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Effect of yogic practices on selected hematological variables and lipid profile among obese college men

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Abstract

The purpose of this investigation was to study the effect of yogic practices on hematological variables and lipid profile of obese college men. Thirty obese college men students were selected randomly from J. J. College of Arts and Science (Auto), Pudukkottai, Tamil Nadu, India. The age ranged between 18 to 25 years, the subjects were selected based on BMI. Pretest and posttest designed was used. Experimental Group - I (N= 15) allowed to undergo yogic practices for six weeks, while control group (N=15) maintained their daily routine activities. The selected hematological variables were White Blood Cells and Red Blood Cells and Lipid Profile for High Density Lipoprotein and Low Density Lipoprotein were examined by laboratory test. For the analysis of data paired 't' test was applied. There was insignificant reduction of White Blood Cell in experimental group but the number of Red Blood Cells has significantly improved in Experimental group after six weeks yogic practices High Density Lipoprotein significantly improved in experimental group. The Low Density Lipoprotein has shown significant decrease in experimental group after six weeks of training. From the results, it can be predicted that, yoga practices is a effective method which can be helpful to decrease Obese level. The results demonstrate that yogic practices enhance the Red Blood Cells and High Density Lipoprotein level and help to decrease Low Density Lipoprotein level among the college level obese men.

Keywords: Yogic practices, hematological, lipid profile, obese, white blood cells, red blood cells

1. Introduction

The ultimate goal of yoga is, however, to help the individual to transcend the self and attain enlightenment. Yoga is not a religion; it is a way of living that aims towards 'a healthy mind in a healthy body'. Man is a physical, mental and spiritual being; yoga helps promote a balanced development of all the three. The art of practicing yoga helps in controlling an individual's mind, body and soul. It brings together physical and mental disciplines to achieve a peaceful body and mind; it helps manage stress and anxiety and keeps you relaxing. It helps in increasing flexibility, muscle strength and body tone. It also improves respiration, blood circulation, metabolic energy system and vitality.

Hematology is a branch of medicine concerning the study of blood, the blood-forming organs, and blood diseases. Hematology is the specialty responsible for the diagnosis and management of a wide range of being and malignant disorders of the red and white blood cells, platelets and the coagulation system in adults and children. Hematologists care directly for patients on hospital wards and outpatient clinics. Their patients may have a serious life-threatening illness such as leukemia, lymphoma or myeloma that requires chemotherapy. Some hematologists specialize in diseases affecting the blood coagulation system such as hemophilia, while others provide expertise in the areas of blood transfusion or disorders of hemoglobin such as sickle cell disease.

Lipid profile or lipid panel, is the collective term given to the estimation of, typically, total cholesterol, high-density lipoprotein cholesterol, low-density lipoprotein cholesterol, and triglycerides. An extended lipid profile may include very low-density lipoprotein. This is used to identify hyper lipidemia (various disturbances of cholesterol and triglyceride levels), many forms of which are recognized risk factors for cardiovascular disease and sometimes pancreatitis.

For children and adolescents at low risk, lipid testing is usually not ordered routinely. However screening with a lipid profile is recommended for children and youths who are at an increased

risk of developing heart disease as adults. Some of the risk factors are similar to those in adult and include a family history of heart disease or health problems such as diabetes, high blood pressure (hypertension), or being overweight.

Obesity is most commonly caused by a combination of excessive food intake, lack of physical activity, and genetic susceptibility. A few cases are caused primarily by genes, endocrine disorders, medications, or mental disorder. The view that obese people eat little yet gain weight due to a slow metabolism is not medically supported. On average, obese people have a greater energy expenditure than their normal counterparts due to the energy required to maintain an increased body mass.

2. Materials & Methods

The present study was aimed to achieve an effect of yogic practices on hematological variables and lipid profile of obese college men. For the purpose of study thirty obese men students were selected randomly from J. J. College of Arts and Science (Auto), Pudukkottai, Tamil Nadu India. The age ranged between 18 to 25 years, the subjects were selected based on BMI. Pretest and posttest designed was used. Experimental Group - I (N= 15) allowed to underwent yogic practices for six weeks, while control group (N=15) maintained their daily routine activities. The selected hematological variables were White Blood Cells (WBC) and Red Blood Cells (RBC) and Lipid Profile for High Density Lipoprotein (HDL) and Low Density Lipoprotein (LDL) were examined by laboratory test. For the analysis of data paired ‘t’ test was applied. There was significant improvement in White Blood Cells (WBC) and Red Blood Cells (RBC) in experimental group after six weeks yogic practices. High Density Lipoprotein significantly improved in experimental group. The Low Density Lipoprotein has shown significantly decreased in experimental group after six weeks of training. From the results, it can be predicted that, yogic practices is an effective method which can be helpful to

decrease obese level. The results demonstrate that yogic practices enhance all hematological like White Blood Cells (WBC) and Red Blood Cells (RBC) and Lipid profile like High Density Lipoprotein (HDL) level and help to increase High Density Lipoprotein (HDL) and decrease Low Density Lipoprotein (LDL) level among the college level obese men compared to control. In all cases 0.05 level of significance was fixed to the hypotheses.

