

**IMPACT OF VARIED INTENSITIES OF PLYOMETRIC TRAINING ON SELECTED STRENGTH AND POWER PARAMETERS OF MALE VOLLEYBALL PLAYERS****Mr. M. Senthil Kumar<sup>1</sup>, Dr.R.Mohanakrishnan, <sup>2</sup> Dr.M.Rajashekarana <sup>3</sup>**

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[msenthilkumarsrm@gmail.com](mailto:msenthilkumarsrm@gmail.com) , [mohanakrishnansrm@gmail.com](mailto:mohanakrishnansrm@gmail.com)**Abstract**

The purpose of the study was to find out the impact of varied intensities of plyometric training on selected strength and power parameters of male volleyball players. To achieve the purpose of the present study, thirty male volleyball players were randomly selected from Chennai, Tamilnadu, India and their age ranged from 18 to 25 years. The selected subjects were divided into three groups of fifteen subjects in each. Group I acted as low intensity plyometric training and group II acted as high intensity plyometric training and group III acted as control group. Muscular strength was assessed by sit ups, grip strength was assessed by dynamometer, explosive power was assessed by standing broad jump and elastic power was assessed by bunny hops test. The experimental groups participated for a period of eight weeks for alternate three days in a week and the post-tests were taken. To find out the difference between the two groups paired 't' test was used. The result reveals that the experimental groups showed better performance on muscular strength, grip strength, explosive power and elastic power than the control group.

**Key words:** Plyometric, Intensity, Volleyball, Strength, Power.**1. Introduction**

Plyometric is defined as exercises that enable a muscle to reach maximum strength in as short as possible. The speed-strength ability is known as power. For an exercise to be truly plyometric, it must be a movement preceded by an eccentric contraction. These results not only stimulating the proprioceptors sensitive to rapid stretch, but also in loading the serial elastic components with a tension force form which they can rebound. A reasonable amount of flexibility is important when beginning the plyometric training program. Athletes from a wide range of sports use plyometric training to help them reach peak physical condition and used correctly, it can be a highly effective form of power training, especially when combined with a suitable strength training program. Plyometric refers to exercise that enables a muscle to reach maximum force in the shortest possible time. The muscle is loaded with an eccentric (lengthening) action, followed immediately by a concentric (shortening) action. Plyometric training involves and uses

practicing plyometric movements to toughen tissues and train nerve cells to stimulate a specific pattern of muscle contraction so the muscle generates as strong a contraction as possible in the shortest amount of time. A plyometric contraction involves first a rapid muscle lengthening movement, followed by a short resting phase, then an explosive muscle shortening movement, which enables muscles to work together in doing the particular motion. Plyometric training engages the myotatic reflex, which is the automatic contraction of muscles when their stretch sensory receptors are stimulated. The intensities can be varied as low and high according to the need. (Baljinder, et al.2012).

## 2. Purpose of the study

The purpose of the study was to find out the impact of varied intensities of plyometric training on selected strength and power parameters of male volleyball players.

## 3. Hypothesis

It was hypothesized that the experimental groups would show significant improvement on selected strength and power parameters of male volleyball players than control group.

## 4. Methodology

To achieve the purpose of the present study, thirty male volleyball players were randomly selected from Chennai, Tamilnadu, India and their age ranged from 18 to 25 years. The selected subjects were divided into three groups of fifteen subjects in each. Group I acted as low intensity plyometric training and group II acted as high intensity plyometric training and group III acted as control group. Muscular strength was assessed by sit ups, grip strength was assessed by dynamometer, explosive power was assessed by standing broad jump and

elastic power was assessed by bunny hops test. The experimental groups participated for a period of eight weeks for alternate three days in a week and the post-tests were taken. To find out the difference between the two groups paired 't' test was used.

## 5. Results and Discussions

The primary objective of the paired 't' ratio was to describe the differences between the pre-test and post-test mean.

**Table – 1**

Summary of 't' ratio on selected strength and power parameters of low intensity plyometric group

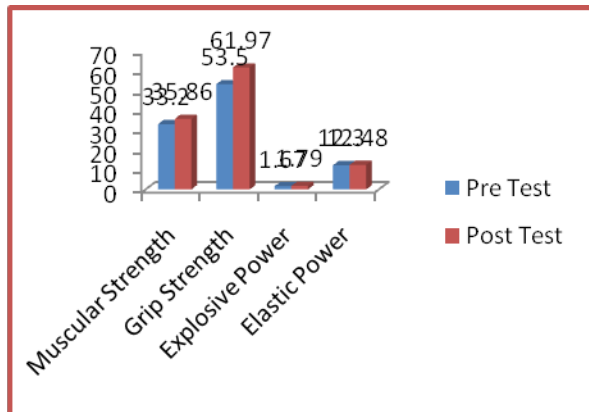
S. No	Variables	Pre-Test Mean	Post-Test Mean	Mean difference	Std. Dev (±)	σ D M	't' Ratio
1	Muscular Strength	33.20	35.86	2.66	3.82	0.98	2.69*
2	Grip Strength	53.50	61.97	8.46	2.08	0.53	15.72*
3	Explosive Power	1.67	1.79	0.11	0.02	0.01	18.57*
4	Elastic Power	12.30	12.48	0.17	0.07	0.01	9.69*

An examination of table - I indicates that the obtained 't' ratios were 2.69, 15.72, 18.57 and 9.69 for muscular strength, grip strength, explosive power and elastic power respectively. The obtained 't' ratios were found to be greater than the required table

value of 2.14 at 0.05 level of significance for 1, 14 degrees of freedom. Hence it was found to be significant.

