



EFFECT OF CYCLING AND SWIMMING ON THE PHYSICAL AND PHYSIOLOGICAL VARIABLES AMONG LONG DISTANCE RUNNERS

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Abstract

The purpose of the study was to find out whether there would be any significant improvement on selected variables as a result of cycling and swimming training on selected physical fitness and physiological variables among long distance runners. , forty five long distance runners from different colleges were selected within Chennai. Randomly selected (N=45) long distance runners were divided into three groups and assigned as cycling group, swimming training group and control group. Pre test scores were collected on selected criterion variables, namely, muscular endurance of upper body assed by sit ups, cardio respiratory endurance assed by cooper test and resting pulse rate assed by palpation method. After six weeks experimental treatments to the experimental groups, scores on selected criterion variables were obtained. The differences between the initial and final scores were the effect of respective experimental treatments. To test the statistical significance, the scores were subjected to ANCOVA. Comparing between the treatments groups cycling group was better than swimming group in improving Muscular Endurance of and also found that there was no significant difference between cycling group and swimming group among long distance runners on Resting pulse rate. It was further found that cycling group was better than swimming group in improving Cardiorespiratory Endurance of long distance runners.

Keywords: Cycling, Swimming, Long distance runners.

Introduction

Long distance runners require long term endurance to excel in long distance running. There are different training methods being following by these athletes to improve their long term endurance. However, the effect of swimming and cycling in improving the long term endurance of long distance runners were not researched fully. Hence, the investigator selected this research topic. To test how far the long distance runners improved their physical fitness and physiological variables, the

investigator selected physical fitness variable, Muscular endurance and physiological variable, Pulse rate and cardio respiratory endurance.

Methodology

The purpose of the study was to find out whether there would be any significant improvement on selected variables as a result of cycling and swimming training on selected physical fitness and physiological variables among long distance runners. To achieve the purpose of the study, forty five long distance runners from different colleges

were selected within Chennai. They were selected randomly as subjects. The selected subjects were of age group of 18 to 22 years. The subjects were randomly divided in to three groups of 15 subjects in each group. Group one acted as experimental group I and group two acted as experimental group -II and group- three acted as control group. Group three underwent routine without any special treatment and group I underwent cycling exercises and group III underwent swimming exercises for six weeks.

Random group pre and posttest research design was followed in this

study. Randomly selected (N=45) long distance runners were divided into three groups and assigned as cycling group, swimming training group and control group. Pre test scores were collected on selected criterion variables, namely, muscular endurance, cardiorespiratory endurance and resting pulse rate. After six weeks experimental treatments to the experimental groups, scores on selected criterion variables were obtained. The differences between the initial and final scores were the effect of respective experimental treatments. To test the statistical significance, the scores were subjected to ANCOVA.

RESULTS

Table I
Computation of analysis of covariance

Variable	Means	Exp. Gr I	Exp. Gr II	Con. Gr	S V	SS	df	MS	F
Muscular Endurance	Pre test	34.13	35.27	36.60	B	45.73	2	22.87	1.66
					W	578.27	4	13.77	
	Post test	38.40	37.53	36.60	B	24.31	2	12.16	0.71
					W	716.93	4	17.07	
	Adjusted	39.66	37.60	35.27	B	133.73	2	66.87	33.20*
					W	82.57	4	2.01	
Resting Pulse Rate	Pre test	64.00	61.67	59.93	B	124.93	2	62.47	0.94
					W	2794.27	4	66.53	
	Post test	61.93	57.27	62.93	B	274.44	2	137.22	2.04
					W	2826.80	4	67.30	
	Adjusted	60.51	57.40	64.22	B	346.82	2	173.41	4.50*
					W	1581.67	4	38.58	
Cardio Respirator	Pre test	1833.33	1803.00	1856.67	B	21723.33	2	10861.67	0.67

y Endurance					W	678307	4 2	16150.1 6	
	Post test	2006.0 0	2011.00	1871.67	B	187421	2	93710.5 6	6.02*
					W	653303	4 2	15554.8 4	
	Adjusted	2005.6 3	2015.45	1867.59	B	200389	2	100194	6.46*
W					636175	4 1	15516.4 6		

Table F-ratio at 0.05 level of confidence for 2 and 42 (df) =3.22 and 41 (df) =3.23.

