

EFFECT OF COMBINATION OF PLYOMETRIC AND SKILL TRAINING IN THE DEVELOPMENT OF SPEED, MUSCULAR STRENGTH ENDURANCE AND SERVING ABILITY AMONG THE VOLLEYBALL PLAYERS

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Abstract - *The purpose of the study was to find out the effects of combination of plyometric and skill training in the development of the speed, muscular strength endurance and serving ability of the school level volleyball players. Sixty volleyball players from the various schools of Dakshina Kannada in Karnataka were selected as subjects and their age ranged from 14 to 17 years. The subjects were divided into three equal groups. The first group underwent plyometric with skill training (n=20), the second group underwent skill training alone (n=20) and the third group acted as the control group they did not practice any specific training. The selected variables were assessed by the speed (50 meter dash test), muscular strength endurance (sit-ups test) and serving ability (Russell-Lange volleyball test) conducted before and after the 12 weeks of training regimen. The data was analyzed by covariance. The plyometric with skill training group showed significantly greater improvement in the muscular strength endurance, speed and Serving ability better than the other two groups of the skill training group and the control group. During volleyball match the body moves in multiple plans of motions like jump, spike, block, dive and volley. This involves training multiple muscles through movements, as opposed to isolating muscles.*

Key Words: Speed (sprinting ability), Muscular strength endurance, Serving ability, Plyometric training, Skill training, Acceleration Runs, Pace Races. PSTG (plyometric with skill training group), STG (skill training group), CG (control group).

1.INTRODUCTION

Fm impellizzeri, E Rampinini, C Castanga, F Martino, S Fiorini, U Wisloff (2008) did a study was to determine the effect of plyometric training on sand versus grass on muscle soreness and jumping and sprinting ability in soccer players and concluded that plyometric training on sand improved both jumping and sprinting ability and induced less muscle soreness .therefore plyometric training on different surface may be associated with different training –induced effect on some neuromuscular factors related to the efficiency of the stretch shortening cycle. Ozelif, Pakel Hach Ahmed, Altunsoy Mustafa, Oz Efvan, Pekel Alying Ozge (2010) did a study to determine the effect of 4months volleyball training on flexibility, jump, speed and agility in preadolescent girls and concluded that training significantly affected subjects, bodyweight, body height, flexibility, jump, speed, and agility

performance & were significantly improved, although flexibility decreases. John Shaji and Saluja Isha (2009) conducted a study to compare the individual and combined effect of plyometric and dynamic stretching on vertical jump and agility and revealed that the plyometric has a role in improving agility; while dynamic stretching when studied individually do not have much significant effect for the same. The dynamic stretching protocol did not show any improvement in agility but, when combined with the plyometric training program, it showed significant effect in enhancing agility. Sports-training is thoroughly systematic; it is very personal to each athlete and is based on certain well-tested scientific principles however, not all aspects of training are covered by science. In expert hands, sports training becomes a magic, wand of making people perform to the best of their potential, and satisfaction of the trainers and the society. There are no short-cuts in sports training; it is long term phenomenon requiring utmost patience, restraint, commitment and continuity on the part of both trainee(s) and trainer(s).If an athlete cannot generate a powerful motion in the core it will not transferred to the extremities. Sit-ups works on core and lower back muscles; which assist in strengthening and toning underlying core muscles. it helps in performing the spiking and blocking and also it is very much inculcating in other jumping movements for volleyball players. (Trishchler, 1997). The set position differs depending on the start. Body alignment is of key importance in producing the optimal amount of force. Ideally the athlete should begin in a point stance and push of using both legs for maximum force production (Stephen, 2009).Serving is the Volleyball game's "equalizer" because, from start to finish, the player can control every aspect of the game, especially the outcome of the serve (Ortega, E.2009).

2.METHODOLOGY

The study was formulated as Pre and Post test random group design, in which sixty school boys volleyball players from various school representing inter school level tournaments were selected as the subjects for the study from Dakshina Kannada district, Karnataka. Sixty subjects were divided into the three equal groups. The subjects were assigned at random to one of the three groups, in which the first group (n=20, plyometric with skill training group) performed the plyometric with skill training, the second group (n=20, skill training group) performed the skill training alone, the third group (n=20, control group) did not

perform any training. The variables such as the speed were measured by 50 meter dash test, the muscular strength endurance was measured by sit-ups test and the serving ability was measured by Russell-Lange volleyball test. The test was occurred before and after 12 weeks regimen.

