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EFFECT OF PLYOMETRIC TRAINING ON BLOCKING AND SPIKING AMONG VOLLEYBALL PLAYERS

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ABSTRACT

The purpose of this study was to find out the Effect of plyometric training on blocking And Spiking among volleyball players. For the purpose of the study, random group design was employed. Randomly selected sixty volleyball players (N=60) were divided into four groups consisting of 15 in each group. Experimental Group I underwent low intensity plyometric training, experimental group II underwent medium intensity plyometric training and experimental group III underwent high intensity plyometric training group four was control group which did not participated in any special training. The control group did not participate in any special exercises except of their routine. Pre test scores were obtained using standard tests on blocking and spiking before the experimental period and the post test scores were obtained immediately after the twelve weeks experimental period. The difference between the pre test and post test means were subjected to statistical treatment using ANCOVA, which was the effect of varied intensities of plyometric training. In all cases 0.05 level was fixed to test the hypothesis of the study.

Key words: Blocking and Spiking

INTRODUCTION

The physical education programme provides each student with an opportunity to assess his fitness and to develop skill and understanding that will enable him to enjoy a productive stay in school, college and a more meaningful existence after school and college.

Right from the origin of physical education the major objectives of physical education was physical fitness. The aim of physical education in the early years attained physical fitness, which was a main requisite of the then citizens. As days changed, the need, importance, scope and objectives have also changed because the demand of environment to preserve to withstand stress, to resist fatigue and to possess the energy for vigorous and well rounded life has increased.

STATEMENT OF THE PROBLEM

The purpose of this study was to find out the Effect of plyometric training on blocking And Spiking among volleyball players

DELIMITATIONS

The study delimited to the following aspect

1. Only sixty men volleyball players from different colleges in Andhra Pradesh and Telangana who represented their college at intercollegiate level tournaments, were randomly selected as subjects for the study.

2. This experimental study was administered to only foure groups of fifteen (15) men volleyball players each.

3. The age of the subjects ranged from 19-24 years only

4. In the study, only low, medium and high intensities of plyometric training where considered as varied intensities of plyometric training.

5. Following are the variables selected for this study.

3. Blocking

4. Spiking

LIMITATIONS

The research study was limited to the following factors, and these limitations would be taken in to consideration while analyzing the data and interpreting the results.

1. While conducting the study the external factors like atmosphere conditions, cultural influence, and socio-economic condition and also the body structure of the subjects were not taken in to consideration.

2. No attempt was made to control the subjects participating in other extra curricular activities.

3. Though the subjects were motivated verbally, no attempt was made to differentiate their motivation level during testing and training.

4. The investigator did not consider the geographical location at the time of conducting the experiment.

5. The exercises were classified in to low, medium and high intensity based the classification of experts like Donald A.Chu (1992)

SELECTION OF SUBJECTS

The purpose of the study was to find out the Effect of plyometric training on blocking And Spiking among volleyball playersTo achieve the purpose of this study, sixty men volleyball players were selected from different colleges of Andhra Pradesh & Telangana who represented their colleges in intercollegiate level volleyball tournaments. The selected subjects were of age group ranging from 19 to 24 years with standard deviation of $\pm$ 2.1. The subjects were randomly divided into four groups and each group contained fifteen subjects. Group I acted as experimental group I and Group II acted as experimental group II group III acted as experimental group III and the fourth group was considered as control group. .

SELECTION OF VARIABLES

Dependent Variables

1. Blocking
2. Spiking

Independent Variables

1. 12 Weeks Low Intensity Plyometric Exercises
2. 12 Weeks Medium Intensity Plyometric Exercises
3. 12 Weeks High Intensity Plyometric Exercises

EXPERIMENTAL DESIGN

For the purpose of the study, random group design was employed. Randomly selected sixty volleyball players (N=60) were divided into four groups consisting of 15 in each group. Experimental Group I underwent low intensity plyometric training, experimental group II underwent medium intensity plyometric training and experimental group III underwent high intensity plyometric training group four was control group which did not participated in any special training. The control group did not participate in any special exercises except of their routine. Pre test scores were obtained using standard tests on blocking and spiking before the experimental period and the post test scores were obtained immediately after the twelve weeks experimental period. The difference between the pre test and post test means were subjected to statistical treatment using ANCOVA, which was the effect of varied intensities of plyometric training. In all cases 0.05 level was fixed to test the hypothesis of the study.

CRITERION MEASURES

The following criterion measures were adopted to measure the test.

1. blocking and spiking were measured based on Volleyball Skill tests.

