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Impact of bicycle ergometer practices on selected physiological variables of inter university players from different discipline

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Abstract
The purpose of the study is to analyze the influence of bicycle ergo meter practices on selected physiological variables of inter university players from different discipline. For these purpose 30 inter-university players from different discipline were selected from Annamalai University, Tamilnadu, India. Their age group ranged between 18-22 years. The randomly selected subjects were divided in two equal groups. Group- I namely Experimental group (Bicycle ergometer practices) and Group- II Control Group. Each group randomly divided 15 each. Experimental group performed bicycle ergometer practices three days a week for a period of twelve weeks and control group did not participate any training. The Statistical technique ANCOVA was used to find out the adjusted mean significant difference between the groups. The experimental group had a significant improvement on the selected physiological variables than the control group.

Keywords: Bicycle Ergometer Training, Blood Pressure (Systolic & Diastolic), Resting Pulse Rate

1. Introduction

Sportsmen and women must participate in year round conditioning programs to have the utmost efficiency, consistent improvement and balanced abilities. For that they must put their bodies under a certain amount of stress to increase physical capabilities. Physical exercise is extremely important for maintaining physical fitness including healthy weight; building and maintaining healthy bones, muscles, and joints; promoting physiological well-being; and strengthening the immune system. To improve or maintain a desired level of physical fitness, there is a need to constantly administer an adequate training intensity while exercising.

Fitness is perhaps one of the most controversial aspects in the field of measurement in physical education. It is most elusive quality and has been frequently defined in rather abstract terms. In the dictionary 'Fitness' is defined as having the necessary qualities or a readiness or preparedness. Fitness is operationalized in present day Western Societies with a focus on two goals; performance and health. Performance related fitness refers to those components fitness that are necessary for optional work to work performance. Anaerobic exercise comprises brief, strength-based activities, such as sprinting or bodybuilding, whereas aerobic exercise is centered on endurance activities, such as marathon running or long-distance cycling. Cessation refers to the detraining of regular physical training. The effects of stopping training are quite minor compared with those from immobilization. In general, greater the gains during training, the greater the losses during detraining simply because the well- trained person has more to lose than the untrained person.

2. Methodology

The purpose of the study is to analyze the influence of bicycle ergo meter practices on selected physiological variables of inter university players from different discipline. For these purpose 30 inter-university players from different discipline were selected from Annamalai University, Tamilnadu, India. Their age group ranged between 18-22 years. The randomly selected subjects were divided in two equal groups. Group- I namely Experimental group (Bicycle ergometer practices) and Group- II Control Group. Each group randomly divided 15 each. The selected dependent variables namely Systolic Blood Pressure, Diastolic Blood Pressure were assessed by using Sphygmomanometer and Resting Pulse Rate were accessed by using Blood Pressure Monitor and counting the beats per minute.

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Table 1: Criterion Variables and Test

S.No	Variables	Tests / Instruments	Unit of Measurement
1	Systolic blood pressure	Sphygmomanometer	mmHg
2	Diastolic blood pressure	Sphygmomanometer	mmHg
3	Resting pulse rate	Blood pressure monitor	BPm

Experimental Design and Statistical Technique
Random group experimental design was used, experimental group and control group data were carefully recorded for pre and post test scores analysis of Co-variance (ANCOVA) was used to find out the adjusted post test mean significant difference among treatment group.

3. Results & Discussion
The data collected from experimental group and control group prior and after experimentation on selected variables were statistically examined by using 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 .05 level of confidence to test the 'F' ratio obtained by analysis of covariance for all the groups selected criterion variables.

Table 2: Analysis of Covariance on Physiological Variables of Bicycle Ergometer Practices Group and Control Group

Variables	Test	Bicycle ergometer practices Group	Control Group	SoV	Sum of Squares	Df	Mean squares	'F' ratio
SBP	Pre Test Mean	117.07	116.40	B	3.33	1	3.33	0.14
	SD	5.59	3.86	W	648.53	28	23.16	
	Pre Test Mean	116.66	118.47	B	24.30	1	24.30	2.03
	SD	3.75	3.14	W	335.07	28	11.97	
	Adjusted Post test Mean	116.66	118.46	B	31.91	1	31.91	3.74
				W	8.53	27	8.53	
DBP	Pre Test Mean	79.20	76.93	B	38.53	1	38.53	1.54
	SD	5.33	4.65	W	79.33	28	25.05	
	Pre Test Mean	79.40	76.26	B	73.63	1	73.63	3.83
	SD	4.75	3.99	W	538.53	28	19.23	
	Adjusted Post test Mean	79.40	76.27	B	21.68	1	21.69	2.12
				W	276.36	27	10.22	
RPR	Pre Test Mean	80.13	80.00	B	0.13	1	0.13	0.15
	SD	3.38	2.61	W	255.73	28	9.13	
	Pre Test Mean	77.20	76.60	B	43.20	1	43.20	5.65
	SD	2.57	2.94	W	214.00	28	7.64	
	Adjusted Post test Mean	77.20	79.60	B	46.00	1	46.00	8.76
				W	141.04	27	5.22	

The required table value for significance at 0.05 level of confidence with degrees of freedom 1 and 27 is 4.20*Significant at .05 level of confidence

The findings of the study show that there is a significant difference existing between experimental and control group on systolic blood pressure and diastolic blood pressure, since the obtained 'F' ratio of 3.74 and 2.12 which are lesser than the table value of 4.20 for degrees of freedom 1 and 27. It shows that its not significant systolic blood pressure and diastolic blood pressure. Other variable of resting pulse rate, the calculated 'F' ratio value is 8.76 is greater than the table value of 4.20 for degrees of freedom 1 and 27. Since the results of the study indicate that there is a significant difference that exists among the adjusted post test mean of experimental and control group on the development of resting pulse rate.

Table 3: Scheffe's Post Hoc Test for Mean Difference between Groups

Variables	Mean Values		Mean Difference	Confidence Interval at 0.05
	Group - I	Group - II		
SBP	117.77	117.23	0.55	0.71
DBP	77.81	77.92	0.12	0.68
RPR	78.55	79.99	0.85	0.85

4. Discussion on Findings
The results of the study indicated that there is no significant difference in systolic blood pressure and diastolic blood pressure. The subjects age ranged from 18-22 years. Basically their BP is always normal. If we take the abnormal subjects if available mean the training effect may influence to reduce the

BP and make it normal BP. Regarding the resting pulse rate there is significant changes because of 12 weeks bicycle ergometer practices. This results are confirmed with the earlier study in which during inspiration there is a rise in the BP, the irradiation of impulse from the respiratory centre to cardiac and vasomotor tone increased blood pressure rose. During expiration BP fell low.

5. Conclusions
1. Physiological variables of SBP and DBP have not shown significant development because of bicycle ergometer practices was given to experimental group when compared to control group.
2. The experimental group has achieved significant improvement on the selected physiological variable of resting pulse rate in bicycle ergometer practices.

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