

## EFFECT OF LOW INTENSITY PLYOMETRIC TRAINING WITH DIFFERENT NEURO MUSCULAR ACTIVITIES ON PERFORMANCE VARIABLES

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*The present study aim was to find out the effect of low intensity plyometric training with neuro muscular activities on performance variables of school students. To attain the purpose of this study, twenty male school students were randomly selected as subjects from Regional College of Physical Education, North Tiripura, India using a simple random method. Their age were ranged from 15 to 17 years. The selected participants were randomly divided into three groups such as group 'I' underwent low intensity plyometric training with neuro muscular activities (n=10) and group II act as control (n=10). Group 'I' underwent low intensity plyometric training with neuro muscular activities for three alternative days per week and one session per day for six weeks period. Group 'II' was not exposed to any specific training but they were participated in regular activities. The data on selected criterion variables such as speed and power; it was assessed by 50 mts dash and sarjent vertical jump test respectively. The collected data were statistically analyzed by using dependent-'t' test and Analysis of Covariance (ANCOVA) was fixed at 0.05 level of confident. All the data were analyzed by used SPSS-22 version statistical package. It was concluded that the low intensity plyometric training with neuro muscular activities group were significantly improved on speed and power when compared than control group and also made significant differences among experimental and control groups.*

**Key Words:** *Low Intensity Plyometric Training with Neuro Muscular Activities, Speed, Power*

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### **Introduction**

Plyometrics, also known as jump training or plyos, are exercises in which muscles exert maximum force in short intervals of time, with the goal of increasing power speed-strength. This

training focuses on learning to move from a muscle extension to a contraction rapid or explosive manner, such as in specialized repeated jumping. Plyometrics are primarily used by athletes, especially martial artists, sprinters and high jumpers, to improve performance and are used in the fitness field to a much lesser degree. Plyometric training involves exercises that generate quick, powerful movements involving explosive concentric muscle contraction preceded by an eccentric muscle action. Plyometric exercise has been in practice for many years, to develop the explosive power of athletes (Arumugam, Kumar & Suriya, (2019).

Neuromuscular pertaining to both nerves and muscles, as in neuromuscular blockade by an anesthetic agent, the neuromuscular junction the meeting place of a nerve and a muscle fiber, and neuromuscular transmission the transfer of information from the nerve to the muscle. To elucidate the effects of muscular fatigue on knee joint laxity and the neuromuscular characteristics of male and female athletes. We were particularly interested in determining whether such effects would be more pronounced in female athletes than in males participating in the same sport (Barber-Westin, 2010). Explosive power can be increased, either by increasing the amount of work or by decreasing the amount of time. In throwing and jumping events, serving in tennis are some of the sticking examples for power (Arumugam & Satheeshkumar, (2019). Speed which provides movements, the speed and coordination is an elementary technical demand for sportive performance (Arumugam & Suriya, 2018).

### **Purpose of the Study**

The purpose of the study is to find out the effect of low intensity plyometric training combined with different neuro muscular activities on performance variables of school students.

### **Methodology**

The aim of present study was to find out the effect of low intensity plyometric training with neuro muscular activities on performance variables of school students. To attain the purpose of this study, twenty male school students were randomly selected as subjects from Regional College of Physical Education, North Tiripura, India using a simple random method. Their age were ranged from 15 to 17 years. The selected participants were randomly divided into three groups such as group 'I' underwent low intensity plyometric training with neuro muscular activities (n=10) and group II act as control (n=10). Group 'I' underwent low intensity plyometric training with neuro muscular activities for three alternative days per week and one session per day for six weeks period. Group 'II' was not exposed to any specific training but they

were participated in regular activities. The data on selected criterion variables such as speed and power; it was assessed by 50 mts dash and sarjent vertical jump test respectively. The collected data were statistically analyzed by using dependent-‘t’ test and Analysis of Covariance (ANCOVA) was fixed at 0.05 level of confident. All the data were analyzed by used SPSS-22 version statistical package.

#### 4. Analysis of Data

**Table I**  
**Means and Dependent ‘T’-Test for the Pre and Post Tests on Power and Speed of Experimental and Control Groups**

Criterion variables	Mean	Experimental Group	Control Group
Power	Pre test	0.40	0.39
	Post test	0.47	0.41
	<b>‘t’test</b>	<b>15.92*</b>	1.83
Speed	Pre test	7.93	7.97
	Post test	7.54	7.94
	<b>‘t’test</b>	<b>12.06*</b>	1.20

\*Significant at .05 level. (Table value required for significance at .05 level for ‘t’-test with df 9 is 2.26)

From the table I the dependent-‘t’-test values of power and speed between the pre and post tests means of experimental groups were greater than the table value 2.26 with df 9 at 0.05 level of confidence, it was concluded that the experimental group had significant improvement in the power and speed between while compared to control group.

