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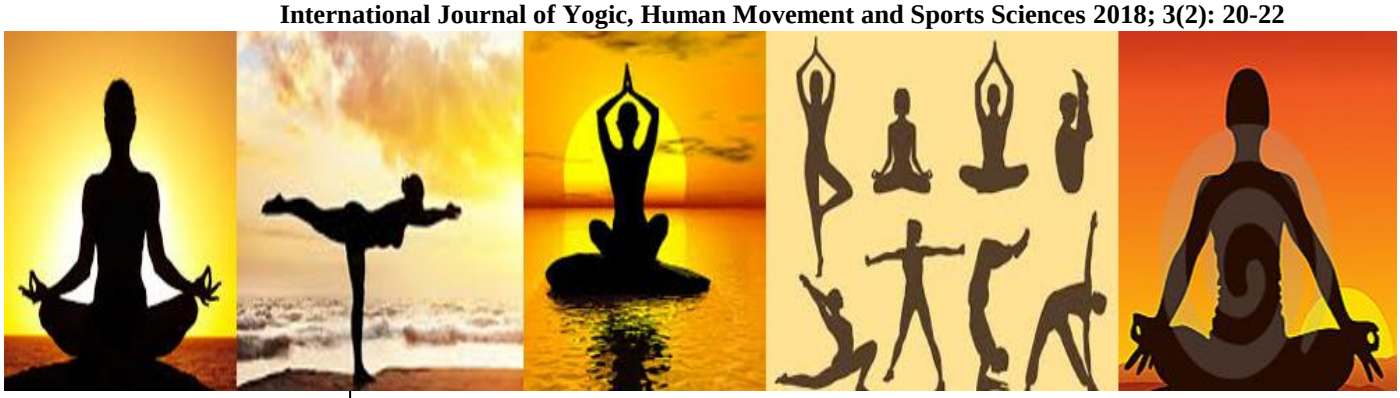

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Outcome of plyometric training and plyometric training with protein supplementation on spiking ability of volley ball players

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Abstract
The purpose of the study was to investigate the outcome of plyometric training and plyometric training with protein supplementation on explosive power. To achieve the purpose of the study, forty-five men inter collegiate volleyball players were selected as subjects. The age, height and weight of the subjects ranged from 18 to 22 years, 162 to 175 centimetres and 60 to 75 kilograms respectively. The selected subjects were randomly assigned into three equal groups of 15 subjects each. Group I underwent plyometric training, group II underwent plyometric training with protein supplementation and group III acted as control. The experimental groups were trained up in which two modes of training were given independently with separate participants in each group. The pre test data were collected prior to the training programme and post test data were collected immediately after the twelve weeks of plyometric training and plyometric training with protein supplementation from two experimental groups and a control group on selected dependent variables were statistically analyzed to find out the significant difference if any, by applying independent T test and the analysis of covariance (ANCOVA). Since three groups were involved, whenever the obtained 'F' ratio for adjusted post test means was found to be significant, the Scheffe's test was applied as post hoc test to determine the paired mean differences. In all the cases level of confidence was fixed at 0.05 for significance.

Keywords: plyometric training, protein supplementation, spiking ability

Introduction

Dietary supplements

Dietary supplement is an artificial invention projected to supplement the diet when taken by mouth as a pill, capsule, tablet, or liquid (USNIH, 2011). A supplement can supply nutrients either take out from food items or man-made, in person or in grouping, in order to boost the amount of their eating. The class of nutrient compounds contains vitamins, minerals, fiber, fatty acids and amino acids. Dietary supplements can also include substances that have not been deep-rooted as being necessary to life, but are advertised as having a beneficial biological effect, such as plant pigments or polyphenols. Animals can also be a source of supplement components, as for example collagen from chickens or fish.

Objectives of the study

The aim of the study is to find effect of plyometric training and plyometric training with protein supplementation on Spiking ability.

Training programme

In this study, training was done under close supervision with frequent adjustments in training intensity to maintain the desired training stimulus. The training programmes were scheduled for one session a day each session lasted between thirty to forty-five minutes approximately including warming up and warming down. During the training period, the experimental groups underwent their respective training programme three days per week (alternative days) for twelve weeks in addition to their curriculum. The group–I involved on plyometric training, Intensity starting from low to high @ 60-foot contact to @ 110-foot contact with 10 to 14 repetition and 2 to 3 sets followed from first week to twelve weeks.

