



P-ISSN: 2394-1685  
E-ISSN: 2394-1693  
Impact Factor (ISRA): 5.38  
IJPESH 2018; 5(4): 25-28  
© 2018 IJPESH  
www.kheljournal.com  
Received: 16-05-2018  
Accepted: 18-06-2018

**R Varathan**  
Physical Director, Sankar  
Polytechnic College, Sankar  
Nagar, Tirunelveli, Tamil Nadu,  
India

## Effect of yoga and aerobic training on total cholesterol and triglycerides variables in middle aged diabetic patients

**R Varathan**

### Abstract

**Introduction:** Diabetes is related to the impaired glucose tolerance of the body, where insulin functioning is affected. The beneficial effect of the practice of Yoga and other exercises like Aerobic Training on diabetes includes direct influence on pancreatic secretion by rejuvenation of the pancreatic cells, through alternate abdominal contractions and relaxations, during asana.

**Methods:** The purpose of the study was to find out the effects of yoga and Aerobic Training on selected biochemical variables total cholesterol and triglycerides among diabetic patients. To achieve this purpose, sixty men patients who were not involved in any vigorous physical training programme, age ranging from 35 to 45, undergoing treatment for hypertension and type-II diabetes mellitus, were selected from in and around Pettai, Tirunelveli city. The selected subjects were divided into three groups at random with 20 each. Twenty patients in each category (type II Diabetes and Hypertension) would serve as control group and the remaining forty would undergo systematic Yoga training and Aerobic training in the department of physical education and sports sciences, under the supervision of physician, The M.D.T Hindu College, Tirunelveli. The control group did not undergo any special training programme. The remaining subjects constituted an experimental group who underwent Yoga and Aerobic Training Programme. The selected subjects were medically examined by a qualified medical person for undergoing the training programme.

**Conclusions:** Analysis of data using ANACOVA showed that there were significant difference between experimental groups and control group on selected variables total cholesterol and triglycerides. The significant improvement in the above said variables highlights the effect of aerobic training and yoga training design for this study, its systematic progressive loading pattern and appropriate recovery phase between sessions during the training period. The control group did not participate any kind of training programme specifically for improving the selected variable level.

**Keywords:** Yoga and aerobic training, total cholesterol and triglycerides

### Introduction

Diabetes is a disease where there is an increased level of sugar in the blood due to diminished effectiveness or lack of insulin that is produced in the body. Insulin is a hormone that is needed to convert sugar, starches and other foods into energy needed for daily life. Insulin is a hormone secreted by beta cells of islets of langerhans, situated in pancreas. The glucagons produced by Alfa cells have anti-insulin action. Both in unison keep a constant glucose level in the blood. Insulin also acts as gate keeper, where, only in its presence can the blood glucose enter the body cells and provide fuel and energy to work. In diabetes, the cellular fuel is thus compromised, while excess of glucose remains in the circulation. If the Diabetes is mild it could be controlled with diet restriction and physical exercise. When these measures cannot control the problem, a doctor may prescribe drugs or insulin in specific doses after doing a thorough check-up and examining the blood sugar levels. Mild diabetes may be controlled by diet restriction. In any case even with active treatment of the disease, a strict diet schedule will help a person to lead a comfortable life.

The cause of diabetes may vary, although both genetic and environmental factors such as obesity, stress, lack of exercise, smoking, consumption of alcohol, fatty foods, etc., appear to play vital roles. Symptoms of diabetes include tiredness, thirst, feeling uncomfortable, frequent urination, dryness in the mouth, wounds don't heal quickly etc.

**Correspondence**  
**R Varathan**  
Physical Director, Sankar  
Polytechnic College, Sankar  
Nagar, Tirunelveli, Tamil Nadu,  
India