3.ANALYSIS OF THE DATA AND RESULTS OF THE STUDY

A paired sample of student’s t-test was used to determine the significance of the mean differences between the Pre-test and Post-test values of a variable in the same group. Analysis of variance (ANOVA) was used to know the significant differences among the group. Statistical significance was accepted as $p \leq 0.05$ level of confidence.

Diagrammatical representation of Pre-test, Post-test means and t-value of PSTG, STG and CG on the selected fitness and skill performance variables was presented in figure1-2-3.

Bar diagram showing Pre-test and Post-test means and t-value of PSTG, STG and CG on Speed scores

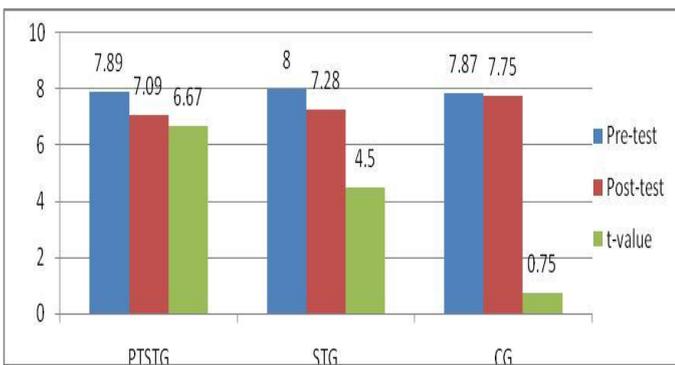


Figure-1

From the above figure-2 (1.PSTG, 2.STG, 3.CG) it was observed that the ‘t’ value for the plyometric with skill training group and skill training alone on speed were 6.67*, 4.5* and the required table value was 2.093 at 95% level. Since, the obtained ‘t’ value was higher than the table value and it was significant. But the control group on speed scores were ($t=0.75, p \leq 0.05$) lesser than table value 2.093 at 95% level and it was not significant.

Bar diagram showing Pre-test and Post-test means and t-value of PSTG, STG and CG on Muscular strength endurance

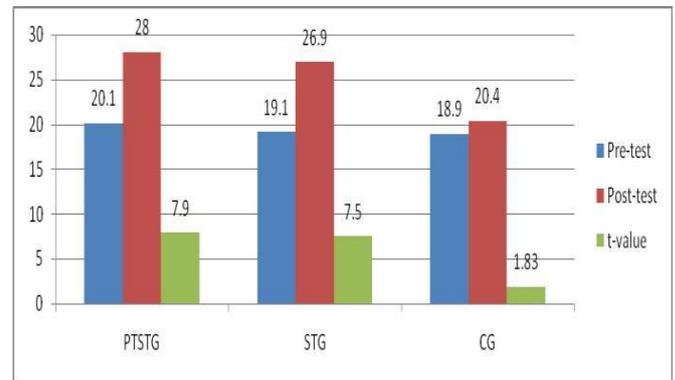


Figure-2

From the above figure-1 (1.PSTG, 2.STG, 3.CG) it can be observed that the ‘t’ value for the plyometric with skill training group and skill training alone on muscular strength endurance scores ($t=7.98^*, 7.50^*, p \leq 0.05$) were greater than table value 2.093 at 95% level and it was significant. But the control group on muscular strength endurance scores were ($t=1.83, p \leq 0.05$) lesser than the table value 2.093 at 95% level and it was not significant.

Bar diagram showing Pre-test and Post-test means and t-value of PSTG, STG and CG on Serving ability scores

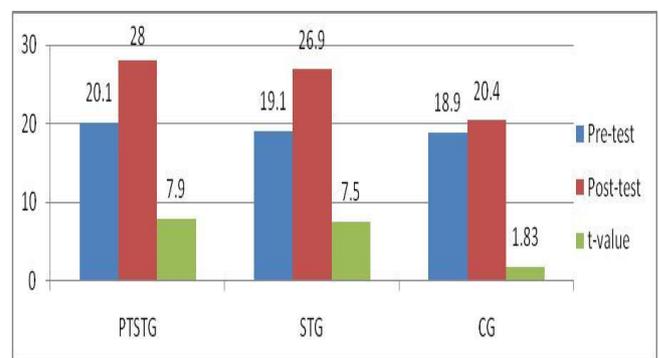


Figure-3

From the above figure-3 (1.PSTG, 2.STG, 3.CG) it was observed that the ‘t’ value for the plyometric with skill training group and skill training alone on Serving ability scores ($t=7.90^*, 7.50^*, p \leq 0.05$) were greater than table value 2.093 at 95% level and it was significant. But the control group on Serving ability scores were ($t=1.83, p \leq 0.05$) lesser than table value 2.093 at 95% level and it was not significant.

