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EVALUATING THE ABILITY OF VOLLEYBALL PLAYERS TO EXPLOSIVE POWER: THE EFFECT OF PLYOMETRIC TRAINING

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Abstract:

The purpose of the study was to find out the influences of plyometric training on explosive power among inter-collegiate volleyball players. To achieve the purpose of the present study, thirty volleyball players from Jamal Mohamed College, Tiruchirappalli, Tamil Nadu were selected as subjects at random and their ages ranged from 18 to 21 years. The selected subjects had earlier played experience of at least three years in Volleyball. The selected variable explosive power was tested by standing broad jump test. The subjects (n=30) were randomly assigned into two equal groups of fifteen players each. The groups were named as Plyometric training group (PTG) and Control group (CG) in an equivalent manner. Training programme was imparted for about 12 weeks. Analysis of covariance test was followed. All the statistical analysis tests were computed at 0.05 level of significance. The experimental group players showed significant improvement on explosive power when compared to the subjects in the control group.

Key Words: Plyometric, Explosive Power, Volleyball, ANCOVA.

Introduction:

One kind of training approach that can improve explosiveness and power output is plyometrics. In plyometrics, an active muscle alternates between a fast deceleration and a fast acceleration, or from a fast eccentric muscle action to a fast concentric muscle action. The stretch-shortening cycle is the term for this deceleration to acceleration action. Since the eccentric to concentric muscle action uses the elastic energy stored in the muscle, muscles that begin in a static position are unable to produce as much force as those that use the stretch-shortening cycle. Because the stretch-shortening cycle releases elastic energy stored in the muscles, it is more efficient and results in a higher power output. The central nervous system receives a signal from the muscles telling it to resist the sudden stretch. Stated differently, the muscle will quickly recover from the abrupt stretch. Given this knowledge, plyometric training may help athletes improve their reaction times, which in turn may boost their power and speed (Sachin et al. 2025).

Methodology:

The purpose of the study was to find out the influences of plyometric training on explosive power among inter-collegiate volleyball players. To achieve the purpose of the present study, thirty volleyball players from Jamal Mohamed College, Tiruchirappalli, Tamil Nadu were selected as subjects at random and their ages ranged from 18 to 21 years. The selected subjects had earlier played experience of at least three years in Volleyball. The selected variable explosive power was tested by standing broad jump test. The subjects (n=30) were randomly assigned into two equal groups of fifteen players each. The groups were named as Plyometric training group and Control group in an equivalent manner. Training programme was imparted for about 12 weeks. Analysis of covariance test was followed. All the statistical analysis tests were computed at 0.05 level of significance.

Results:

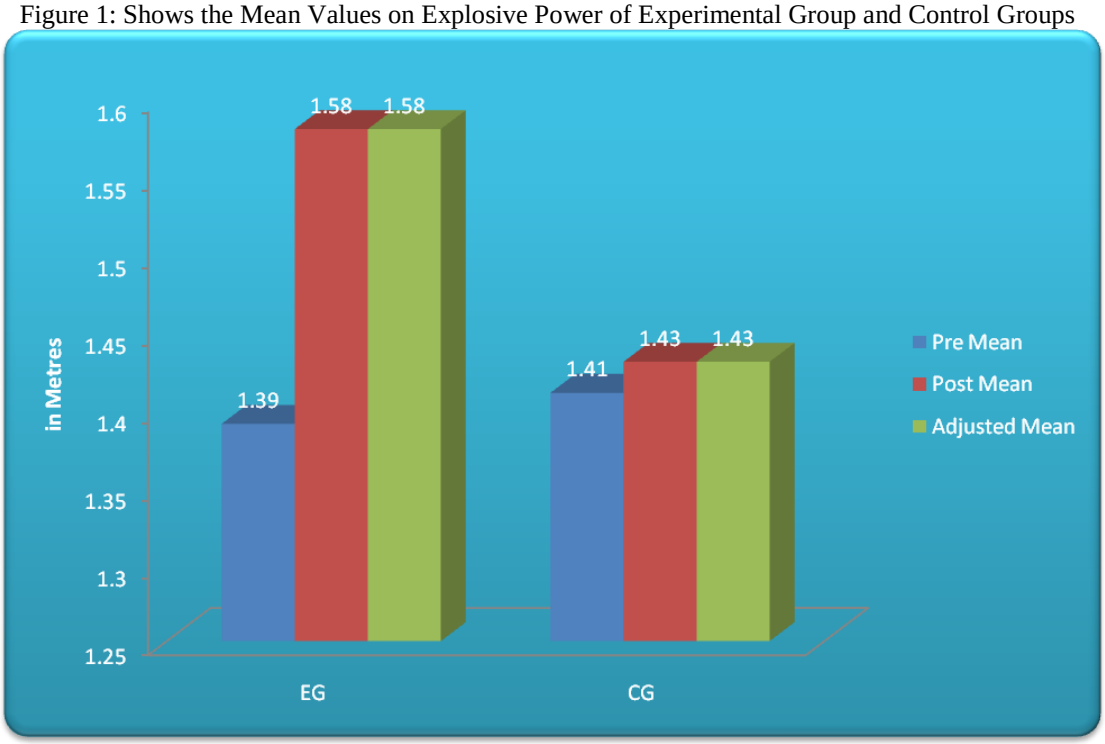
Table 1: Computation of Analysis of Covariance of Explosive Power of Experimental and Control Groups

	Experimental Group	Control Group	Source of Variance	Sum of Squares	df	Mean Square	F
Pre Test Mean	1.39	1.41	BG	0.001	1	0.001	0.46
			WG	0.08	28	0.003	
Post Test Mean	1.58	1..43	BG	0.27	1	0.27	104.15*
			WG	0.07	28	0.003	
Adjusted Post Mean	1.58	1.43	BG	0.26	1	0.26	100.19*
			WG	0.07	27	0.003	

* Significant at 0.05 level, Table value for df 1 and 28 was 4.20, 1 and 27 was 4.21

The above table indicates the adjusted mean value of explosive power of experimental and control groups were 1.58 and 1.43 respectively. The obtained F-ratio of 100.19 for adjusted mean was greater than the table value 4.21 for the degrees of freedom 1 and 27 required for significance at 0.05 level of confidence. The result of the study indicates that there was a significant difference among experimental and control groups on explosive power. The above table also indicates that both pre and post test means of experimental and control groups differ significantly. The pre, post and adjusted post mean values of explosive power of both experimental and control groups are graphically represented in the figure 1.

Figure 1: Shows the Mean Values on Explosive Power of Experimental Group and Control Groups



Conclusions:

- The control group players did not show significant improvement in explosive power.
- The experimental group players showed significant improvement on explosive power when compared to the subjects in the control group.

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