

# **Effect of Aerobic Training and Yogic Practices on Selected Haematological Variables among Obese Women**

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## **Abstract**

The purpose of the study was to find out the "Effect of aerobic training and yogic practices on selected hematologigal variables among obese women". For the purpose of the study 45 obese women, were divided into three groups based on their BMI, one as Aerobic group, two as Yogic group, , third group served as control group. The selected subjects were measured of their Hemoglobin and Blood sugar .The interventional training programmes for this study were twelve weeks. Analysis of covariance (ANCOVA) was used to find out whether the mean differences were significant or not. The results of this study proved that there was a significant improvement on Hemoglobin and Blood sugar due to Aerobic and Yogic practices.

**Key Words:** Aerobic training, Yogic practices, Haematology

## **Introduction**

Obesity, in absolute term, is an increase of body adipose tissue(fat tissue) mass. Obesity is typically assessed by BMI (body mass index) and in terms of its distribution via the waist circumference. The cut-off limits for waist circumference for Indians have been recommended to be 90 cm for male and 80 cm for female. Abdominal obesity is defined by waist circumference above these limits.

"Aerobics" basically means living or working with oxygen. Aerobic refers to a variety of exercises that stimulate heart and lung activity for a time period sufficiently long to produce beneficial changes in the body Aerobic is a system of exercises designed to promote the supply and use of oxygen in the body. Some of these exercises include running, dancing, rowing, skating and walking. (Cooper, 1970)

In the yoga sutras of Patanjali there is a concise definition of Yogasanas: "Sthiram Sukham Aasanam", meaning 'that position which is comfortable and steady'. In this context, asanas are practiced to develop the ability to sit comfortably in one position for an extended period of time. The techniques of pranayama provide the method whereby the life force can be activated and regulated in order to go beyond one's normal boundaries or limitations and attain a higher state of vibratory energy. (Swami Satyananda Saraswati 1998)

Hemoglobin is an iron-rich protein that gives blood its red color. Hemoglobin helps red blood cells to carry oxygen from the lungs throughout the body. Blood sugar refers to the glucose present in blood; it is the only sugar present at all time in blood, biological fluids, and tissues in physiologically significant amount though other monosaccharides are also absorbed in the same manner as glucose (Pooja Malhaotra 2007).

### **Purpose of the Study**

It is proved fact that, aerobics and yogic Practices reduce obesity among obese women and also have effect on, the hematological variables, body composition and cardio respiratory function etcetera. The investigator is interested to make a scientific research to assess the effect of Aerobic training and Yogic practices on Hemoglobin and Blood sugar among obese women in this study

### **Hypotheses**

It was hypothesized that there would be no significant improvement on Hemoglobin and Blood sugar among obese women due to Aerobic training and Yogic Practices.

### **Review of Related Researches**

Wallman K et,al., ( 2006) Examined the effects of an 8-week exercise intervention on aerobic fitness, android and gynoid fat mass, and blood lipids in overweight and obese participants. Twenty-four sedentary participants (average BMI = 30 +/- 2 kg/m<sup>2</sup>; 18 females, 6 males) were randomized into either interval training and diet education (INT group), continuous aerobic exercise and diet education (CON group), or diet education only (DIET group). Durations of exercise sessions were similar (approximately 30 minutes), with both exercise groups completing the same amount of work. The INT and CON groups demonstrated significant improvements over time for VO<sub>2</sub> peak) ( $p < 0.01$  and  $p < 0.05$ , ES = 1.1 and 1.2, respectively) and time to exhaustion on a graded exercise test ( $p < 0.01$  and ES = 0.8 for both groups). Further, a large effect size (0.7) was recorded for the loss in android fat mass over time in the INT group only.

### **Methodology**

For the purpose of the study 45 obese women were selected from Chennai city at random. They were divided based on their BMI, They were assigned into three groups of which first group served as, Aerobic group, second as Yogic group, third group served as control group. The selected subjects were measured of their Hematological variables, Hemoglobin and Blood sugar. The interventional training programmes for this study were given for twelve weeks Aerobic Training for experimental group I and Yogic Practice for experimental group II and the control group was not given practice of the routine.

