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Influence of Aerobic and Anaerobic Training Module on Selected Physiological Parameters Among College Men Students

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Abstract:

The main purpose of the study was to know the influence of aerobic and anaerobic training on selected physiological parameters among college men students. To achieve these purpose sixty men students were selected from V.H.N. Senthikmara Nadar College, Virudhunagar, Tamilnadu selected as subjects. The age of the subjects ranged from 18 to 20 years. Resting pulse rate and Vital capacity were chosen as criterion variables. Analysis of covariance (ANCOVA) was used as statistical technique to know the influence of the training. Scheffe's test was followed as a post hoc test to know which variable was made a better impact. The results of the study showed that there was significance difference exist between aerobic training group and anaerobic training group on Resting Pulse Rate and Vital capacity, when compared to the control group.

Keywords: Aerobic Training, Anaerobic Training, Resting Pulse Rate & Vital capacity

Introduction:

Aerobic exercise is physical exercise of relatively low intensity that depends primarily on the aerobic energy-generating process. Aerobic literally means "living in air", and refers to the use of oxygen to adequately meet energy demands during exercise via aerobic metabolism. Anaerobic exercise is exercise intense enough to trigger lactic acid formation. It is used by athletes in non-endurance sports to promote strength, speed and power and by body builders to build muscle mass. The resting heart rate of the body (commonly called RHR) is the number of contractions of the heart that occur in a single minute while the body is at complete rest. This number will vary depending upon the age, gender, and general health of a person. There will also be a large different in the resting heart rate of athletes when compared to non-athletes. Vital capacity is the maximum amount of air a person can expel from the lungs after a maximum inhalation. A normal adult has a vital capacity between 3 and 5 litres and a human being vital capacity depends on age, sex, height, weight and ethnicity.

Methodology:

To achieve the purpose of the study 60 college boys were selected from V.H.N. Senthikmara Nadar College, Virudhunagar, Tamilnadu selected as subjects. The age of the subjects ranged from 18 to 20 years only. The subjects were assigned at random to one of the three groups ($n = 20$), in which experimental group-1 had undergone aerobic training programme, experimental group-2 had undergo anaerobic training programme and group-3 had acted as control group and they had not undergone any special training programme.

Table - I : Selection of Variables and Tests

S.No	Criterion Variable	Test	Unit of Measurement
1.	Resting Pulse Rate	Palpation method	In beats / minute
2.	Vital Capacity	Spiro Meter	In millilitres

Training Protocol:

The training programme were scheduled for one session a day, each session lasted between 45 minutes and an hour, approximately excluding warming up and relaxation in morning session. During the training period, the experimental groups underwent their respective training programme three days per week (alternate days) for twelve weeks in addition to their regular programme of the course of study as per their curriculum. The training sessions were held every other day, so that the physical rest was adopted in the study. The students trained every Tuesday, Thursday and Saturday.

Statistical Analysis:

The selected variables for which data were collected from three groups prior to and after experimentation on selected physiological variables were statistically examined for significant difference, if any, by applying the analysis of covariance (ANCOVA) with the help of SPSS package. The level of significance was accepted at $P < 0.05$.

Result and Discussion:

Table - II : Tabulation of ANACOVA for Resting Pulse Rate (RPR)

	Aerobic Training Group (ATG)	Anaerobic Training Group (AATG)	Control Group (CG)	S O V	Sum of Squares	Df	Mean Squares	F -Ratio
Pre Test Mean	69.22	69.75	70.25	B	11.0	2	5.50	1.63
				W	193.7	57	3.38	
Post Test Mean	66.61	64.81	70.35	B	320.7	2	160.35	34.57*
				W	264.5	57	4.46	
Adjusted Post Test Mean	66.69	64.80	70.72	B	302.3	2	151.15	32.59*
				W	259.6	56	4.46	

The required table value for significant at 0.05 level of confidence for 2 and 57 (df)= 3.15. 2 and 56 (df) = 3.15 respectively.