Table-1

Results of the test of the three groups (plyometric with skill training group, skill training group and control group) of the school level volleyball male players on Speed.

	PSTG	STG	CG	SOV	Df	SOS	MS	F value
Pre-test Mean	7.89	8.00	7.87	BG	2	0.20	0.10	0.42
SD	0.36	0.53	0.52	WG	57	13.73	0.24	
Post-test Mean	7.09	7.28	7.75	BG	2	4.61	2.31	10.50*
SD	0.42	0.47	0.48	WG	57	12.60	0.22	
S _{Ed}	0.12	0.16	0.16					
MD	0.8	0.72	0.12					
t-value	6.67*	4.50*	0.75					

Table F ratio at 0.05 level of confidence for 2 and 57(df) =3.15 significant.

The obtained 'F' value by the Pre test scores 0.42 was lesser than the required 'F' value of 3.15 was significant at 0.05 level. It was proved that there was no significant difference between the groups at the Pre-test and Post-test and the randomization at the Pre-test was equal. The Post-test scores analysis was proved that there was significant difference between the groups and the obtained 'F' value 10.50 was greater than the required 'F' value of 3.15. It was proved that the differences between the Post- test means of the subjects were significant.

Table-2

Results of the test of the three groups (plyometric with skill training group, skill training group and control group) of the school level volleyball male players on Muscular strength endurance.

	PSTG	STG	CG	SOV	Df	SOS	MS	F value
Pre-test Mean	20.10	19.10	18.90	BG	2	16.34	8.17	0.77
SD	3.22	3.49	2.74	WG	57	601.12	10.55	
Post-test Mean	28.00	26.90	20.40	BG	2	674.80	337.40	39.01*
SD	3.04	3.05	2.47	WG	57	492.90	8.65	
S _{Ed}	0.99	1.04	0.82					
MD	7.90	7.80	1.50					
t-value	7.98*	7.50*	1.83					

Table F ratio at 0.05 level of confidence for 2 and 57(df) =3.15 significant.

The obtained F value by the Pre-test score 0.77 was lesser than the required F value of 3.15 and it was significant at 0.05 level. It was proved that there was no significant difference between the groups at the Pre-test and Post-test and the randomization at the Pre-test was equal. The Post-test scores analysis was proved that there was significant difference between the groups and the obtained 'F' value

39.01* was greater than the required F value of 3.15. It was proved that the differences between the Post- test means of the subjects were significant.

Table-3

Results of the test of the three groups (plyometric with skill training group, skill training group and control group) of the school level volleyball male players on Serving ability.

	PSTG	STG	CG	SOV	Df	SOS	MS	F-value
Pre-test Mean	31.70	32.40	32.00	BG	2	4.94	2.47	0.11
SD	4.88	4.09	4.63	WG	57	1239.52	21.75	
Post-test Mean	41.50	40.50	33.95	BG	2	661.30	330.65	29.42*
SD	2.75	2.60	4.21	WG	57	640.90	11.24	
S _{Ed}	1.25	1.08	1.96					
MD	9.80	8.10	1.95					
t-value	7.84*	7.50*	0.99					

Table F ratio at 0.05 level of confidence for 2 and 57(df) =3.15 significant.

The obtained 'F' value by the Pre- test scores 0.11 was lesser than the required 'F' value of 3.15 was significant at 0.05 level. It was proved that there was no significant difference between the groups at the Pre-test and Post-test and the randomization at the Pre-test was equal. The Post test scores analysis was proved that there was significant difference between the groups and the obtained 'F' value 29.42* was greater than the required 'F' value of 3.15. It was proved that the differences between the Post- test means of the subjects were significant.

4.DISCUSSION

The results of the study were proved that Speed, Muscular strength endurance of the volleyball players was significantly improved within 12 weeks of the plyometric training with skill training group and skill training group. The study of the results showed significant improvement of the serving ability due to the plyometric training with skill training group and skill training group. The comparison between the treatment groups proved that the plyometric training with skill training group was better than the Skill training group respectively in improving speed, muscular strength endurance and serving ability of the volleyball players.

5.CONCLUSION

- * The plyometric training with skill training group and Skill training group improved significantly on speed, muscular strength endurance and serving ability of volleyball players.
- * The plyometric training with skill training group and Skill training group improved significantly better than the Skill training group and control group on speed, muscular strength endurance and serving ability of volleyball players.
- * The Skill training group improved significantly better than the control group on speed, muscular strength endurance and serving ability of volleyball players.

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