2.1 Training Program

The training program of 6-weeks for yogic practice was developed. Warm up and limbering down had done before and after the training program. The yogic training program was given to experimental group for 6 weeks of one session in the morning between 7.00 A.M. to 9.00 A.M. for six days in a week. The training program consists of different types of yogic activities which are mentioned below in Table 1.

Table 1: Yogic training program

S. No	Yogic Exercise	Repetition	Set
1.	Suryanamaskar (12 count)	4	1
2.	Kapalabhati	300	2
3.	Om Chanting	10	3
4.	Savasana	25	1
5.	Tadasana	5	1
6.	Halasana	5	1

3. Results and Findings

The effect of dependent variable on White Blood Cells and Red Blood Cells and High Density Lipoprotein and Low Density Lipoprotein was determined through the collected data by using appropriate Paired ‘t’-test was applied to analyze the Pre and Post-test differences. The level of significance was set at 0.05 levels ($p < 0.05$). Statistical techniques and results are presented below. Table 2 - 5.

Table 2: Significance Of Differences Between Pre-test And Post-test Means Of Experimental Group And The Control Group With Regard On White Blood Cells.

Groups	Test	Mean	SD	SEM	't' Value
Experimental Group	Pre-test	9.11X10 ⁹ L	.38	.098	4.416
	Post-test	9.26X10 ⁹ L	.43	.11	
Control Group	Pre-test	9.10X10 ⁹ L	.43	.11	.900
	Post-test	9.08X10 ⁹ L	.39	.10	

Significance value 0.05 level – table value 2.15

Table 3: Significance of Differences Between Pre-test And Post-test Means Of Experimental Group And The Control Group With Regard On Red Blood Cells

Groups	Test	Mean	SD	SEM	't' Value
Experimental Group	Pre-test	5.81X10 ¹² L	.15	.040	3.568
	Post-test	5.88X10 ¹² L	.12	.032	
Control Group	Pre-test	5.84X10 ¹² L	.18	.047	.190
	Post-test	5.86X10 ¹² L	.33	.087	

Significance value 0.05 level – table value 2.15

Table 2 exhibits the results of experimental group and the control group in a tabular figure for the variable ‘White Blood Cells’. In case of experimental group, statistical deduction stated that the values of mean and standard deviation for the variable ‘White Blood Cells’ was 9.11 ±.38 (pre-test) and 9.26 ±.43 (post-test). Whereas for control group the pre-test and post-test values were 9.10 ±.43 and 9.08 ±.39, respectively. While testing the difference of mean between the pre-test and post-test of experimental group the ‘t’-value for WBC came out to be 4.416 and for the control group it lies at .900, which was

insignificant at .05 level of significance. Hence, it may be interpreted that WBC of experimental group has significantly improved after 6-weeks yogic practices. The graphical representation of mean values of experimental and control group for white blood cells are presented in Figure 1.

Table 3 exhibits the results of experimental group and the control group in a tabular figure for the variable ‘Red Blood Cells’. In case of experimental group, statistical deduction stated that the values of mean and standard deviation for the variable ‘Red Blood Cells’ was 5.81 ±.15 (pre-test) and 5.88

±.12 (post-test). Whereas for control group the pre-test and post-test values were 5.84 ±.18 and 5.86 ±.33, respectively. While testing the difference of mean between the pre-test and post-test of experimental group the ‘t’-value for RBC came out to be 3.568, which was significant at 0.05 level and for the control group it lies at .190, which was insignificant at .05 level of significance. Hence, it may be interpreted that RBC of experimental group has significantly improved after 6-weeks yogic training. The graphical representation of mean values of experimental and control group for red blood cells are presented in Figure 2.

