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Significant effects of varied methods of training on selected physical parameters among middle distance runners

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Abstract
The present study was designed to find out the outcomes of varied methods of training on selected Physical fitness parameters among Middle Distance Runners. To attained the purpose, forty five (N = 45) men middle distance athletes were selected as subjects. The subjects were divided at random into three groups of fifteen each (n = 15). Group-I underwent Plyometric Training, Group-II underwent Intermittent Training and Group III acted as control. The experimental groups underwent the respective training for a period of 12 weeks (3 days/week), whereas the control remain as normal with the sedentary life. Physical Fitness parameters such as Speed and Strength were selected, and it was assessed before and after the training period. Data were collected and statistically analyzed using ANCOVA. Scheffe's post hoc test was applied to determine the significant difference between the paired means. In all the cases 0.05 level of significance was fixed. The resulting data revealed that 12 weeks of Plyometric Training group and Intermittent Training group were found to be benefitted in improving the Speed and Strength among Middle Distance Runner when compared to control. It is predominantly effective in Intermittent Training group than Plyometric Training group.

Keywords: Intermittent Training, Plyometric Training, Speed, Strength

Introduction

Plyometrics is the term now applied to exercises that have their roots in Europe, where they were first known simply as jump training. Interest in this jump training increased during the early 1970s as East European athletes emerged as powers on the world sport scene. As the Eastern bloc countries began to produce superior athletes in such sports as track and field, gymnastics and weight lifting the mystique of their success began to center on their training methods (Allerheiligen, 1992) [1].

The actual term 'plyometrics' 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)* [2].

Intermittent exercise is a term used to describe a variety of different physical training types. The term "intermittent," which means to stop and start at intervals, and the term "interval," as in interval training, is used somewhat interchangeably. In most circumstances, interval training will be conducted as a high intensity exercise activity *(Dary, 1998)* [3].

By its nature, exercise is not aimless; it involves physical exertion that is directed towards the development, increase, or maintenance of physical fitness. Intermittent exercise is a description of the intensity of the activity as well as its nature.

Methodology

The study was conducted on forty five (N = 45) men middle distance athletes were selected as subjects. Subjects were randomly assigned equally into three groups. Group-I underwent Plyometric Training, Group-II underwent Intermittent Training and Group III acted as control. The experimental groups underwent the respective training for a period of 12 weeks (3 days/week), whereas the control remain as normal with the sedentary life.

Among the various Physical fitness parameters only Speed and Strength were selected as dependent variables. Speed was assessed by 50mts Run and Strength was assessed by Bench Press. All the three groups were tested on selected Speed and Strength were analyzed before and after the training period.

Analysis of the Data

The data collected from the experimental groups and control group on prior and after experimentation on selected variables were statistically examined by analysis of covariance (ANCOVA) was used to determine differences, if any among the adjusted post test means on selected criterion variables separately. Whenever they obtained f-ratio value in the simple effect was significant the Scheffe's test was applied as post hoc test to determine the paired mean differences, if any. In all the cases 0.05 level of significance was fixed.

The Analysis of covariance (ANCOVA) on Speed and Strength of Experimental Groups and Control group have been analyzed and presented in Table -1.

Table 1: Values of Analysis of Covariance for Experimental Groups and Control Group on Speed and Strength

CertainVariables	Adjusted Posttest Means			Source of Variance	Sum of Squares	df	Mean Squares	'F' Ratio
	Plyometric Training Group-(I)	Intermittent Training Group- (II)	Control Group-(III)					
Speed	7.15	6.87	7.67	Between With in	4.94 2.53	2 41	2.47 0.06	39.97*
Strength	48.59	54.84	42.57	Between With in	1116.19 283.08	2 41	558.10 6.90	80.83*

Significant at.05 level of confidence
(The table value required for Significance at.05 level with df 2 and 41 is 3.23)

Table-1 shows that the adjusted post test mean value of Speed and Strength for Plyometric Training, Intermittent Training and Control Group, are 7.15, 6.87, 7.67, 48.59, 54.84 and 42.57 respectively. The obtained F-ratio of 39.97 and 80.83 for the adjusted post test mean is more than the table value of 3.23 for df 2 and 41 required for significance at 0.05 level of confidence.

The results of the study indicate that there are significant differences among the adjusted post test means of Experimental Groups and Control Group on the decrease of Speed and Strength.

To determine which of the paired means had a significant difference, Scheffe's test was applied as Post hoc test and the results are presented in Table 2.

