



EFFECT OF PLYOMETRIC TRAINING AND COMPLEX TRAINING ON SPEED COMPONENT AMONG RUNNERS

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ABSTRACT

The purpose of the study was to find out the effect of plyometric training and complex training on speed component among runners. For this purpose, forty five (N=45) men runners who participated in Alagappa University intercollegiate athletic meet during the year 2016-2017, were selected randomly as subjects. They were divided into three equal groups of fifteen (n=15), namely Plyometric Training group, Complex Training group, and group III acted as Control. The training period was limited to three days per week for twelve weeks. The dependent variable selected for this study was Speed, and it was assessed by 30 meters run test. All the subjects were tested prior to and immediately after the experimental period on the selected dependent variable. The collected data were analyzed by using dependent 't'-test to find out significant improvements. Analysis of covariance (ANCOVA) was used to determine the differences, if any, among the adjusted post-test means. Whenever 'F'-ratio for adjusted post-test mean was found to be significant, the Scheffe's test was applied as post-hoc test to determine the paired mean differences. The level of significance was fixed at 0.05 level of confidence for all the cases. The results of the study showed all the experimental groups namely, Plyometric training group and Complex training group had significantly improved in Speed. Further the study showed Complex training group is better than Plyometric training group and control group.

KEYWORDS

Speed, Plyometric training, Complex training

Introduction

Sport and games involve competition. Without competition, there is no game. Competition provides a forum within which people strive to become competent, to become excellent. The opportunities for rivalry within sport are many and varied: team against team, individual against individual, individual against a record, individual now against a previous best performance, individual against a physical barrier. Competition involves individuals and groups striving for excellence within the rules and traditions that make up a sport, including all the festival characteristics that give the sport additional flavor and meaning (Dary, 1998).

Physical fitness is served by individual sciences such as pediatric and adult physiology, biochemistry, biomechanics and sports medicine, and it can be defined as the individual's ability to meet the demands of a specific task. It primarily consists of elements of aerobic and anaerobic fitness, muscular strength and flexibility. Regardless of the performance level, sex and age, all competitors use one or more of these elements of fitness during their daily practice. For example, in an endurance event such as the marathon, aerobic capacity is the most important element for success, whereas in sprinting events, such as the 100 mts, anaerobic power predominates. Consequently, training programs have to address the most important elements of physical fitness for each individual sport (Fleck, 1999).

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' (Baechele, 1994).

Plyometric training can take many forms, including jump training for the lower extremities and medicine ball exercises for the upper extremities. Jump training exercises were classified according to the relative demands they placed on the athlete. All the exercises are progressive in nature, with a range of low to high intensity in each type of exercise. The classification of exercises is jumps in place; standing jumps; multiple hops and jumps, bounding, box drills and depth jumps.

Complex training was developed by the Europeans to blend the results of heavy weight training with what they call shock training and what is called plyometrics by Indians (Chu, 1996).

Methodology

The study was conducted on forty five (N=45) men runners who participated in Alagappa University intercollegiate athletic meet during the year 2016-2017, were selected randomly as subjects. They were divided into three equal groups of fifteen (n=15), namely Plyometric Training group, Complex Training group, and group III (Control group) that did not involve in any training. The training period was limited to three days per week for twelve weeks. The dependent variable selected for this study was Speed, and it was assessed by 30 meters run test.

Results and Discussion

The data collected from the experimental groups and control group 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. The level of significance was fixed at 0.05 level of confidence to test the 'F' ratio obtained by analysis of covariance on selected criterion variables.

The analysis of covariance on Speed of the pre, post and adjusted test scores of Plyometric Training, Complex training and Control group, have been analyzed and presented in table - I.

TABLE - I ANALYSIS OF COVARIANCE OF THE DATA ON SPEED OF PRE, POST AND ADJUSTED SCORES OF EXPERIMENTAL GROUPS AND CONTROL GROUP

Test	Plyometric Training Group	Complex Training Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	F-ratio
Adjusted Post-Test Mean	4.29	4.01	4.43	Between Sets	1.82	2	0.91	303.33*

				Withi n Sets	0.13	42	0.003	
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*** 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

The table-I shows that the adjusted post-test means on Speed of Plyometric training group, Complex training group and Control group are 4.29, 4.01 and 4.43 respectively. The obtained 'F' ratio of 303.33 for adjusted post-test mean is greater than the table value of 3.23 for df 2 and 41 required for significance at 0.05 level of confidence on Speed.

The results of the study indicated that there is a significant difference between the adjusted post-test means of Plyometric training group, Complex training group and Control group on Speed.

Since, three groups are compared, whenever the obtained 'F' ratio for adjusted post test is found to be significant, the Scheffe's test is used to find out the paired mean difference and it is presented in table-II.

TABLE – II SCHEFFE'S TEST FOR THE DIFFERENCE BETWEEN PAIRED MEANS ON SPEED

Plyometric Training Group	Complex Training Group	Control Group	Mean Difference	Confident Interval Value
4.29	4.01	---	0.28*	0.05
4.29	---	4.43	0.14*	
---	4.01	4.43	0.42*	

***Significant at 0.05 level of confidence.**

The table-II shows that the mean difference values of Plyometric training group and Complex training group, Plyometric training group and Control group and Complex training group and Control group are 0.28, 0.14 and 0.42 respectively, which are greater than the confidence interval value of 0.05 on Speed at 0.05 level of confidence. The results of the study showed that there is a significant difference between Plyometric training group and Complex training group, Plyometric training group and Control group and Complex training group and Control group.

The above data also reveals that Complex training group had shown better performance in Speed than Plyometric training and Control group.

The pre, post and adjusted mean values of Plyometric training group, Complex training group and Control group on Speed are graphically represented in the Figure -I.

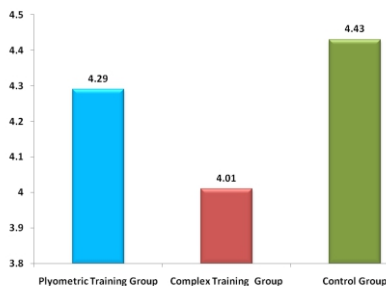


Figure: I The adjusted mean values of Plyometric Training group, Complex Training group and Control group on Speed

Conclusion

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

1. It is concluded that Plyometric Training Group and Complex Training Group have significantly improve speed of the Runners.
2. Plyometric Training Group is showed better performance than Complex Training Group and Control group.

References

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