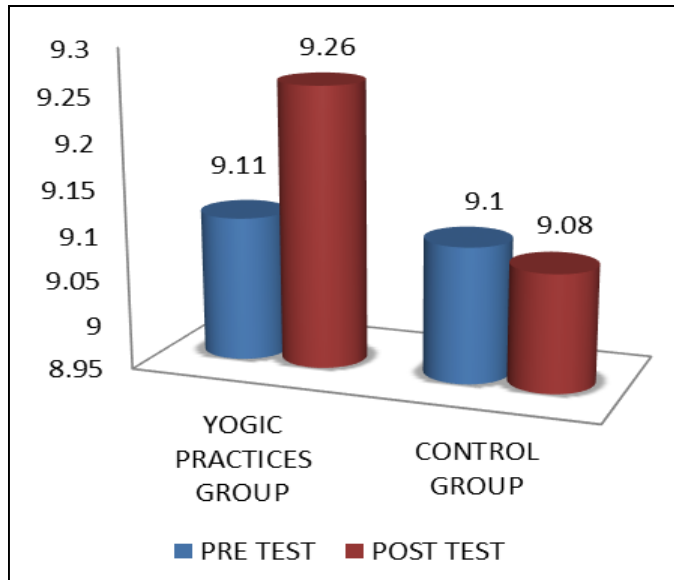


Fig 1: Pre-test and post-test mean values of experimental and control group on variable White Blood Cells.

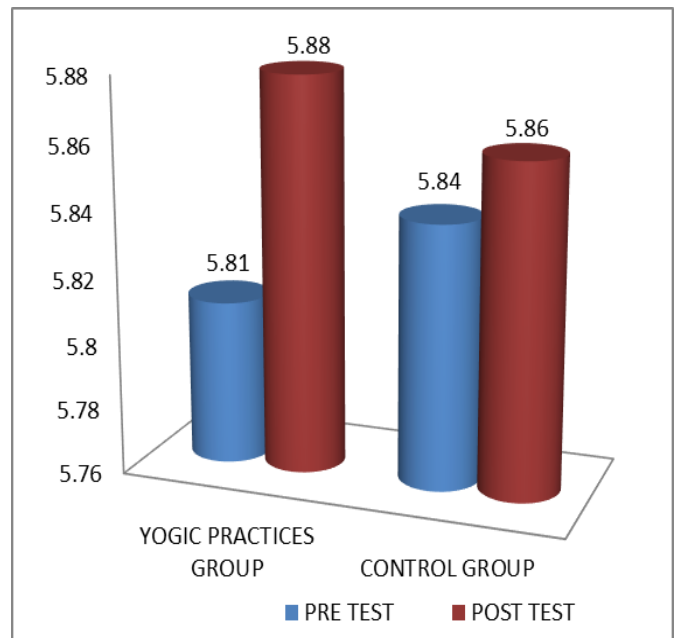


Fig 2: Pre-test and post-test mean values of experimental and control group on variable Red Blood Cells.

Table 4: Significance of differences between pre-test and post-test means of experimental group and the control group with regard on high density lipoprotein

Groups	Test	Mean	SD	SEM	't' Value
Experimental Group	Pre-test	45.67	7.42	1.91	4.583
	Post-test	47.06	6.39	1.65	
Control Group	Pre-test	45.40	7.79	2.01	1.713
	Post-test	43.26	8.01	2.06	

Significance value 0.05 level – table value 2.15

Table 5: Significance Of Differences Between Pre-test And Post-test Means Of Experimental Group And The Control Group With Regard On Low Density Lipoprotein.

Groups	Test	Mean	SD	SEM	't' Value
Experimental Group	Pre-test	165.33	3.99	1.03	11.829
	Post-test	159.06	4.60	1.19	
Control Group	Pre-test	165.46	4.64	1.20	.154
	Post-test	165.66	5.20	1.34	

Significance value 0.05 level – table value 2.15

Table 4 exhibits the results of experimental group and the control group in a tabular figure for the variable ‘High Density Lipoprotein’. In case of experimental group, statistical deduction stated that the values of mean and standard deviation for the variable ‘High Density Lipoprotein’ was 45.67 ± 7.42 (pre-test) and 47.06 ± 6.39 (post-test). Whereas for control group the pre-test and post-test values were 45.40 ± 7.79 and 43.26 ± 8.01, respectively. While testing the difference of mean between the pre-test and post-test of experimental group the ‘t’-value for HDL came out to be 4.583, which was significant at 0.05 level and for the control group it lies at 1.713, which was insignificant at .05 level of significance. Hence, it may be interpreted that HDL of experimental group has significantly improved after 6-weeks yogic training. The graphical representation of mean values of experimental and control group for high density lipoprotein is presented in Figure 3.

Table 5 exhibits the results of experimental group and the control group in a tabular figure for the variable ‘Low Density Lipoprotein’. In case of experimental group, statistical deduction stated that the values of mean and standard deviation for the variable ‘Low Density Lipoprotein’ was 165.33 ± 3.99 (pre-test) and 159.06 ± 4.60 (post-test). Whereas for control group the pre-test and post-test values were 165.46 ± 4.64 and 165.66 ± 5.20, respectively. While testing the difference of mean between the pre-test and post-test of experimental group the ‘t’-value for LDL came out to be 11.829, which was significant at 0.05 level and for the control group it lies at .154, which was insignificant at .05 level of significance. Hence, it may be interpreted that LDL of experimental group has significantly lowered after 6-weeks yogic training. The graphical representation of mean values of experimental and control group for high density lipoprotein is presented in Figure 4.

