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Comparative Effect of Selected Yoga Practice on Triglyceride Level Among Sedentary Male

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Abstract:
This study investigated the comparative effects of Suryanamaskar and Pragya Yoga on triglyceride level among sedentary middle-aged men. A total of 45 male participants (aged 35–55 years) from Gwalior, Madhya Pradesh, were randomly assigned into three groups: Suryanamaskar, Pragya Yoga, and control. The interventions were conducted for 45 minutes daily, five days a week, over an eight-week period. Suryanamaskar and Pragya yoga was considered the independent variable and Triglyceride was considered the dependent variable. Triglyceride 2 ml of blood in plain vial was taken as the criterion measures.
A 3 × 3 Mixed-Model ANOVA with Bonferroni post-hoc tests revealed significant reductions in triglyceride concentrations in both experimental groups compared to the control. While both practices demonstrated beneficial effects, the Suryanamaskar group showed slightly greater improvement than the Pragya Yoga group. However, the results of the present study indicate that both experimental groups—namely the Suryanamaskar group and the Pragya Yoga group—demonstrated a significant reduction after four and eight weeks of training. The analysis of the data further revealed that there was no significant change in Triglyceride in the control group.
The findings suggest that yogic practices, particularly Suryanamaskar and Pragya Yoga, can serve as non-pharmacological strategies for managing hypertriglyceridemia and improving metabolic health.

Keywords: Suryanamaskar, Pragya Yoga and Triglyceride.

Introduction: -Suryanamaskar emphasizes a sequence of dynamic, interconnected postures that establish continuity between the more static, traditional yoga poses. The practice is often described as a form of "linking," since it integrates bodily movement with controlled breathing. In this system, the breath governs both the rhythm of transitions and the duration of each posture.Pragya Yoga, conceptualized by Gurudev Pt. Shri Ram Sharma Acharya, introduces an innovative yet accessible approach to yoga aimed at fostering health and happiness. Designed to be simple and suitable for the wider population, it was named "Pragya Yoga" under the noble mission of Pragya Abhiyan. The principal center for learning this holistic discipline is Shantikunj, located near the Ganges and in the foothills of the Himalayas, often regarded as a modern-day Aranyak.
Triglycerides are one of the most important forms of lipids present in the human body and constitute a major source of stored energy. Chemically, triglycerides are composed of one glycerol molecule esterified with three fatty acid chains. They are synthesized primarily in the liver and adipose tissues and circulate in the bloodstream through lipoproteins. Following the consumption of food, especially diets rich in

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carbohydrates and fats, excess energy that is not immediately utilized by the body is converted into triglycerides and stored in adipose tissues for future metabolic requirements.

Under normal physiological conditions, triglycerides play a vital role in maintaining energy homeostasis, thermal insulation, and protection of internal organs. They also contribute significantly to cellular metabolism and overall physiological functioning. However, abnormal elevation of triglyceride levels in the blood, a condition known as hypertriglyceridemia, has emerged as a major public health concern in modern society. Elevated triglyceride concentrations are strongly associated with several metabolic and cardiovascular disorders such as obesity, type 2 diabetes mellitus, hypertension, metabolic syndrome, atherosclerosis, and coronary artery disease. Persistent elevation of triglycerides contributes to endothelial dysfunction and plaque formation in arterial walls, thereby increasing the risk of myocardial infarction and stroke.

The prevalence of hypertriglyceridemia has increased considerably due to rapid urbanization, sedentary lifestyles, unhealthy dietary practices, psychological stress, lack of physical activity, smoking, and alcohol consumption. Sedentary individuals are particularly vulnerable to lipid abnormalities because reduced physical activity adversely affects lipid metabolism and energy expenditure. Consequently, triglycerides have gained significant importance as a biochemical marker for evaluating cardiovascular risk and metabolic health.

In recent years, increasing attention has been directed toward non-pharmacological and holistic approaches for the management of elevated triglyceride levels. Lifestyle modifications such as regular physical exercise, balanced nutrition, stress management, and yogic practices have demonstrated beneficial effects on lipid metabolism. Yogic interventions including Surya Namaskar, pranayama, meditation, and Pragya yoga practices are believed to improve metabolic efficiency, enhance circulation, reduce stress-induced hormonal imbalance, and promote better utilization of lipids within the body. These practices may also contribute to autonomic balance and endocrine regulation, thereby supporting cardiovascular and metabolic health.

