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Effect of uphill training on selected physical and physiological variables among long distance runners

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ABSTRACT

The main purpose of this study is to find out the effect of uphill training on selected physical and physiological variables among long-distance runner. For the present study, the researcher takes the male long distance runners from Pudukkottai District taken as sources of data. Thirty male long distance runners, who had participated in intercollegiate tournaments, were preferred as the area under discussion for this study. The age of the subject matter was ranging from 18 years to 25 years. The criterion measures adopted for the study measuring the physical and physiological variables are given below. To measure the physical variables 600 m run for speed endurance, 12 minutes run and walk for cardiorespiratory endurance, pulse count for resting pulse rate and Harvard step test for vo_2 max the effect of uphill training on selected physical variables and physiological variables among long-distance runners the independent “t” test was used at 0.05 level of significance. Result: There was a significant difference in experimental groups in speed endurance, Cardiorespiratory endurance, resting pulse rate and vo_2 max.

Keywords— Uphill Training, Physical and physiological variable, Long-distance runners

1. INTRODUCTION

Sports' training is a scientifically based and pedagogical process of sports perfection which through a systematic effect on psycho-physical performance ability and performance readiness aims at leading the sportsmen to high and highest performance (Harre-1981).

Hill running has a strengthening effect as well as boosting your athlete's power and is ideal for those athletes who depend on high running speeds -football, rugby, basketball, cricket players and even runners. To reduce the possibility of injury hill training should be conducted once the athlete has a good solid base of strength and endurance.

2. PHYSICAL VARIABLES

Skill- related physical fitness consist of those components of physical fitness that have a relationship with enhanced performance in sports and motor skills. The components are commonly defined as, arm strength, leg explosive power, and abdominal strength.

- Speed Endurance
- Cardio respiratory Endurance

2.1 Physiological Variables

The physiological effects of exercise are fairly well known. When a large muscle group goes into action, it requires the increased supply of food together with an increased supply of oxygen for the conversion of food into energy. It requires also more rapid disposal of waste products. Heart and lungs together speed up their action in order to meet this demand. Because of this heightened organic activity, assimilation is accelerated, digestion improved and general nutrition heightened as evidenced in improved appetite and a loss of body fat. Keeping pace with these nutritional demands, elimination by means of kidney, lungs, intestines and skin is increased. These effects are made possible which controls organic activity.

- Resting Pulse Rate
- Vo_2 Max

3. METHODOLOGY

To achieve the purpose of these study thirty male long-distance runners were selected at random, from Pudukkottai district. The age of the subjects ranged from 18-25 Years. The selected subjects were divided into one experimental group and one

Selvam R. Panneer, Sundar M.; *International Journal of Advance Research, Ideas and Innovations in Technology* control group at random. The Investigator reviewed the available scientific literature and on the basis of discussion with experts, feasibility, criteria, availability of instruments, equipment and the relevance of the variables to the present study. The following variables were selected for the present study.

Table 1: Physical and physiological variables

S. no	Physical and Physiological Variables	Test Item	Unit of Measurement
1	Speed Endurance	600 m run	Seconds
2	Cardio respiratory endurance	Cooper's test	Meters
3	Resting Pulse Rate	Pulse Rate	Counts
4	Vo ₂ Max	Harvard Step Test	

3.1 Statistical techniques

Analysis of 't' ratio will be used in this study. The level of significance is 0.05 level of confidence which will be considered to be the appropriate one for this study.

4. RESULTS

Table 2: Computation of 't' Ratio between the pre and post-test mean values of physical and physiological variables on experimental group and control group

Variables	Group	Test	Mean	Sd	df	't' Ratio
Speed Endurance	Control Group	Pre test	46.46	1.39	14	0.24
		Post-test	46.45	1.24		
	Experimental Group	Pre test	46.27	1.08	14	12.92*
		Post-test	45.61	1.16		
Cardio Respiratory Endurance	Control Group	Pre test	2660.46	143.16	14	1.71
		Post-test	2680.40	160.27		
	Experimental Group	Pre test	2648.73	108.41	14	12.65*
		Post-test	2702.40	109.35		
Resting Pulse Rate	Control Group	Pre test	75.20	4.17	14	0.69
		Post-test	75.46	2.97		
	Experimental Group	Pre test	75.00	5.66	14	6.32*
		Post-test	72.73	5.20		
Vo ₂ Max	Control Group	Pre test	76.72	0.95	14	1.22
		Post test	76.88	0.75		
	Experimental Group	Pre test	76.13	1.51	14	12.89*
		Post-test	76.46	1.50		

Insignificance at 0.05 level of confidence df (14) is = 2.15

5. DISCUSSION ON FINDINGS

The investigator had a through and vision that steps aerobic training would improve men long distance runners speed endurance, cardiorespiratory endurance, resting pulse rate and Vo₂ max which in turn would help them to play better. The investigator selected exercises that are uphill training for long distance runners.

The statistical values presented in Table proved that there was a significant improvement in selected physical and physiological variables among long-distance runners due to uphill training. Obtained 't' value of speed endurance is 12.92, cardiorespiratory endurance is 12.65, resting pulse rate is 6.32 and Vo₂ max is 12.89 respectively which is greater than the required 't' value to be significant. For the degrees of freedom 2.15 at 0.05 level of confidence.

Thus the hypothesis of this study that there would be a significant improvement due to uphill training on selected physical and physiological variables among long-distance runners was accepted at 0.05 level of confidence.

6. CONCLUSIONS

Based on the results of the present study the following conclusions.

1. The results of the study showed that there were significant improvements in physical variables on speed endurance and cardiorespiratory endurance after six weeks uphill training among long-distance runners.
2. The results of the study showed that there were significant improvements in physical variables on resting pulse rate and Vo₂ max after six weeks uphill training among long-distance runners.

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