IMPACT OF BALLISTIC TRAINING ON SELECTED POWER PARAMETERS AMONG VOLLEYBALL PLAYERS

Dr.S.Rameshkumar*
Assistant Professor
MASS College of Physical Education
Mr.R.Nasreth Philip**
Lecturer
MASS College of Physical Education,
SH-136, Pondy Mailam Road V.Parangani Village, Villupuram
District -605 109

Abstract

The reason to study about this was once to discover the effect of ballistic training on selected power parameters among volleyball players. Thirty volleyball players have been randomly selected from various colleges in and around Salem district, Tamil Nadu State, India to obtain the study's purpose. Subject's age ranged from 18 years to 25 years. The participants, as experimental and control groups, were randomly divided into two equal groups of fifteen each such as experimental and control groups. For eight weeks, three days a week, one session daily, the experimental group took part in the ballistic training. The control group had things to do with their day-to-day operations and had no exceptional coaching. The topics of the two groups had been tested on chosen variables prior and at once after the training period. The collected data have been analyzed statistically through analysis of covariance (ANCOVA) to locate out the magnitude difference, if any between the groups. The 0.05 degree of confidence was once fixed to take a look at the level of magnitude difference, if any between groups. The research outcome to find out about showed that there were significant gaps between ballistic training group and control group that used to exist. However, in addition, the ballistic training group reported major gains on vertical jump and seated medicine ball throw compared to control group.

Key words: *volleyball, ballistic training, vertical jump and seated medicine ball.*

Introduction

Volleyball is a social game, where next to the good coordination and cleverness comes up to the important place team players good rapprochement and cooperation Adams, et al (2002). Modern volleyball needs strong physical stamina for players, while improving speed and explosive strength and endurance ability is very necessary in parallel. Vertical jumping capability is key to volleyball success. Jumping is used during the jump set, jump, block and spike serve. A successful player must be able to not only jump high, but also be able to quickly reach that height, this requires an ability to generate power in a very short time Stojanovic, et al (1996).

Ballistic training, also called power training, may be a type of training which involves throwing weights, and jumping with weights, so as to extend explosive power. The intention in ballistic exercises is to maximize the acceleration phase of an object's movement and minimize the deceleration phase. as an example, throwing a drugs ball maximizes the acceleration of the ball; this may be contrasted with a customary weight training where there would be a

pronounced deceleration phase at the tip of the repetition i.e. at the top of a bench press exercise the barbell is decelerated and dropped at a halt Fleck and Kraemer (2013). in step with Scott Pearson ballistic training may be a terribly effective training methodology for rising strenuosity and sports performance; there are a unit many vital problems practitioners should take into thought before prescribing this modality to athletes. Scott Pearson opinion that ballistic training takes advantage of the stretch-shorten cycle to develop power. However, ballistic training emphasizes the intent, rate and continuing acceleration of the concentric part of exercises, instead of the storage and utilization of elastic energy to enhance the athletic capabilities of athletes. Ballistic training forces the athlete's body to recruit and trigger quick twitch muscle fibers. This can be vital as a result of these muscle fibers have the best potential for growth and strength. Ballistic training needs the muscles to adapt to acquiring terribly quickly and forcefully. This training needs the central nervous system to coordinate and manufacture the best quantity of force within the shortest time potential Baker et al (2001).

Methodology

To obtain the purpose of the study, thirty volleyball players have been randomly selected from various colleges in and around Salem district, Tamil Nadu State, India. The age of subjects ranged from 18 to 25 years. The participants, as experimental and control groups, were randomly divided into two equal groups of fifteen each such as experimental and control groups. For eight weeks, three days a week, one session daily, the experimental group took part in the ballistic training. The control group had things to do with their day-to-day operations and had no exceptional coaching. For measuring vertical jump, vertical jump test was used and the unit of measurement was in Centimeter. For measuring Seated medicine ball throw, seated medicine ball throw test was used and the unit of measurement was in Meters. The topics of the two groups had been tested on chosen variables prior and at once after the training period. The collected data have been analyzed statistically through analysis of covariance (ANCOVA) to locate out the magnitude difference, if any between the groups. The 0.05 degree of confidence was once fixed to take a look at the level of magnitude difference, if any between groups.

