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Impact of Hypoxic Training and Pranayama Practices on Selected Physical Fitness Variables among School Boys

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Abstract

Aim of the study was to find out the impact of hypoxic training and pranayama practices on selected physical fitness variables among school boys. The study was conducted on forty five (N=45) students studying government her sec school, Chidambaram and age group ranged 14 to16 years Tamilnadu, India, during the year 2012-2013 were selected as subjects at random and they were divided randomly into two experimental groups and on control group of fifteen each, namely Group I Hypoxic Training, Group II Pranayama Practice and Group III acted as Control. The training period was limited to twelve weeks and for three days per week. The experimental groups underwent their respective experimental treatment for 12 weeks. Cardio respiratory endurance and agility were selected as dependent variables. Cardio respiratory endurance was assessed Cooper's 12 Minute Run/Walk Test and Agility was assessed by Shuttle run test. All the subjects were tested prior to and after the training for all the selected variables. The data collected from the three groups prior to and post experimentation was statistically analyzed by using Analysis of Covariance (ANCOVA). Scheffe's post hoc test was applied to determine the significant difference between the paired means. In all the cases .05 level of significance was fixed. The result reveals significant differences in cardio respiratory endurance and agility among the experimental groups.

Keywords: Hypoxic training, Pranayama Practices, Cardio respiratory endurance, Agility.

Introduction

The entire sphere of sport, its structure and dynamics, is a reflection of the society in which it exists. Sport in general, and sport activities in particular, are the creations of people interacting with one another. Sport is influenced by the society and the ways in which the people in sport, especially athlete, are "naturally" supported or victimized by their involvement. Sport can have both positive and negative effects on participants, but it also calls attention to the possibility that people define and create sport in their lives and that sport can be defined and created in ways that actually stand in opposition to society as a whole **(Coakley, 1986)**.

Soccer as it is seen today has undergone a tremendous improvement since its birth. Of all the events in human history the one to attract the largest audience was neither a great political occasion nor a special celebration of some complex achievements in art or science, but simple ball game a soccer match. If we examine it more carefully we would soon realize, that each soccer match is a symbolic event of some complexity. One of the greatest strengths of the game is its simplicity. At its crudest level all that are needed is a ball and an open space with something to act as a goal post. No other sport is so easily available and so immediately inspiring **(Morris, 1981).**

Sport and athletes have always been subjects for art. In early Greek Culture, where sport was so fundamental to social life, artists often used athletes as subjects, creating sculpture and decorating vases with athletes in action. Throughout history, artists have been intrigued by the physical beauty of the athletic body and the visual beauty of the athletic performance. Sport became the object for intellectual analysis and investigation during this century. Hypoxic (low-oxygen) workout makes the oxygen delivery system more efficient, increasing the strength and endurance up to 40 percent **(Guyton, 1990).** Specific muscles exercised in the hrs gain improved oxygen delivery for extra power and endurance. Hypoxic training can cut your valuable workout time by up to 50 percent.

Pranayama is control of Breath". "Prana" is Breath or vital energy in the body. On subtle levels prana represents the pranic energy responsible for life or life force, and "ayama" means control. So Pranayama is "Control of Breath". One can control the rhythms of pranic energy with pranayama and achieve healthy body and mind. Patanjali in his text of Yoga Sutras mentioned pranayama as means of attaining higher states of awareness; he mentions the holding of breath as important practice of reaching Samadhi. Hatha Yoga also talks about 8 types of pranayama which will make the body and mind healthy. Five types of prana are

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responsible for various pranic activities in the body, they are Prana, Apana, Vyan, Udana & Samana. Out of these Prana and Apana are most important. Prana is upward flowing and Apana is downward flowing. Practice of Pranayama achieves the balance in the activities of these pranas, which results in healthy body and mind.

Methodology

The study was conducted on forty five (N=45) students studying government her sec school, Chidambaram and age group ranged 14 to16 years Tamilnadu, India, during the year 2012-2013 were selected as subjects at random and they were divided randomly into two experimental groups and on control group of fifteen each, namely Group I Hypoxic Training, Group II Pranayama Practice and Group III acted as Control. The training period was limited to twelve weeks and for three days per week. The experimental groups underwent their respective experimental treatment for 12 weeks. Cardio respiratory endurance and agility were selected as dependent variables. Cardio respiratory endurance was assessed Cooper's 12 Minute Run/Walk Test and Agility was assessed by Shuttle run test. All the subjects were tested prior to and after the training for all the selected variables. The data collected from the three groups prior to and post experimentation was statistically analyzed by using Analysis of Covariance (ANCOVA). Scheffe's post hoc test was applied to determine the significant difference between the paired means. In all the cases .05 level of significance was fixed. During the training period, the experimental groups underwent their respective training programmes. Group-I underwent Hypoxic Training, Group-II underwent Pranayama Practice, for all three days per week for twelve weeks. The duration of training session in all the days was between thirty and forty five minutes approximately which included warming up and limbering down. For Hypoxic training continuous running with inhaling and exhaling with equal running stride was maintained throughout the course of training. Training progressing was given every week(i.e. first week three stride inhale and three stride exhale was given while continuous running with half an hour and following weeks one more stride of inhale and exhale was increased). All the subjects involved in this study were carefully monitored throughout the training programme to be away from injuries. They were questioned about their health status throughout the training programme. None of them reported any injuries or discomfort. However, muscle soreness appeared in the earlier period of the training programme and was reduced in due course.

