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EFFECT OF PLYOMETRIC TRAINING WITH YOGIC PRACTICES ON SPEED AND AGILITY AMONG VOLLEYBALL ADOLESCENT PLAYERS

Mr. Prahlad Singh Patel, Research Scholar
M.G.C.G.V. Chitrakoot, Satna (M.P.)
Prof. Leons Wilfred Vaz, Professor
L.N.I.P.E. Gwalior (M.P.)
Dr. Shrikrishna Patel, I/C Principal
D.A.V. Training College, Kanpur (U.P.)

Abstract

The purpose of this study will be to discover Effect of plyometric training programme with yogic practices on speed and agility of adolescence volleyball players. 45 adolescent volleyball male players with the age ranged from fourteen to twenty years. All the subjects residing at own home and during training were imparted within the Sports and Youth Welfare Department, Academy, Narsinghpur, M.P. For this study two Motor Fitness Components namely speed and agility were used. This study was conducted to determine possible cause and effect relationship of 08 weeks Plyometric training and yogic practice on volleyball players. To analyze data, descriptive statistics was used. Further to check the effectiveness of each training program between pre and post test in both experimental group paired t- test was used. To make adjustments for difference in the initial means and test the adjusted posttest means for significant differences, the analysis of covariance (ANCOVA) was used (Broota, 1989) and the hypothesis was tested at 0.05 level of significance. The findings of the study in relation tospeed and agility, subject showed in a significant difference between pre and post test in ploymetric training and ploymetric& yogic asana training group. There was significant difference among different training group in relation to speed and agility. Further, In case of post means difference ploymetric& yogic exercise training group and control group was found insignificant difference, in relation to speed and ploymetric training and ploymetric& yogic exercise training group was found insignificant difference, in relation to agility.

Keywords: Plyometric, Adolescent, Explosive Strength and Muscular Endurance.

Introduction

Modern volleyball require for player a good physical stamina, parallel it is very important to develop speed and explosive power and force endurance. Volleyball is also a social game, where next to the good coordination and cleverness comes up to the important place team players good rapprochement and cooperation. Plyometric exercises have been shown to improve jump performance in many sports. These exercises combine strength with speed of movement to produce power. By using the myotatic stretch reflex of the muscle to produce an explosive reaction, plyometric is believed to be the link between speed and strength (Powers, 1996). The plyometric method is ranked among the most frequently used methods for conditioning in volleyball. In

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the present study training methods include plyometric training; plyometric training with yogic practices will be used.

Methodology

The purpose of this study will be to discover Effect of plyometric training programme with yogic practices on speed and agility of adolescence volleyball players. Forty five adolescent volleyball male players and all of them were purposively selected as subjects for the study. The age level of subjects ranged from fourteen to twenty years. All the subjects residing at own home and during training were imparted within the Khel Avam Yuva Kalyan Vibhag, Academy, Narshinghpur (M.P.). For this study the Speed and Agility (Motor fitness variable) were selected a pre and posttest control group design was employed for this investigation. In this study, groups were classified into three. Experimental Group 'A'(Plyometric training group), Experimental Group 'B'(Plyometric training combined with yogic practice) and Control group. 50-Yard dash was selected to measure whereas agility was measured by Shuttle run of (30 feet X 2). To analysis the collected data T test and F ratio at 0.05 level of significance

Findings

TABLE 1
SIGNIFICANCE OF DIFFERENCE BETWEEN PRE AND POST TEST PERFORMANCE OF PLYOMERTIC TRAINING GROUP IN SPEED

Groups	Mean	SD	SE Mean	DM	SE	"t" ratio
Pre test	8.91	1.14	.295	0.540	0.138	3.90*
Post test	8.37	.790	.204			

*Significant at 0.05 level, t.05(14) = 2.145

It is evident from Table 1 that there was a significant difference between the means of pre and post test in Speed (50 meter dash) of plyometric training group. The mean difference was calculated as 0.540 and standard error of difference was 0.138 since the obtained value of paired 't' (3.905) was higher than the tabulated value of 't' (2.145) which was required to be significant at (14) degree of freedom with 0.05 level of significance.

