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EFFECT OF INTERMITTENT RUNNING ON STRENGTH ENDURANCE AND CARDIO RESPIRATORY ENDURANCE AMONG UNIVERSITY MEN STUDENTS

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Abstract:

The purpose of the study was designed to examine the effect of intermittent running on strength endurance and cardio respiratory endurance of university men students. For the purpose of the study, thirty university men students studying bachelor's degree in Karnataka University, Darwad, Karnataka State, India were selected as subjects. They were divided into two equal groups. Each group consisted of the fifteen subjects. Group I underwent intermittent running 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-ups and cooper's 12 min run / 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 intermittent running 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 intermittent running.

Key Words: Intermittent Running, Strength Endurance, Cardio Respiratory Endurance, University Men Students

Introduction:

Intermittent running is a systematic training method in which periods of running at a predetermined intensity are alternated with short recovery intervals such as walking, jogging, or complete rest. This method is widely used in sports training and physical conditioning to improve various physical fitness components such as speed, endurance, cardiovascular efficiency, and muscular strength. Unlike continuous running, intermittent running allows athletes to perform repeated bouts of high-intensity work while minimizing excessive fatigue through controlled recovery periods. The concept of intermittent running is based on the principle that the body can sustain higher exercise intensities when short rest intervals are included between efforts. During the running phase, the cardiovascular and muscular systems are highly stimulated, which enhances oxygen uptake, energy metabolism, and neuromuscular coordination. The recovery phase allows partial replenishment of energy stores, removal of metabolic by-products such as lactic acid, and restoration of physiological balance. Because of this alternation between work and rest, athletes are able to complete a greater total volume of high-quality training compared to continuous running methods.

Intermittent running training can be designed in many forms depending on the objectives of the program. The duration of the work interval may range from a few seconds to several minutes, while the recovery interval can vary from complete rest to low-intensity activity. Coaches manipulate variables such as running distance, speed, number of repetitions, and rest duration to target specific fitness components. For example, shorter high-speed intervals help develop speed and anaerobic power, whereas longer intervals with moderate recovery improve aerobic endurance and cardiovascular efficiency. Another important feature of intermittent running is its effectiveness in developing both aerobic and anaerobic energy systems. During high-intensity running bouts, the anaerobic energy system is predominantly activated to supply immediate energy. During the recovery phase, the aerobic system works to restore energy reserves and remove metabolic waste products. This combined stimulation of both energy systems leads to significant improvements in overall physical performance.

Intermittent running is particularly beneficial for athletes involved in sports that require repeated bursts of high-intensity activity, such as football, hockey, basketball, and athletics. Regular practice of intermittent running enhances cardiovascular endurance, muscular strength, running economy, and recovery ability. It also improves the athlete's capacity to tolerate fatigue and maintain performance over longer periods of competition.

Intermittent running is a highly effective and versatile training method that alternates work and recovery periods to enhance multiple aspects of physical fitness. Through proper manipulation of intensity, duration, and recovery intervals, it can be adapted to suit the needs of athletes at different levels and across various sports disciplines.

Methodology:

The purpose of the study was designed to examine the effect of intermittent running on strength endurance and cardio respiratory endurance of university men students. For the purpose of the study, thirty university men students studying bachelor's degree in Karnataka University, Darwad, Karnataka State, India were selected as subjects. They were divided into two equal groups. Each group consisted of the fifteen subjects. Group I underwent intermittent running 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-ups and cooper's 12 min run / 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 intermittent running 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 Intermittent Running and Control Groups

Test	Intermittent Running Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre Test							
Mean	40.87	40.13	Between	4.03	1	4.03	1.07
S.D.	1.93	2.03	Within	105.47	28	3.77	
Post Test							
Mean	45.87	40.47	Between	218.70	1	218.70	18.22*
S.D.	1.82	1.93	Within	336.17	28	12.01	
Adjusted Post Test							
Mean	45.51	40.82	Between	158.57	1	158.57	247.97*
			Within	17.27	27	0.64	

* 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 intermittent running group and control group are 45.51 and 40.82 respectively on strength endurance. The obtained "F" ratio of 247.97 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 intermittent running 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 intermittent running 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 Intermittent Running and Control Groups

Test	Intermittent Running Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre Test							
Mean	1388.67	1374.00	Between	1613.33	1	1613.33	0.79
S.D.	46.02	41.45	Within	57533.33	28	2054.76	
Post Test							
Mean	1458.67	1382.67	Between	43320.00	1	43320.00	12.66*
S.D.	41.44	42.18	Within	95786.67	28	3420.95	
Adjusted Post Test							
Mean	1452.29	1389.04	Between	29186.14	1	29186.14	87.65*
			Within	8990.42	27	332.98	

* 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 intermittent running group and control group are 1452.29 and 1389.04 respectively on cardio respiratory endurance. The obtained "F" ratio of 87.65 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 intermittent running group and control group on cardio respiratory endurance.

Conclusions:

- There was a significant difference between intermittent running 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 intermittent running.

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