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Acute Effect of Yoga Training and Aerobic Exercise on Fasting Blood Sugar and Aggression in Obesity Men

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Abstract: ***The purpose of the study was to find out the effect of yogic practices and Aerobic exercise on selected aggression and fasting blood sugar among obesity among obese men. The subjects were divided into three groups (n=20) at random. Group I underwent yogic practices, Group II underwent aerobic exercise and Group III acted as control group. The study consisted of pre test and post test. pre test and post test were conducted for all the subjects on selected psychological variables particularly aggression and bio chemical variable fasting blood sugar. The data obtained were analyzed by Analysis of Covariance (ANCOVA) to assess the significant difference among the groups on find out the effects of Yogic practices and Aerobic exercise among obesity men. The 'F' ratio obtained by Analysis of Covariance were compared at 0.05 level of significance. It is concluded that Yogic practices reduced effectively the selected bio psychological variable – reduced aggression and bio chemical variable control fasting blood sugar among obesity middle aged men than the control group. Aerobic exercise also reduced effectively the selected aggression and bio chemical variable control fasting blood sugar among obesity middle aged men than the control group. It is found that yogic practices are slightly effective than Aerobic exercise on the reduced aggression and control fasting blood sugar.***

Keywords: Yoga, Aerobic exercise, aggression, fasting blood sugar, obesity.

I. INTRODUCTION

Twenty first century has witnessed a land mark development in science and technology including space, defense, atomic energy, computer, internet service etc. By the internet invention we can collect required information within a fraction of second from any part of the world. Due to this advanced scientific technological invention, the body movements of the human being have been restricted. Tension and competitive feeling increased. Man has been felt the prey of stress, hypo kinetic and psychosomatic diseases. So time has come that man should not ignore the importance of any physical activities. Every one desires good health and it is the ultimate objective of all those who want happiness in life. Everyone has to follow good health practices in their routine life. Minor health disorders are quite common to all. In the case of major health problems, the precautionary measures are plenty. Some people control their diseases like blood pressure, diabetes, acidity, asthma etc. by taking medicines regularly. But such practice does not in a way completely eliminate the health disorders; on the other hand it leads to several other adverse health problems. The continuous, systematic and regular practice of Yoga and any physical activities is an effective tool to maintain good health and also helps eliminate all the dreadful diseases from the human body.

Physical education and sports, being an integral part of education, experiences the impact of scientific advancements. Now sports are able to give outstanding performance because of involvement few scientifically substantiated training methods and means of execution of sports exercise such as sports techniques and tactics improvement of sports gear and equipment as well as other components and conditions of sports training.[1]

Yoga means to "yoke" to "unite" to bind to "link" to connect or to "merge". As yoke joins two bulls together, the yoga unites body and mind together. The merger of soul with God, and the experience of oneness with him is yoga. It is possible only through the control over sense organs and through continued practice and detachment. According to the great Sage Patanjali the withdrawal of

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sense organs from their worldly objects and their control is yoga.

The aim of man's life is to get rid of the worries, anxieties and sufferings of the world and to achieve peace and bliss. To get rid of the tempting delusions, sorrows and pains of the world, there are different paths of yoga namely Bhakti yoga, Karma yoga, Dhyana yoga, Jnana yoga, Hatha yoga and other yogas. The paths may be different but the ultimate aim is the same. Our body has been called the temple of the God. According to Shankracharya we can see the image of God in our own body if maintained purity and free from disease. Just as spotless mirror gives clear reflection, the body and mind if maintained purity and health can lead up to success. Yoga is a science of physical and mental control. It is a system of self renewal of mind and body. It is a means of acquiring a slim supple and healthy body. It can be a way to achieve inner tranquility. It is also a path to great spiritual attainment. Our ancient Rishis and sages have given eight stages of yoga. They are Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana and Samadhi. [2]

Pranayama is controlling the normal breathing cycle, it increase the expansion and contraction of our lungs so that they become capable of purifying more and more blood. Mind becomes capable of more concentration. It has a unique power to throw waste products from the body. It creates resistance power in the body against disease.