TABLE 2
SIGNIFICANCE OF DIFFERENCE BETWEEN PRE AND POST TEST PERFORMANCE OF PLYOMETRIC AND YOGASANA TRAINING GROUP IN SPEED

Groups	Mean	SD	SE Mean	DM	SE	"t" ratio
Pre test	8.21	0.801	0.207	0.147	0.117	1.25
Post test	8.36	0.901	0.232			

*Significant at 0.05 level, t.05(14) = 2.145

It is evident from Table 2 that there was no significant difference between the means of pre and post test in Speed (50 meter dash) of plyometric training group. The mean difference was calculated as 0.147 and standard error of difference was 0.117 since the obtained value of paired 't' (1.25) was lower than the tabulated value of 't' (2.145) which was required to be significant at (14) degree of freedom with 0.05 level of significance.

TABLE 3
ANALYSIS OF COVARIANCE FOR BETWEEN SUBJECT EFFECT AMONG EXPERIMENTAL GROUPS

Source	Sum of Squares	df	Mean Square	F	Sig.
Group	2.662	2	1.331	9.60*	.000
Error	5.681	41	.139		
Total	3240.160	45			

*Significant at 0.05 level of significance

It is evident from table 3 that, among the Treatment groups i.e. Plyometric training group, Plyometric & Yogasana training group and the control group there exists a significant difference (9.60) as the p-value (0.000) is less than 0.05. Thus the null hypothesis was rejected at 0.05 level of significance. Since the F-Value is significant, a pair-wise comparison of means has been made in table 1.5.

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TABLE 4
PAIR WISE COMPARISON OF MEAN SPEED WITH LEAST SIGNIFICANT DIFFERENCE AMONG TREATMENT GROUPS

(I) Group	(J) Group	Mean Diff. (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
Plyometric Trg. Group	Plyometric & Yogasana Ex. Group	-.524(*)	.143	.001	-.812	-.524(*)
Plyometric Trg. Group	Control Group	-.547(*)	.138	.000	-.826	-.547(*)
Plyometric & Yogasana Exercise Group	Control Group	-.023	.137	.866	-.300	-.023

*Significant at 0.05 level of significance

Table 4 describe the pair wise comparison of means between Plyometric training group and Plyometric & Yogasana training group, reveals that mean difference is significant at 0.05 level of significance as p-value (0.000) is less than 0.05. The pair wise comparison of means between Plyometric & Yogasana training group and Control group, reveals that mean difference no significant at 0.05 level of significance as p-value (0.000) is higher than 0.05. However the pair wise comparison of means between Plyometric exercise group and Control group reveals that mean difference is significant at 0.05 level of significance as p-value (0.00) is less than 0.05.

TABLE 5
LEAST SIGNIFICANT DIFFERENCE POST HOC TEST OF THE MEAN OF SPEED AT DIFFERENT METHODS OF TRAINING IN VOLLEYBALL PLAYER

Plyometric Training Group	Plyometric & Yogasana training Group	Control Group	MD	CD at 5% level
8.092	8.616		.524(*)	.275
8.092		8.639	.547(*)	.275
	8.616	8.639	.023	.275

*Significant at 0.05 level of significance

Table 5 revealed that there is significant difference between the paired mean of Speed at different methods of training at plyometric training and plyometric &yogasana training is .524, plyometric training and control group is .547, plyometric &yogasana training and control group is .023 respectively. The highest significant paired mean difference was recorded between plyometric training and control group is .547, on the other hand the lowest significant paired mean difference was recorded between plyometric &yogasana training and control group is .023.

TABLE 6
SIGNIFICANCE OF DIFFERENCE BETWEEN PRE AND POST TEST PERFORMANCE OF PLYOMERTIC TRAINING GROUP IN AGILITY

Groups	Mean	SD	SE Mean	DM	SE Mean Diff.	"t" ratio
Pre test	11.15	1.07	.276	.36	.067	5.392*
Post test	10.79	.974	.251			

*Significant at 0.05 level, t.05(14) = 2.145

It is evident from Table 6 that there was a significant difference between the means of pre and posttest in Agility (Shuttle Run Test) of plyometric training group. The mean difference was calculated as 0.36 and standard error of difference was 0.067 since the obtained value of paired 't' (5.392) was higher than the tabulated value of 't' (2.145) which was required to be significant at (14) degree of freedom with 0.05 level of significance.

TABLE 7
SIGNIFICANCE OF DIFFERENCE BETWEEN PRE AND POST TEST PERFORMANCE OF PLYOMETRIC AND YOGASANA TRAINING GROUP IN AGILITY

Groups	Mean	SD	SE Mean	DM	SE	"t" ratio
Pre test	10.56	.585	.151			
Post test	10.19	.570	.147	.373	.041	9.153*

*Significant at 0.05 level t.05(14) = 2.042

It is evident from Table 7 that there was a significant difference between the means of pre and post test in Agility (Shuttle Run Test) of plyometric & yogasana training group. The mean difference was calculated as 0.373 and standard error of difference was 0.041 since the obtained value of paired 't' (9.153) was higher

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than the tabulated value of 't' (2.042) which was required to be significant at (14) degree of freedom with 0.05 level of significance.

