

**INFLUENCE OF TWELVE WEEKS AEROBIC TRAINING ON SELECTED
PHYSIOLOGICAL VARIABLES AMONG BP PATIENTS**

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Abstract

The purpose of the study was to investigate the influence of twelve weeks aerobic training on selected physiological variables among BP patients. To achieve the purpose of the present study, forty men BP patients from Chennai city were chosen as the subjects and their age shall ranged from 25 to 35 years. The subjects were divided into two equal groups of twenty subjects each. For the present study pre test – post test randomized group design which consists of control group and experimental group was used. The subjects were randomly assigned to two equal groups of twenty BP patients each and named as Group ‘A’ and Group ‘B’. Group ‘A’ underwent aerobic training and Group ‘B’ underwent no training. The data was collected before and after twelve weeks of training. The data was analyzed by applying Analysis of Co -Variance (ANCOVA) technique to find out the effect of aerobic training on selected physiological variables among BP patients. The level of significance was set at 0.05. The findings of the present study have strongly indicates that aerobic training of twelve weeks have significant effect on selected physiological variables i.e., vital capacity, systolic blood pressure, diastolic blood pressure and pulse rate of BP patients. Hence the hypothesis earlier set that aerobic training programme would have been significant effect on selected physiological variables in light of the same the hypothesis was accepted.

Key words: Aerobic, Physiology, Blood Pressure.

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Introduction

The term 'aerobic' is a new word but not a new idea (**Jackson, 1985**). Aerobics is a progressive physical conditioning programme that stimulates cardio respiratory activity for a period sufficiently long to produce beneficial changes in the body. According to **Robergs and Roberts (1997)**, aerobic exercise can be defined as the ability to perform cardiovascular exercise, whether it is cross-country skiing, spinning, running, aerobic exercise or swimming, for an extended period of time.

Any exercise or activity that elevates the heart rate to one hundred and twenty beats per minute for at least twelve minutes is said to be aerobic (**Creggaing, 1984**). Aerobic exercise requires the heart rate to reach at least 60% of the maximal heart rate for an extended period of time. It is the activity that can be sustained for an extended period of time without developing an oxygen deficit (**Bucker, 1983**). It is characterized by one simple requirement, the necessity to sustain repeated muscle contraction. This criterion is fulfilled through two basic functions, the ability to consume enough oxygen and an adequate fuel provision. The capacity for oxygen consumption is reliant upon the physiological parameters of maximal oxygen uptake, lactate threshold and economy of movement in the given activity.

Hypertension is a medical condition in which the pressure of the blood pushing against the blood vessel walls is persistently high. High blood pressure forces the heart to work harder to pump blood throughout the body, and when blood pressure is continually high hardening of the arteries and heart failure can develop. Normal blood pressure is less than 120/80, and anything 140 and above/90 and above is considered hypertension (**Deveries, 1994**).

Objective of the Study

The purpose of the study was to investigate the influence of aerobic training on selected physiological variables among BP patients. It was hypothesized that there would have been a significant influence of aerobic training on selected physiological variables among BP patients.

Methodology

The purpose of the study was to investigate the influence of twelve weeks aerobic training on selected physiological variables among BP patients. To achieve the purpose of the present study, forty men BP patients from Chennai city were chosen as the subjects and their age shall ranged from 25 to 35 years. The subjects were divided into two equal groups of twenty subjects each. The investigator selected the following variables for the present investigation. The vital capacity was measured using spirometer, systolic and diastolic blood pressure was measured by sphygmomanometer and pulse rate was measured by stethoscope. For the present study pre test – post test randomized group design which consists of control group and experimental group was used. The subjects were randomly assigned to two equal groups of twenty BP patients each and named as Group ‘A’ and Group ‘B’. Group ‘A’ underwent aerobic training and Group ‘B’ underwent no training. The data was collected before and after twelve weeks of training. The data was analyzed by applying Analysis of Co -Variance (ANCOVA) technique to find out the effect of aerobic training on selected physiological variables among BP patients. The level of significance was set at 0.05.

Results and Discussion

The detailed procedure of analysis of data and interpretation were given below,

Table-I
Summary of Descriptive Statistics on Selected physiological Variables among BP Patients

Sl.No	Variables	ATG					CG				
		Pre	SD (±)	Post	SD (±)	AM	Pre	SD (±)	Post	SD (±)	AM
1	Vital Capacity	1.57	0.34	2.41	0.78	2.41	1.60	0.45	1.54	0.90	1.54
2	Systolic Blood Pressure	138.20	5.78	124.60	7.89	124.50	136.10	2.43	137.85	4.90	137.94
3	Diastolic Blood Pressure	87.05	3.23	79.55	5.49	79.89	89.05	5.67	87.95	4.98	87.60
4	Pulse Rate	80.40	3.45	73.10	3.24	73.09	80.35	3.12	79.90	2.78	79.90

ATG = Aerobic Training Group

CG = Control Group

The table I shows that the pre and post test means and standard deviation of two groups on selected physiological variables of BP patients.