#### Computation of Analysis of Covariance

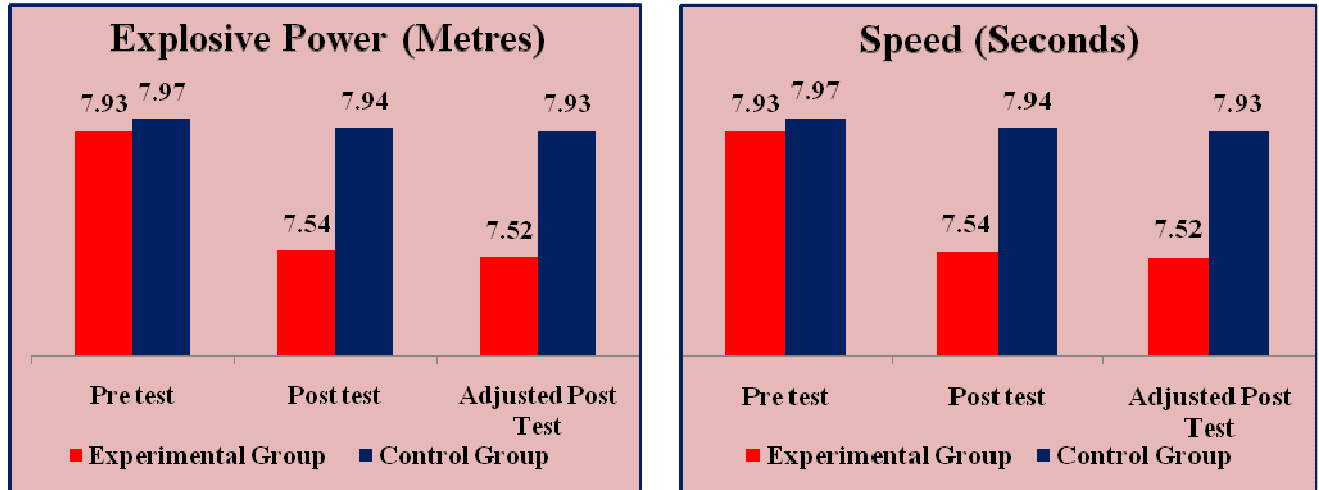
The descriptive measures and the results of analysis of covariance on the criterion measures were given in the following tables.

**Table – II**  
**Computation of Mean and Analysis of Covariance on Power and Speed of Experimental and Control Groups**

	Experimental Group	Control Group	Source of Variance	Sum of Squares	df	Mean Square	F
Power (Adjusted Post Mean)	0.48	0.41	BG	34.01	1	34.01	36.18*
			WG	15.98	17	0.94	
Speed (Adjusted Post Mean)	7.52	7.93	BG	2.07	1	2.07	17.23*
			WG	2.04	17	0.12	

\* Significant at 0.05 level. Table value for df 1, 17 was 4.45

The above table indicates the adjusted mean value on power and speed of experimental and control groups were 0.48 & 0.41 and 7.52 & 7.93 respectively. The obtained F-ratio of 36.18 and 17.23 for adjusted mean was greater than the table value 4.45 for the degrees of freedom 1 and 17 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 power and speed.



**Figure I: Pre Test, Post Test and Adjusted Post Test Mean Values of Experimental Group and Control Group on Power and Speed.**

### Discussion on Findings

Pasanen, Parkkari, Pasanen & Kannus, (2009) conducted the study on effect of a neuromuscular warm-up programme on muscle power, balance, speed and agility. Arumugam &

Satheeshkumar, (2019) evaluated the effect of resistance plyometric training on Lower Body Power among Athletes. From above these both supportive study I intent to conduct this study the result of the my study indicates that there was a significant improvement on power and speed due to the effect of low intensity plyometric training with neuro muscular activities among school students when compared to control group.

### **Conclusion**

1. There was significant improvement on power and speed due to the effect of low intensity plyometric training with neuro muscular activities among school students.
2. There was a significant difference between experimental and control groups on power and speed due to the effect of low intensity plyometric training with neuro muscular activities among school students.
3. However the control group had not shown any significant improvement on any of the selected variables.

### **References**

1. Barber-Westin, S. D., Hermeto, A. A., & Noyes, F. R. (2010). A six-week neuromuscular training program for competitive junior tennis players. *The Journal of Strength & Conditioning Research*, 24(9), 2372-2382.
2. Arumugam, S., & Satheeshkumar, C. (2019). Effect of Resistance Plyometric Training on Lower Body Power among Athletes, *Journal of Information and Computational science*; 9(7), 117-122, ISSN No:1548-7741, DOI:10.12733.JICS.2019.V9I7.535569.0822, UGC-CARE Approved Group - A Journal (Scopus Indexed) serial number: 21148.
3. Arumugam, Kumar & Suriya, (2019). Effect of Skill Training Associated with Plyometric Training on Selected Performance Variables and Leg Explosive Power among Kabaddi Players. *The International journal of analytical and experimental modal analysis* 11(11):1373-1377.
4. Arumugam, S., & Suriya, P. (2018). Effect of Sprint Training on Speed and Agility among Soccer Players. *International Journal of Emerging Technologies and Innovative Research* (www.jetir.org), ISSN:2349-5162, Vol.5, Issue 7, page no.308-311.
5. Pasanen, K., Parkkari, J., Pasanen, M., & Kannus, P. (2009). Effect of a neuromuscular warm-up programme on muscle power, balance, speed and agility: a randomised controlled study. *British journal of sports medicine*, 43(13), 1073-1078.