If one practices the Asanas and Pranayama regularly and systematically for long period, it is sure to find that they act as curatives of and preventives for various kinds of mental and physical ailments. The body will become light, and intellect will turn sharp and clear, memory will grow strong, will-power assumes firmness and rigidity, body fat and heart rate will be reduced, the belly will no longer project, the face will look serene, the eyes will grow bright and lustrous, the voice will turn sweet, an improve in static motor performance, personality development, lung capacity and respiratory, brain functions and physical fitness.

Aerobic literally means "with oxygen in and refers to the use of oxygen in muscles energy generating process. Aerobic exercises typically those performed at moderate levels of intensity for extended periods of time that maintain an increased heart rate. [3]

Aerobic activities include walking, jogging, bicycling, dancing and swimming etc. anything that involves the large muscle groups, which sustains for thirty minutes or longer, is considered aerobic. It should be done a minimum of five days a week for at least thirty minutes each session. Aerobic exercise is the exercise that involves or improves oxygen consumption by the body. Aerobic means "with oxygen", and refers to the use of oxygen in the body's metabolic or energy-generating process. They are several kinds of aerobic exercise which are performed at moderate levels of intensity for extended periods of time. To obtain the best results, an aerobic exercise session involves a warming up period, followed by at least 20 minutes of moderate to intense exercise, involving large muscle groups, and a cooling down period at the end. Aerobics is a form of physical exercise that combines rhythmic aerobic exercise with stretching and strength training routines with the goal of improving all elements of fitness (flexibility, muscular strength and cardio – vascular fitness). It is usually performed to music and may be practiced in a group setting led by an instructor, although it can be done solo and without musical accompaniment. With the goal of preventing illness and promoting physical fitness, practitioners perform various routines comprising a number of different dance-like exercises. Formal aerobics classes are divided into different levels of intensity and complexity. Aerobics classes may allow participants to select their level of participation according to their fitness level. Many gyms offer a wide variety of aerobic classes for participants. Each class is designed for a certain level of experience and taught by a certified instructor with a specialty area related to their particular class.[4]

Regular aerobic exercises will improve cardiovascular and cardio respiratory function (heart and lungs), an increased maximal oxygen consumption (VO2max), maximal cardiac output (amount of blood pumped every minute), maximal stroke volume (amount of blood pumped with each beat) and blood volume and ability to carry oxygen. Reduced workload on the heart (myocardial oxygen consumption) for any given sub maximal exercise intensity, increased blood supply to muscles and ability to use oxygen Lower heart rate and blood pressure at any level of sub maximal exercise, threshold for lactic acid accumulation. Lower resting systolic and diastolic blood pressure in people with high blood pressure, Increased HDL Cholesterol (the good cholesterol), Decreased blood triglycerides reduced body fat and improved weight control Improved glucose tolerance and reduced insulin resistance. [5]

II. PURPOSE OF THE STUDY

The purpose of the study was to find out the effect of yogic practices and Aerobic exercise on selected fasting blood sugar and aggression among obesity men.

A. Materials and Methods

After obtaining the institutional ethical clearance, the investigation was conducted to analyze the variations in blood glucose level before and after yoga and Aerobic exercise. For that purpose, 60 obese middle aged men were selected from a tertiary care teaching

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hospital and from other hospitals of Tiruchirapalli district, India. The subjects were seted into three sets (each set comprised of 20 men). The age sets of the test sets were from 35 to 45 years. Set I underwent yogic practices, set II underwent aerobic exercise and set III act as control. However all the three sets were advised to continue the medicines as per the recommendations of regular doctors. The individuals of the control set were considered as inactive rest. Further, the study was formulated by the random design, consisting of a pre test and post test. Pre test were conducted for all the 60 subjects on selected biochemical variable – blood sugar (bfasting and) by laboratory and aggression (standard questioners) tests. The experimental sets were requested to participate in their respective yoga and Arabic exercises for a period of six weeks. The post test was conducted for all the subjects after successful experimentation of yogic practices and brisk walking exercises. The data obtained were analyzed by Analysis of Covariance (ANCOVA) to assess the significant differences among the sets on post test for blood sugar and aggression to find out the effects of yoga and aerobic exercise among obesity men especially to controlled in blood sugar level and reduced aggression.