Table - II

Analysis of Variance of Pre Test Scores on Selected Physiological Variables among BP Patients

Sl. No	Variables	Source of Variance	Sum of Squares	df	Mean Squares	F-Value
1	Vital Capacity	BG	0.008	1	0.008	0.54
		WG	0.57	38	0.01	
2	Systolic Blood Pressure	BG	44.10	1	44.10	2.20
		WG	761.00	38	20.02	
3	Diastolic Blood Pressure	BG	40.00	1	40.00	1.53
		WG	989.90	38	26.05	
4	Pulse Rate	BG	0.02	1	0.02	0.004
		WG	241.35	38	6.35	

* $P < 0.05$ Table F, df (1,38) (0.05) = 4.09

In table II, the results of analysis of variance of pre test scores on vital capacity (0.54), systolic blood pressure (2.20), diastolic blood pressure (1.53) and pulse rate (0.004) were lesser than the table value of 4.09 indicating that it was not significant for the degrees of freedom (1,38) at 0.05 level of confidence indicating that the random sampling was successful.

Table-III

Analysis of Variance of Post Test Scores on Selected Physiological Variables among BP Patients

Sl. No	Variables	Source of Variance	Sum of Squares	df	Mean Squares	F-Value
1	Vital Capacity	BG	7.54	1	7.54	869.33*
		WG	0.33	38	0.009	
2	Systolic Blood Pressure	BG	1755.62	1	1755.62	108.76*
		WG	613.35	38	16.14	
3	Diastolic Blood Pressure	BG	705.60	1	705.60	57.06*
		WG	469.90	38	12.36	
4	Pulse Rate	BG	462.40	1	462.40	127.69*
		WG	137.60	38	3.62	

* $P < 0.05$ Table F, df (1,38) (0.05) = 4.09

In table III, the results of analysis of variance of post test scores on vital capacity (869.33), systolic blood pressure (108.76), diastolic blood pressure (57.06) and pulse rate (127.69) were greater than the table value of 4.09 indicating that it was significant for the degrees of freedom (1,38) at 0.05 level of confidence.

Table-IV

Analysis of Covariance of Adjusted post test scores on Selected Physiological Variables among BP Patients

Sl. No	Variables	Source of Variance	Sum of Squares	df	Mean Squares	F-Value
1	Vital Capacity	BG	7.54	1	7.54	925.79*
		WG	0.302	37	0.008	
2	Systolic Blood Pressure	BG	1709.53	1	1709.53	104.28*
		WG	606.55	37	16.39	
3	Diastolic Blood Pressure	BG	571.05	1	571.05	60.12*
		WG	351.39	37	9.49	
4	Pulse Rate	BG	463.98	1	463.98	138.77*
		WG	123.71	37	3.34	

* P < 0.05 Table F, df (1,37) (0.05) = 4.10

In table IV, the results of analysis of covariance of adjusted post test scores on vital capacity (925.79), systolic blood pressure (104.28), diastolic blood pressure (60.12) and pulse rate (138.77) were greater than the table value of 4.10 indicating that it was significant for the degrees of freedom (1,37) at 0.05 level of confidence.

In case of physiological variables i.e. vital capacity, systolic blood pressure, diastolic blood pressure and pulse rate the results between pre and post (12 weeks) test has been found significantly higher in experimental group in comparison to control group. This is possible because aerobic exercise is steady physical activity using large muscle groups. This type of exercise strengthens the heart and lungs and improves the body's ability to use oxygen. Aerobic exercise has the most benefits for your heart. Over time, aerobic exercise can help decrease your heart rate and blood pressure and improve your breathing which directly contribute to enhancement in their vital capacity, systolic blood pressure, diastolic blood pressure and pulse

rate and due to regular aerobic training programme which may also bring sudden spurt in physiological variables in BP patients.

The findings of the present study have strongly indicates that aerobic training of twelve weeks have significant effect on selected physiological variables i.e., vital capacity, systolic blood pressure, diastolic blood pressure and pulse rate of BP patients. Hence the hypothesis earlier set that aerobic training programme would have been significant effect on selected physiological variables in light of the same the hypothesis was accepted.