Group–II involved on plyometric training with protein supplementation the training load was followed as like a plyometric training group schedule, in addition that the protein supplied for the subject, the protein powder was supplied at 0.8 grams per kg of the body weight of subjects on the training days (weekly three days). Training schedule given for group I and II is tabled in appendix II.

Spiking Ability

Selection of Test

The investigator analysed various literature, has consulted the experts in physical education and selected the test items to collect data on bio-motor and skill performance variables which were standardized and most suitable to this study, they are presented in table – 1.

Table 1: Dependent variables and tests

S. No.	Variables	Criterion Measures	Unit of Measurement
1	Spiking Ability	Wall spike test	Numbers

The Spike (Wall Spike)

Purpose

To measure the ability to spike of the subjects.

Equipment

A wall, measuring tape, colour chalk, volley ball and stop watch.

Procedure

The subjects should stand behind the marked line, which is drawn from the wall at the distance of 4.5 m. Subjects start to spike the volleyball against the wall, while spike ball should rebound and come to the subject for next spike, likewise it should be continue for 30 seconds, if the ball is missed, subjects can take a another ball and continue the spike.

Scoring

Every successful spike with rebound is considered as a point. Within 30 seconds, maximum no of successful spike taken as a score. Three trails were given, among that best score was taken.

The pre and post test data collected from the experimental and control groups on spiking ability were statistically analysed by ANCOVA and the results are presented in table- 2.

Table 2: Analysis of covariance on spiking ability of experimental and control groups

	Plyometric Training	Plyometric Training with Protein Supplements	Control Group	SOV	Sum of Squares	df	Mean squares	'F' ratio
Pre test Mean	14.01	14.06	13.73	B	0.93	2	0.46	0.70
SD	0.75	0.79	0.88	W	27.86	42	0.66	
Post test Mean	18.53	20.13	13.86	B	318.04	2	159.02	60.06*
SD	0.99	2.53	0.74	W	111.20	42	2.64	
Adjusted Post test Mean	18.52	20.10	13.90	B	301.43	2	150.71	56.08*
				W	110.17	41	2.68	

(The required table value for significance at 0.05 level of confidence with degrees of freedom 2 and 42 is 3.23 and degree of freedom 2 and 41 is 3.23)

*Significant at .05 level of confidence

Table 2 shows that the pre test mean and standard deviation on spiking ability of plyometric training, plyometric training with protein supplementation groups and control group are 14.01 $\pm$ 0.75, 14.06 $\pm$ 0.79 and 13.73 $\pm$ 0.88 respectively. The obtained 'F' ratio value of 0.70 for pre test means on spiking ability of plyometric training, plyometric training with protein supplementation groups and control group were less than the required table value of 3.23 for the degrees of freedom 2 and 42 at 0.05 level of confidence. It reveals that there is statistically insignificant difference among the plyometric training, plyometric training with protein supplementation groups and control group during pre test period. It inferred that the random assignment of the subjects for the three groups is successful.

The post test mean and standard deviation on spiking ability of plyometric training, plyometric training with protein supplementation groups and control group are 18.53 $\pm$ 0.99, 20.13 $\pm$ 2.53 and 13.86 $\pm$ 0.74 respectively. The obtained 'F' ratio value of 60.06 for post test means on spiking ability of plyometric training, plyometric training with protein supplementation groups and control group were higher than the required table value of 3.23 for the degrees of freedom 2 and 42 at 0.05 level of confidence.

The adjusted post test means on spiking ability of plyometric training, plyometric training with protein supplementation groups and control groups are 18.52, 20.10 and 13.90 respectively. The obtained 'F' ratio value of 56.08 on spiking ability were greater than the required table value of 3.23 for the degrees of freedom 2 and 42 at 0.05 level of confidence. It is observed from this finding that significant differences exist among the adjusted post test means of experimental and control groups on spiking ability.

Since, the adjusted post test 'F' ratio value is found to be significant the Scheffe's test is applied as post hoc test to determine the paired mean differences, and it is presented in table-3.