Table I

Intra Class Correlation Coefficient of Test – Retest Scores

S.No	Variables	Tests	Obtained 'r'
1	Blocking	Volleyball Skill Test	0.81*
2	Spiking	Volleyball Skill Test.	0.80*

* Significant at 0.01 level

RESULTS ON BLOCKING

The statistical analysis comparing the initial and final means of Blocking due to low intensity, medium, high intensities of plyometric training and control groups of volleyball players is presented in Table II

Table II

COMPUTATION OF ANALYSIS OF COVARIANCE DUE TO LOW, MEDIUM AND HIGH INTENSITIES OF PLYOMETRIC TRAINING ON BLOCKING

	Low intensity plyometric trainings Group	Medium intensity plyometric training Group	High intensity plyometric Group	Control Group	SOV	Sum of Squares	df	Mean Squares	Obtained F
Pre Test Mean	9.60	10.20	10.60	10.33	B	8.05	3	2.68	1.62
Std Dev	0.74	0.94	1.18	1.95	W	92.93	56	1.66	
Post Test Mean	10.87	10.87	11.80	10.67	B	11.65	3	3.88	4.25*
Std Dev	0.83	1.13	1.18	0.82	W	51.20	56	0.91	
Adjusted Post Test Mean	11.09	10.86	11.64	10.61	B	8.68	3	2.89	4.19*
					W	37.97	55	0.69	

SOV: Source of Variance; B: Between W: Within

Required $F_{(0.05),\,(df\,3,75)} = 2.77$

* Significant at 0.05 level of confidence

As shown in Table II, the pre test mean on Blocking of low intensity plyometric trainings group was 9.60 with standard deviation ± 0.74 pre test mean of medium intensity plyometric training group was 10.20 with standard deviation ± 0.94, the pre test mean of high intensity plyometric training group was 10.60 with standard deviation ± 1.18, the pre test mean of control group was 10.33 with standard deviation ± 1.95. The obtained F ratio of 1.62 on pre test means of the groups was not significant at 0.05 level as the obtained F value was less than the required table F value of 2.77 to be significant at 0.05 level. This shows that there was no significant difference in means of the groups at initial stage.

The results presented in Table II, the post test mean on Blocking of low intensity plyometric trainings group was 10.87 with standard deviation ± 0.83 post test mean of medium intensity plyometric training group was 10.87 with standard deviation ± 1.13, the post test mean of high intensity plyometric training group group was 11.80 with standard deviation ± 1.13, the post test mean of control group was 10.67 with standard deviation ± 0.82. The obtained F ratio of 4.25 on post test means of the groups was significant at 0.05 level as the obtained F value was greater than the required table F value of 2.77 to be significant at 0.05 level. This shows that there was significant difference in means of the groups at post experimental stage.

Taking into consideration of the pre test means and post test means, adjusted post test means were determined and analysis of covariance was done. The adjusted mean on Blocking on low intensity plyometric trainings group was 11.09, medium intensity plyometric training group was 10.86, high intensity plyometric training group was 11.64 and control group was 10.61. The obtained F value on adjusted means was 4.19. The obtained F value was greater than the required value of 2.77 and hence it was accepted that there was significant differences among the adjusted means on the Blocking of the subjects.

Since significant improvements were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table III

Table III
Multiple Comparisons between Low, Medium and High intensities plyometric training and Control Groups and Scheffe's Post Hoc
Analysis on Blocking

Low intensity plyometric trainings Group	Medium intensity plyometric training Group	High intensity plyometric Training Group	Control Group	MEAN DIFF	C.I
11.09	10.86			0.23	0.87
11.09		11.64		0.56	0.87

11.09			10.61	0.48	0.87
	10.86	11.64		0.78	0.87
	10.86		10.61	0.25	0.87
		11.64	10.61	1.03*	0.87

* Significant at 0.05 level.

The post hoc analysis of obtained ordered adjusted means proved that to be significant at 0.05 level confidence the required confidence interval was 0.87. The following paired mean comparisons were greater than the required confidence interval and were significant at 0.05 level.

High intensity plyometric training Group Vs Control Group (MD: 1.03)

The following paired mean comparisons were less than the required confidence interval and were not significant at 0.05 level.

