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EFFECT INCLINE AND DECLINE RUNS IN TREADMILL ON VO_2 MAX AND RESTING HEART RATE AMONG VOLLEYBALL PLAYERS

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ABSTRACT

The purpose of the study was to find out the Effect incline and decline runs in treadmill on vo_2 max and resting heart rate among volleyball players To achieve the purpose of this study, Seventy five Volleyball players who had participated at intercollegiate level competitions from different colleges were selected as subjects. The selected subjects' age group was ranging from 19 to 25 years. The subjects were randomly divided into three groups and each group consists of twenty five subjects. Group one acted as experimental group -I and Group two acted as experimental group-II, group three acted as control group. Group one underwent incline treadmill walking and running exercises, group II underwent decline treadmill walking and running exercises and group three was control group which did not participated in any special training. before the experimental period and the post test scores were obtained immediately after the twelve weeks experimental period. The difference between the pre test and post test means were subjected to statistical treatment using ANCOVA In all cases 0.05 level was fixed to test the hypothesis of the study.

INTRODUCTION

The high level of physical fitness necessitates the controlling mind when we speak. Gracefully poised and well conditioned individual comes from years of daily experience in a selected variety of vigorous physical activities. Consistence of physical fitness forms sports and the precision and nicety of body control. physical fitness forms sports and the precision and nicety of body control. Sports lead to mental poise an emotional stability that should stand the athlete in good stead in future critical situations.

The goal of physical fitness programme is to improve the performance in activities of daily living, job demands, sports and recreational activities, which was said by Craig Liebenson(2003).

METHODOLOGY

EXPERIMENTAL DESIGN

The purpose of the study was to find out the Effect incline and decline runs in treadmill on vo_2 max and resting heart rate among volleyball players To achieve the purpose of this study, Seventy five Volleyball players who had participated at intercollegiate level competitions from different colleges were selected as subjects. The selected subjects' age group was ranging from 19 to 25 years. The subjects were randomly divided into three groups and each group consists of twenty five subjects. Group one acted as experimental group -I and Group two acted as experimental group-II, group three acted as control group. Group one underwent incline treadmill walking and running exercises, group II underwent decline treadmill walking and running exercises and group three was control group which did not participated in any special training. before the experimental period and the post test scores were obtained immediately after the twelve weeks experimental period. The difference between the pre test and post test means were subjected to statistical treatment using ANCOVA In all cases 0.05 level was fixed to test the hypothesis of the study.

COMPUTATION OF ANALYSIS OF COVARIANCE AND POST HOC TEST

RESULTS ON VO_2 MAX

The statistical analysis comparing the initial and final means of VO_2 max due to Incline training, Decline training and control groups of Volleyball Players is presented in Table I

Table I

COMPUTATION OF ANALYSIS OF COVARIANCE DUE TO INCLINE AND DECLINE RUNS TRAINING ON VO_2 MAX

	Incline trainings Group	Decline training Group	Control Group	SOV	Sum of Squares	df	Mean Squares	Obtained F
Pre Test Mean	43.15	40.60	41.73	B	49.94	3	16.65	0.75
Std Dev	5.31	3.40	4.70	W	1242.55	56	22.19	

Post Test Mean	46.36	46.61	41.77	B	223.29	3	74.43	4.23*
Std Dev	4.98	3.74	3.66	W	985.35	56	17.60	
Adjusted Post Test Mean	45.37	47.65	41.91	B	251.23	3	83.74	23.96*
				W	192.20	55	3.49	

SOV: Source of Variance; B: Between W: Within

* Significant at 0.05 level of confidence

As shown in Table I, the pre test mean on VO_2 max of Incline trainings group was 43.15 with standard deviation $\pm$ 5.31 pre test mean of Decline training group was 40.60 with standard deviation $\pm$ 3.40, with standard deviation $\pm$ 5.18, the pre test mean of control group was 41.73 with standard deviation $\pm$ 4.70. The obtained F ratio of 0.75 on pre test means of the groups was not significant at 0.05 level as the obtained F value was less than the required table F value of 2.77 to be significant at 0.05 level. This shows that there was no significant difference in means of the groups at initial stage.

The results presented in Table I, the post test mean on VO2 max of Incline trainings group was 46.36 with standard deviation $\pm$ 4.98 post test mean of Decline training group was 46.61 with standard deviation $\pm$ 3.74, with standard deviation $\pm$ 3.74, the post test mean of control group was 41.77 with standard deviation $\pm$ 3.66. The obtained F ratio of 4.23 on post test means of the groups was significant at 0.05 level as the obtained F value was greater than the required table F value of 2.77 to be significant at 0.05 level. This shows that there was significant difference in means of the groups at post experimental stage.

Taking into consideration of the pre test means and post test means, adjusted post test means were determined and analysis of covariance was done. The adjusted mean on VO2 max on Incline trainings group was 45.37, Decline training group was 47.65 and control group was 41.91. The obtained F value on adjusted means was 23.96. The obtained F value was greater than the required value of 2.77 and hence it was accepted that there was significant differences among the adjusted means on the VO2 max of the subjects.