Table 3: Scheffe's test for the difference between the adjusted post test paired means of spiking ability

Adjusted Post Test Means			DM	CI
Plyometric Training	Plyometric Training with Protein Supplements	Control Group		
18.52	20.10		1.58*	0.99
18.52		13.90	4.62*	0.99
	20.10	13.90	6.20*	0.99

*significant

Table - 3 shows the Scheffe's test results that there are

significant differences between the adjusted post tests means of plyometric training and plyometric training with protein supplementation groups; plyometric training and control groups; plyometric training with protein supplementation group and control group on spiking ability. Moreover plyometric training with protein supplementation group had high impact to increase the spiking ability of the volleyball players.

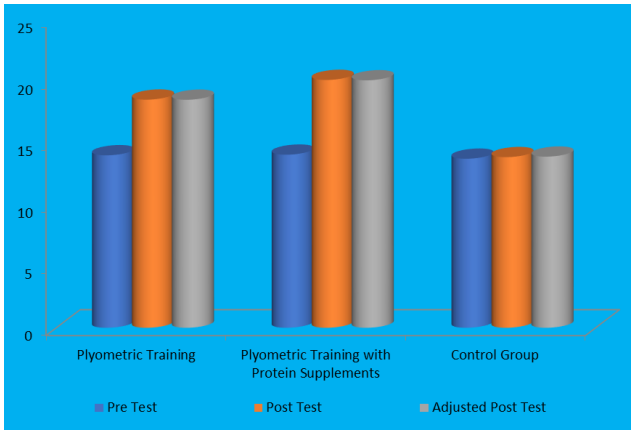

Fig 1: Cylinder diagram showing the mean value on spiking ability of experimental and control groups

Discussion

The result of the study showed that significant differences exist among the experimental and control groups on spiking ability. Hence among the experimental group the plyometric training with protein supplementation group had high improvements on spiking ability. The following studies are supporting my finding of the study.

Selvakumar and Palanisamy (2017) [5] found out the effect of strength and plyometric training on selected skill performance variables of male volleyball players. The result of twelve weeks strength and plyometric training has significant impact on passing and serving of experimental group compare to control group.

Guruvupandian and Murugavel (2017) investigated the influence of high intensity plyometric training program on motor fitness variables of intercollegiate male handball players. The study revealed that the motor fitness parameters were significantly improved due to influence High Intensity Plyometric training.

Arumugam (2016) [10] conducted Effect of in-season training on skill performance of volleyball. The finding suggests that the skill performance improved of volleyball players.

Palao and others (2004) [7] examined the effect of a team's level on the performance of skills (serve, reception, spike, block and dig) in high level volleyball. Found a significant difference in the performance of the spike in the teams of level. An increase in success of reception, spike, block and dig in relation to the level of the team is observed.

Result

The result of the study showed that significant differences exist among the experimental and control groups on spiking ability. Hence among the experimental group the plyometric training with protein supplementation group had high improvements on spiking ability.

References

1. Baechle, Thomas R. Essentials of Strength Training and Conditioning. Champaign: Human Kinetics. 1994, 248.
2. Bompa Tudor O. Periodization: Theory and Methodology of Training, (4th ed). Champaign, Illinois: Human Kinetics Publishers. 1999, 24.
3. Clark Harrison H. Application of Measurements of Health and Physical Education. Englewood Cliffs, N. J Prentice Hall Inc, 1976.
4. Clarke David H. Exercise Physiology. Englewood Cliffs, New Jersey Prentice Hall Inc. 1986, 23.
5. Selvakumar P, Palanisamy G. Effect of strength and plyometric training on selected skill performance variables of male volleyball players. International Journal of Physical Education, Sports and Health. 2017; 4(3):57-59.
6. Pasiakos. Others examined the effects of protein supplements on muscle damage, soreness and recovery of muscle function and physical performance. Result stated that protein supplements had positive effect on physical performance, 2014.
7. Palao JM, Santos JA, Urena A. Effect of team level on skill performance in volleyball. International Journal of Performance Analysis in Sport. 2004; 4(2):50-60.
8. Pasiakos SM, Lieberman HR, McLellan TM. Effects of protein supplements on muscle damage, soreness and recovery of muscle function and physical performance: a systematic review. Sports Med. 2014; 44(5):655-70.
9. Pasiakos SM, McLellan TM, Lieberman HR. The effects of protein supplements on muscle mass, strength, and aerobic and anaerobic power in healthy adults: a systematic review. Sports Med. 2015; 45(1):111-31.
10. Arumugam C. Effect of in-season training on skill performance of volleyball players. International Journal of Recent Research and Applied Studies. 2016; 1(3):4-6.