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PHYSICAL EDUCATION

UGC Journal No: 63023

EFFECT OF LOW AND HIGH INTENSITY PLYOMETRIC TRAINING PROGRAM ON LEG EXPLOSIVE POWER OF MEN ATHLETES

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ABSTRACT

The purpose of the study was to find out the effect of low and high intensity plyometric training program on leg explosive power of men athletes. To achieve the purpose forty five (N=45) College Anna University Inter-collegiate athletes studying various colleges in Chennai, Tamilnadu, India were selected as subjects. Their age was ranged from 18 to 25 ears. The subjects were divided into three groups of fifteen each (n=15). Group-I underwent low intensity plyometric training, Group-II underwent High intensity plyometric training and Group-III acted as Control. The duration of the training period will be restricted to twelve weeks and the number of sessions per week was confined to three. Leg Explosive Power was selected as criterion variable and it was assessed by Sargent jump test. The data was collected from the experimental groups were statistically examined with using Analysis of covariance (ANCOVA). Explosive power showed significant difference among the groups. High Intensity plyometric training group showed better performance in the leg explosive power than Low Intensity plyometric training group and Control group.

Key Words: Leg Explosive Power, Plyometric Training, Sargent Jump.

INTRODUCTION

Now a days, more and more individuals particularly boys and girls are affected by sports activities and increasing the number that are representing in the sports area. As preventive and curative health measures, it has become more successful throughout the world and, millions of teenagers should have chance of enjoying sports. Sport is the way which we use our physical capacities to play. Sports is an important in other ways, when one's body works better his mind works better, his brain and his body are interrelated. Sports allows you to blow of tension, to forget your problems for a while and to go out and have a good time no matter what other pressures one may be under in his life (Chandrakumar and Ramesh, 2015). The word training means different things in different fields. In sports the word training is generally understood to be synonym of doing exercise. In a narrow sense training is physical exercise for the improvement of performance. Training involves constructing an exercise programme to develop an athlete for a particular event. This increasing skill and energy capacities are equal consideration (Singh, 1991).

The actual term 'plyometric' was first coined in 1975 by Fred Wilt, the American Track and Field coach. The elements ply and metric come from Latin roots for "increase" and "measure" respectively, the combination thus means 'measurable increase"(Baechle, 1994). Plyometrics refers to human movement that involves an eccentric (lengthening) muscle contraction immediately and rapidly followed by a concentric (shortening) contraction. This is often referred to as the stretch-shortening cycle. The phase between these two contractions is referred to as the amortization phase. Energy stored during the eccentric phase is partially recovered during the concentric phase. In order to best use this stored energy the eccentric phase must be rapidly followed by the concentric.

Intensity of load is the degree of effort being made by the sportsman while doing an exercise. The degree of effort is always considered in relation to time. It is also equated with the amount of force or energy being spent in relation to time. The load intensity can be further divided in to movement intensity and load density. The intensity of load is usually expressed in percentage of the maximum passable intensity. Exercise with maximum intensity

leads to improvement of speed abilities, speed endurance, maximum strength and explosive strength. Exercise with lower intensity results in the improvement of different types of endurance. Exercise with very low intensity does not lead to any improvement but is good for active recovery. Load intensity has inverse relationship with load volume. Higher load intensity is possible only with lower load volume and vice versa (Singh, 1991).

METHODOLOGY

The study was conducted on forty (N=45) male College athletes who were participated in the Anna University Chennai athletic meet held during the year 2016 were selected as subjects. Subjects were randomly divided equally into three groups of fifteen each (n=15). Group-I underwent low intensity plyometric training, Group-II underwent High intensity plyometric training and Group-III acted as Control. The duration of the training period will be restricted to twelve weeks and the number of sessions per week was confined to three. Based on the foot contact of the each plyometric exercises intensity was fixed. Leg Explosive Power was selected as criterion variable and it was assessed by Sargent Jump test. To analysis Explosive power between experimental groups one way analysis of variance (ANOVA) was computed. The level of confidence was fixed at 0.05 level for all the cases.

RESULTS

The analysis of variance on of Leg Explosive Power of Low intensity Plyometric Training Group, High intensity plyometric group and Control group have been analyzed and presented in Table – 1.

TABLE – 1
COMPUTATION OF ANALYSIS OF COVARIANCE OF PRE TEST, POST TEST AND ADJUSTED POST TEST ON LEG EXPLOSIVE POWER OF EXPERIMENTAL GROUPS AND CONTROL GROUP

Test	Low Intensity Plyometric Training Group	High Intensity Plyometric Training Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	F-ratio
Pre-Test Mean	1.90	1.89	1.91	Between groups	0.004	2	0.002	0.52
				Within groups	0.17	42	0.004	
Post-Test Mean	2.14	2.20	1.93	Between groups	0.58	2	0.29	59.64*
				Within groups	0.20	42	0.005	
Adjusted Post-Test Mean	2.14	2.21	1.93	Between sets	0.63	2	0.31	89.45*
				Within Sets	0.14	41	0.003	

**** Significant at 0.05 level of confidence***
Table value for df (2, 42) at 0.05 level = 3.22 Table value for df (2, 41) at 0.05 level = 3.23

Table-1 shows that the obtained F-ratio value of 0.52 for pre test mean of Low intensity Plyometric Training Group, High intensity plyometric group and Control group on Leg Explosive Power is less than the required table value of 3.22 for significance with df 2 and 42 at 0.05 level of confidence. The obtained F-ratio value of 59.64 for post test mean of Low intensity Plyometric Training Group, High intensity plyometric group and Control group on Leg Explosive Power is more than the required table value of 3.22 for significance with df 2 and 42 at 0.05 level of confidence. The obtained F-ratio value of 89.45 for adjusted post test mean of Low intensity Plyometric Training Group, High intensity plyometric group and Control group on Leg Explosive Power is higher than the required table value of 3.23 for significance with df 2 and 41 at 0.05 level of confidence. The results of the study indicated that there is a significant difference between the adjusted post-test means of Low intensity Plyometric Training Group, High intensity plyometric group and Control group on Leg Explosive Power. Since, three groups are compared and whenever the obtained 'F' ratio for adjusted post test is found to be significant,

Scheffe's test is used to find out the paired mean difference and it is presented in Table-2.