The data collected from the three groups prior to and post experimentation on cardio respiratory endurance and agility were statistically analyzed by using Analysis of Covariance (ANCOVA). Hence, whenever the obtained f-ratio value was significant the Scheffe's test was applied as post hoc test to determine the paired mean differences, if any. In all the cases .05 level of significance was fixed. The Analysis of covariance (ANCOVA) on cardio respiratory endurance and agility of Experimental Groups, have been analyzed and presented in Table -1.

Results

Table I. Analysis of covariance on dependent variables of hypoxic training group, pranayama practices group and control group

Dependent Variables	Adjusted Post-test Means			SOV	S of SQ	df	Mean Squares	'F' Ratio
	HTG group	PP group	Control Group (III)					
Cardio Respiratory Endurance (In Meters)	2411.90	2274.29	2050.47	B W	997331.14 270340.56	2 41	498665.57 6593.67	75.63*
Agility (In Seconds)	9.68	10.27	10.55	B W	5.91 2.91	2 41	2.95 0.07	41.61*

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

Table I shows that the adjusted post test mean value of cardio respiratory endurance and agility for hypoxic Training group, pranayama practices group and control group are 2411.90, 2274.29, 2050.47, 9.68, 10.27 and 10.55 respectively. The obtained F-ratio of 75.63 and 41.61 value of 3.23 for df 2 and 41 required for significance at .05 level of confidence. The results of the study indicate that there are significant differences

among the adjusted post test means of experimental groups on the increase of cardio respiratory endurance and agility. 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 - II.

Table II. The scheffe's test for the differences between the adjusted post tests paired means on cardio respiratory endurance and agility

Dependent Variables	Adjusted Post-test means			Mean Difference	Confidence Interval
	Hypoxic Training Group - (I)	Pranayama Practices Group - (II)	Control Group - (III)		
Cardio Respiratory Endurance (In Meters)	2411.90	2274.29	---	137.61*	74.37
	2411.90		2050.47	361.43*	74.37
	---	2274.29	2050.47	223.82*	74.37
Agility (In Seconds)	9.68	10.27	---	0.59*	0.24
	9.68	---	10.55	0.87*	0.24
	---	10.27	10.55	0.28*	0.24

**** Significant at.05 level of confidence***

Table II shows that the adjusted post-test mean differences on Hypoxic Training Group and Pranayama Practices Group, Hypoxic Training Group and Control Group, Pranayama Practices Group and Control Group are 137.61, 361.43 and 223.82 respectively. These values are greater than the confidence interval value 74.37, which shows significant differences at .05 level of confidence. Further the table 2 shows that the adjusted post-test mean differences on Hypoxic Training Group and Pranayama Practices Group, Hypoxic Training Group and Control Group, Pranayama Practices Group and Control Group are 0.59, 0.87 and 0.28 respectively. These values are greater than the confidence interval value 0.24, which shows significant differences at .05 level of confidence.

It may be concluded from the results of the study that there is a significant difference in cardio respiratory endurance and agility between the adjusted post-test means of Hypoxic Training Group and Pranayama Practices Group, Hypoxic Training Group and Control Group, Pranayama Practices Group and Control Group. However, the improvements of cardio respiratory endurance and agility were significantly higher for Hypoxic Training Group than Pranayama Group and Control Group. It may also be concluded that Hypoxic Training Group is better than Pranayama Group and Control Group in improving Cardio respiratory endurance and Agility. The adjusted post test mean values of experimental groups and control groups on cardio respiratory endurance and agility are graphically represented in the Figure I and II.

Figure I. The adjusted post tests mean values of experimental groups on Cardio respiratory endurance (In Meters)

