



EFFECT OF WALKING AND SELECTED ASANAS ON BLOOD SUGAR AND LIPID PROFILE OF AGED PERSONS

Physical Education

**Dr. Binod
Chowdhary***

Associate Professor, Seva Bharati Mahavidyalaya, Kapgari. Paschim
Medinipur*Corresponding Author

ABSTRACT

Physical activity may increase high-density lipoprotein levels and reduce cholesterol and triglyceride concentrations. However, patients with diabetes mellitus are usually unable to maintain the level of recommended physical activity due to various reasons such as age, obesity, cardiovascular disease, and other complications. One of the physical activities that can be performed by diabetes mellitus patients is Yoga Therapy. Yoga exerts a beneficial effect on insulin kinetics and the resulting lipid profile. Yoga helps redistribute body fat and decreases obesity which may lead to insulin resistance. Yoga is generally safe, simple to learn, and can be practiced by even ill, elderly or disabled individuals. Yoga has been shown to have therapeutic benefits for individuals with a wide range of health conditions. The present study was conducted to assess the effect of 8 weeks of walking and asanas on blood sugar and lipid profile in elder person. **Methods:** Twenty elderly (age range 40 to 65 years) person were selected from Jhargram old age club and randomly divided into two groups (n=10) of walking & asanas group and control group. Practice group were subjected to regular Walking & Asanas for 8 weeks (45 minutes per session), while the control group did not participated any regular activity. The dependent variables were fasting plasma glucose, post-prandial blood sugar, total cholesterol, triglycerides, low density lipoprotein, very low density lipoprotein and high density lipoprotein and were examined before and after 8 weeks of training intervention in both groups. **Results:** A significant ($p \leq 0.05$) decrease in fasting plasma glucose, post- prandial blood sugar, total cholesterol, triglycerides, low density lipoprotein and very low density lipoprotein; with a significant ($p \leq 0.05$) increase in high density lipoprotein level from its initial value; while showing insignificant result in control group. **Conclusions:** It may be concluded that adoption of walking and practice of asanas on long term basis would bring proper control of blood sugar and lipid profile levels in aged person.

KEYWORDS

Walking, Asanas, Blood sugar, Lipid profile.

Introduction-

Physical activity may increase high-density lipoprotein levels and reduce cholesterol and triglyceride concentrations. However, patients with diabetes mellitus are usually unable to maintain the level of recommended physical activity due to various reasons such as age, obesity, cardiovascular disease, and other complications. One of the physical activities that can be performed by diabetes mellitus patients is Yoga Therapy. Yoga exerts a beneficial effect on insulin kinetics and the resulting lipid profile. Yoga helps redistribute body fat and decreases obesity which may lead to insulin.

India has more diabetics than any other country in the world, according to the International Diabetes Foundation. According to recent estimates, approximately 51 million people was diabetes in 2010 and by 2030, 87 million people is expected to have diabetes in India. Keeping in view the alarming increase in the incidence and prevalence of diabetes in India, WHO has declared India as the- Diabetic Capital of the World. Type 2 diabetes mellitus is a global health problem and one of the leading causes of morbidity and mortality for 90-95% of all diabetic cases. The major risk factor for coronary artery disease in diabetes mellitus is dyslipidemia. The characteristic features of diabetic dyslipidemia are a high plasma triglyceride concentration, low high density lipoprotein (HDL) concentration and increased concentration of small dense low-density lipoprotein (LDL) particles. Insulin resistance leads to increased flux of free fatty acids and hence the lipid changes. Coronary artery disease is the most important cause of death and disability among older women. By the year 2015, cardiovascular mortality is likely to rise to 90% in females in India. High circulating serum cholesterol, low-density lipoprotein-cholesterol (LDL-C) and serum triglycerides are major risk factors of this disease. The modification of lipid profile may be important both in the prevention and control of coronary heart disease. Behavioral methods are recommended by the National Cholesterol Education Programme as the first line of prevention and treatment for hypercholesterolemia and other risk factors. Yoga is an ancient traditional Indian, psychological, physical and spiritual exercise practice that has been studied for several decades for its role in the management of numerous chronic diseases. It is a form of physical activity consisting of various postures (Asana). Yoga is generally safe, simple to learn, and can be practiced by even ill, elderly or disabled individuals. Yoga has been shown to have therapeutic benefits for individuals with a wide range of health conditions. It seems that, yoga improves psychological conditions to manage stress, reduce anxiety and negative emotions, and increase positive emotions and to achieve emotional balance. Calderon et al. and Mahajan et al. conducted a

study on subjects with mild to moderate hypertension and reported that yoga can play an important role in risk modification for cardiovascular diseases. Another study had reported a better lipid profile in long and medium term mediators when compared to non mediators. In view of these observations, the present study was undertaken to assess the effect of Walking & Asanas on blood sugar and the lipid profile in aged person.

Methodology:

Randomized control study was conducted in aged person of Jhargram, West Bengal, India. Twenty aged person in the age range of 45-65 years were selected for this study. The subjects were randomly divided into two groups equally; of which first group underwent walking & asanas for 45 mints session along with the conventional medicines. (First 15 mint. Walking, 5 mints, rest then practice of selected asanas for 25 mints.). Blood lipid analyses were performed at the Jhargram Hospital Pathological Laboratory. All the statistical calculations were done with the help of SPSS software Version 17. To find out the mean and standard deviation of the selected variables, descriptive statistics were employed. In order to find out the effects of training on lipid profiles of aged person with type 2 diabetes mellitus, the Analysis of Covariance (ANCOVA) was used and the F-ratio was found out. Whenever the F-ratio was found significant, Least Significant Difference (LSD) post hoc test was applied to determine which of the paired means difference was significant. In all the cases 0.05 levels of significance were fixed.

