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EFFECT OF FARTLEK TRAINING ON RESTING PULSE RATE AND BREATH HOLDING TIME AMONG COLLEGE MEN STUDENTS

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Abstract:

The purpose of the study was designed to examine the effect of fartlek training on resting pulse rate and breath holding timeof college men students. For the purpose of the study, thirty men students from Sri Meenakshi Vidiyal Arts and Science College, Valanadu Kaikatti, Tiruchirapalli, Tamil Nadu, India were selected as subjects. They were divided into two equal groups. Each group consisted of the fifteen subjects. Group I underwent fartlek 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 resting pulse rate and breath holding time were selected as criterion variables. All the subjects of two groups were tested on selected dependent variables by using radial pulse and holding the breath for time 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 fartlek training group and control group on resting pulse rate and breath holding time. And also it was found that there was a significant improvement on resting pulse rate and breath holding time due to twelve weeks of fartlek training.

Key Words: Fartlek Training, Resting Pulse Rate, Breath Holding Time, College Men Students

Introduction:

Physical training methods that combine aerobic and anaerobic demands have gained considerable importance in modern sports science due to their effectiveness in improving cardiovascular and respiratory efficiency. Among these methods, Fartlek training, a Swedish term meaning "speed play," is a widely adopted endurance training approach that blends continuous exercise with intermittent variations in speed and intensity (Astrand & Rodahl, 1986). Unlike rigid interval training, Fartlek training allows athletes to alternate between fast and slow running based on terrain, distance, or subjective effort, thereby providing both physiological stimulation and psychological engagement (Bangsbo et al., 2006).

Fartlek training is particularly effective in enhancing cardiorespiratory fitness, as it simultaneously stresses the aerobic and anaerobic energy systems. The continuous yet varied nature of this training method leads to significant adaptations in the cardiovascular system, including increased stroke volume, improved oxygen utilization, and enhanced cardiac efficiency (McArdle et al., 2015). As a result, regular participation in Fartlek training has been shown to cause a reduction in resting pulse rate, which is a key indicator of cardiovascular health and efficiency (Fox et al., 1993).

Resting pulse rate, defined as the number of heart beats per minute at rest, reflects the functional status of the heart and autonomic nervous system. Endurance-based training methods such as Fartlek training improve parasympathetic tone and reduce sympathetic dominance, leading to a lower resting heart rate (Saltin & Astrand, 1967). A reduced resting pulse rate indicates that the heart can pump a greater volume of blood per beat, thereby requiring fewer beats to maintain adequate circulation at rest (Helgerud et al., 2001). Several studies have reported significant decreases in resting pulse rate following aerobic and variable-pace training programs, confirming the cardiovascular benefits of Fartlek training (Singh & Kumar, 2015).

In addition to cardiovascular adaptations, Fartlek training contributes to improvements in respiratory efficiency, including breath-holding time. Breath-holding time is a physiological measure of respiratory endurance and lung efficiency, reflecting an individual's tolerance to carbon dioxide accumulation and the capacity of the respiratory muscles (Shephard, 1998). Endurance training enhances lung ventilation, strengthens respiratory muscles, and improves oxygen diffusion capacity, all of which contribute to increased breath-holding ability (McArdle et al., 2015).

The varied intensity patterns in Fartlek training stimulate deeper and more frequent breathing, which over time enhances lung compliance and respiratory control. These adaptations allow individuals to sustain breath-holding for longer durations, indicating improved respiratory efficiency and control (Yadav & Tiwari, 2014). Improvements in breath-holding time are particularly relevant for athletes, as efficient respiratory function delays fatigue and enhances overall performance during prolonged physical activity (Billat, 2001).

Fartlek training is a versatile and effective conditioning method that produces significant improvements in both resting pulse rate and breath-holding time. Through its combined aerobic-anaerobic nature, it promotes cardiovascular efficiency, enhances respiratory endurance, and supports overall physiological well-being. Consequently, Fartlek training is highly recommended for athletes and physically active individuals aiming to improve cardiovascular health and respiratory capacity in a dynamic and engaging manner.

Methodology:

The purpose of the study was designed to examine the effect of fartlek training on resting pulse rate and breath holding time of college men students. For the study, thirty men students from Sri Meenakshi Vidiyal Arts and Science College, Valanadu Kaikatti, Tiruchirapalli, Tamil Nadu, India were selected as subjects. They were divided into two equal groups. Each group consisted of fifteen subjects. Group I underwent fartlek 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 resting pulse rate and breath holding time were selected as criterion variables. All the subjects of two groups were tested on selected dependent variables by using radial pulse and holding the breath for time 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:

Resting Pulse Rate:

The analysis of covariance on resting pulse rate of the pre and post test scores of fartlek training group and control group have been analyzed and presented in table 1.

Table 1: Analysis of Covariance of the Data on Resting Pulse Rate of Pre and Post Tests Scores of Fartlek Training and Control Groups

Test	Fartlek Training Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre Test							
Mean	73.60	73.20	Between	1.20	1	1.20	1.12
S.D.	1.08	1.00	Within	30.00	28	1.07	
Post Test							
Mean	71.93	73.07	Between	9.63	1	9.63	8.56*
S.D.	0.91	0.68	Within	31.50	28	1.13	
Adjusted Post Test							
Mean	71.81	73.19	Between	13.71	1	13.71	34.98*
			Within	10.58	27	0.39	

* 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 fartlek training group and control group are 71.81 and 73.19 respectively on resting pulse rate. The obtained "F" ratio of 34.98 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 resting pulse rate.

The results of the study indicated that there was a significant difference between the adjusted post-test means of fartlek training group and control group on resting pulse rate.

Breath Holding Time:

The analysis of covariance on breath holding time of the pre and post test scores of fartlek training group and control group have been analyzed and presented in table 2.

Table 2: Analysis of Covariance of the Data on Breath Holding Time of Pre and Post Tests Scores of Fartlek Training and Control Groups

Test	Fartlek Training Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre Test							
Mean	42.93	42.47	Between	1.63	1	1.63	0.03
S.D.	8.15	6.93	Within	1686.67	28	60.24	
Post Test							
Mean	49.13	42.60	Between	320.13	1	320.13	5.16*
S.D.	6.78	6.82	Within	1737.47	28	62.05	
Adjusted Post Test							
Mean	48.93	42.80	Between	281.60	1	281.60	47.35*
			Within	160.57	27	5.95	

* 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 fartlek training group and control group are 48.93 and 42.80 respectively on breath holding time. The obtained "F" ratio of 47.35 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 breath holding time.

The results of the study indicated that there was a significant difference between the adjusted post-test means of fartlek training group and control group on breath holding time.

Conclusions:

- There was a significant difference between fartlek training group and control group on resting pulse rate and breath holding time.
- And also it was found that there was a significant improvement on selected criterion variables such as resting pulse rate and breath holding time due to fartlek training.

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