B. 2.1 Training Programme

The subjects were selected by random and were divided into three groups and the experimental group I was given Yogic practices at 5.45am to 6.45am and experimental group II was given Aerobic exercise 7.00 am to 8.00am for duration of one hour (6 days a week) for six weeks. Group III is the control group, was not given any training but in active rest. Yogic programs and Aerobic exercise for selected groups are presented in the table

C. Training programme for experimental groups

Table 1:

Groups	Programmes
Experimental Group - I	Loosening Exercises, Asanas, Pranayama, and relaxation.
Experimental Group - II	Aerobic exercise
Control Group	No training

D. Training Schedule of Experimental Group – I (Yogic Practices)

Weeks yoga training programme
Duration: 6 weeks, Asanas : 30 minutes,
Weekly: 5 days, Pranayamas: 10 minutes,
Time : 45 minutes , Relaxation: 5 minutes

Table 2

Weeks	Asanas Duration	Pranayama Times
I	5 Seconds	3
II	10 Seconds	3
III	15 Seconds	4
IV	20 Seconds	4
V	25 Seconds	5
VI	30 Seconds	5

Following movements are given for the above durations.
Yoga practices
Ardha kati chakrasana, Padahastasana,Ardha-chakrasana,Utkatasana, Paschimottanasa,Ustrasana, Ardhmatsyendrasana,

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Bhujangasana, Salabhasana, Dhanurasana,Navasana, Halasana,Savasana Kapalabhati, Nadi sudhi,
Training Schedule for Experimental Group – II (Aerobic exercise)
Weeks aerobic exercises training programme (Low impact) Duration: 6 weeks
Warm Up, Exercises: 5 minutes,
Weekly: 5 Class, Aerobics Exercises: 30 Minutes, Time: 45 minutes,
Cool down Exercises: 10 minutes

Table 3

weeks	Slow moments	Medium movements	Fast movements	Warm down
I & II	15 Minutes 3 times	10 Minutes 2 times	5 Minutes 1 times	10Minutes
III & IV	10 Minutes 3 times	15 Minutes 4 times	5 Minutes 2 times	10Minutes
V& VI	10 Minutes 3 times	15 Minutes 4 times	10 Minutes 3 times	10Minutes

Following movements are given for the above durations.
On the sport marching, Marching with arms side, upward and down, Out ward toe touch with single arm, Out ward toe touch with double arm, Toe touching, Toe touching side ward movement, Toe touching with side ward movement arm movement, V-step movement, L-step right side movement, L-step left side movement, Zig-zag forward movement, V-shape forward toe touch right,& left side V-shape forward knee up right, & left side movement Grape wine movement, Single leg side ward movement, A-step movement, Dymand step movement, V- Step rotation right side movement,V- Step rotation left side movement

III. RESULTS AND DISCUSSION

In this study the psychological variables including stress and self-confidence were analyzed by yoga and brisk walking. The Aggression was measured through questionnaire standardized by Buss & perry, 1992).

Table 4
Table 6; Computation of mean and analysis of covariance of fasting blood sugar of experimental and control group

Test	Experimental Group – I (Asana practice)	Experimental Group – II (Suryanamaskar)	Control group	Source of variance	df	Sum of square	Mean square	F
Pre-test mean	166.87	166.67	171.20	Between	2	332.8	166.42	1.10
				Within	42	6350.8	151.21	
Post-test mean	150.07	159.20	167.87	Between	2	3310.0	1655.02	16.93*
				Within	42	4104.9	97.74	
Adjusted mean	160.06	151.24	168.76	Between	2	2214.0	1107.00	
				Within	41	1957.1	47.73	23.19*

Table F- ratio at 0.05 level of confidence. For 2 and 42 (df) = 3.1.2, 2 and 42 (df) = 3.22,2 and 41 (df)=3.23.

