



EFFECT OF PLYOMETRIC TRAINING ON SELECTED PHYSICAL FITNESS VARIABLES OF SCHOOL BOYS

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Abstract:

The purpose of this study was to find out the impact of a Plyometric training intervention on the speed and leg explosive power of school boys. To achieve the purpose of this study (n=30), schoolboys from Government High School, Rajanagaram (V), Rajanagaram (M), and Government High School, Palacharla (V), Rajanagaram (M), Andhra Pradesh were selected at random, and their age group ranged from 12 to 14 years. The selected subjects were randomly assigned to 2 equal groups of 15 each. Group I underwent Plyometric training and Group II represented the control group. The experimental group was subjected to Plyometric training on alternate days in a week for eight weeks. The data was analysed by applying a dependent t-test to find out the effect of Plyometric training on speed and leg explosive power in school boys. The level of significance was set at the 0.05 level. There was a significant difference between pre and post-tests of Plyometric training on speed and leg explosive power in school boys.

Key Words: Plyometric Training, Speed and Leg Explosive Power.

Introduction:

Plyometric training is defined as a quick, powerful movement involving an eccentric contraction, followed immediately by an explosive concentric contraction. This is accomplished through the stretch-shortening cycle or an eccentric-concentric coupling phase. The eccentric-concentric coupling phase is also referred to as the integrated performance paradigm, which states that to move with precision, forces must be loaded (eccentrically), stabilized (isometrically), and then unloaded/accelerated (concentrically). Plyometric exercise stimulates the body's proprioceptive and elastic properties to generate maximum force output in a minimum amount of time.

Plyometric training is an effective mode of training as it enhances motor learning and neuromuscular efficiency by promoting the excitability, sensitivity, and reactivity of the neuromuscular system to increase the rate of force production (power), motor-unit recruitment, and firing frequency (rate coding), and synchronization.

Muscles produce the necessary force to change the direction of an object's Centre of mass. All movement patterns that occur during functional activities involve a series of repetitive stretch-shortening cycles. The neuromuscular system must react quickly and efficiently following an eccentric muscle action to produce a concentric contraction and impart the necessary force (or acceleration) in the appropriate direction. Therefore, specific functional exercises that emphasize rapid changes in direction must be utilized to prepare each athlete for the functional demands of a specific activity.

The speed of muscular exertion is limited by neuromuscular coordination. This means that the body will move most effectively and efficiently within a speed range that the nervous system has been programmed to allow. Plyometric training improves both neuromuscular efficiency and the range of speeds set by the central nervous system. The optimum reactive performance of any activity depends on the speed at which muscular forces can be generated.

Methodology:

To achieve the purpose of this study (n=30), school boys from Government High School, Rajanagaram (V), Rajanagaram (M), and Government High School, Palacharla (V), Rajanagaram (M), Andhra Pradesh were selected at random, and their age group ranged from 12 to 14 years. The selected subjects were randomly assigned to 2 equal groups of 15 each. Group I underwent Plyometric training and Group II represented the control group. The experimental group was subjected to Plyometric training on alternate days in a week for eight weeks. The data was analysed by applying a dependent t-test to find out the effect of plyometric training on speed and leg explosive power in school boys. The level of significance was set at the 0.05 level.

Table 1: Computation of 't' Test on Speed of Experimental and Control Groups of Adolescent School Boys

Group	Test	Mean	SD	DM	σ DM	't'	'p' value
Experimental	Pre	9.38	1.88	0.3	0.03	8.97*	0.01
	Post	9.08	1.81				
Control	Pre	8.49	1.221	0.02	0.01	1.54	0.14
	Post	8.51	1.222				

*Significant at 0.05 level.

