ISO 9001 - 2015

ISSN 2349 - 4891

Monthly

IJRRAS

IF
4.665

Volume 4,Issue 4, April 2017

International Journal of
Recent Research and Applied Studies

SURRAGH PUBLICATIONS

ISSN: 2349 - 4891

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

Effect of Plyometric Training on Selected Physical Variable Among School Volleyball Players

K.Veeramani[1] & Dr.K.Vaithianathan[2]

[1]*M.Phil Research Scholar, Department of Physical Education & Sports Sciences, SRM University, Chennai, Tamilnadu, India.*
[2]*Director of Sports, SRM University, Chennai, Tamilnadu, India.*

Received 15th March 2017, Accepted 20th April 2017

Abstract

The purpose of the present study was to investigate the effect of plyometric training on selected physical variable among school volleyball players. To achieve the purpose of the study thirty men players were selected from Govt Hr.Sec.School, Erode district, during the year 2017. The subject's age ranges from 14 to 19 years. The selected players were divided into two equal groups consists of 15 men players each namely experimental group and control group. The experimental group underwent plyometric training programme for six weeks. The control group was not taking part in any exercise during the course of the study. Speed, Arm power and explosive power were taken as criterion variables in this study. Pre-test was taken before the exercise period and post- test was measured immediately after the six week exercise period. Statistical technique't' ratio was used to analyze the means of the pre-test and post test data of experimental group and control group. The results revealed that there was a significant difference found on the criterion variables. The difference found is due to plyometric training given to the experimental group on Speed, Arm power and explosive power when compared to control group.

Keywords: Plyometric training, Volleyball**,** Speed, Arm power and Explosive power.

Introduction

"The World Health Organization defined health in its constitution of 1948 as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity". Physical Education is one of the most ancient arts of the humanities. In its broadest interpretation Physical Education is defined as the art and science of voluntary purposeful and active human movement. It is clear that Physical Education is concerned with a fundamental mode of human expression. Likewise it is an essential form of non – verbal communication which can be communicated very effectively depending and does, express a wider range of emotions while participating in a group towards the activities of Physical Education (John Nixon, 1980).

Plyometric refers to exercises that allow the muscle to contract eccentrically before explosive contraction which enable the muscle to reach maximum explosive strength in a shortest period of time. The training aims at linking strength with speed to produce power. In this training the body weight of an athlete is used as resistance. All the forms of jumping exercises, wall bar exercises, pull-ups, skipping, rope climbing, sit-ups, etc. are the various forms of plyometric exercises. Since plyometric put great stress on the muscular-skeletal system, it is better to practice after developing the basic strength through weight training. Physical fitness is the ability to function effectively throughout your workday, perform your usual other activities and still have enough energy left over to handle any extra stresses or emergencies which may arise. The physical fitness might vary by individual but most experts agree that there are five basic components of physical fitness which involve your heart, lungs, strength, endurance, and agility or flexibility.

Correspondence
K.Veeramani
E-mail: aucpescholars2015@gmail.com

Methodology

Selection of subjects

To achieve the purpose of this study 30 school Boys volleyball players were selected from Govt.Hr. Sec. School, Erode District, Random group design was used. The subject's age ranged from 14 to 19 years. The subjects were divided in two groups namely experimental group (Group-I) and control group (Group-II). Experimental group underwent Plyometric training and Control group did not considered for any specific training

Experimental design

To carry out the study the investigator used two groups, one experimental group and one control group, each group consists of 15 subjects. All the groups were tested on selected criterion variable and the readings were recorded in their respective unit, as pre-test scores. After pre-test the experimental group was treated with

circuit based Plyometric training for a period of six weeks. After six weeks of training both the groups were tested again on the selected criterion variables and the scores were recorded in their respective units as post test scores. The pre and post test were taken for analysis.

Selection of Variables
Independent variables
Dependent variables

Experimental Group I	Plyometric training	Total subjects -30
Control Group	No Training	

- Physical variable

Selected Variables and Test Items

S. No	Variables	Test Items	Unit
1	Speed	50mts dash	Seconds
2	Arm Power	Push ups	Count per minutes
3	Leg explosive power	Standing broad jump	Meters

Statistical Technique

The following statistical procedures were used. The "t" ratio was calculated to find out the significance of the difference between the mean of the initial and final test of the experimental group.

Analysis of the Data

The significance of the difference among the means of experimental group was found out by pre-test. The data were analyzed and dependent't' test was used with 0.05 levels as confidence.