Table 5
Scheffe's post-hoc test for fasting blood sugar

Experimental Group – I (Varied asana Practices)	Experimental Group – II (suryanamaskar)	Control Group	Mean difference	Required C.I
160.06	151.24	-	8.22*	2.18
160.06	-	168.76	8.70*	2.18
-	151.24	168.76	117.25*	2.18

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Table 6:Computation of mean and analysis of covariance on Aggression of control and experimental groups
(Scores in points)

Test	Experimental Group – I (Varied Yogic Practices)	Experimental Group – II (Aerobic exercise)	Control group	Source of variance	df	Sum of square	Mean square	F
Pre-test mean	168.3	158.07	174.73	Between	2	4238.87	2149.4	1.71
				Within	87	14606.0	167.89	
Post-test mean	146.4	141.27	174.93	Between	2	19739.5	9869.7	6.32*
				Within	87	12838.9	147.80	
Adjusted mean	145.37	148.57	186.66	Between	2	8479.39	4239.7	
				Within	86	31163.1	36.78	8.81*
Mean Gain	21.9	16.80	0.20					

*Table F- ratio at 0.05 level of confidence. For 2 and 87=3.103

Table 7:
Table 5; Scheffe's post-hoc test for Aggression

Experimental Group – I (Varied Yogic Practices)	Experimental Group – II (Aerobic exercise)	Control group	Mean difference	Required C.I
145.37		168.66	23.29	3.90
	148.57	168.66	20.9	3.90
145.37	148.57		3.20	3.90

The results presented in table showed that the obtained adjusted means on Blood Sugar (Fasting) among Yogic practices group was 160.06 followed by Arobice group group with the mean value of 151.24and control group mean value of 168.76. The difference among pre test scores Post test scores and adjusted mean scores of the subjects were statistically treated using ANCOVA and F values obtained were 1.10, 16.93 and 23.19 respectively. It was found that obtained F value on pre test score was not significant at 0.05 level of confidence as the obtained value was lesser than the required table value and post test Scores was significant at 0.05 level of confidence as the value was greater than the required table F value of 3.1.The post hoc analysis through Scheffe`s confidence test proved that due to Twelve weeks treatment the Yogic practices group and Aerobic group there was significant improvement in Blood Sugar (Fasting) than control group and the differences were significant at 0.05 level. The post hoc analysis between the experimental group namely Yogic practices group and Aerobic group proved that there was significant difference. The results presented in table showed that the obtained adjusted means on Blood Sugar (Fasting) among Yogic practices group was 145.37 followed by Aerobic group group with the mean value of 148.57 and control group mean value of 168.66. The difference among pre test scores Post test scores and adjusted mean scores of the subjects were statistically treated using ANCOVA and F values obtained were 1.71, 6.32 and 8.81 respectively. It was found that obtained F value on pre test score was not significant at 0.05 level of confidence as the obtained value was lesser than the required table value and post test Scores was significant at 0.05 level of confidence as the value was greater than the required table F value of 3.1.The post hoc analysis through Scheffe`s confidence test proved that due to Twelve weeks treatment the Yogic practices group and Aerobic group there was significant improvement in Blood Sugar (Fasting) than control group and the differences were significant at 0.05 level. The post hoc analysis between the experimental group namely Yogic practices group and Aerobic group proved that there was significant difference.

IV. CONCLUSION

Further the study was found that yoga and aerobic exercise reduced effectively the selected psychological variable aggression and bio chemical variable control fasting blood sugar among obesity men than the control group.