Table-1 shows that the mean and standard deviation and 't' ratio of experimental group and control group. The experimental group pre and post-test mean values of speed were 9.38 and 9.08 and standard deviation values were 1.88 and 1.81 and obtained 't' value was 8.97. Since the "p" value was lesser than 0.05, there was a significant improvement on speed. And control group pre and post-test mean values of speed were 8.49 and 8.51 and standard deviation values were 1.221 and 1.222. The obtained 't' value of the control group was 1.54. Since the "p" value was greater than 0.05, there was no significant improvement on speed. The findings of the study statistically proved that the experimental group showed significant improvement on speed due to the effect of plyometric training of school boys.

Figure 1: Bar Diagram Showing the Mean Values of Speed of Experimental and Control Groups of School Boys

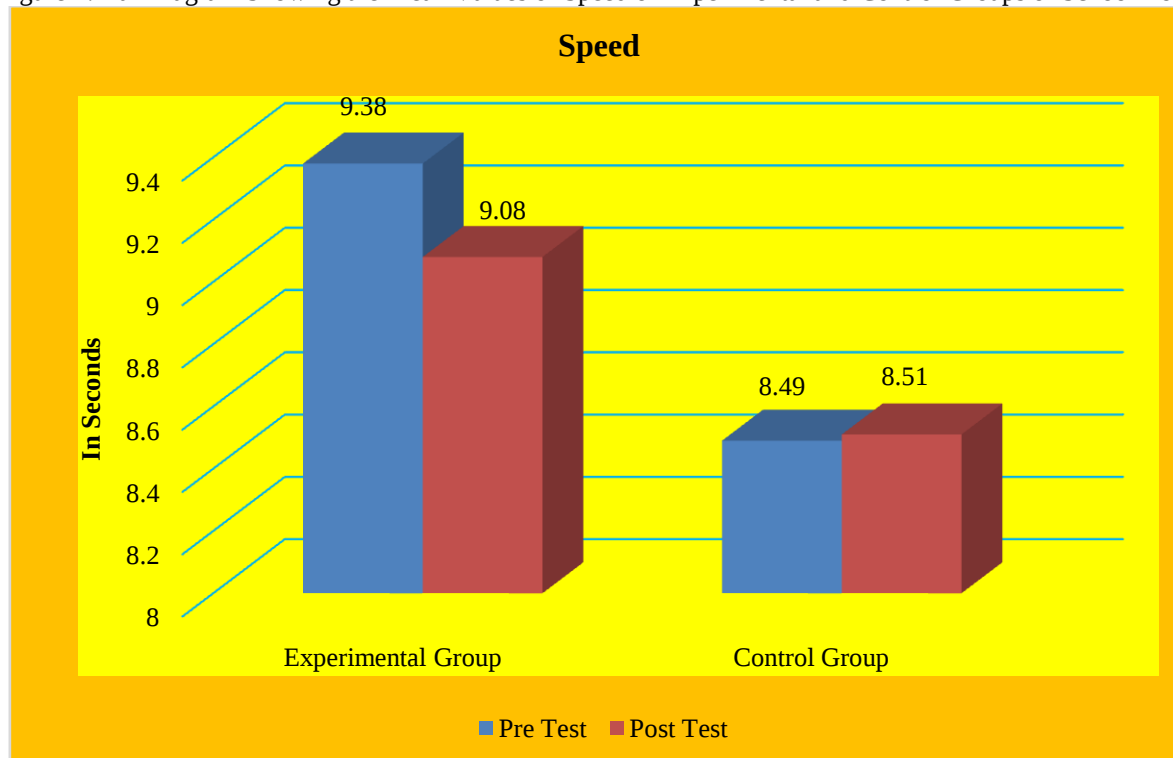


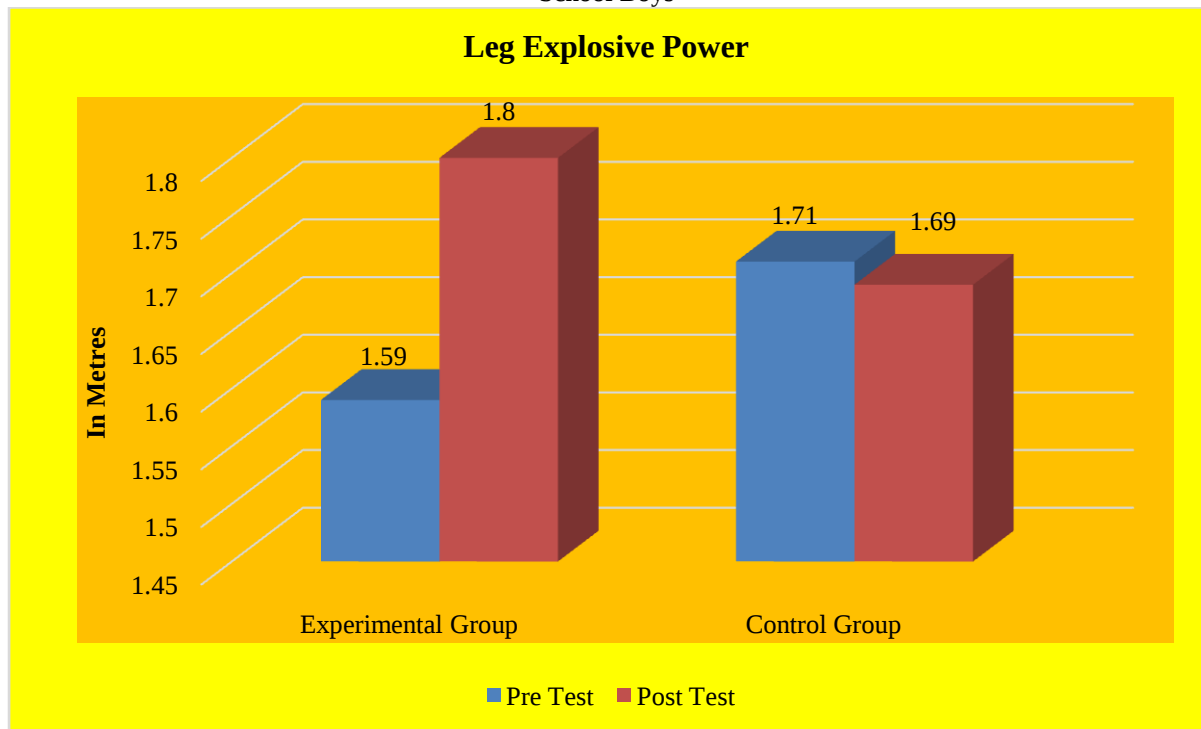
Table 2: Computation of 't' Test on Lower Extremity Explosive Power of Experimental and Control Groups of Adolescent School Boys

Group	Test	Mean	SD	DM	σ DM	't'	'p' value
Experimental	Pre	1.59	0.26	0.21	0.02	10.37*	0.01
	POST	1.8	0.22				
Control	Pre	1.71	0.34	0.02	0.01	1.19	0.25
	POST	1.69	0.33				

*Significant at 0.05 level.

Table 2 shows that the mean, standard deviation and 't' ratio of experimental group and control group. The experimental group pre and post-tests mean values of leg explosive power were 159 and 1.80 and standard deviation values were 0.26 and 0.22 and obtained 't' value was 10.37. Since the "p" value was lesser than 0.05, there was a significant improvement on leg explosive power. And control group pre and post-test mean values of leg explosive power were 1.71 and 1.69 and standard deviation values were 0.34 and 0.33. The obtained 't' value of the control group was 1.19. Since the "p" value was greater than 0.05, there was no significant improvement on leg explosive power. The findings of the study statistically proved that the experimental group showed significant improvement on leg explosive power due to the effect of plyometric raining of school boys.

Figure 2: Diagram Showing the Mean Values of Experimental and Control Groups on Leg Explosive Power of School Boys



Conclusions:

- There was a significant improvement on speed of experimental group of adolescent school boys due to the effect of plyometric training.
- There was a significant improvement on leg explosive power of experimental group of school boys due to the effect of plyometric training.

References:

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