

Original Research Paper

Physical Education

EFFECT OF PLYOMETRIC TRAINING AND COMPLEX TRAINING ON SELECTED PHYSICAL FITNESS COMPONENT AMONG RUNNERS

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ABSTRACT Purpose: To find out the effect of plyometric training and complex training on selected Physical Fitness component among runners. **Subjects:** 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. **Training Protocol:** The training period was limited to three days per week for twelve weeks. **Variables:** The dependent variable selected for this study was Agility. **Testing Procedures:** Agility was assessed by Shuttle. All the subjects were tested prior to and immediately after the experimental period on the selected dependent variable. **Statistical Techniques:** 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. **Results:** The results of the study showed all the experimental groups namely, Plyometric training group and Complex training group had significantly improved in Agility. **Conclusion:** The study showed Complex training group is better than Plyometric training group and control group.

KEYWORDS : Agility, Plyometric training, Complex training

Introduction

Sports have become as competitive as other fields in the world. In ancient limes, our ancestors exhibited talents in terms of physical activity. But now it has become completely professional. Somehow or other irrespective of age the human race is involved in different kinds of sports either for recreation or competition. In the present world, Sports have become extremely competitive. It is not mere participation or practice that makes an individual victorious. Sports life is affected by various factors like physiology, biomechanics, sports training, sports medicine, sociology, coaching, computer application, psychology and so on.

Training is an effective antidote against weakness. In the vast play Held of life, the sports galaxy of players rests entirely on the base foundation called training. It is a programme of exercise designed to improve the skill and increase the energy capacities of an athlete for a particular event. Training is the total process of preparation of a sportsman, through different means and forms for better performance. Physical training brings about local changes in the muscles, improved, neuromuscular co-ordination of activities and a series of more general cardio - respiratory changes (*Adams et al.*, **1992**).

Plyomctric training, termed as explosive-reactive is a power training, which involves powerful muscular contractions in response to a rapid stretching of the involved musculature. These powerful contractions are not a pure muscular event; they have an extremely high degree of central nervous system involvement. The event is a neuromuscular event. It is a combination of an involuntary reflex, which is then followed by a fast muscular contraction. The main objective in plyometric training is to improve quickness through strength. The fast twist or white labor is responsible for explosive type of muscular contraction. Plyometric has undergone a considerable metamorphosis over the past few years. New ideas and techniques will lead the reader into the second generation of plyometric training. In the theory of strength training, the specific training for the increase of explosive type strength is referred to as plyometric training and the training method is called the plyometric method. Plyomctrics is speed-strength training, a combination of strength and speed (Villarreal et al., 2011).

Complex training describes a power-developing workout that

combines weights and plyometric exercises. About 10 years ago, these workouts were greeted with great acclaim as research indicated that they could significantly enhance fast twitch muscle fiber power and, therefore, dynamic sports performance.

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 Agility, and it was assessed by Shuttle Run.

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

Test	Plyom etric Train- ing Group	Com- plex Train- ing Group	Cont- rol Group	Source of Varian ce	Sum of Square s	df	Mean Square s	F-ratio	
Adjust ed	22.55	20.02	23.19	Betwe en sets	198.63	2	99.32	220.71 *	
Test Mean				Within Sets	18.56	41	0.45		

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

The table-I shows that the adjusted post-test means on Agility of Plyometric training group, Complex training group and Control group are 22.55, 20.02 and 23.19 respectively. The obtained 'F' ratio of 220.71 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 Agility.

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 Agility.

Since, three groups are compared, whenever the obtained 'F' ratio for adjusted post test is find 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 AGILITY

Plyometric Training Group	Complex Training Group	Control Group	Mean Difference	Confident Interval Value
22.55	20.02	_	2.53*	0.14
22.55		23.19	0.64*	
	20.02	23.19	3.17*	

*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 2.53, 0.64 and 3.17 respectively, which are greater than the confidence interval value of 0.14 on Agility at 0.05 level of confidence. The results of the study showed that there is a significant difference between Plyometric training group and Control group and Complex training group, Plyometric training group and Control group and Complex training group, Plyometric training group and Control group and Control group and Control group.

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

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



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

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 Agility of the Runners.

2. Plyometric Training Group is showed better performance than Complex Training Group and Control group.

References

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