It is found that yoga are slightly effective than Aerobic exercise on the selected psychological variable reduce aggression and bio

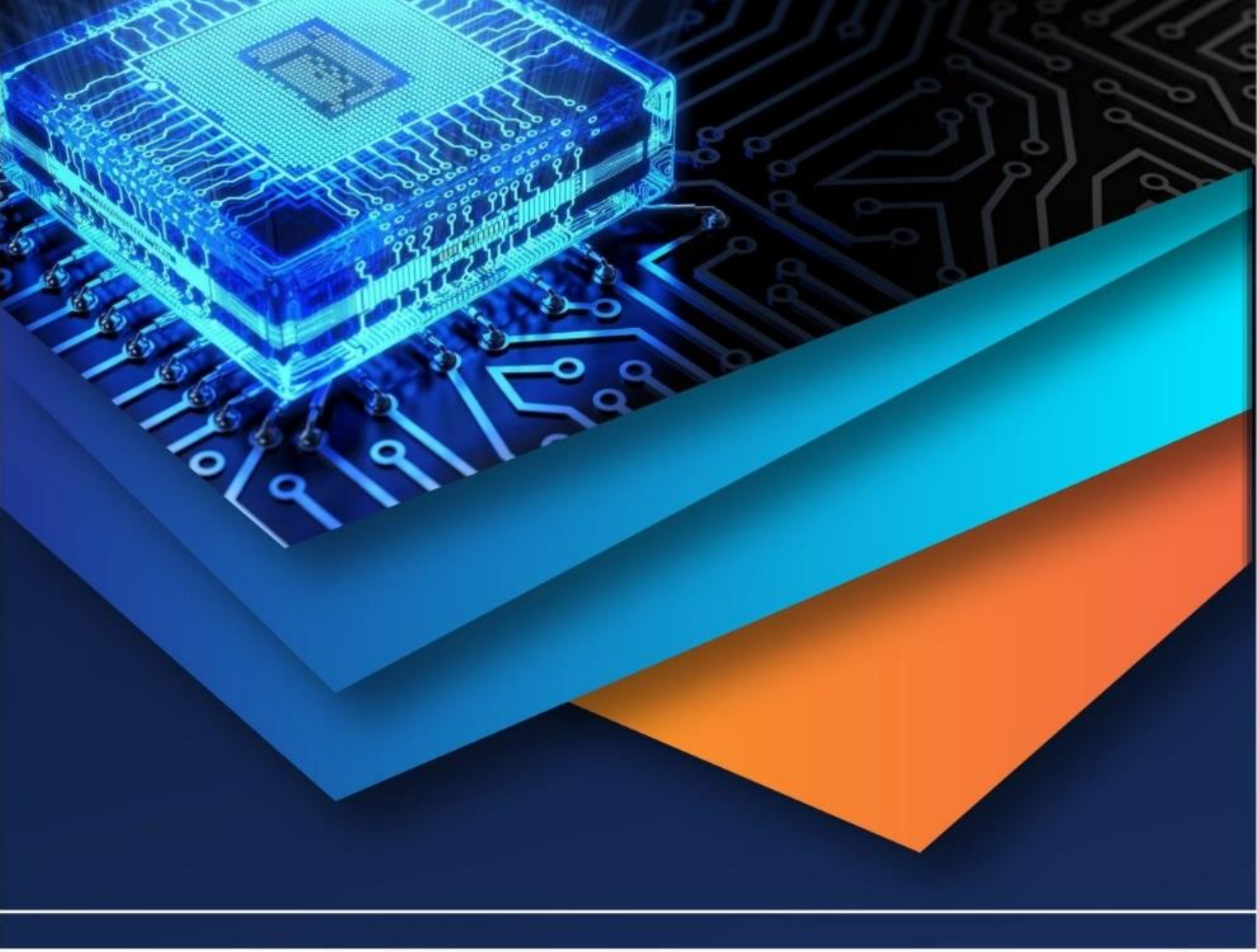
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chemical variable control fasting blood sugar.

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