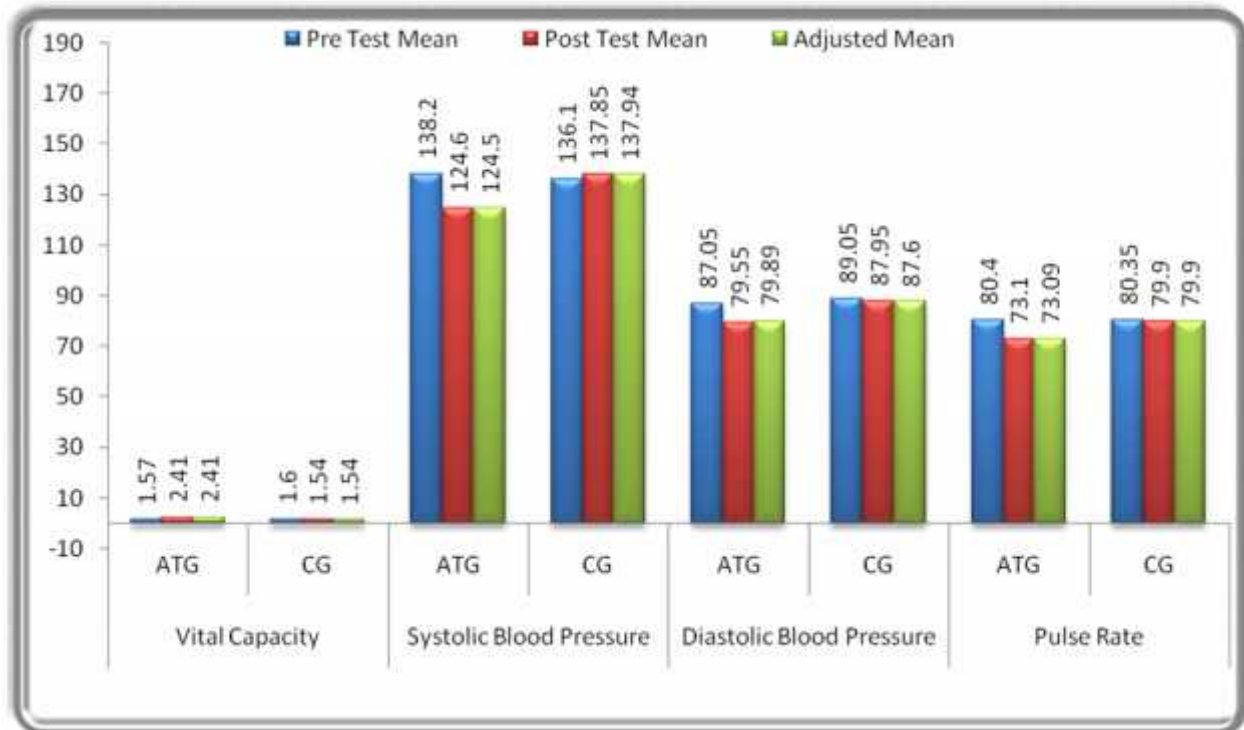


Figure-I Shows the Mean Values of Control Group on Selected Physiological Variables among BP Patients

CONCLUSIONS

In the light of the study undertaken with certain limitations imposed by the experimental conditions, result of the study reveals that there was a significant improvement in the experimental groups on selected variables when compared to the control group after the completion of twelve weeks of aerobic training.

References

- Ananda (1982). *The Complete Book of Yoga Harmony of Body & Mind*. Delhi: Orient Books Pvt. Ltd.
- Barrow, H.M., Mc. Gee. M. and Kathleen A. Tritschler (1989). *Practical Measurements in Physical Education and Sports*, Philadelphia: Lea Fibiger.
- Bowman, A.J., Clayton, R.H., Murray, A., Reed, J.W., Subhan, M.M., and Ford, G.A., (1997). Effects of aerobic exercise training and Yoga on the baroflex in healthy elderly persons. *European Journal of Clinical Investigation*, 27(5), 443-449.
- Deveries, (1994) *Physiology of exercise for physical education athletics and exercise science*, WMC Brown Publishers, U.S.A.
- Iyengar, B,K,S. (1968). *Light on Yoga*. London: George Allen and Unwin Ltd.
- Meyer B. J., Meij, H.S., And Meyer, A.C., (1996) *Human Physiology*, Juta academic Publishers, Wetton.
- Sarada Subramaniam and Madhavan kuty, K., (2001). *Text Book of Human Physiology*, S.Chand and Company Ltd., New Delhi.