

Influence of Yogic Exercises on Selected Physiological Variables among Diabetic Patients

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Abstract – The purpose of the study was to investigate the influence of yogic exercises on physiological variables among diabetic patients. To facilitate the study, twenty-four subjects were selected in the age group of 40 to 55 years. They were divided into two equal groups with twelve subjects each in control group and experimental group. Two groups were equated on the random blood sugar level value at rest. Group I acted as a control group and group II acted as an experimental group which underwent selected yogic exercises for eight weeks. Pre-test and post-test data were collected before and after the training period. To test for the significant mean difference between the groups, ‘t’ test was used and tested for 0.05 level of significance. The results of the study indicated that eight weeks of selected yogic exercises decrease the level of random blood sugar and mean arterial pressure of diabetes patients.

Key Words: Diabetic Patients, Yogic Exercises, Blood Sugar and Arterial Blood Pressure.

INTRODUCTION

In diabetic patients sugar can be mobilized from the liver, kidneys and also from proteins by “cori cycle” which is the cause for high blood sugar in the blood even when food is not consumed. The clinical manifestation of diabetes is very simple and gradual in most cases. The tissues are not utilizing glucose consequently glucose accumulates in the blood stream (hyperglycemia) and spills over into the urine (Glycosuria). Diabetes is “starvation amidst plenty” is noticed (Whichester, N.M. 1969). The mean arterial pressure (MAP) is the average arterial pressure throughout one cardiac cycle, systole, and diastole. MAP is influenced by cardiac output and systemic vascular resistance, each of which is under the influence of several variables (Daniel DeMers and Daliah Wachs, 2019). At high heart rates, mean arterial pressure is more closely approximated by the arithmetic mean of systolic and diastolic pressures because of the change in shape of the arterial pressure pulse (Gavin J. Reid and John M. Thomson, 1984). Yogasana is not only to develop the muscles and the body but also to regulate the proper activities of all the internal organs and glands that affect the nervous system and that which control our wellbeing to a much greater degree than we actually suppose (Indira Devi, 1967). The study of yoga is fascinating to those with a philosophical mind. It is a practical holistic philosophy designed to bring about profound

state of well-being to body, mind and spirit. Yoga is also said to be harmony. It is thus an integral subject, which takes into consideration man as a whole. The aim of yoga is to devise ways and means of helping the body and mind to maintain their state of balance. Yoga helps one to achieve better emotional and intellectual concentration (Karen Ross, 1973).

METHODOLOGY

The purpose of the research was to investigate the influence of yogic exercises on selected physiological variables among diabetic patients. To facilitate the research, twenty-four subjects from Valangaiman, Thiruvarur district, Tamilnadu were selected and the age ranged between 40 and 55 years. They were divided into two equal groups with twelve subjects each in control group and experimental group. Two groups were equated on the random blood sugar level value at rest. The control group was not undergo any treatment. The experimental group underwent selected yogic exercises such as Trikonasana, Vajrasana, Bhujangasana, Dhanurasana, Halasana, Salabhasana Ardha-salabhasana and Sarvangasana five days in a week for eight weeks. The physiological variables such as blood sugar and mean arterial pressure were selected as criterion variable. The O-Toluidine method (mg/dl) was used to find the glucose level in the blood. The mean arterial pressure was measured with the help of stethoscope

and Sphygmomanometer (mm Hg) and by using the following formula: $P\ mean = Diastolic\ pressure + 1/3\ pulse\ pressure$. Where the pulse pressure is the difference between systolic pressure and diastolic pressure (Edward L. Fox & Donald K. Mathews, 1981). Pre-test and post-test data were collected before and after the training period.

Experimental Design and Statistical Procedure

Since equated groups design was used with the pretest score of random blood sugar level being equated for the control group and experimental group. The mean difference between posttest random blood sugar levels were analyzed by using ‘t’ test and the significant level was fixed at 0.05.

RESULTS

Table I

Mean, Mean Difference, Standard Deviation, Standard Error of the Mean and ‘t’ Value for Blood Sugar and Mean Arterial Blood Pressure of Control Group and Experimental Group

Variables	Groups	Mean	MD	SD	SEM	Obtained ‘t’ value	Required ‘t’ value
Blood Sugar	Control Group	184.42		24.56			
	Experimental Group	135.08	49.34	4.93	6.99	7.058*	2.179
Arterial Blood Pressure	Control Group	85.97		4.79			
	Experimental Group	82.16	3.81	3.8	1.52	2.505*	2.179

* Significant 0.05 level
(Table value required is 2.179 for 11 degrees of freedom)

As for as physiological variable blood sugar concern, the mean and standard deviation values of control group and experimental group are 184.42 & 24.56 and 135.08 & 4.93 respectively. The mean differences of control and experimental group is 49.34 and the standard error of the mean is 6.99. The obtained ‘t’ value 7.058 is greater than the required ‘t’ value of 2.179 to be significant at 0.05 level. As for as physiological variable arterial blood pressure concern, the mean and standard deviation values of control group and experimental group are 85.97 & 4.79 and 82.16&3.8 respectively. The mean differences of control and experimental group is 3.81 and the standard error of the mean is 1.52. The obtained ‘t’ value 2.505 is greater than the required ‘t’ value of 2.179 to be significant at 0.05 level. The obtained mean difference of blood sugar and arterial blood pressure are 49.34&3.81 respectively due to yogic exercises performed by the experimental group.

DISCUSSION ON FINDINGS

The result shows that there was a significant difference among control group and experimental group in the random blood sugar level and the mean arterial pressure. The mean values showed that

experimental group which underwent yogasana had lower random blood sugar level and lowered mean arterial pressure when compared with control group. The result of the study is online with Mani Prasad. V (2016) concluded that twelve weeks of yogic practices and brisk walking significantly altered physiological variable of mean arterial blood pressure among diabetic patients. Lorenzo A Gordon et. al. (2008) also concluded that hatha yoga exercise has therapeutic preventative and protective effects in type II diabetes by decreasing oxidative stress. This may have direct impact on the use of Hatha yoga exercise as a safe therapeutic modality in diabetes mellitus. Finally, Satarupa Dash and Atanu Kumar Thakur were concluded that yoga asana and Pranayama may be used as an adjunct to medical therapy to optimize the biochemical parameters. Yoga Therapy also improves the status of diabetics, in terms of reduction of drugs doses, physical and mental alertness and prevention of complication.

CONCLUSION

It was concluded that the diabetes patients have reduced random blood sugar level and arterial blood pressure than the control group due to eight weeks of yogic exercises.

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