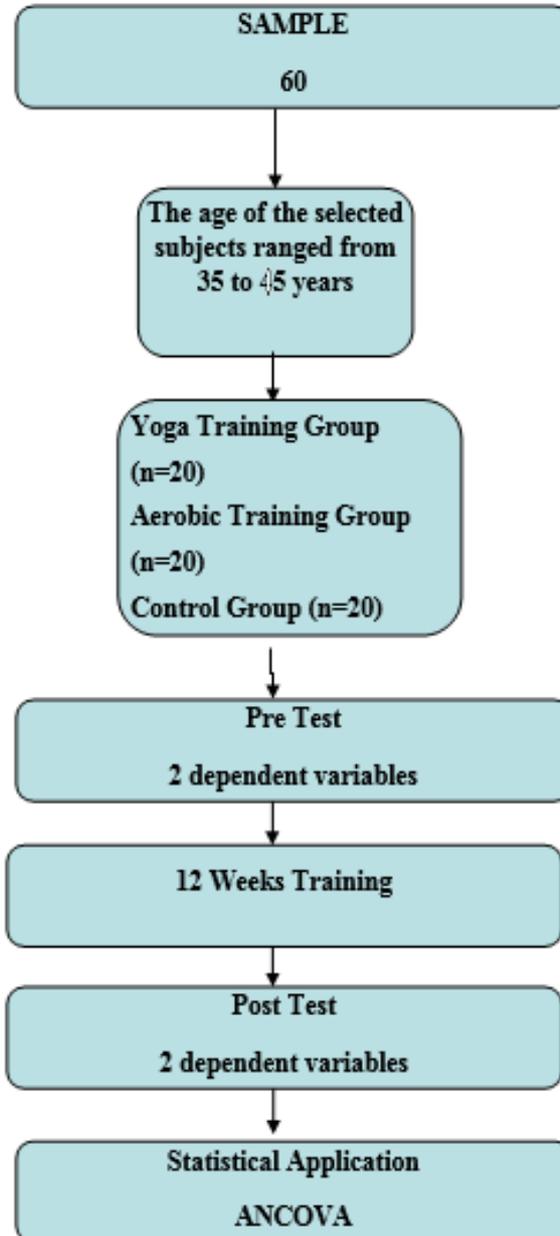
Diabetes results in the body's inability to keep the amount of sugar in the blood at a healthy level. High blood sugar usually results in health problems. These include heart attacks, strokes, frequent infections, eye problems that can lead to blindness and kidney failure. Uncontrolled diabetes may cause damage to blood vessels, nerves and affects the immune system. Maintaining glucose in the blood at the right level is

all that has to be done to avoid diabetes.

**Purpose of the study**

The purpose of this study was to find out the Effect of Yoga and Aerobic Training on Total Cholesterol and Triglycerides Variables in Middle Aged Diabetic Patients.

**Methodology**



**Results**

**Table 1:** Summary of Mean and Dependent ‘T’ Test for the Pre and Post Tests on Total Cholesterol and Triglycerides of Experimental and Control Groups

Variable	Tests	Yoga Training Group	Aerobic training Group	Control Group
Total Cholesterol	Pre Test Mean	226.41	230.59	196.39
	Post Test Mean	196.73	186.29	196.83
	Adjusted Post Test Mean	223.94	236.00	193.85
	‘t’ value	7.00	8.35	0.67
Triglycerides	Pre Test Mean	125.80	133.07	105.54
	Post Test Mean	105.31	102.01	104.92
	Adjusted Post Test Mean	103.60	97.44	111.20
	‘t’ value	5.58	8.76	0.91

\*Significant at .05 level. The table value required for .05 level of significance with df 19 is 2.093.

The table I show that the obtained dependent t-ratio values between the pre and post test means on Total Cholesterol and Triglycerides of Yoga training, aerobic training and control groups are 7.00, 8.35 and 0.67, 5.58,8.76 and 0.91 respectively. The table value required for significant difference with df 19 at .05 level is 2.093. Since, the obtained 't' ratio value of experimental group are greater than

the table value, it is understood that training programmes had significantly improved the performance of Total Cholesterol and Triglycerides. However, the control group has not improved significantly as the obtained 't' value is less than the table value, because they were not subjected to any specific training.

**Table 2:** analysis of covariance of yoga training, aerobic training and control groups total cholesterol and triglycerides

Variable	Source Of Variance	Sum Of Squares	Df	Mean Squares	Obtained 'F'-Ratio
Total Cholesterol	Pre Test	4089.96	1	4089.96	13.43*
	Groups	17067.78	2	8530.89	28.01*
	Error	17056.13	56	304.57	
Triglycerides	Pre Test	1754.36	1	1754.36	16.49*
	Groups	1137.50	2	568.75	5.35*
	Error	5958.22	56	106.40	

\*significant at .05 level of confidence. (the table value required for significance at .05 level with df 1 & 56 and 2 & 56 are 4.02 and 3.17 respectively).

From the table II, the obtained F-ratio for pretest is 13.43 and 16.49 which is greater than the table value of 4.02 with df 1 and 56 required for significance at 0.05 level of confidence. The result of the study indicates that there was significant difference among the pretest means of yoga training, aerobic training and control groups on Total Cholesterol and Triglycerides.