Table 1
Analysis of't'-ratio for the pre and post tests of experimental and control group on speed for school volleyball players (Speed means count in seconds)

Groups	Mean		Mean Difference	S.D	Standard Error	't' ratio
	Pre	Post				
Experimental	8.41	7.35	1.06	0.70	0.18	8.94*
Control	8.29	8.53	0.24	0.77	0.20	1.73

*Significance at 0.05 level of confidence df (14) is =2.15

An examination of table 1 shows that the obtained mean values of pretest and post test were 8.29, 8.53 respectively. The standard deviations were 0.77 and 0.77 and mean difference is 0.24; the obtained 't' ratio is 1.73; the required table value is 2.15; insignificance at 0.05 level. The obtained 't' ratio is lesser than the table value. It is found to be insignificant. An examination of experimental group shows that the obtained mean values of pretest and post test were 8.41, 7.35 respectively. The standard deviations were 0.70 and 0.67 and mean difference is 1.06; the obtained 't' ratio is 8.94; the required table value is 2.15; significance at 0.05 level. The obtained 't' ratio is greater than the table value. It is found to be significant.

Table 2
Analysis of 't'-ratio for the pre and post tests of experimental and control group on arm power for school volleyball players (Arm power means count in maximum count per minute)

Groups	Mean		Mean Difference	S.D	Standard Error	't' ratio
	Pre	Post				
Experimental	14.47	14.33	0.14	2.03	0.52	1.47
Control	14.13	17.93	3.8	2.43	0.63	15.64*

*Significance at 0.05 level of confidence df (14) is =2.15

An examination of table 2 shows that the obtained mean values of pretest and post test were 14.47, 14.33 respectively. The standard deviations were 2.03 and 1.95 and mean difference is 0.14; the obtained 't' ratio is 1.47; the required table value is 2.15; insignificance at 0.05 level. The obtained 't' ratio is lesser than the table value. It is found to be insignificant.

An examination of experimental group shows that the obtained mean values of pretest and post test were 14.13, 17.93 respectively. The standard deviations were 1.78 and 2.43 and mean difference is 3.80; the obtained 't' ratio is 15.64; the required table value is 2.15; significance at 0.05 level. The obtained 't' ratio is greater than the table value. It is found to be significant.

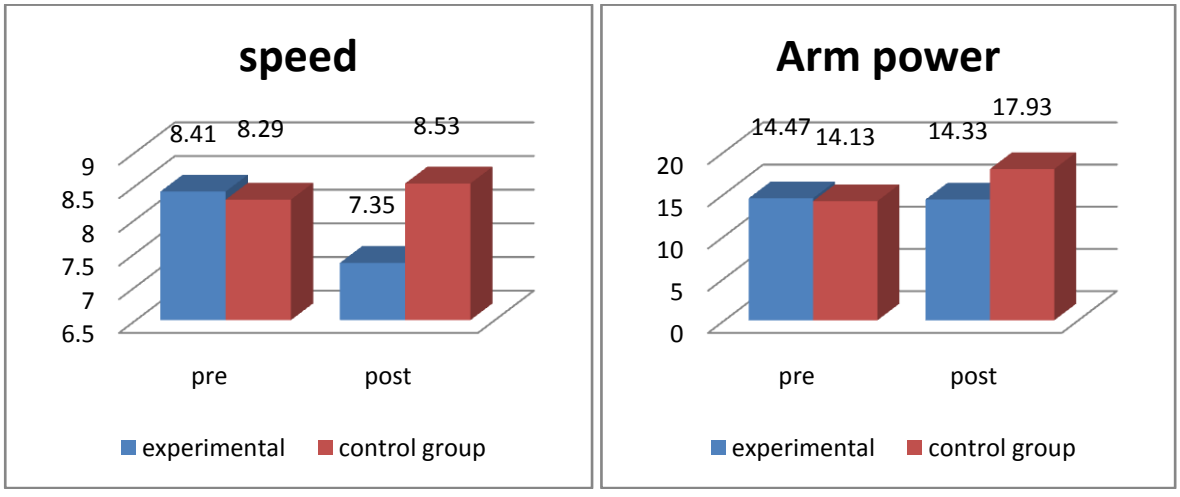
Table 3
Analysis of 't'-ratio for the pre and post tests of experimental and control group on explosive power for school volleyball players (Explosive power means count in meters)