Selected asanas are as follow:

Surya Namaskar, Padmasanas, Halasanas, Yogamudra, Paschimatyasana, Ardha Matsyendrasanas,

Bhujangasana, Shalabhasana, Dhanurasana, Nawkasana, Sethu Bandhasanas, Shavasana,

Table 1: Descriptive Statistics and Analysis of Covariance for the pre and post test data of blood glucose of training group and control group.

Blood sugar	Training group		Control Group		F-Value
	Pre- Test	Post test	Pre- Test	Post test	
FPG	169.40 ± 15.75	159.60 ± 10.64	164.10 ± 26.13	164.50 ± 26.12	4.02
PPBG	229.72 ± 41.52	216.65 ± 41.30	230.60 ± 24.87	229.15 ± 25.56	7.46

* Significant at the 0.05 level.

Table 2: LSD test for the differences between the adjusted post tests paired means of Blood Sugar

Blood sugar	Adjusted post test means		Mean difference	Standard Error
	YPG	CG		
FPG	155.873	165.552	.9679	3.124
PPBG	225.301	229.201	3.900	1.514

* Significant at the 0.05 level

Table 3: Descriptive Statistics and Analysis of Covariance for the pre and post test and designated as training group.

Lipid Profile	Training Group		Control Group		F-Ratio
	Pre Test	Post Test	Pre Test	Post Test	
TC	204.72 ± 28.34	199.45 ± 29.13	205.81 ± 36.24	205.65 ± 36.35	21.78
TG	164.65 ± 27.47	159.82 ± 25.68	157.63 ± 21.35	158.31 ± 21.46	16.17
LDL	126.57 ± 14.42	122.38 ± 13.78	124.21 ± 16.25	124.10 ± 16.58	17.21
VLDL	34.21 ± 4.65	31.68 ± 3.25	32.90 ± 3.64	32.81 ± 3.16	7.28
HDL	48.57 ± 3.84	50.15 ± 3.26	46.38 ± 3.27	46.43 ± 3.14	19.68

* Significant at the 0.05 level

Table 4: LSD test for the differences between the adjusted post tests paired means of Lipid profile

Lipid Profile	Adjusted post test means		Mean difference	Standard Error
	YPG	CG		
TC	198.34	204.12	5.78	0.788
TG	153.66	158.83	5.17	0.726
LDL	121.89	124.62	2.73	0.534
VLDL	28.51	30.89	2.38	0.521
HDL	48.36	51.48	3.12	0.568

* Significant at the 0.05 level

Results:

From the Table 2, using ANCOVA, the F ratio for adjusted post-test means in Fasting Plasma Glucose (FPG) and Post-Prandial Blood Sugar (PPBS) of the subjects were 4.02 and 7.46 respectively, which were significant at 0.05 levels. From the Table 4, using ANCOVA, the F ratio for adjusted post-test means in Total Cholesterol (TC), Triglycerides (TG), Low-Density Lipoprotein (LDL), Very Low-Density Lipoprotein (VLDL), High-Density Lipoprotein (HDL) of the subjects were 21.78, 16.17, 17.25, 7.28, 19.68 respectively, which were significant at 0.05 levels. The above analysis of the data indicated that there were a significant difference in the adjusted post-test means among training group and control group. Further, to determine which of the paired means had a significant difference, the LSD post hoc test was applied and the result was presented in Table 3 and in Table 4.

Conclusion:

Based on our results, it can be said that, walking and asanas is one of the method to improve the quality of life. From the beneficial effects of training as seen in this study, it may be assumed that adoption of walking and asanas on long term basis would bring proper control of blood sugar and lipid profile levels in aged person.

REFERENCES:

1. Snehalatha, Ramachandran (2009) Insight into the mechanism of primary prevention of type 2 diabetes. Centre for Cellular and Molecular Biology.
2. Gupta V (2002) Diabetes in Elderly Patients. JK Practitioner 91(4): 258-259.
3. Albright A, Franz M, Hornsby G, Kriska A, Marrero D, et al. (2000) American College of Sports Medicine position stand. Exercise and type 2 diabetes. Med Sci Sports Exerc 32: 1345-1360.
4. Yang K, Bernardo LM, Sereika SM, Conroy MB, Balk J, et al. (2011) Utilization of 3-month yoga program for adults at high risk for type 2 diabetes: a pilot study. Evid Based Complement Alternat Med 2011: 257891.
5. Mooradian AD (2009) Dyslipidemia in type 2 diabetes mellitus. Nat Clin Pract Endocrinol Metab 5: 150-159.
6. Schenck-Gustafsson K (1996) Risk factors for cardiovascular disease in women: assessment and management. Eur Heart J 17 Suppl D: 2-8.
7. Das S, Yadav D, Narang R, Das N (2002) Interrelationship between lipid peroxidation, ascorbic acid and superoxide dismutase in coronary artery disease. Current Science 83(4): 488-491.

8. Mahajan AS, Reddy KS, Sachdeva U (1999) Lipid profile of coronary risk subjects following yogic lifestyle intervention. Indian Heart J 51: 37-40.
9. Calderon R Jr, Schneider RH, Alexander CN, Myers HF, Nidich SI, et al. (1999) Stress, stress reduction and hypercholesterolemia in African Americans: a review. Ethn Dis 9: 451-462.
10. Mondal S (2013) Science of exercise: ancient Indian origin. J Assoc Physicians India 61: 560-562.
11. Singh S, Malhotra V, Singh KP, Madhu SV, Tandon OP (2004) Role of yoga in modifying certain cardiovascular functions in type 2 diabetic patients. J Assoc Physicians India 52: 203-206.