Low intensity plyometric trainings Group Vs Medium intensity plyometric Training Group (MD: 0.23)

Low intensity plyometric trainings Group Vs High intensity plyometric Training Group (MD: 0.56)

Low intensity plyometric trainings Group Vs Control Group (MD: 0.48)

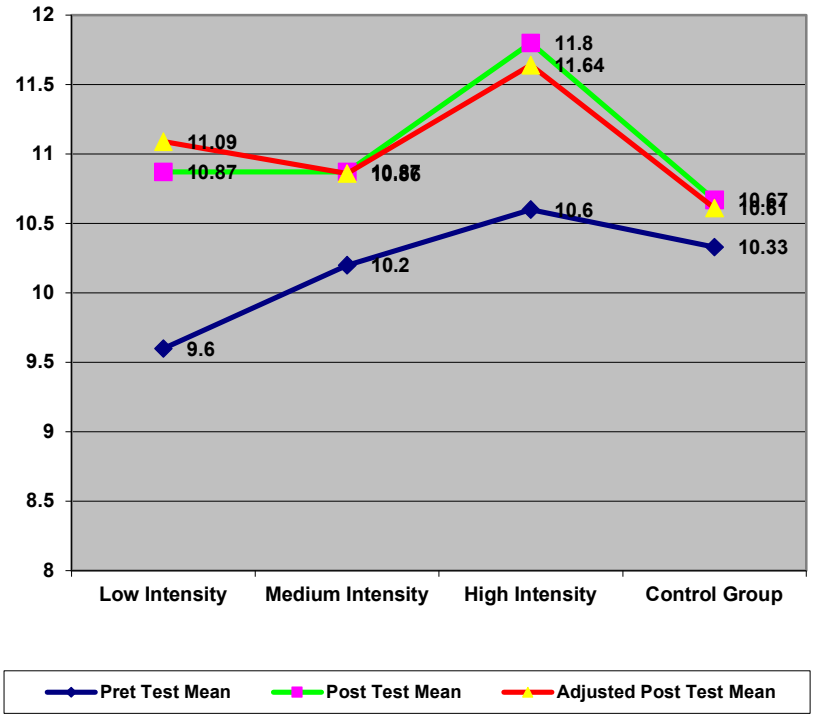
Medium intensity plyometric training Group Vs High intensity plyometric Training Group (MD: 0.78)

Medium intensity plyometric training Group Vs Control Group (MD: 0.25)

The pre test, post test and ordered adjusted means were presented through line graph for better understanding of the results of this study in Figure I.

Figure I

LINE GRAPH SHOWING PRE, POST AND ADJUSTED MEANS ON BLOCKING



RESULTS ON SPIKING

The statistical analysis comparing the initial and final means of Spiking due to low intensity, medium, high intensities of plyometric training and control groups of volleyball players is presented in Table IV

Table IV

COMPUTATION OF ANALYSIS OF COVARIANCE DUE TO LOW, MEDIUM AND HIGH INTENSITIES OF PLYOMETRIC TRAINING ON SPIKING

	Low intensity plyometric trainings Group	Medium intensity plyometric training Group	High intensity plyometric Group	Control Group	SOV	Sum of Squares	df	Mean Squares	Obtained F
Pre Test Mean	10.00	10.20	10.20	10.33	B	0.85	3	0.28	0.30
Std Dev	1.00	1.01	0.68	1.11	W	52.13	56	0.93	
Post Test Mean	10.87	11.13	11.80	10.27	B	18.18	3	6.06	5.24*
Std Dev	1.06	1.19	0.68	1.03	W	64.80	56	1.16	

Adjusted Post Test Mean	11.01	11.12	11.79	10.15	B	20.30	3	6.77	11.36*
					W	32.77	55	0.60	

SOV: Source of Variance; B: Between W: Within

Required $F_{(0.05),(df\ 3,75)} = 2.77$

* Significant at 0.05 level of confidence

As shown in Table IV, the pre test mean on Spiking of low intensity plyometric trainings group was 10.00 with standard deviation ± 1.00 pre test mean of medium intensity plyometric training group was 10.20 with standard deviation ± 1.01, the pre test mean of high intensity plyometric training group was 10.20 with standard deviation ± 0.68, the pre test mean of control group was 10.33 with standard deviation ± 1.11. The obtained F ratio of 0.30 on pre test means of the groups was not significant at 0.05 level as the obtained F value was less than the required table F value of 2.77 to be significant at 0.05 level. This shows that there was no significant difference in means of the groups at initial stage.

The results presented in Table IV, the post test mean on Spiking of low intensity plyometric trainings group was 10.87 with standard deviation ± 1.06 post test mean of medium intensity plyometric training group was 11.13 with standard deviation ± 1.19, the post test mean of high intensity plyometric training group group was 11.80 with standard deviation ± 1.19, the post test mean of control group was 10.27 with standard deviation ± 1.03. The obtained F ratio of 5.24 on post test means of the groups was significant at 0.05 level as the obtained F value was greater than the required table F value of 2.77 to be significant at 0.05 level. This shows that there was significant difference in means of the groups at post experimental stage.