Table II also shows that the obtained F-ratio value is 28.01 and 5.35 which is higher than the table value 3.17 with df 2 and 56 required for significance at .05 level. Since the value of F-ratio is higher than the table value, it indicates that there is significant difference among the adjusted post-test means of yoga training, aerobic training and control groups.

**Table 3:** Scheffe's Test for the Differences between the Adjusted Post Test Paired Means of Total Cholesterol and Triglycerides

Variable	Yoga Group			Mean Differences
	Yoga Group	Aerobic Training Group	Control Group	
Total Cholesterol	223.94	236.00		12.06*
	223.94		193.85	30.09
		236.00	193.85	42.15*
Triglycerides	103.60	97.44		6.16
	103.60		111.20	7.60
		97.44	111.20	13.76*

\* Significant at 0.05 level.

Table III shows that the adjusted posttest mean differences on Total Cholesterol and Triglycerides between the yoga training and aerobic training groups; yoga training and control groups; aerobic training and control groups were,42.15, 30.09 and 12.06, 13.76, 7.60 and 6.16 respectively. The values are greater than the confidence interval value 15.61, which shows significant difference at .05 level of confidence.

It may be concluded from the results of the study that there is a significant difference in Total Cholesterol and Triglycerides between the yoga training and aerobic training groups; yoga training and control groups; aerobic training and control groups;

It was concluded that of Aerobic training groups is better than Yoga training and control groups in improving Total Cholesterol and Triglycerides.

**Discussion**

The results of the study indicated that there is no significant difference in Cholesterol between the yoga training and aerobic training groups but there is significant difference in Cholesterol between yoga training and control group aerobic training and control group. Both the training gives equal

improvement.

The results of the study indicated that there is no significant difference in Triglycerides between the yoga training and aerobic training groups, yoga training and control groups. There is significant difference between aerobic training and control group. It was concluded that of Aerobic training group is better than yoga training and control group in improving Triglycerides.

The most noteworthy finding related to lipids in our study was the beneficial reduction in triglyceride and total cholesterol concentrations in the experimental groups after the aerobics and yoga training programme. In prior studies, significant reductions in blood triglycerides and total cholesterol concentrations after exercise have been reported in men and in women with some degree of regularity. This study has been adjudged with the findings of Manhothra (2004), Gill (2003), Durstine (2000), Ginsburg (1996), Lee (1995), Tsetsonis (1995) and Schriewer (1984).

**Conclusions**

Analysis of data using ANACOVA showed that there were significant difference between experimental groups and

control group on selected variables Total Cholesterol and Triglycerides. The significant improvement in the above said variables highlights the effect of aerobic training and yoga training design for this study, its systematic progressive loading pattern and appropriate recovery phase between sessions during the training period. The control group did not participate any kind of training programme specifically for improving the selected variable level.

### References

1. Ardy Fred Berg. The Facts on File Dictionary of Fitness, New York: Facts on File Publications, 1984.
2. Boule NG *et al.* Effects of exercise on glycemic control and body mass in type 2 diabetes mellitus: a meta-analysis of controlled clinical trials, JAMA, 2001; 12;286(10):1218-27.
3. Brenner BM *et al.* Effects of losartan on renal and cardiovascular outcomes in patients with type 2 diabetes and nephropathy. N Engl J Med. 2001; 345:861-9.
4. Bruce CR *et al.* Disassociation of muscle triglyceride content and insulin sensitivity after exercise training in patients with Type 2 diabetes, Diabetologia. 2004; 47(1):23-30.
5. Byrne Keivn P. Understanding and Managing Cholesterol: A Guide for Wellness Professionals, Champaign, Illinois: Human Kinetics Books, 1991.
6. Chapman MJ *et al.* Raising high-density lipoprotein cholesterol with reduction of cardiovascular risk: the role of nicotinic acid-a position paper developed by the European Consensus Panel on HDL-C. Curr Med Res Opin. 2004; 20(8):1253-68. Compact Oxford reference Dictionary, Oxford University Press, 2001, 372.
7. Seals DR, Hagberg JM, Allen WK, Hurley BF, Dalsky GP, Ehsani AA *et al.* Glucose tolerance in young and older athletes and sedentary men. Journal of Applied Physiology. 1984; 56:1521-1525.
8. Fagard RH, Cornelissen VA. Effect of exercise on blood pressure control in hypertensive patients. Eur J Cardiovasa Prev Rehabil. 2007; 14(1):12-7.
9. Fenicchia LM *et al.* Influence of resistance exercise training on glucose control in women with type 2 diabetes, Metabolism. 2004; 53(3):284-9.