Results

TABLE – I
DESCRIPTIVE ANALYSIS OF POWER PARAMETERS AMONG EXPERIMENTAL AND CONTROL GROUPS

S.No	Variables	Group	Pre-Test Mean	SD (±)	Post –Test Mean	SD (±)	Adjusted Mean
1	Vertical jump	BTG	55.87	0.64	59.29	0.86	59.30
		CG	55.89	0.63	57.51	1.99	57.50
2	Seated medicine ball throw	BTG	4.64	0.02	4.89	0.05	4.89
		CG	4.65	0.03	4.76	0.15	4.76

BTG = Ballistic training group **CG= Control group**

The tables-I shows the pre, post-test means, standard deviations and adjusted means on vertical jump and Seated medicine ball throw of male volleyball players had been numerical presented. The evaluation of covariance on chosen variables of ballistic training group and manipulate team is introduced in table – II

TABLE – II
COMPUTATION OF ANALYSIS OF COVARIANCE ON POWER PARAMETERS AMONG VOLLEYBALL PLAYERS

S.No	Variables	Test	Sum of variance	Sum of squares	Df	Mean square	F ratio
1	Vertical jump	Pre-test	B.G.	0.005	1	0.005	0.01
			W.G.	11.51	28	0.41	
		Post-test	B.G.	23.77	1	23.77	10.07*
			W.G.	66.08	28	2.36	
		Adjusted means	B.S.	24.26	1	24.26	10.94*
			W.S.	59.83	27	2.21	
2	Seated medicine ball throw	Pre-test	B.G.	0.001	1	0.001	0.81
			W.G.	0.03	28	0.001	
		Post-test	B.G.	0.12	1	0.12	9.11*
			W.G.	0.38	28	0.01	
		Adjusted means	B.S.	0.11	1	0.11	8.18*
			W.S.	0.38	27	0.01	

**Significant at 0.05level of confidences*

(The table values required for significance at 0.05 level of confidence for 1 & 28 and 1 & 27 are 4.20 and 4.21 respectively).

In the table the outcomes of analysis of covariance on vertical jump and seated medicine ball throw. The obtained 'F' ratio of 0.01 and 0.81 for Pre-test potential was once less than the table value of 4.20 for df 1 and 28 required for value at 0.05 degree of confidence on vertical jump and seated medicine ball throw. The got 'F' ratio of 10.07 and 9.11 for post-test mean used to be higher than the table value of 4.20 for df 1 and 28 required for value at 0.05 degree of vertical jump and seated medicine ball throw. The obtained 'F' ratio of 10.94 and 8.18 for adjusted post-test potential was increased than the table value of 4.21 for df 1 and 27 required for importance at 0.05 degree of vertical jump and seated medicine ball throw. The result of the find out about indicated that there was once a great difference amongst the adjusted post-test means of ballistic training group and manipulate group on vertical jump and seated medicine ball throw. And additionally ballistic training team showed significant enhancement on vertical jump and seated medicine ball throw in contrast to manipulate group.