**Schedule Followed for Aerobic Training Group**

S.No	Name of Exercise	Weeks		
		I - IV	V - VIII	IX - XII
1	Marching on the Spot	32 counts	40 counts	48 counts
2	Touch Out	8 sets	12 sets	16 sets
3	Step Touch	4 sets	6 sets	8 sets
4	Double Step Touch	2 sets	3 sets	4 sets
5	Grapevine	4 sets	6 sets	8 sets
5	Cross Over Step	4 sets	6 sets	8 sets
7	Jump on Spot	8 sets	12 sets	16 sets
8	Ham Curl	4 sets	6 sets	8 sets
9	Front Kick	4 sets	6 sets	8 sets
10	Knee and Arm Lift	4 sets	6 sets	8 sets

**Yogic techniques for Yogic Group**

10 Minutes Loosening Exercises was given to the subjects before the training period				
S.No	ASANAS	Duration	PRANAYAMA	Duration
1	Bhujangasana	2 Mins	Ujjayi	5 Mins
2	Hasta utthanasana	1 Mins	Kapalbhati	2 Mins
3	Shalabhasana	1 Mins	Bastrika	1 Mins
4	Halasana	2 Mins		
5	Dhanurasana	2 Mins		
5	Paschimottansana	1 Mins		
7	Ardha mastsyendrasana	1 Mins		
8	Vipareeta karaniasana	1 Mins		
9	Ushtrasana	1 Mins		
15 Minutes Cool down Exercises was given to the subjects after the training period				

**Statistical Technique**

Analysis of covariances ANCOVA was used to find out the significant improvement in Hemoglobin and reduction in Blood sugar, due to Aerobic Training and Yogic practices among Obese women.

**Results**

The statistics comparing the initial and final means of Hemoglobin and Blood sugar due to Aerobic Training and Yogic practices among obese women is presented in Table I.

**Table-I**  
**Computation of Analysis of Covariance of Hemoglobin and Blood**  
**Sugar among Obese Women**

Variables	Test	Aerobic group	Yogic group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	'F' ratio
Blood sugar	Pre test	98.33	88.07	99.06	between	1134.71	2	567.35	1.19
					within	20023.20	42	476.74	
	Post test	92.2	88.66	99.60	between	933.91	2	466.96	1.61*
					within	12145.33	42	289.17	
	Adjusted	89.91	93.78	96.78	between	355.99	2	177.99	4.33*
					within	1727.790	41	41.14	
	Mean gain	6.13	-0.60	-0.53					
Hemoglobin	Pre test	11.66	11.77	11.05333	Between	4.53	2	2.265	2.92
					Within	32.58	42	0.78	
	Post test	13.68	12.18	10.82	Between	61.40	2	30.70	38.66*
					Within	33.35	42	0.79	
	Adjusted	13.53	11.94	11.20	Between	40.36	2	20.18	94.70*
					Within	8.950	41	0.21	
	Mean gain	-2.013 33	-0.41	0.23					

Table f- ratio at 0.05 level of confidence for (2) (41) = 3.21.

\* Significant.

**Table II**  
**Ordered Scheffe's Post - Hoc Test on Hemoglobin and Blood sugar**  
**Among Obese Women**  
(Scores in mm/Hg)

**Scheffe's Confidence Interval Test Scores on hemoglobin**

Aerobic group	Yogic group	Control group	MD	CI
13.53	11.94	-	1.59	1.47
13.53	-	11.20	2.33	2.45*
-	11.94	11.20	0.74	0.86

**Scheffe's Confidence Interval Test Scores on Blood Sugar**  
(Scores in mgs/ dl)

Control group	Yogic group	Aerobic group	MD	CI
96.78	93.78	-	3.00	1.34
96.78	-	89.91	6.87	8.53*
-	93.78	89.91	3.87	5.53*

\* Significant.

### Discussion

It is proved fact that, aerobics and yogic Practices reduce obesity and also have effect on, the hematological variables, body composition and cardio respiratory function ect.

The findings of this study proved that there was significant improvement in experimental group compared to control group. as shown in table I.

In the Table II the results proved that hematological variables hemoglobin, were significantly improved and blood sugar, were significantly reduced . Hence, Null hypothesis was rejected.

### Conclusion

1. It was concluded that the hematological variable hemoglobin significantly improved and blood sugar was significantly reduced among the Aerobic group and Yogic group compared to control group.
2. It was concluded that blood sugar was significantly decreased and there was a significant improvement in Hemoglobin among the Aerobic group compared to Yogic group.

### References

Cooper, K.H. (1970), ***The New Aerobics***, New York: Bintin Books;

Pooja Malhaotra. (2007), ***Calories*** New Delhi, Sterling publication Pvt.Ltd: PP.16-56.

Swami Satyananda Saraswati. (1998), ***Asana Pranayama Mudra Bandha***, Yoga Publications trust, Munger, Bihar, India.

Wallman K, Plank LA, Rakimov B and Maiorana AJ., (2006) "The effects of two modes of exercise on aerobic fitness and fat mass in an overweight population" ***The University of Western Australia, Sport Science, Exercise and Health***, Crawley, Western Australia, Australia. [kwallman@cyllene.uwa.edu.au](mailto:kwallman@cyllene.uwa.edu.au) Research in Sports Medicine, Dec;36(8): PP: 1359-66.