Taking into consideration of the pre test means and post test means, adjusted post test means were determined and analysis of covariance was done. The adjusted mean on Spiking on low intensity plyometric trainings group was 11.01, medium intensity plyometric training group was 11.12, high intensity plyometric training group was 11.79 and control group was 10.15. The obtained F value on adjusted means was 11.36. The obtained F value was greater than the required value of 2.77 and hence it was accepted that there was significant differences among the adjusted means on the Spiking of the subjects.

Since significant improvements were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table V

Table V

Multiple Comparisons between Low, Medium and High intensities plyometric training and Control Groups and Scheffe's Post Hoc Analysis on Spiking

Low intensity plyometric trainings Group	Medium intensity plyometric training Group	High intensity plyometric Training Group	Control Group	MEAN DIFF	C.I

11.01	11.12			0.11	0.81
11.01		11.79		0.78	0.81
11.01			10.15	0.86*	0.81
	11.12	11.79		0.67	0.81
	11.12		10.15	0.97*	0.81
		11.79	10.15	1.64*	0.81

* Significant at 0.05 level.

The post hoc analysis of obtained ordered adjusted means proved that to be significant at 0.05 level confidence the required confidence interval was 0.81. The following paired mean comparisons were greater than the required confidence interval and were significant at 0.05 level.

Low intensity plyometric trainings Group Vs Control Group (MD: 0.86)

Medium intensity plyometric training Group Vs Control Group (MD: 0.97)

High intensity plyometric training Group Vs Control Group (MD: 1.64)

The following paired mean comparisons were less than the required confidence interval and were not significant at 0.05 level.

Low intensity plyometric trainings Group Vs Medium intensity plyometric Training Group (MD: 0.11)

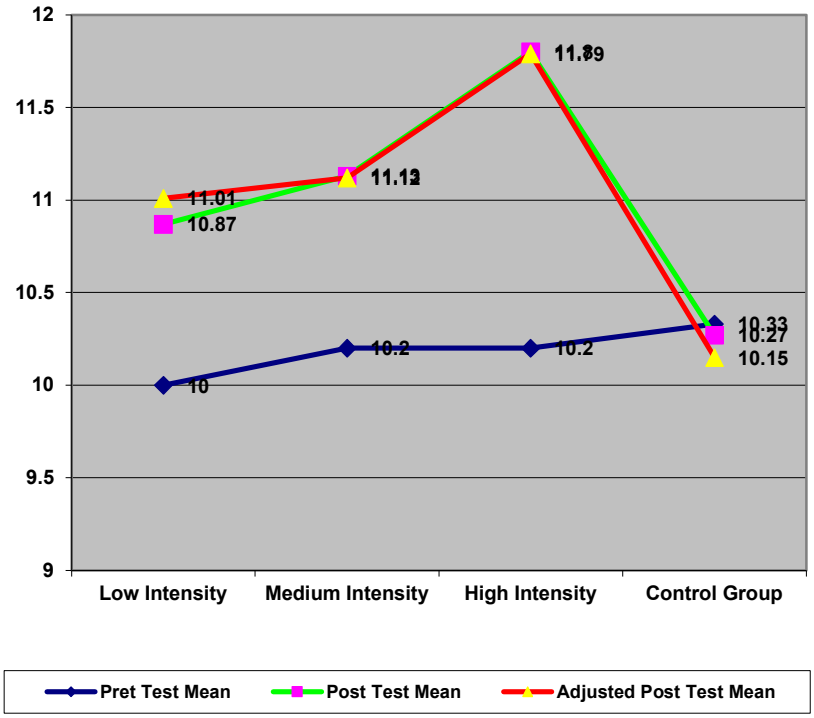
Low intensity plyometric trainings Group Vs High intensity plyometric Training Group (MD: 0.78)

Medium intensity plyometric training Group Vs High intensity plyometric Training Group (MD: 0.67)

The pre test, post test and ordered adjusted means were presented through line graph for better understanding of the results of this study in Figure II.

Figure II

LINE GRAPH SHOWING PRE, POST AND ADJUSTED MEANS ON SPIKING



CONCLUSIONS

Within the limitations and delimitations of the study, the following conclusions were drawn.

1. It was concluded that high intensity plyometric training significantly contributed for improving blocking among volleyball players compared to control group. Comparing among treatment groups there was no significant differences on blocking.

2. It was concluded that varied intensities of plyometric training, low, medium and high intensities, significantly contributed for improving spiking among volleyball players compared to control group. Comparing among treatment groups there was no significant differences on spiking.

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