Table 2: The Scheffe's test for the differences between the adjusted post tests paired means on Speed and Strength

Certain Variables	Adjusted Post test Means			Mean Difference	Confidence Interval
	Plyometric Training Group -(I)	Intermittent Training Group -(II)	Control Group -(III)		
Speed	7.15	6.87		0.28*	0.23
	7.15		7.67	0.52*	0.23
		6.87	7.67	0.80*	0.23
Strength	48.59	54.83		6.24*	2.44
	48.59		42.57	6.02*	2.44
		54.83	42.57	12.26*	2.44

Significant at.05 level of confidence

Table 2 shows that the adjusted post test mean difference Speed and Strength on Plyometric Training group and Intermittent Training group, Plyometric Training group and Control group, Intermittent Training group and Control group are 0.28, 0.52, 0.80, 6.24, 6.02 and 12.26 respectively, these values are greater than the confidence interval value 0.23 and 2.44 which shows significant differences at 0.05 level of confidence.

It may be concluded from the results of the study that there is a significant difference in Speed and Strength between the adjusted post test means of Plyometric Training group and Intermittent Training group, Plyometric Training group and Control group, Intermittent Training group and Control group. However, the improvement in Speed and Strength was significantly decreased for Intermittent Training group than Plyometric Training group and Control Group.

It may be concluded that the Intermittent Training group is better than the other Plyometric Training group in improving Speed and Strength.

The adjusted post test means values of experimental groups and control group on Speed and Strength are graphically represented in the Figure-1 and Figure-2.

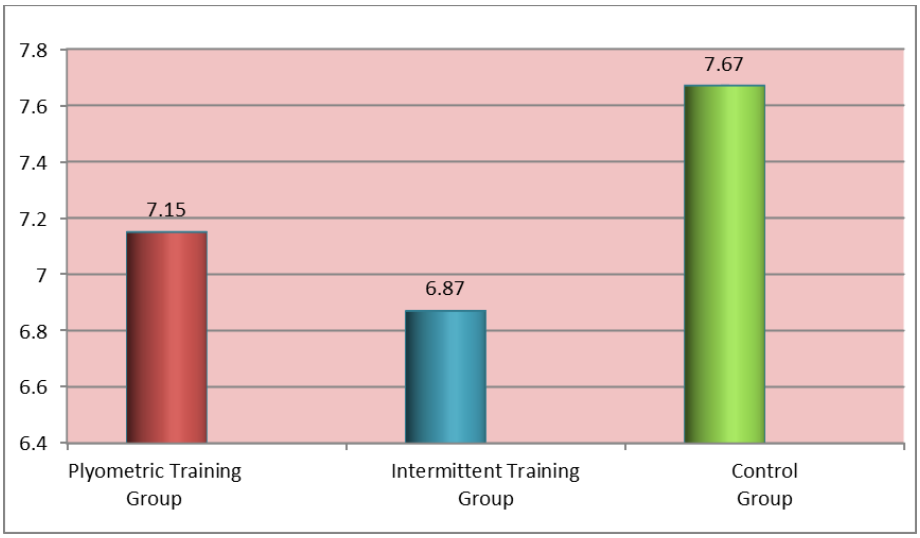

Fig 1: Bar Diagram on Ordered Adjusted Means of Speed

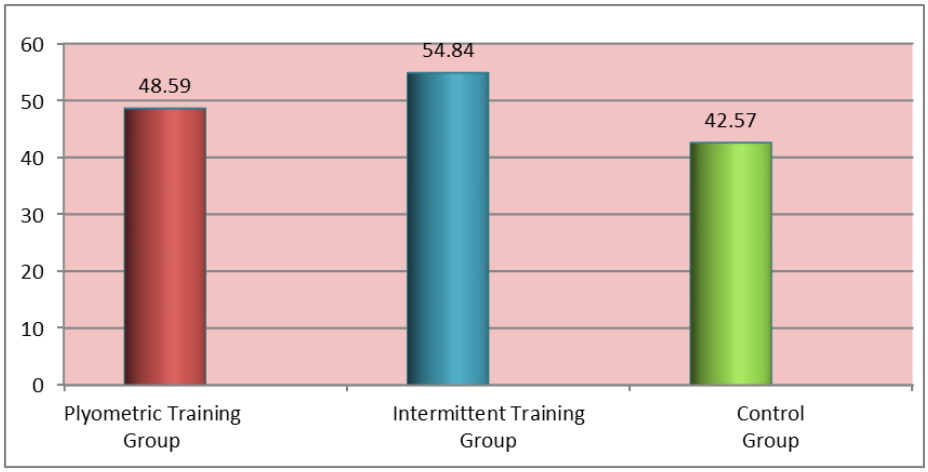

Fig 2: Bar Diagram on Ordered Adjusted Means of Strength

Conclusion

1. From the analysis of the data, the following conclusions were drawn.
2. Significant differences in achievement were found between Plyometric Training group, Intermittent Training group and Control group in the selected criterion variables such as Speed and Strength.
3. The Experimental groups namely, Plyometric Training and Intermittent Training group had significantly improved in Physical Fitness variables such as Speed and Strength.
4. The Intermittent Training was found to be better than the Plyometric Training group in increasing Speed and Strength.

References

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