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Effect of yoga on biochemical variables

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Abstract
The purpose of the study was to find out the effect of yoga therapy on biochemical variables among diabetic patients. The objective of the study is to determine the blood sugar, triglycerides and total cholesterol of diabetic patients and the effect of yoga asana on these variables. To achieve the purpose of the study, twelve middle aged men diabetic patients were selected from Tuticorin district. The age of the subjects was ranged from 45-65 years. The subjects performed selected yoga asana in the morning time for 30 – 40 minutes every day for 40 days which was given by the yoga expert. The biomechanical variables such as blood sugar, triglycerides and total cholesterol were selected as dependent variables. The selected variables were estimated before and after the yogic program of 40 days with the help of qualified Lab Technician. The single group pre and post test random group design was used as experimental design. The dependent "t" test was applied to determine the difference between the means of diabetic patients. The level of confidence was fixed at .05 levels. The result of the study shows that there was a significant reduction in blood sugar, triglycerides and total cholesterol between pre and post test. It was concluded that, there was a significant improvement on blood sugar, triglycerides and total cholesterol among diabetic patients due to yoga therapy. Hence it is recommended that, similar study may be attempted by changing the hematological variables, may be attempted by the state or national level young aged men and women, may be conducted for the cardiac patients.

Keywords: Blood sugar, triglycerides, total cholesterol and diabetics

Introduction

Yoga is an ancient philosophical and religious tradition which is thought to have originated in India in at least 1000 B.C. (Feuerstein, 1990) [2]. It refers to a large body of values, attitudes and techniques (Feuerstein, 1990) [2] whose primary objective is the pursuit of enlightenment or selfknowledge (Feuerstein, 1993) [3]. The word yoga is probably derived from the Sanskrit word "Yuj" which means to "unite" or "connect" and in the higher levels of yoga this is often said to mean the experience of union of the individual self with the universal self (Feuerstein, 1990) [2].

Yoga is the mental, physical, spiritual control, developed thousands of years ago in India. The joining of body and soul are achieved through the practice and mastering of specific physical postures called asana, breathing exercises called pranayama (Kogler, 1999).

Yoga therapy is the science of applying the various techniques of yoga in a variety of illnesses and conditions, to facilitate optimal health, healing and awakening. Classes are designed for the individual or group with a therapeutic focus for a specific health condition e.g. cancer, heart, prenatal, diabetes, multiple sclerosis (Yoga Therapy, 2010) [7].

Diabetes is a complex condition with a multitude of metabolic imbalances involving the regulation and utilization of insulin and glucose (sugar) in the body. Yoga's effectiveness at preventing and treating diabetes is due to its emphasis of a healthy diet and lifestyle as well as its ability to balance the endocrine system, massage and tone the abdominal organs, stimulate the nervous and circulatory systems, and reduce stress (Sahay, 1994) [6].

Statement of The Problem

The purpose of the study is to find out the effect of yoga therapy on biochemical variables among diabetic patients.

Methodology

The purpose of the study was to find out the effect of yoga therapy on biochemical variables among diabetic patients. The objective of the study is to determine the blood sugar, triglycerides and total cholesterol of diabetic patients and the effect of yoga asana on these variables. To achieve the purpose of the study, twelve middle aged men diabetic patients were selected from Tuticorin district. The age of the subjects was ranged from 45-65 years. The subjects performed selected yoga asana in the morning time for 30 – 40 minutes every day for 40 days which was given by the yoga expert. The biomechanical variables such as blood sugar, triglycerides and total cholesterol were selected as dependent variables. The selected variables were estimated before and after the yogic program of 40 days with the help of qualified Lab Technician. The single group pre and post test random group design was used as experimental design. The dependent "t" test was applied to determine the difference between the means of diabetic patients. The level of confidence was fixed at .05 levels.

Table 1: Name and Duration of Various Yogaasanas Included in Yogic Exercises

Name	Duration
Kapal- bhati	5-10mins per day
sarpasana	5-10 mins per day
Bhramari	5 times a day
shavasana	5 – 10 mins per day
Tadasana	¼ minute to one minute for adding ¼ minute per week.
Trikona-asana	¼ minute to 1 minute for each side, adding ¼ minute per week
Pashimottanasana	¼ minute to one minute for each side, adding ¼ minute per week

Analysis and Interpretations of Data

The data on biochemical variables are analysed and the obtained results are presented in Table 2.

Mean values of pre and post test among men diabetic patients on blood sugar, triglycerides and total cholesterol are graphically represented in figure 1.