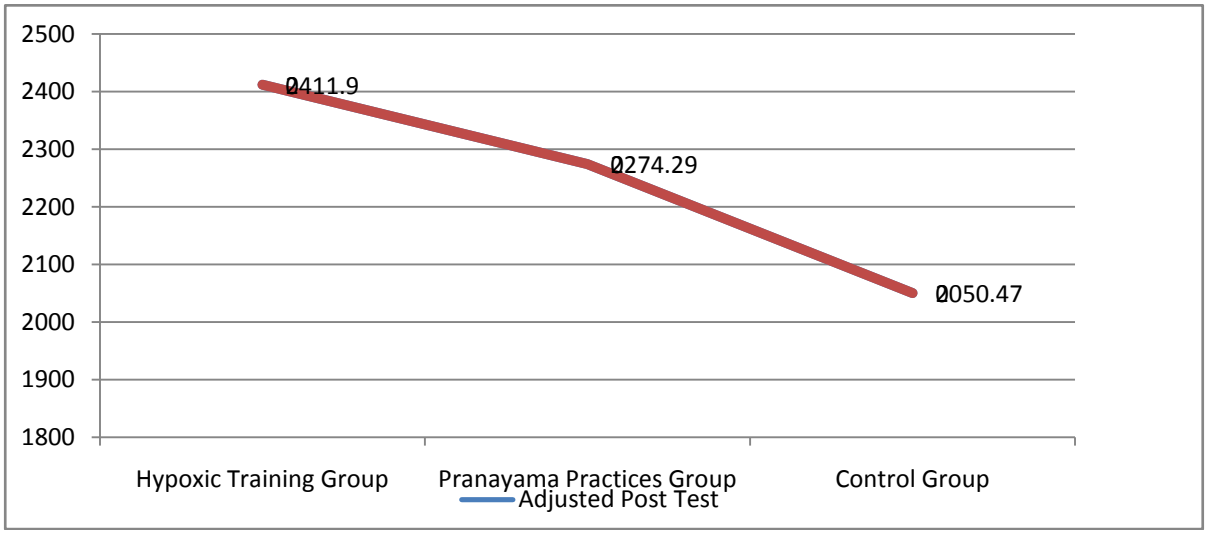
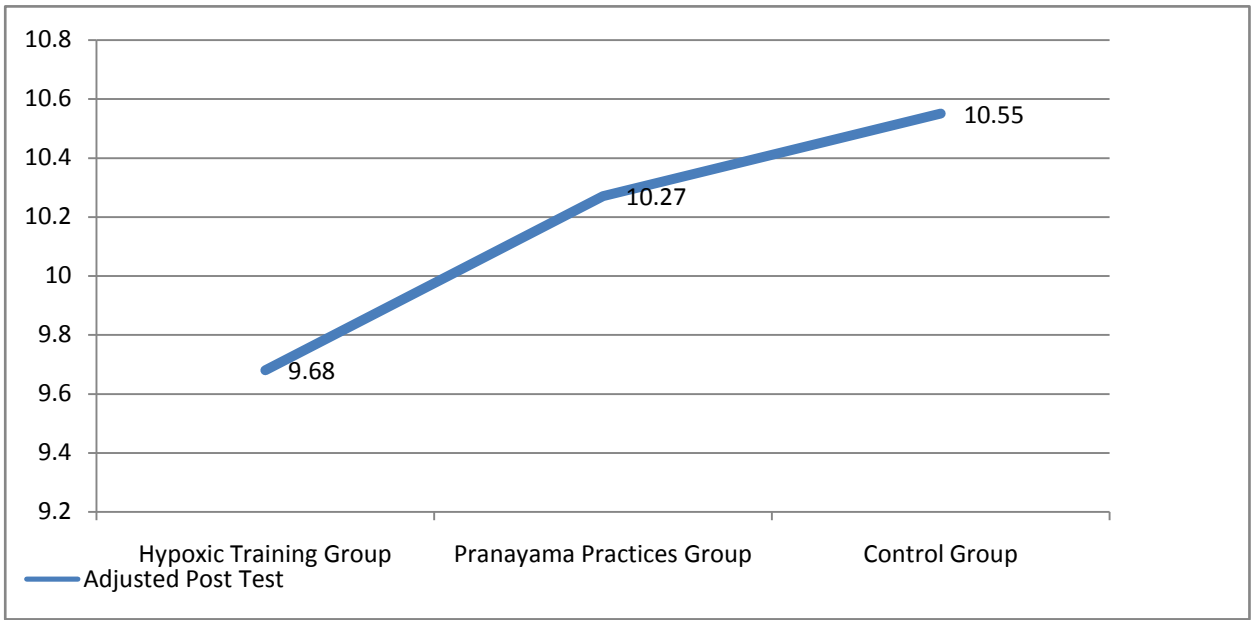


Figure II. The adjusted post tests mean values of experimental groups on Agility (In Seconds)



Discussion on Findings

The results of the study indicate that all the experimental groups namely hypoxic training group and pranayama practices group had significantly improved in the selected dependent variables such as cardio respiratory endurance and agility. It is also found that the achieved by the hypoxic training group was greater when compared to pranayama practices group and control group.

It is inferred from the results of the present study that systematically designed Hypoxic training and Pranayama Practices enhance the performance standard, as the selected dependent variables are very important qualities for better performance in almost all sports and games. Hence, it is concluded from the results of the study that systematically and scientifically designed hypoxic training and pranayama practices may be given due recognition and implemented properly in the training programmes of all the disciplines in order to achieve maximum performance

Conclusion

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

1. The experimental groups namely, hypoxic training group and pranayama practices group had significantly improved in cardio respiratory endurance and agility.
2. Significant differences in achievement were found among hypoxic training group and pranayama practices group with regard to all the selected criterion variables such as cardio respiratory endurance and agility.

References

1. Coakley J. Jay, Sport in Society: Issues and Controversies, St Louis: Times Mirror/Mosby College Publishing, 1986.
2. Guyton Arthur C., Hypoxic Training – A History: Text Book of Medical Physiology, Philadelphia: W.B. Saunders Company, 1990.
3. Morris Desmond, The Soccer Dribble, London: Jonathan Cape Ltd., 1981.