



EFFECT OF VARIED PACKAGES OF STRENGTH TRAINING ON EXPLOSIVE POWER OF FEMALE ATHLETES

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ABSTRACT

The purpose of the study was to find out the effect of varied packages of strength training on explosive power of female athletes. To achieve the purpose of this study, seventy five female athletes was randomly selected from St. Joseph Southern Railway sports club athletes, Trichy, Tamil Nadu, The age of the subjects ranged from 18 to 22 years. Group-I underwent plyometric training, Group-II underwent barbell training, Group-III underwent uphill training, Group-IV underwent circuit training and group-V acted as control who does not participate in any training programme. The data collected from the five groups prior to and post experimentation were statistically analyzed by analysis of covariance (ANCOVA). Since five different groups were involved whenever, the "F" ratio for adjusted post mean was found to be significant, the Scheffe's test followed as a post hoc test to determine the paired means difference. The result of the study stated that there was a significant improvement on explosive power of the varied packages of strength training groups when compared to the control group.

Key words: Plyometric, Barbell, Uphill, Circuit, Speed Endurance.

INTRODUCTION

The general preparation phase is important to help introduce the athlete to the training environment, develop core and limb strength, to teach safe and effective techniques and also to introduce the training habit. One of the simplest ways of developing strength is to use the athlete's own body weight.

The term "plyometrics" was coined by Fred Wilt after watching Soviet athletes prepare for their events in track and field; he felt this was a key to their success (Wilt and Yessis, 1984). It is a poor term to describe what happens, but it has since been accepted and is now well established. When Wilt learned of the work being done by Michael Yessis (2009) on Soviet (Russia) training methods, they quickly collaborated to help disseminate information on plyometric.

The advantage of the barbell is that unlimited progression is possible because we can always add more weight to the bar. Of course, every lifter has their own genetically pre-determined maxes that they can handle. So, in theory, one could reach a point in their training where further progression is impossible. Being able to add more weight easily makes progressing with this tool very simple.

The attraction of mixed hill training is that it can be fitted in with the terrain the athlete is running

on and can, therefore, be interesting and full of variety. If they do a fartlek session round a hilly course, they will be able to fit in a number of different runs.

Circuit training is ideal for both advanced athletes and beginners because it can be scaled to the ability of the athlete. Circuit routines are fast, effective and fun. Popular for decades, circuit training was usually conducted on old universal machines where exercisers went from station to station for a pre-determined number of reps, or time, until all exercises were completed. Often the exercises were single jointed, isolated movements performed sitting down on a universal-type machine.

METHODOLOGY

The purpose of the study was to find out the effect of varied packages of strength training on explosive power of female athletes. To achieve the purpose of this study, seventy five female athletes was randomly selected from St. Joseph Southern Railway sports club athletes, Trichy, Tamil Nadu, The age of the subjects ranged from 18 to 22 years. They were divided into five groups; each group consisted of fifteen subjects. Group-I underwent plyometric training, Group-II underwent barbell training, Group-III underwent uphill training, Group-IV underwent circuit training and group-V acted as control who does not participate in any training programme. The

experimental group's subjects were participated in their respective training programme three days per week for twelve weeks, duration of the training programme on 40 minutes (including warm up and warm down) per day. Once in two weeks the training load was increased. Explosive power was measured by vertical jump test. The data collected from the five

RESULTS

Table - I Analysis of Covariance on Explosive Power of Varied Packages of Strength Training and Control Groups of Female Athletes

	Plyometric Training	Barbell Training	Uphill Training	Circuit Training	Control Group	SoV	Sum of Squares	df	Mean squares	'F' ratio
Pre-test Mean	31.46	31.20	31.33	31.53	31.40	B	0.98	4	0.24	0.11
SD	1.64	1.32	1.39	1.55	1.50	W	154.80	70	2.21	
Post-test Mean	34.66	33.93	34.20	33.01	31.66	B	84.74	4	21.18	10.74*
SD	1.29	1.70	1.14	1.55	1.23	W	138.00	70	1.97	
Adjusted Post-test Mean	34.62	34.03	34.22	32.92	31.66	B	86.89	4	21.72	15.59*
						W	96.10	69	1.39	

