.D.	0.67	0.81	0.72	W	23.06	42	0.549	
Post Test								
Mean	87.33	84.73	82.00	B	213.37	2	106.68	184.65*
S.D.	0.81	0.79	0.65	W	24.26	42	0.57	
Adjusted Post test								
Mean	87.28	84.75	82.02	B	206.91	2	103.45	230.95
				W	18.36	41	0.448	

* Significant at 0.05 level of confidence

(The table values required for significance at 0.05 level of confidence for 2 and 42 and 41 are 3.22 and 3.23) respectively.

Table-I shows that the pre-test mean values on maximum strength (Back Strength) of conventional resistance training group, ballistic training group and control group were 81.80, 81.66 and 81.66 respectively. The obtained 'F' ratio of 0.162 for pre test scores was less than the table values of 3.22 for DF 2 and 42 required for significance at 0.05 level of confidence on maximum strength (Back Strength).

The post-test mean values on maximum strength (Back Strength) of conventional resistance training group, ballistic training group and control group were 87.33, 84.73 and 82.00 respectively. The obtained 'F' ratio of 184.65 for post test scores was greater than the table values of 3.22 for DF 2 and 42 required for significance at 0.05 level of confidence on maximum strength (Back Strength).

The adjusted post-test mean values on maximum strength (Back Strength) of conventional resistance training group, ballistic training group and control group were 87.28, 84.75 and 82.02 respectively. The obtained 'F' ratio of 230.95 for adjusted post test scores was greater than the table value of 3.23 for DF 2 and 41 required for significance at 0.05 level of confidence on maximum strength (Back Strength).

The results of the study indicated that there was significant difference between the adjusted post-test means of conventional resistance training group, ballistic training group and control group on maximum strength (Back Strength).

Since, the obtained 'F' ratio for the adjusted post-test mean was found to be significant, Scheffe's test was applied to find out the paired mean differences, if any, among the groups and the results are presented in table-II.

Table 2: The Scheffe's test for the differences between paired means on maximum strength (back strength)

Conventional resistance training group	Ballistic training group	Control group	Mean Differences	Confidence interval value
87.28	84.75		2.53*	0.68
87.28		82.02	5.26*	0.68
	84.75	82.02	2.73*	0.68

*Significant at 0.05 level of confidence.

The Table-II shows that the adjusted post-test paired mean differences on maximum strength (Back Strength) between conventional resistance training and ballistic training groups, conventional resistance training and control groups and ballistic training and control groups were 2.53, 5.26 and 2.73 respectively, which are higher than the confidence interval of 0.68 required for significance at 0.05 level of confidence.

It is inferred that twelve weeks of conventional resistance training and ballistic training groups have significantly improved the maximum strength (Back Strength) as compared to the control group. The results also reveals that no significant difference existed between conventional resistance training group and ballistic training group in maximum strength (Back Strength) after twelve weeks of respective training.

The adjusted post-test mean values of conventional resistance training group, ballistic training group and control group on maximum strength (Back Strength) are graphically represented in figure-I.