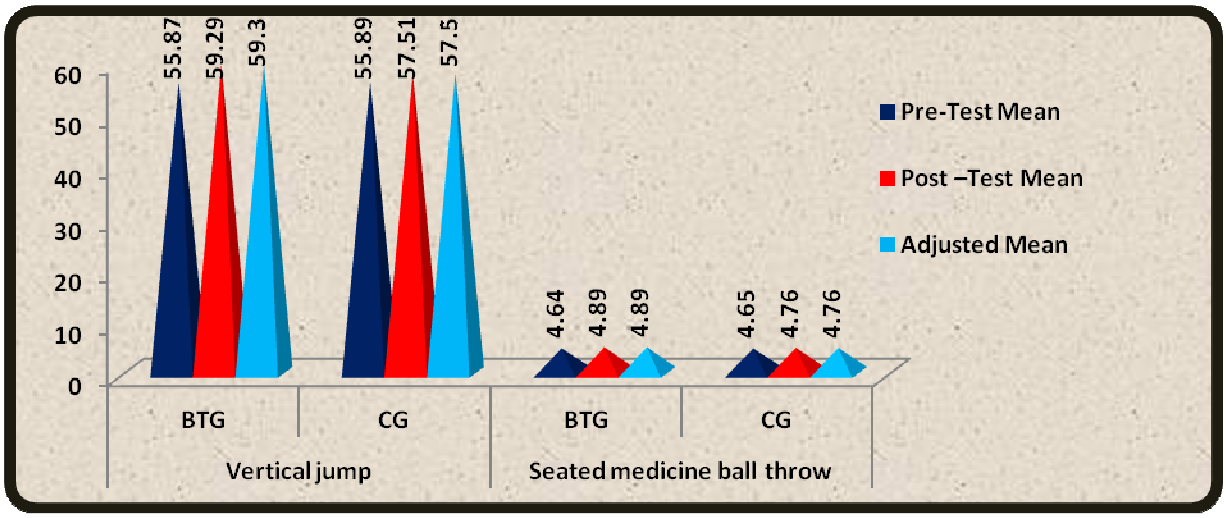

Figure-I The pre, post and adjusted mean values of vertical jump and seated medicine ball throw of both experimental and control groups are graphically represented in the figure-I.

Discussion on findings

The study results indicate that, when compared to the control group, the experimental group that underwent ballistic training had shown significant improvement in the selected variables, namely vertical jump and seated medicine ball throw. In all of the selected variables the control group showed no noticeable change. The results of this study are suggestive that Ballistic stretching is effective for increasing the explosive power of elite volleyball players than control group Subbiah (2019). shot put throwing performance can be increased similarly after 6 weeks of strength or ballistic-power training, in moderately trained subjects Nikolaos et al (2013). Elraoufebada (2013) found that the ballistic training for the development explosive power to improve the mechanical performance and the level of achievement lifting snatch for Youth weightlifters in childhood and adolescence. Ballistic resistance training is effective for increasing the vertical jump performance of elite volleyball players in a sport specific jumping performance Newton et al (1999). The results of this study indicate that using ballistic resistance exercise is an effective method for increasing Peak force and rate of force development Winchester et al (2008).

Conclusions

The following results were drawn from the data analysis

1. The volleyball players of the experimental group showed significant improvement in all selected power parameters, namely vertical jump and seated ball medicine throw.
2. The Volleyball Players of control group showed no significant improvement in any of the variables selected.

Reference

Nikolaos, Z., Konstantinos, S., Methenitis, S., Constantinos, P., Giorgos, K., Georgiadis, G., Stasinaki, A.N., Panagiota, M., & Gerasimos, T. (2013). Effects of Strength vs. Ballistic-Power Training on Throwing Performance. *Journal of sports science & medicine*. 12. 130-137.

Elraoufebada, K.A. (2013). The impact of ballistic training on explosive power development and some biomechanics parameters for lifting the snatch youth weightlifters. *International sport science students conference*.

Newton, R. U., Kraemer, W. J., & Hakkinen, K., (1999). Effects of ballistic training on preseason preparation of elite volleyball players. *Medicine and Science in Sports and Exercise*. 31(2), pp. 323-330. DOI: 10.1097/00005768-199902000-00017.

Subbiah, S. (2019). Effect of ballistic stretching on vertical jump performance among Volleyball players. *International journal of scientific research*, *8(8). 2278-7844*

Scott Pearson 6th July 2018 | 5 min. Ballistic Training. https://www.scienceforsport.com/ballistic-training/.

Fleck, S.J., and Kraemer, W.J. (2013). 'Ballistic Training' in Designing Resistance Training Programmes, *Human Kinetics:Leeds*, p.280.

Adams, K., OShea, J.p., OShea, K.l., & Climstein, M. (2002). The effect of six weeks of squat, plyometric and squat-plyometric training on power production. *Journal of Applied Sport Science Research*. 6(1):36-41.

Stojanovic, T., and Kostic, R. (1996). The effects of the plyometric sport training model on the development of the vertical jump of volleyball players. *Physical Education and Sport*. 1(9):11 -25.

Winchester, J.B., McBride, J.M., & Maher, M.A. (2008). Eight weeks of ballistic exercise improves power independently of changes in strength and muscle fiber type expression. *Journal of Strength and Conditioning Research*. 22(6), 1728-1734. doi:10.1519/JSC.0b013e3181821abb.