*Significant

Taking into consideration of the pre test means and post test means adjusted post test means were determined and analysis of covariance was done and the obtained F value 33.20 was greater than the required value of 3.21 and hence it was accepted that there was significant differences among the treated groups.

Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe’s Confidence Interval test. The results were presented in Table I

Taking into consideration of the pre test means and post test means adjusted post test means were determined and analysis of covariance was done and the obtained F value 4.50 was greater than the required value of 3.21 and hence it was accepted that there

was significant differences among the treated groups.

Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe’s Confidence Interval test. The results were presented in Table I.

Taking into consideration of the pre test means and post test means adjusted post test means were determined and analysis of covariance was done and the obtained F value 6.46 was greater than the required value of 3.21 and hence it was accepted that there was significant differences among the treated groups.

Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe’s Confidence Interval test. The results were presented in Table I.

Table II
Scheffe’s Confidence Interval Test Scores

MEANS				Required · C I
Cycling Group	Swimming Group	Control Group	Mean Difference	
Muscular Endurance				
39.66	37.60		2.05*	1.34
39.66		35.27	4.38*	1.34
	37.60	35.27	2.33*	1.34

Resting Pulse Rate				
60.51	57.40		3.11	5.87
60.51		64.22	3.71	5.87
	57.40	64.22	6.82*	5.87
Cardio Respiratory Endurance				
2005.63	2015.45		-9.82	117.73
2005.63		1867.59	138.04*	117.73
	2015.45	1867.59	147.86*	117.73

* Significant

The post hoc analysis of obtained ordered adjusted means proved that there was significant differences existed between cycling group and control group (MD: 4.38). There was significant difference between swimming group and control group (MD: 2.33). There was significant difference between treatment groups, namely, cycling group and swimming group (MD: 2.05).

The post hoc analysis of obtained ordered adjusted means proved that there was no significant differences existed between cycling group and control group (MD: 3.71). There was significant difference between swimming group and control group (MD: 6.82). There was no significant difference between treatment groups, namely, cycling group and swimming group (MD: 3.11).

The post hoc analysis of obtained ordered adjusted means proved that there

CONCLUSIONS

Within the limitations and delimitations of the study, the following conclusions were drawn

1. It was concluded that Cycling and Swimming exercises significantly improved muscular endurance lower body of the long distance runners. It was also found that cycling was

was significant differences existed between cycling group and control group (MD: 138.04). There was significant difference between swimming group and control group (MD: 147.86). There was no significant difference between treatment groups, namely, cycling group and swimming group (MD: 9.82).

Comparing between the treatments groups cycling group was better than swimming group in improving Muscular Endurance of Lower Body and also found that there was no significant difference between cycling group and swimming group among long distance runners on Resting pulse rate. It was further found that cycling group was better than swimming group in improving Cardiorespiratory Endurance of long distance runners.

significantly better than swimming in improving muscular endurance lower body.

2. It was concluded that Cycling and Swimming exercises significantly improved muscular endurance upper body of the long distance runners. It was also found that there was no significant difference between

cycling swimming in altering muscular endurance lower body.

3. It was concluded that Swimming exercises significantly improved resting pulse rate of the long distance runners. It was also found that there was no significant difference between cycling swimming in altering resting pulse rate.
4. It was concluded that Cycling and Swimming exercises significantly improved cardiovascular endurance of the long distance runners. It was also

found that there was no significant difference between cycling and swimming in altering cardiovascular endurance.

RECOMMENDATIONS

The findings of the study proved that cycling and swimming exercises significantly improved selected physical and physiological variables of long distance runners. Hence, it was recommended that the experimental protocol suggested in this study, may be included in the training schedule of the long distance runners for improving their performances.

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