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Influence of Yoga Practices and Swimming Programme on Insulin Level of Diabetic Patients

KEYWORDS

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1. INTRODUCTION

Good health is our most precious possession. One of the ways to improve physical fitness is by regular exercise. Healthy lifestyle is to optimal health and quality of life [3]. Diabetes is a silent killing metabolic disease. It is a condition in which the pancreas has no longer produces enough insulin or stops the production so that glucose in the blood cannot absorbed by the cells of the body.

Now the researchers found, physical inactivity is one of the main reasons for the cause of diabetes. Diabetes is a wasting disease in which the mechanism of strong glucose in the body is hindered. Glucose is derived from the food we eat, especially from the carbohydrates in the food, as a product of the process of digestion. Liver stores glucose in the form of glycogen. Glucose is the most important energy giving substance. The blood glucose level is 80 to 100mg. per 100ml of blood.

After a heavy meal containing great quantities of carbohydrate, it may raise to 150mg percent. Insulin influences carbohydrate metabolism in two ways: it helps to convert glucose in to glycogen in the liver and tissues and it increases the entry of glucose from the blood in to the cells and tissues, resulting in a reduction of the glucose level in the blood. In a normal adult, the pancreas secretes about 50 units of insulin eve ry day. Extremely high carbohydrate diets continued over a long time may be a cause of such exertion of the beta cells [1].

Glucagon's secretion enhanced by stress and tension. Yoga has been proven effective against stress and tension that in turn controls the Glucagon's secretion. Diabetes usually induced by obesity and hypertension. Yoga is effective in reducing unwanted weight and hypertension.

Yoga helps in enhancing insulin receptor on muscles that is enhanced by muscular relaxation and improved blood circulation thus reducing blood sugar. Yoga postures tend to exercise the pancreas that heals it and improves its function [8].

Swimming strengthens all the major muscles of the body parts, which is valuable in controlling diabetes. When exercising, muscle cells more efficiently absorb blood sugar [6].

This is how physical training absorbs blood sugar and it may increase insulin levels.

Blood samples were collected from the subjects before and after the training to find out the level of insulin. Standard CLIA lab test was used to find out the insulin level of diabetic patients [7].

2. METHODOLOGY

The purpose of the study was to determine the effect of yogic practices and swimming

Programme on insulin level of diabetic patients. The subjects of the study were sixty Diabetic patients selected from Rajkot District in Gujarat. Their age group ranges from thirty five to forty five. The subjects were randomly assigned into four groups with fifteen subjects in each. The Experimental Group I would consider, as control group not attend any treatment and the

Experimental group II would undergo freestyle swim for forty-five minutes in morning and evening that was 10 minutes swimming and 10 minutes rest. Third group would undergo Yoga practices for forty-five minutes in morning and evening. Fourth Group would undergo Yoga practices for forty-five minutes in morning and swimming Programme for forty-five minutes in evening. Above trainings would be given to the subjects for twelve weeks, six days per week.

Factors like habits, life style, daily routine, diet and others that may have an effect on the results of the study were not taken into consideration.

2.1. YOGAPRACTICESGIVEN

The following yogic practices were given to the experimental group III and IV, one minute for each posture and one-minute rest after each posture Surya Namaskar for five minutes.

Padmasana, Sarvangasana, Halasana, Salabasana, Bhujangasana, Dhanurasana, Matsyasana, Paschimottanasana, Yoga Mudrasana and Shavasana. Pranayama- Nadi suddhi Pranayam by alternate nostril for fifteen minutes, Meditation and Yoga Nidra for ten minutes.