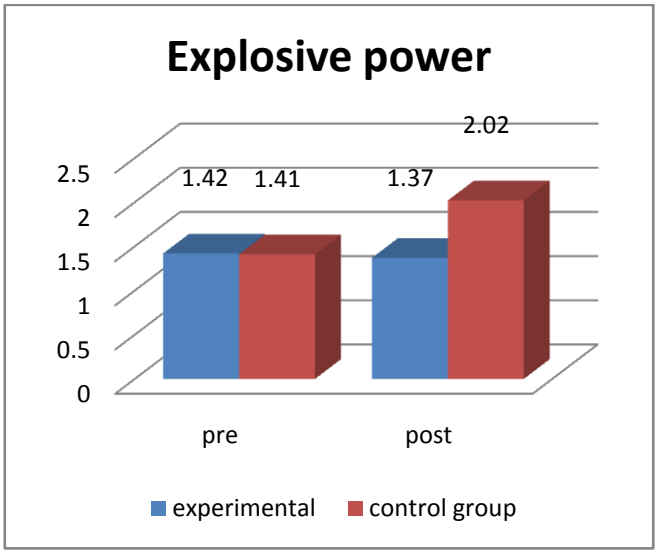
Groups	Mean		Mean Difference	S.D	Standard Error	't' ratio
	Pre	Post				
Experimental	1.42	1.37	0.05	0.13	0.03	1.86
Control	1.41	2.02	0.61	0.19	0.05	11.62*

*Significance at 0.05 level of confidence df (14) is =2.15

An examination of table 3 shows that the obtained mean values of pretest and post test were 1.42, 1.37 respectively. The standard deviations were 0.13 and 0.09 and mean difference is 0.05; the obtained 't' ratio is 1.86; the required table value is 2.15; insignificance at 0.05 level. The obtained 't' ratio is lesser than the table value. It is found to be insignificant. An examination of experimental group shows that the obtained mean values of pretest and post test were 1.41, 2.02 respectively. The standard deviations were 0.12 and 0.19 and mean difference is 0.61; the obtained 't' ratio is 11.62; the required table value is 2.15; significance at 0.05 level. The obtained't' ratio is greater than the table value. It is found to be significant.

Figure I, II & III
Mean values of Plyometric group and control Group on speed, Arm power & Explosive power for school volleyball players





Discussion on Findings

The investigator had a through and vision that Plyometric exercises would improve school volleyball players speed, arm power, explosive power, agility, resting heart rate and breath holding time which in turn would help them to playing better. The investigator selected exercises that are Plyometric exercises for volleyball players. To perform exercise the volleyball players should have better physical and physiological variables. It is a matter of interest how far Plyometric exercises improve the school volleyball players. The statistical values presented in Table 1, 2 and 3 proved that there was a significant improvement in selected physical variables among school volleyball players due to Plyometric exercises. Obtained't' value of speed is 8.94, arm power is 15.64 and explosive power is 11.62 respectively which is greater than the required 't' value to be significant. For the degrees of freedom 2.15 at 0.05 level of confidence. Thus the hypothesis of this study that there would be significant improvement due to Plyometric exercises on selected physical and physiological variables among school volleyball players was accepted at 0.05 level of confidence.

Conclusions

Based on the results of the present study the following conclusions have been school boys.

1. A result on testing the differences on pre-test means between experimental and control groups, no difference were found on variables used in the study namely speed, arm power and explosive power.
2. On testing the post-test means between experimental and control groups. There was a significant improvement in speed, arm power and explosive power. However the improvement was in favour for experimental group compare better than the control group due to six weeks plyometric training period.
3. In the view of maximize the treatment variance, the collected data were tested by t-ratio used.

References

1. Ayca B, Sener A, ApikogluRabus S, Oba R. (2006) *the effect of exercise on urinary gamma-glutamyl transferase and protein levels of volleyball players.* 46(4):623-7.
2. Avery d., Faigenmbanum, jams E.Mc Fordland (2007) "*Effects of a short-term plyometric and resistance training programme on fitness*",journals of sports science and medicine, 6, 519 – 525.
3. de Villarreal ES., GonzálezBadillo JJ., Izquierdo M., (2008)*"Low and moderate plyometric training frequency produces greater jumping and sprinting gains compared with high frequency"*. Journal of Strength Conditioning Research; 22(3):715-25.
4. Meylan C., Malatesta D., (2009) "*Effects of in-season plyometric training within soccer practice on explosive actions of young players"*, new Zealand, cesar.meylan @aut.ac.nz; 23(g) : 2605-13.
5. Saez de Villarreal, E, Requena, B, and Cronin, JB. *The effects of Plyometric training on sprint performance*; 26(2): 575-584, 2012.
6. Wallace - B.J., et al, (2010) "*Qualification of vertical ground reaction force of popular bilateral Plyometric exercise* "Journal of strength and conditioning research 24 (1):207-12.