Table - III : Scheffe's Post Hoc Test for the Differences between the Adjusted Post Tests Paired Means on Resting Pulse Rate

Adjusted Post Tests Means				Confidence Interval
Aerobic Training Group	Anaerobic Training Group	Control Group	Mean Differences	
66.69	64.80		1.89*	1.73
67.48		70.27	3.58*	1.73
	64.80	70.27	5.47*	1.73

**Significant*

While considering the two training methods, from the results presented in table - III it was found that anaerobic exercise group was better than aerobic training group in reducing resting pulse rate.

Table - IV : Tabulation of ANACOVA for Vital Capacity

	Aerobic Training Group	Anaerobic Training Group	Control Group	SOV	Sum of Squares	Df	Mean Squares	F -Ratio
Pre Test Mean	3440.00	3450.00	3460.00	B	3000.00	2	1500.00	0.01
				W	8357000.00	57	198976.19	
Post Test Mean	3496.67	3603.33	3486.67	B	125444.44	2	62722.22	0.31
				W	8567000.00	57	203976.19	
Adjusted Post Test Mean	3506.74	3603.33	3476.59	B	131511.64	2	65755.82	33.49*
				W	80502.18	56	1963.47	

The required table value for significant at 0.05 level of confidence for 2 and 57 (df)= .15. 2 and 56 (df) = 3.15 respectively.

Note: SOV = Source of Variance; B = Between; W = Within.

Table - V : Scheffe's Post Hoc Test for the Differences between the Adjusted Post Tests Paired Means on Vital Capacity

Adjusted Post Tests Means				Confidence Interval
Aerobic Training Group	Anaerobic Training Group	Control Group	Mean Differences	
3506.74	3603.33		96.59*	41.88
3506.74		3476.59	30.15	41.88
	3603.33	3476.559	126.74*	41.88

**Significant*

Table - V shows that the adjusted post-test means differences on vital capacity between aerobic training and anaerobic training groups; aerobic training and control groups; and anaerobic training and control groups are 96.59, 30.15 and 126.74 respectively.

Discussion on Results:

The analysis of covariance indicated the experimental group - 1 (aerobic exercise), experimental group - 2 (anaerobic exercise) were significantly improved the resting pulse rate. It may be due to the nature of varied regiments of aerobic exercise and anaerobic exercise. Which have influenced to increase the physiological level and function of various organs and systems? Further, finding of the study showed that the control group did not improve the resting pulse rate. However, the experimental group - 2 had more effect on the improvement of resting pulse rate greater than the improvement of resting pulse rate greater than the experimental group - 1.

The analysis of covariance indicated that experimental group - 2 (anaerobic exercise) were significantly improved the vital capacity. It may be due to the nature of varied regimens of anaerobic exercise which would have influenced to increase the physiological level and function of various organs and systems. Further, finding of the study showed that the control group did not improve the vital capacity. However, the experimental group - 2 had more effect on the improvement of vital capacity greater than the experimental group - 1.

Conclusion :

Within the limitations of this study, the following conclusions were the significant decreases on resting pulse rate have been observed following twelve weeks of aerobic and anaerobic training, when compared to control group. When comparing the two experimental groups, anaerobic training was significantly better than the aerobic training in reducing resting pulse rate. The participants of anaerobic training have exhibited significant increase on vital capacity when compared to aerobic training and control groups. It was also concluded that the aerobic training group do not differ significantly when compared to control group in vital capacity.

References :

- Bera, TK. and Raja PMV. (1993) : "*Body Composition, Cardiovascular Endurance and Anaerobic Power of Yogic Practionar*", Indian Journal of Physiology and Pharmacology, 37 (3).
- Coelho, C.W. et al. (2003) : "*Physiological Responses Using 2 High-Speed Resistance Training Protocols*", Journal of Strength Conditioning and Research. 17(2).
- James, RC. and Robert, PC. (1985) : *Plyometrics, Human Kinetics*, p. 3.
- Johnson, BL. and Nelson, JK. (1982) : *Practical Measurements for Evaluation in Physical Education*, New Delhi: Surjeet Publications.
- Bunn, JW. (1972) : *Scientific Principles of Coaching*, (2nd ed.), Englewood Cliffs, New Jersey: Prentice Hall, Inc., p. 125.
- Watson, A.W.S. (1983) : *Physical Fitness and Athletic Performances*, New York : Longman Inc.