Since significant improvements were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table II

Table II

Multiple Comparisons between Incline training, Decline training, and Control Groups and Scheffe's Post Hoc Analysis

on VO_2 max

Incline trainings Group	Decline training Group	Control Group	MEAN DIFF	C.I
45.37	47.65		2.29*	1.97
45.37			0.75	1.97
45.37		41.91	3.46*	1.97
	47.65		3.04*	1.97
	47.65	41.91	5.74*	1.97
		41.91	2.70*	1.97

***** Significant at 0.05 level.

The post hoc analysis of obtained ordered adjusted means proved that to be significant at 0.05 level confidence the required confidence interval was 1.97. The following paired mean comparisons were greater than the required confidence interval and were significant at 0.05 level.

Incline trainings Group Vs Decline Training Group (MD: 2.29)

Incline trainings Group Vs Control Group (MD: 3.46)

Decline training Group Vs Control Group (MD: 5.74)

The following paired mean comparisons were less than the required confidence interval and were not significant at 0.05 level.

RESULTS ON RESTING HEART RATE

The statistical analysis comparing the initial and final means of Resting Heart Rate due to Incline training, Decline training, and control groups of Volleyball Players is presented in Table III

Table III

COMPUTATION OF ANALYSIS OF COVARIANCE DUE TO INCLINE TRAINING, DECLINE TRAINING TRAINING ON RESTING HEART RATE

	Incline trainings Group	Decline training Group	Control Group	SOV	Sum of Squares	df	Mean Squares	Obtained F

Pre Test Mean	72.73	71.80	69.00	B	115.25	3	38.42	1.12
Std Dev	3.90	7.46	6.52	W	1918.93	56	34.27	
Post Test Mean	67.47	68.27	70.13	B	85.78	3	28.59	1.30
Std Dev	4.72	5.40	4.67	W	1236.40	56	22.08	
Adjusted Post Test Mean	66.62	67.97	71.46	B	214.45	3	71.48	6.68*
				W	588.91	55	10.71	

SOV: Source of Variance; B: Between W: Within

* Significant at 0.05 level of confidence

As shown in Table III, the pre test mean on Resting Heart Rate of Incline trainings group was 72.73 with standard deviation $\pm$ 3.90 pre test mean of Decline training group was 71.80 with standard deviation $\pm$ 7.46, with standard deviation $\pm$ 4.87, the pre test mean of control group was 69.00 with standard deviation $\pm$ 6.52. The obtained F ratio of 1.12 on pre test means of the groups was not significant at 0.05 level as the obtained F value was less than the required table F value of 2.77 to be significant at 0.05 level. This shows that there was no significant difference in means of the groups at initial stage.

The results presented in Table III, the post test mean on Resting Heart Rate of Incline trainings group was 67.47 with standard deviation $\pm$ 4.72 post test mean of Decline training group was 68.27 with standard deviation $\pm$ 5.40, with standard deviation $\pm$ 5.40, the post test mean of control group was 70.13 with standard deviation $\pm$ 4.67. The obtained F ratio of 1.30 on post test means of the groups was not significant at 0.05 level as the obtained F value was lesser than the required table F value of 2.77 to be significant at 0.05 level. This shows that there was no significant difference in means of the groups at post experimental stage.

Taking into consideration of the pre test means and post test means, adjusted post test means were determined and analysis of covariance was done. The adjusted mean on Resting Heart Rate on Incline trainings group was 66.62, Decline training group was 67.97. 71.46. The obtained F value on adjusted means was 6.68. The obtained F value was greater than the required value of 2.77 and hence it was accepted that there was significant differences among the adjusted means on the Resting Heart Rate of the subjects.

Since significant improvements were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table IV

Table IV
Multiple Comparisons between Incline training, Decline training and Control Groups and Scheffe's Post Hoc Analysis
on Resting Heart Rate

Incline trainings Group	Decline training Group	Control Group	MEAN DIFF	C.I
66.62	67.97		1.34	3.44
66.62			0.19	3.44
66.62		71.46	4.84*	3.44
	67.97		1.15	3.44
	67.97	71.46	3.49*	3.44
		71.46	4.64*	3.44

* Significant at 0.05 level.

The post hoc analysis of obtained ordered adjusted means proved that to be significant at 0.05 level confidence the required confidence interval was 3.44. The following paired mean comparisons were greater than the required confidence interval and were significant at 0.05 level.

Incline trainings Group Vs Control Group (MD: 4.84)

Decline training Group Vs Control Group (MD: 3.49)

The following paired mean comparisons were less than the required confidence interval and were not significant at 0.05 level.

Incline trainings Group Vs Decline Training Group (MD: -1.34)

CONCLUSIONS

1. It was concluded that Incline running, Decline running on treadmill significantly influenced VO_2 max of Volleyball Players compared to control group. Comparing among treatment groups, Decline running was significantly better than Incline running in improving VO_2 max of the Volleyball Players

2. It was concluded that Incline running, Decline running on treadmill significantly influenced resting heart rate of Volleyball Players compared to control group. Comparing among

treatment groups, there was no significant differences in altering resting heart rate of the Volleyball Players .

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