(The required table value for significance at 0.05 level of confidence with degrees of freedom 4 & 70 and 4 & 69 are 2.50)

The adjusted post test means on explosive power of plyometric training, barbell training, uphill training, circuit training groups and control group are 34.62, 34.03, 34.22, 32.92 and 31.66 respectively. The obtained 'F' ratio value of 15.59 on explosive power were greater than the required table value of 2.50 for the degrees of freedom 4 and 69 at 0.05 level of confidence. It is found that significant differences exist among the adjusted post test means of experimental and control groups on explosive power.

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-II.

Table-II Scheffe's Test for the Difference Between the Adjusted Post Test Paired Means of Explosive Power

Adjusted Post Test Means					DM	CI
Plyometric Training	Barbell Training	Uphill Training	Circuit Training	Control Group		
34.62	34.03				0.59	0.96
34.62		34.22			0.40	0.96
34.62			32.92		1.70*	0.96
34.62				31.66	2.96*	0.96
	34.03	34.22			0.19	0.96
	34.03		32.92		1.11*	0.96
	34.03			31.66	2.37*	0.96
		34.22	32.92		1.30*	0.96
		34.22		31.66	2.56*	0.96
			32.92	31.66	1.26*	0.96

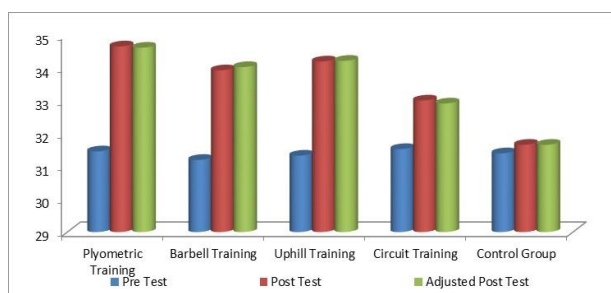
*significant

Table-II shows the Scheffe's test results that there are significant difference between the adjusted post test means of plyometric and circuit training groups; plyometric training and control groups; barbell and circuit training groups; barbell training and control groups; uphill and circuit training groups; uphill training and control groups; circuit training and control groups on explosive power. Also the result of the study reveals that there are no significant differences between the plyometric and barbell training groups;

groups prior to and post experimentation were statistically analyzed by analysis of covariance (ANCOVA). Since five different groups were involved whenever, the "F" ratio for adjusted post mean was found to be significant, the Scheffe's test followed as a post hoc test to determine the paired means difference.

plyometric and uphill training groups; barbell and uphill training groups on explosive power.

Figure - I Cylinder Diagram on Explosive Power of Varied Packages of Strength Training and Control Groups of Female Athletes



DISCUSSION AND FINDINGS

The result of the study found that significant differences exist among experimental and control groups on explosive power. However plyometric training had better impact to increase explosive power performance of the women athletes when compare the other experimental group's subjects. The following studies are supporting my study results. Eskandar, *et al.*, (2014) investigate the effect of plyometric and resistance training on agility, speed and explosive power in soccer players. The results of the study showed that explosive power increased. Abdul, *et al.*, (2014) investigated the effect of 8 weeks of strength and plyometric training on anaerobic power, explosive power and strength quadriceps femur's muscle in Soccer Players. The results of the study showed that plyometric training improves explosive power in soccer players. Deepak (2012) examined the effects of a combined training program (weight training and plyometric) on explosive strength development in adolescents Taekwondo players. The results of the study support the use of complex training to improve the upper and lower body explosive strength level in the adolescents. Luebbers and others (2003) investigated the effects of plyometric training and recovery on vertical jump performance and anaerobic power. The result of the study stated that seven weeks of plyometric training impact to increased on vertical jump performance of college men.

CONCLUSION

The conclusion of the study stated that there was a significant improvement on explosive power of the varied packages of strength training groups when compared to the control group. Moreover among the experimental groups the plyometric training group had better improvement on explosive power.

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