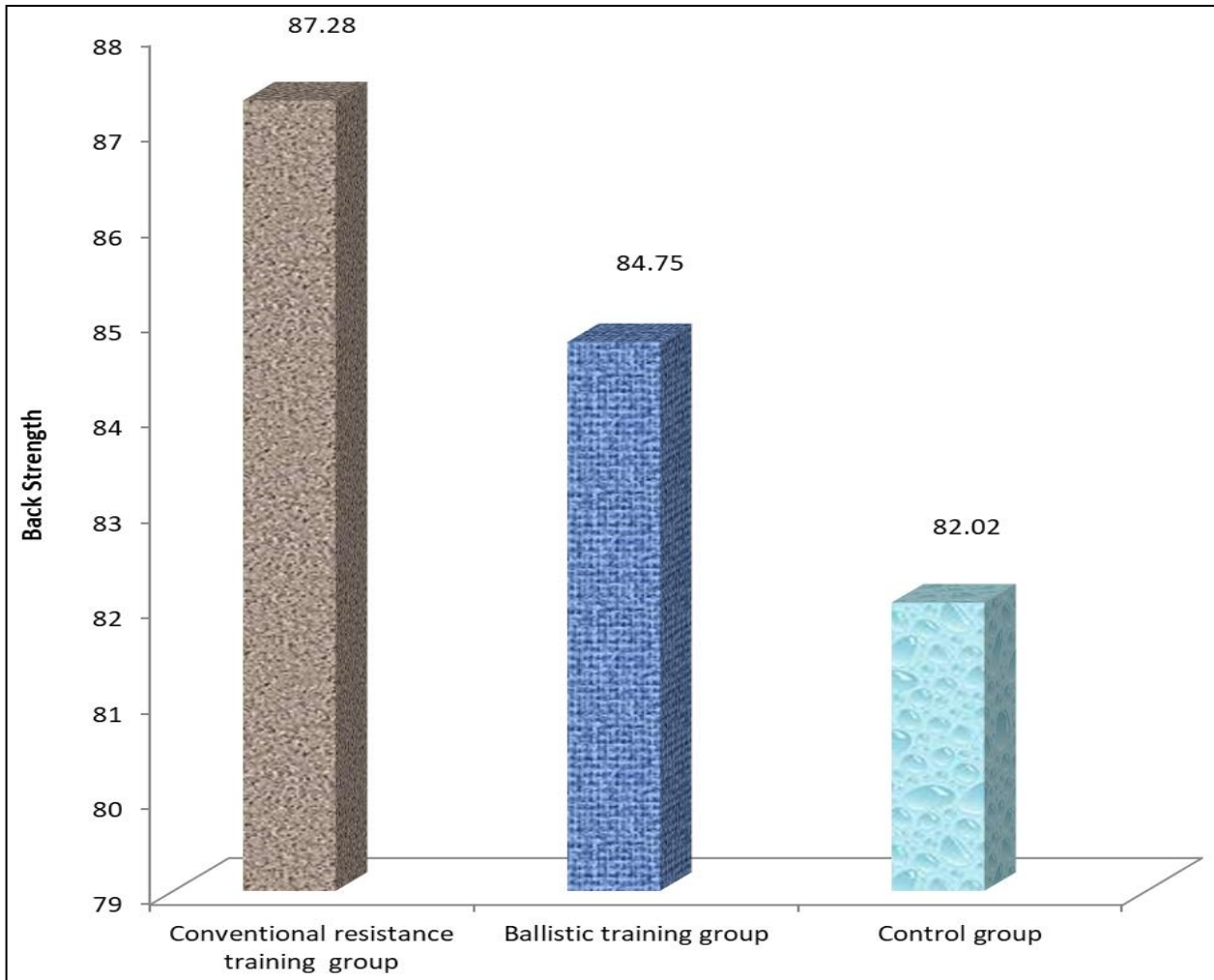


Fig 1: The adjusted post-test mean values of conventional resistance training group, ballistic training group and control group on back strength

Conclusion

1. There was a significant increase in maximum strength for both conventional resistance training and ballistic training groups as compared to control group.
2. There was a significant increase in leg strength for conventional resistance training group as compared to ballistic training group.

Reference

1. Gena Hooks. Weight Training in Athletics and Physical Education, (New Jersey: Prentice Hall Inc., 1974, 97pp.
2. Partric Routh 'O' Keefe, Education through Physical Activity, (London: The C.V. Mosby Company, 1959, 265.
3. Buchers, Malina RM. Genetics of Physical Fitness and Motor Performance, Exercise and Sports Science, Reviews II, 1993, 3206.
4. Granacher M, Gruber A, Gollhofer. Resistance training and neuromuscular performance in seniors. Int. J Sports Med. 2009 Sep;30(9):652-7.
5. Angle Lumpkin, Physical Education – A contemporary Introduction, (Saint Louis: The Mirror and Mosby College Publishing, 1997, 84.
6. Carl Gabbard, Susan Lawy. Physical Education for Children, (New Jersey: Prentice Hall Inc., 1987, 50-51.
7. Cormie PMR, McGuigan RU, Newton. Changes in the eccentric phase contribute to improved stretch-shorten cycle performance after training". Med Sci Sports Exerc. 2010 Sep;42(9):1731-44.