**Figure – 1**

pre and post test differences of the low intensity plyometric group on selected strength and power parameters



**Table – 2**

Summary of ‘t’ ratio on selected strength and power parameters of high intensity plyometric group

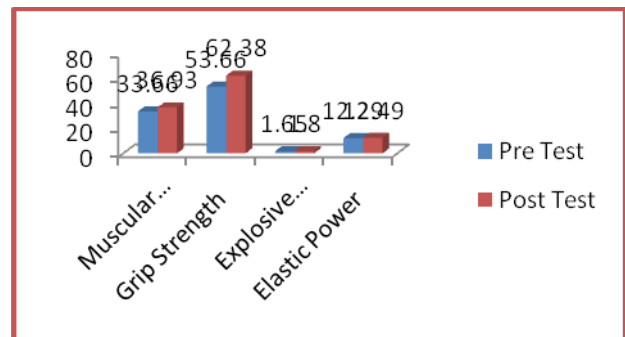
S.No	Variables	Pre-Test Mean	Post-Test Mean	Mean difference	Std. Dev (±)	‘t’ Ratio
1	Muscular Strength	33.66	36.93	3.26	3.05	1.58
2	Grip Strength	53.66	62.38	8.71	2.37	0.52
3	Explosive Power	1.65	1.80	0.15	0.05	0.78
4	Elastic Power	12.29	12.49	0.20	0.05	1.24

An examination of table - II indicates that the obtained ‘t’ ratios were 4.13, 14.19, 11.36 and 13.86 for muscular strength, grip strength, explosive power and elastic power respectively. The obtained ‘t’ ratios were found to be greater than the required table value of 2.14 at 0.05 level of significance for

1, 14 degrees of freedom. Hence it was found to be significant.

**Figure – 2**

pre and post test differences of the high intensity plyometric group on selected strength and power parameters



**Table – 3**

Summary of ‘t’ ratio on selected strength and power parameters of control group

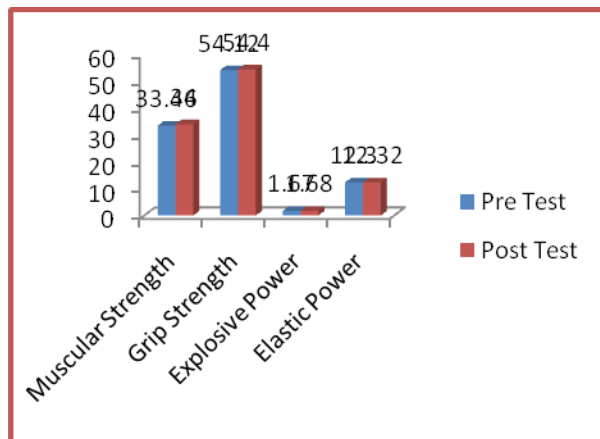
S. No	Variables	Pre-Test Mean	Post-Test Mean	Mean difference	Std. Dev (±)	σ D M	‘t’ Ratio
1	Muscular Strength	33.46	34.00	0.53	1.30	0.33	1.58
2	Grip Strength	54.12	54.40	0.27	2.01	0.52	0.52
3	Explosive Power	1.67	1.68	0.01	0.04	0.01	0.78
4	Elastic Power	12.30	12.32	0.02	0.08	0.02	1.24

An examination of table - III indicates that the obtained ‘t’ ratios were 1.58, 0.52, 0.78 and 1.24 for muscular strength, grip strength, explosive power and elastic power

respectively. The obtained 't' ratios were found to be lesser than the required table value of 2.14 at 0.05 level of significance for 1, 14 degrees of freedom. Hence it was found to be insignificant.

### Figure – 3

pre and post test differences of the control group on selected strength and power parameters



### 6. Discussions and Conclusions

In case of strength and power parameters i.e. muscular strength, grip strength, explosive power and elastic power the results between pre and post (8 weeks) test has been found significantly higher in experimental groups in comparison to control group. The findings of the

present study have strongly indicates that eight weeks of experimental groups had significant influence on selected strength and power parameters i.e. muscular strength, grip strength, explosive power and elastic power of volleyball players. Hence the hypothesis earlier set that experimental groups would have been significant influence on selected strength and power parameters in light of the same the hypothesis was accepted. The result reveals that the experimental groups showed better

performance on muscular strength, grip strength, explosive power and elastic power than the control group.

### 7. References

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