3. ANALYSIS AND INTERPRETATION OF DATA

The data collected experimental group prior and after experimentation on insulin were statistically examined by using' test and analysis of covariance (ANCOVA). Schiffs post hoc test is used to find out the paired means differences. To test the significance, 0.05 level of confidence was used. [2]

Table 1
Mean and't' value on insulin level

Test	Control Group	Swimming Group	Yoga Group	Swimming & Yoga Group
Pre Test	0.593 ± 0.313	0.567 ± 0.232	0.600 ± 0.165	0.660 ± 0.083
Post Test	0.587 ± 0.320	0.827 ± 0.258	0.913 ± 0.141	1.227 ± 0.294
'T' test	0.323	10.217*	7.029*	7.059*

Significant at 0.05 level

(Table value required for 0.05 level of significance with df 14 is 2.15)

Table 2
Analysis of Covariance on Insulin Level

Control	Swimming	Yoga	Swimming Yoga	Source	ss	df	ms	f
0.597	0.860	0.918	1.180	Between	2.538	3	0.846	23.95*
				Within	1.943	55	0.035	

Significant at 0.05 level

(Table value required for 0.05 level of significance with df 55 is 2.18)

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Table 3
Schiff's test for differences of the adjusted post-test paired means on insulin level

Control	Swimming	Yoga	Swimming Yoga	Means Difference	Confidence Interval
0.597	0.860	--	--	0.263*	0.198
0.597	--	0.918	--	0.321*	
0.597	--	--	1.180	0.583*	
	0.860	0.918	--	0.058*	
	0.86	--	1.180	0.320*	
		0.918	1.180	0.262*	

Significant at 0.05 level

The pre and post-test mean values of Control, swimming, and Yoga and swimming & Yoga groups on insulin level were graphically presented in Figure I.

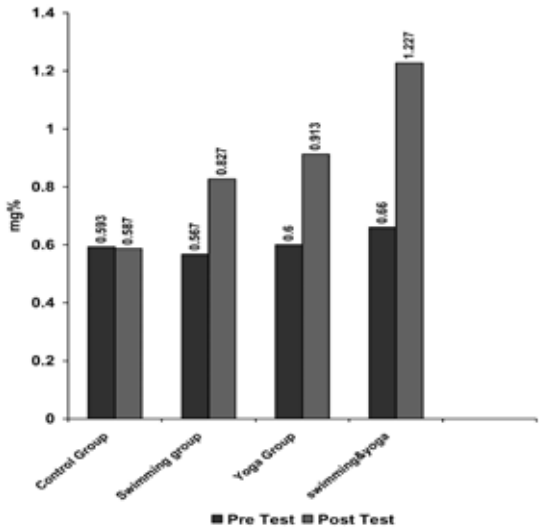

Figure I: Mean Scores on Insulin Level

The adjusted post-test mean values of Control, swimming, Yoga and swimming &Yoga groups on insulin level were graphically presented in Figure II.

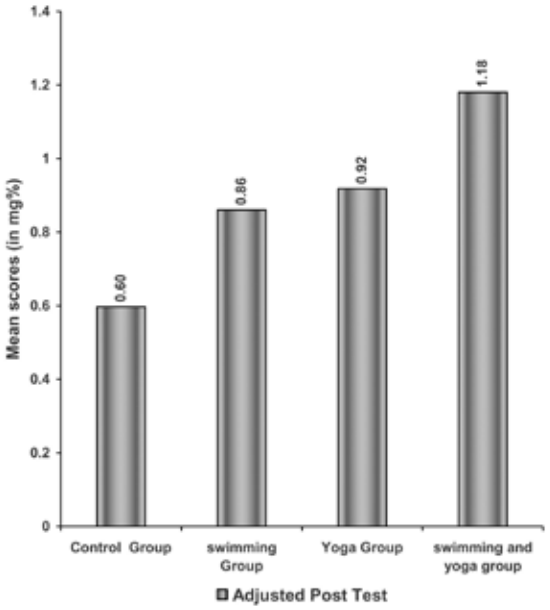

Figure Ii: Mean Scores on Adjusted Post Tests

4. DISCUSSION ON THE FINDINGS OF INSULINLEVEL

The analysis of co-variance of Insulin level indicated that, experimental group II (Swimming), experimental group III (Yoga), and experimental group IV (Swimming and Yoga), were significantly improved the level of insulin. It may be due to the effect of Yoga, swimming and Yoga and swimming training. From the schiffs post hoc test, the experimental group IV had increased the Insulin level more than the experimental group II&III. It was also showed that the experimental group III was better than experimental group II in increased the Insulin level.

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