TABLE 8
DESCRIPTIVE STATISTICS OF ADJUSTED POST MEAN AGILITY OF TREATMENT GROUPS IN VOLLEYBALL PLAYERS

Group	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Plyometric Training	10.429(a)	.053	10.323	10.536
Plyometric & Yogasana Training	10.388(a)	.052	10.283	10.492
Control Group	10.810(a)	.052	10.706	10.914

Table 8 depicts that the adjusted post mean Agility of Plyometric training group is 10.409 sec. The adjusted post mean Agility of Plyometric &Yogasana training group is 10.388 sec and the original post mean Agility of Control group is 10.810 sec. Thus, indicating an increase in mean Agility in the Plyometric & Yogasana training group and Control group and decrease in the Plyometric training group.

TABLE 9
ANALYSIS OF COVARIANCE FOR BETWEEN SUBJECT EFFECT AMONG EXPERIMENTAL GROUPS

Source	Sum of Square	df	Mean Sum Square	F	Sig.
Group	1.607	2	.803	20.33*	.000
Error	1.620	41	.040		

*Significant at 0.05 level of significance

It is evident from table 9 that, among the Treatment groups i.e. Plyometric training group, Plyometric & Yogasana training group and the control group there exists a significant difference (20.33) as the p-value (0.000) is less than 0.05. Thus the null hypothesis was rejected at 0.05 level of significance. Since the F-Value is significant, a pair-wise comparison of means has been made in table 2.5.

TABLE 10
PAIR WISE COMPARISON OF MEAN AGILITY WITH LEAST SIGNIFICANT DIFFERENCE AMONG TREATMENT GROUPS

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
Plyometric Training Group	Plyometric & Yogasana Exercise Group	.042	.075	.581	-.110	.194
Plyometric Training Group	Control Group	.380(*)	.075	.000	-.532	-.229
Plyometric & Yogasana Exercise Group	Control Group	.422(*)	.073	.000	-.569	-.276

*Significant at 0.05 level of significance

The pair wise comparison of means between Plyometric training group and Plyometric & Yogasana training group, reveals that mean difference is no significant at 0.05 level of significance as p-value (0.000) is higher than 0.05. The pair wise comparison of means between Plyometric & Yogasana training group and Control group, reveals that mean difference significant at 0.05 level of significance as p-value (0.000) is less than 0.05. However the pair wise comparison of means between Plyometric exercise group and Control group reveals that mean difference is significant at 0.05 level of significance as p-value (0.00) is less than 0.05.

TABLE 11
LEAST SIGNIFICANT DIFFERENCE POST HOC TEST OF THE MEAN OF AGILITY AT DIFFERENT METHODS OF TRAINING IN VOLLEYBALL PLAYER

Plyometric Training Group	Plyometric & Yogasana training Group	Control Group	MD	CD at 5% level
10.429	10.388		.042	.147
10.429		10.810	.380(*)	.147
	10.388	10.810	.422(*)	.147

*significant at 0.05 level

Table 11 revealed that there is significant difference between the paired mean of Agility at different methods of training at plyometric training and plyometric & yogasana training is .042, plyometric training and control group is .380, plyometric & yogasana training and control group is .422 respectively. The highest

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significant paired mean difference was recorded between plyometric &yogasana training and control group is .422, on the other hand the lowest significant paired mean difference was recorded between plyometric training and control group is .042.

Conclusion

In case of speed, subject showed in a significant difference between pre and post test in ploymetric training group and no significant difference in ploymetric& yogic asana training group.There was significant difference among different training group in volleyball players.

In case of post means difference of ploymetric training group and ploymetric& yogic exercise training group ploymetric training group and control group was found significant whereas ploymetric& yogic exercise training group and control group was found insignificant difference, in relation to speed.

In agility, subject showed in a significant difference between pre and post test in ploymetric training and ploymetric& yogic asana training group.

There was significant difference among different training group in relation to shuttle run.

In case of post means difference of ploymetric training group and control group and ploymetric& yogic exercise training group and control group was found significant. andploymetric training and ploymetric& yogic exercise training group was found insignificant difference, in relation to agility.

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