TABLE – 2
SCHEFFE'S TEST FOR THE DIFFERENCE BETWEEN PAIRED MEANS ON LEG EXPLOSIVE POWER

Low Intensity Plyometric Training Group	High Intensity Plyometric Training Group	Control Group	Mean Difference	Confident Interval Value
2.14	2.21	---	0.07*	0.05
2.14	---	1.93	0.21*	
---	2.21	1.93	0.28*	

Significant at 0.05 level of confidence.

Table-2 shows that the mean difference values of Low intensity plyometric training Group and High intensity plyometric training Group, Low intensity plyometric training Group and Control group, High intensity plyometric training Group and Control group are 0.07, 0.21 and 0.28 respectively, which are greater than the confidence interval value of 0.05 on Leg Explosive Power in Horizontal Distance at 0.05 level of confidence. The results of the study showed that there was a significant difference between Low intensity plyometric training Group and High intensity plyometric training Group, Low intensity plyometric training Group and Control group, High intensity plyometric training Group and Control group. The above data also reveal that High intensity plyometric training Group had shown better performance than Low intensity plyometric training Group and Control group in Leg Explosive Power. The pre, post, and adjusted post mean values of Low intensity plyometric training Group, High intensity plyometric training Group and Control group on Leg Explosive Power are graphically represented in the Figure -1.

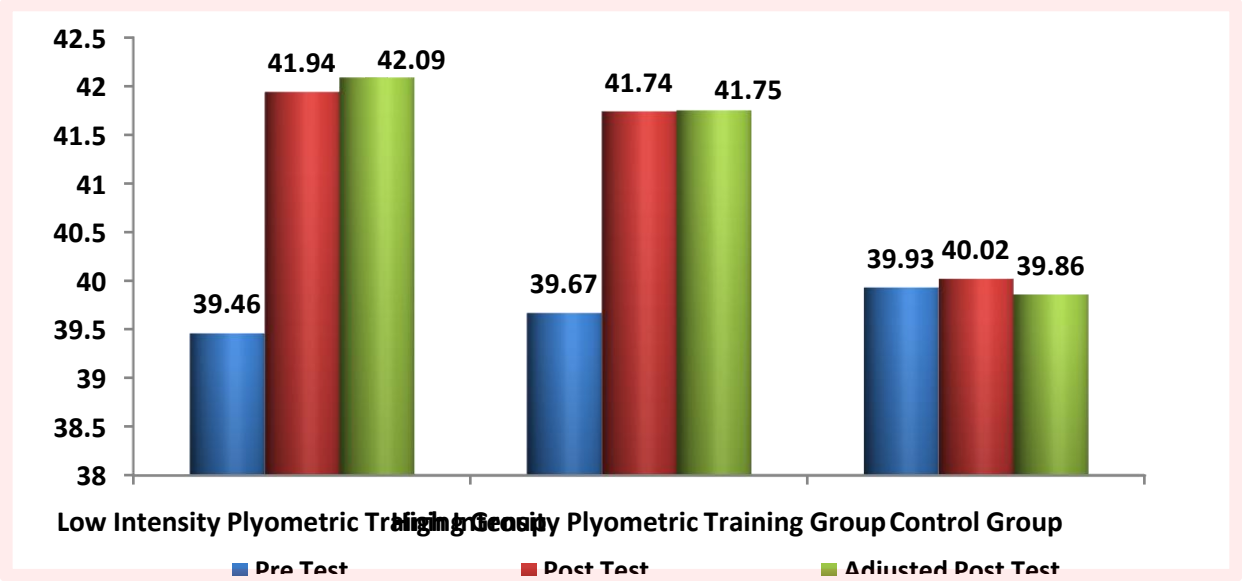

FIGURE - I
THE PRE, POST AND ADJUSTED POST MEAN VALUES OF LOW INTENSITY PLYOMETRIC TRAINING GROUP, HIGH INTENSITY PLYOMETRIC TRAINING GROUP AND CONTROL GROUP ON LEG EXPLOSIVE POWER (IN CENTIMETERS)

CONCLUSIONS

From the analysis of the data, the following conclusions were drawn.

1. It was concluded that there was a significant difference among the Low Intensity Plyometric Training Group, High Intensity Plyometric Training Group and Control group in Leg Explosive Power.
2. It was concluded that there was a significant improvement on Leg Explosive Power on Low Intensity Plyometric Training Group , High Intensity Plyometric Training Group and Control group.
3. Further it was concluded that among the selected group's High Intensity Plyometric Training Group shows the best performance in Leg Explosive Power than Low Intensity Plyometric Training Group and Control group.

REFERENCES

1. Baechle Thomas R. (1994), *"Essential of Straining Training and Conditioning"* Champaign Illinois: Human Kinetics Publishers, p.319.
2. Chandrakumar.N, C Ramesh(2015), Effect of ladder drill and SAQ training on speed and agility among sports club badminton players, International Journal of Applied Research; 1(12): 527-529
3. Singh Hardayal (1991), *"Science of Sports Training"*, New Delhi, D.V.S. Publications.