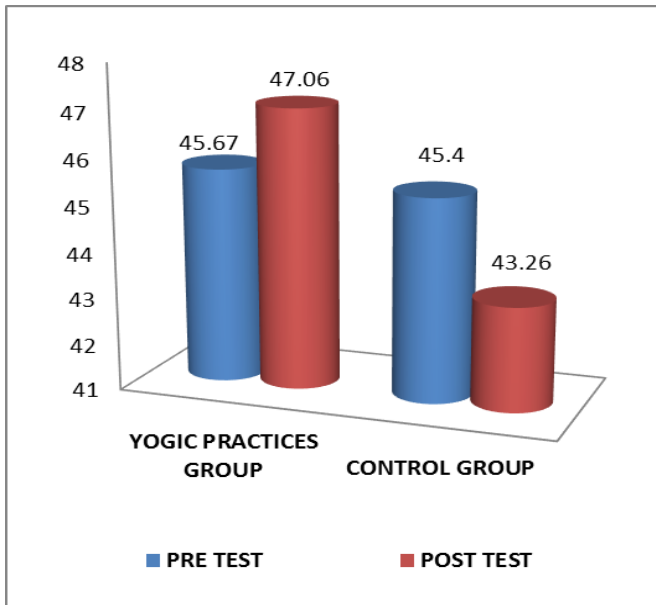


Fig 3: Pre-test and post-test mean values of experimental and control group on variable HDL.

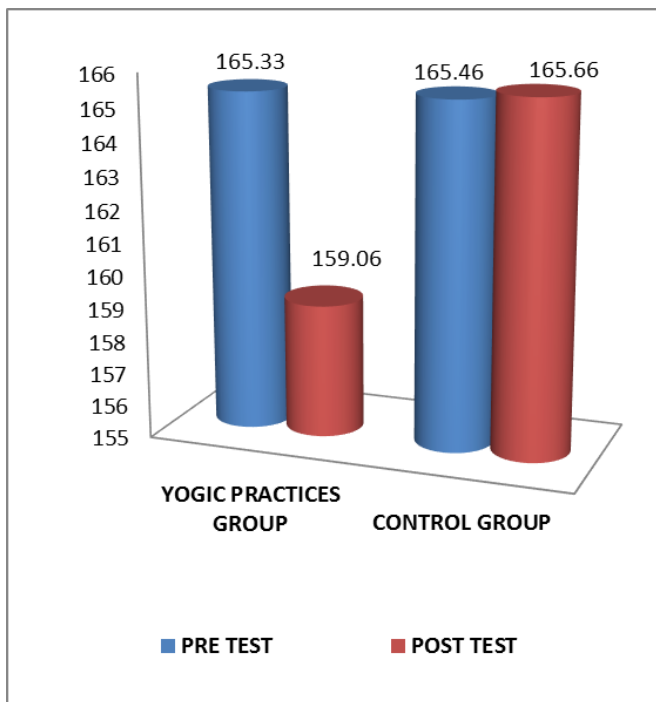


Fig 4: Pre-test and post-test mean values of experimental and control group on variable LDL.

It has been observed from the mean values of both groups in Table 2 and 3 that there is significant improvement of white blood cells and red blood cells in case of experimental group only. The above results might be due to shorter span of 6 weeks yogic practices and difficulties in training the white blood cells through 6 weeks yogic practices. We had performed comprehensive literature search on effect of yoga on hematological (blood cells count), which supported our findings in this study.

A perusal at findings of Table 4 and 5, it has been observed that there is a significant improvement in the level of High Density Lipoprotein and lowering in the level of Low Density Lipoprotein in case of experimental group only through 6 weeks yogic practices. The review showed that yoga practice had beneficial effects on HDL and LDL cholesterol level.

4. Conclusion

Results of this study, it was concluded that through the 6 weeks of yogic practices obese college men students were significantly improved their Hematological variables like total WBC and RBC counts compare to control group. In addition to this obese college men enhancing their HDL level and lowering the LDL level in the blood through 6 weeks of yogic practices compare to control group.

5. Recommendation

The following recommendation is based on the results of these findings for the further study and the related literature. Hence, it is recommended that yogic practices very importance to the obese for college men students which will helps to develop comprehensive physical, physiological and psychologically fitness and decrease obese level. Hence the students can be very energetically and alive in the class room and also healthy in their life style. Therefore, many similar studies may be conducted on blood related components and energy related components variables.

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