Table 2: Summary of Mean and Dependent 'T' Test on Blood Sugar, Triglycerides and Total Cholesterol Between Pre And Post Test of Diabetic Patients

Sl. No	Dependent Variables	Test	Number	Mean	Standard Deviation	't' value
1	Blood Sugar	Pre-Test	12	262	56.90	9.36*
		Post Test	12	202.75	34.89	
2	Triglycerides	Pre-Test	12	254.08	34.05	8.18*
		Post Test	12	207.25	22.76	
3	Total Cholesterol	Pre-Test	12	295.16	39.63	14.03*
		Post Test	12	239.08	34.46	

*Significant at .05 level. (Table value required for significance at .05 levels for 't' with 11 is 2.20).

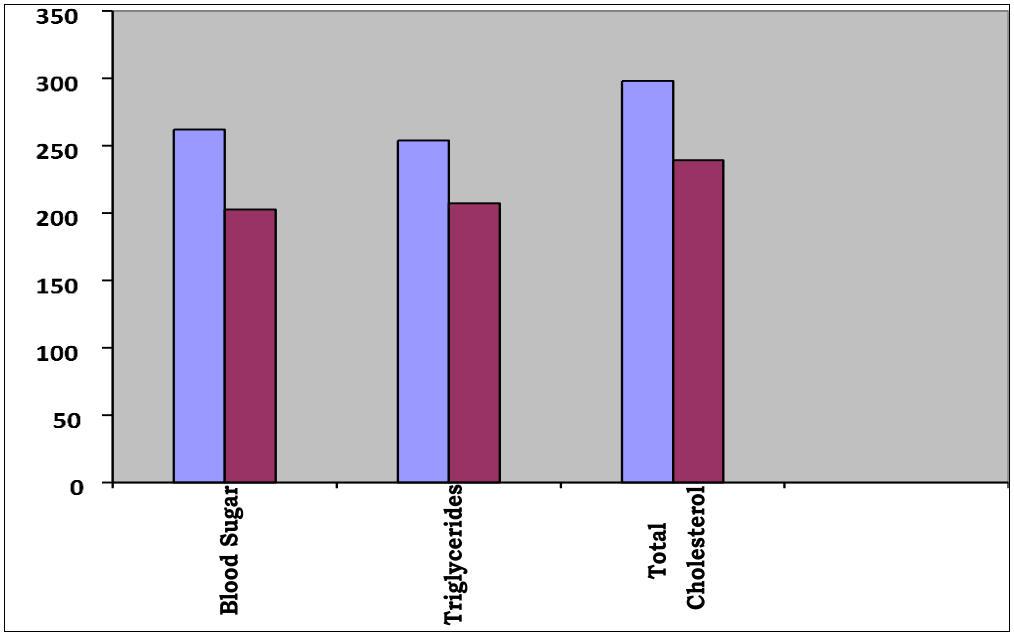

Fig 1: Mean Values of Pre And Post Test Among Men Diabetic Patients on Blood Sugar, Triglycerides and Total Cholesterol

Results and Discussion

Any systematic and scientific training will produce desirable effect if administered for a specific period. That systematically designed training develops dependent variables are very importance quilts for better performance in almost all sports and games. Here the 40 days of yogic program improves the selected variables.

The present study also shows a significant decrease in Blood Sugar (BS), Triglycerides (TG) and Total Cholesterol (TC) from its initial value after forty days of yoga-asana. Due to the yoga therapy, there was a significant reduction in the selected bio chemical variables although showing a reduction didn't show significant change. Various yoga-asana may be directly rejuvenating cells of pancreas as a result of which there may be increase in utilization and metabolism of glucose in the peripheral tissues, liver and adipose tissues through enzymatic process.

The findings of the present study were supported by the following research findings. Sahay *et al* have also reported a significant decrease in biochemical variables such as free fatty acids and a significant reduction in serum lipase activity in diabetics after Yoga practice. Singh *et al* (2002 & 2004) [4] also observed the similar findings in their study.

Hence it is concluded from the result of the study and also inferred from the above literature cited the bio chemical variables should be considered properly when the person getting the middle age to lead healthy life.

Conclusions

The following conclusions were drawn from the findings of the present study. They were

1. There was a significant improvement on blood sugar among men diabetics due to the effect of yoga therapy.
2. There was a significant improvement on triglycerides among men diabetics due to the effect of yoga therapy.
3. There was a significant improvement on total cholesterol among men diabetics due to the effect of yoga therapy.

Recommendations

On the basis of the results of the study the researcher suggests the following recommendations,

1. Similar study may be attempted by the state or national level young aged men and women.
2. Similar study may be attempted by changing the hematological variables.
3. Similar study may be conducted for cardiac patients.

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