



INFLUENCE OF UPHILL TRAINING ON STRENGTH ENDURANCE AND CARDIO RESPIRATORY ENDURANCE COLLEGE MEN STUDENTS

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Cite This Article: Bineesh Baby & Dr. R. Sevi, "Influence of Uphill Training on Strength Endurance and Cardio Respiratory Endurance College Men Students", *International Journal of Interdisciplinary Research in Arts and Humanities*, Volume 8, Issue 2, July - December, Page Number 67-69, 2023.

Abstract:

The purpose of the study was designed to examine the effect of uphill training on strength endurance and cardio respiratory endurance of college men students. For the purpose of the study, thirty men students from Bachelor's degree in Mary Matha Arts and Science College, Mananthavady, Wayanad, Kerala, India were selected as subjects. They were divided into two equal groups. Each group consisted of the fifteen subjects. Group I underwent uphill training for three days per week for twelve weeks. Group II acted as control who did not undergo any special training programme apart from their regular physical education programme. The following variables namely strength endurance and cardio respiratory endurance were selected as criterion variables. All the subjects of two groups were tested on selected dependent variables by using bend knee sit upas and cooper's 9 min run and walk test respectively at prior to and immediately after the training programme. The analysis of covariance was used to analyze the significant difference, if any among the groups. The .05 level of confidence was fixed as the level of significance to test the 'F' ratio obtained by the analysis of covariance, which was considered appropriate. The results of the study showed that there was a significant difference between uphill training group and control group on strength endurance and cardio respiratory endurance. And also it was found that there was a significant improvement on strength endurance and cardio respiratory endurance due to twelve weeks of uphill training.

Key Words: Uphill Training, Strength Endurance, Cardio Respiratory Endurance, College Men Students

Introduction:

Uphill training is a crucial workout for athletes and fitness enthusiasts, offering numerous benefits. It strengthens leg muscles, improves cardiovascular endurance, and enhances overall power and speed. Running or cycling uphill engages more muscle groups, increasing strength and efficiency. Additionally, it boosts anaerobic capacity, helping athletes perform better in high-intensity situations. Uphill training also reduces impact stress on joints compared to flat or downhill running, lowering the risk of injuries. Overall, incorporating hill workouts into a routine enhances endurance, builds strength, and improves athletic performance.

Uphill training is a powerful workout that enhances strength, endurance, and overall fitness. Running or walking uphill engages key muscle groups like the quads, hamstrings, and calves, improving leg strength and explosive power. The increased effort required improves heart and lung capacity, enhancing stamina for sports and daily activities. Uphill training is an efficient way to burn fat and increase metabolism, supporting weight management. Strengthening lower-body muscles and improving balance helps prevent common sports injuries. Overcoming the challenge of uphill workouts builds mental resilience, which benefits academic and personal life.

Methodology:

The purpose of the study was designed to examine the effect of uphill training on strength endurance and cardio respiratory endurance of college men students. For the study, thirty men students from Bachelor's degree in Mary Matha Arts and Science College, Mananthavady, Wayanad, Kerala, India were selected as subjects. They were divided into two equal groups. Each group consisted of fifteen subjects. Group I underwent uphill training for three days per week for twelve weeks. Group II acted as control who did not undergo any special training programme apart from their regular physical education programme. The following variables namely strength endurance and cardio respiratory endurance were selected as criterion variables. All the subjects of two groups were tested on selected dependent variables by using bend knee sit upas and cooper's 9 min run and walk test respectively at prior to and immediately after the training programme. The analysis of covariance was used to analyze the significant difference if any among the groups. The .05 level of confidence was fixed as the level of significance to test the 'F' ratio obtained by the analysis of covariance, which was considered appropriate.

Analysis of the Data:

Strength Endurance:

The analysis of covariance on strength endurance of the pre and post test scores of uphill training group and control group have been analyzed and presented in table 1.

Table 1: Analysis of Covariance of the Data on Strength Endurance of Pre and Post Tests Scores of Uphill Training and Control Groups

Test	Uphill Training Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre Test							
Mean	41.27	40.40	Between	5.63	1	5.63	1.48
S.D.	1.98	1.41	Within	106.53	28	3.80	
Post Test							
Mean	46.53	40.87	Between	240.83	1	240.83	20.54*
S.D.	1.78	1.96	Within	328.30	28	11.73	
Adjusted Post Test							
Mean	46.20	41.20	Between	177.67	1	177.67	205.71*
			Within	23.32	27	0.86	

* Significant at .05 level of confidence.

(The table values required for significance at .05 level of confidence for 2 and 28 and 2 and 27 are 3.34 and 3.35 respectively).

The table 1 shows that the adjusted post-test means of uphill training group and control group are 46.20 and 41.20 respectively on strength endurance. The obtained "F" ratio of 205.71 for adjusted post-test means is more than the table value of 3.35 for df 1 and 27 required for significance at .05 level of confidence on strength endurance.

The results of the study indicated that there was a significant difference between the adjusted post-test means of uphill training group and control group on strength endurance.

Cardio Respiratory Endurance:

The analysis of covariance on cardio respiratory endurance of the pre and post test scores of uphill training group and control group have been analyzed and presented in table 2.

Table 2: Analysis of Covariance of the Data on Cardio Respiratory Endurance of Pre and Post Tests Scores of Uphill Training and Control Groups

Test	Uphill Training Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre Test							
Mean	1379.33	1370.67	Between	563.33	1	563.33	0.25
S.D.	46.83	35.11	Within	63386.67	28	2263.81	
Post Test							
Mean	1449.33	1380.33	Between	35707.50	1	35707.50	11.86*
S.D.	45.09	44.81	Within	84324.17	28	3011.58	
Adjusted Post Test							
Mean	1445.84	1383.82	Between	28595.82	1	28595.82	102.69*
			Within	7518.41	27	278.46	

* Significant at .05 level of confidence.

(The table values required for significance at .05 level of confidence for 2 and 28 and 2 and 27 are 3.34 and 3.35 respectively).

The table 2 shows that the adjusted post-test means of uphill training group and control group are 1445.84 and 1383.82 respectively on cardio respiratory endurance. The obtained "F" ratio of 102.69 for adjusted post-test means is more than the table value of 3.35 for df 1 and 27 required for significance at .05 level of confidence on cardio respiratory endurance.

The results of the study indicated that there was a significant difference between the adjusted post-test means of uphill training group and control group on cardio respiratory endurance.

Conclusions:

- There was a significant difference between uphill training group and control group on strength endurance and cardio respiratory endurance.
- And also it was found that there was a significant improvement on selected criterion variables such as strength endurance and cardio respiratory endurance due to uphill training.

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