As the Suryanamaskar is a traditional approach in yoga with lots of importance and benefits and Pragya Yoga has developed over the limitation of Suryanamaskar for the beginners as the difficulty in performing the asana are entirely different in both the package. So the research angle in the study is that, is there any difference in the effect of Pragya Yoga and Suryanamaskar on Triglyceride.

METHODS

Selection of Subjects-A total of forty-five sedentary men, aged 35 to 55 years, were randomly selected from Gwalior, Madhya Pradesh, to participate in the study. The subjects were allocated into three groups of fifteen each. All participants shared a comparable socio-economic background and were assessed to be physically capable of undertaking the intervention program for which they were enrolled.

Selection of Variable-Based on various studies of physical variables, related research was reviewed to support the present investigation. Keeping in mind the specific purpose of the study, selected yogic intervention strategies—Suryanamaskar and Pragya Yoga—were applied to examine their effect on Triglyceride. For this measurement, 2 ml of blood was collected in a plain vial and used as the criterion measure.

Experimental Design-Mixed-Model design or between-within Randomized group design was used for the study.All the subjects were randomly divided into three groups each comprising 15 subjects. There are two factors in the design namely Group and Time duration, where Group is a between factor which is having three levels i.eA,B& C, and time duration is a within factor which is having three levels i.e 0 week, 4 weeks and 8 weeks.

Training and Practice of yogic intervention strategies:-The training of experimental given in the Yoga hall of Shri Ram colony, Gwalior. The Subject used practiced Pragya Yoga and Suryanamaskarbarefoot. The practice session was conducted for a period of 45 minutes in the morning i.e.7.00 am. to 7.45 am on Monday to Friday for duration of one Month.

Statistical Procedure:-Descriptive statistics were used to describe the nature and characteristics of the data. To see the interaction effect between time duration and groups, 3 × 3 Mixed Analysis of Variance (Between-Within) with Bonferroni Post-Hoc comparison test was applied. Eta Square was also calculated to see the effect size of significance. Level of significance was set at 0.05.

RESULTS

Table 1- Descriptive Statistics Of All Experimental Treatments With All The Three Level Of Time Duration For Triglyceride

Groups	Time (week)	N	Mean	SD	SEM	Min.	Max.	Range	Var.
A (SN)	0	15	186.8	61.88	15.9	67.38	257.10	189.7	3829.57
	4	15	140.0	50.12	13.1	52.13	208.40	156.2	2581.90
	8	15	122.3	43.64	11.2	45.43	191.50	146.0	1905.00
B (PY)	0	15	186.8	51.18	13.2	117.6	302.20	184.60	2619.64
	4	15	148.6	44.95	11.6	102.2	282.10	179.89	2020.93
	8	15	125.8	32.83	8.47	96.10	215.40	119.30	1078.10
C (Control)	0	15	186.2	33.06	8.53	127.8	237.20	109.40	1093.57
	4	15	189.3	32.91	8.49	135.5	240.20	104.70	1083.54
	8	15	190.6	32.37	8.35	132.0	240.10	108.02	1047.99

Table 01 depicts the descriptive statistics for Triglyceride of all the three groups with all the three levels of time. In all the three levels of time i.e. 0 week, 4 weeks and 8 weeks, the mean and standard deviation of group A (Suryanamaskar) was 186.8±61.88, 140.0±50.12 and 122.3±43.64 mg. The mean and standard deviation of group B (Pragya Yoga) was 186.8±51.18, 148.6±44.95 and 125.8±32.83 mg. respectively. The mean and standard deviation of group C (Control) was 186.2±33.06, 189.3±32.91and 190.6±32.37 mg respectively. Table also shows the value of Range, Minimum and maximum score, standard error of mean and the variance.

This Table also depicts the skewness and standard error of skewness and kurtosis and standard error of kurtosis.

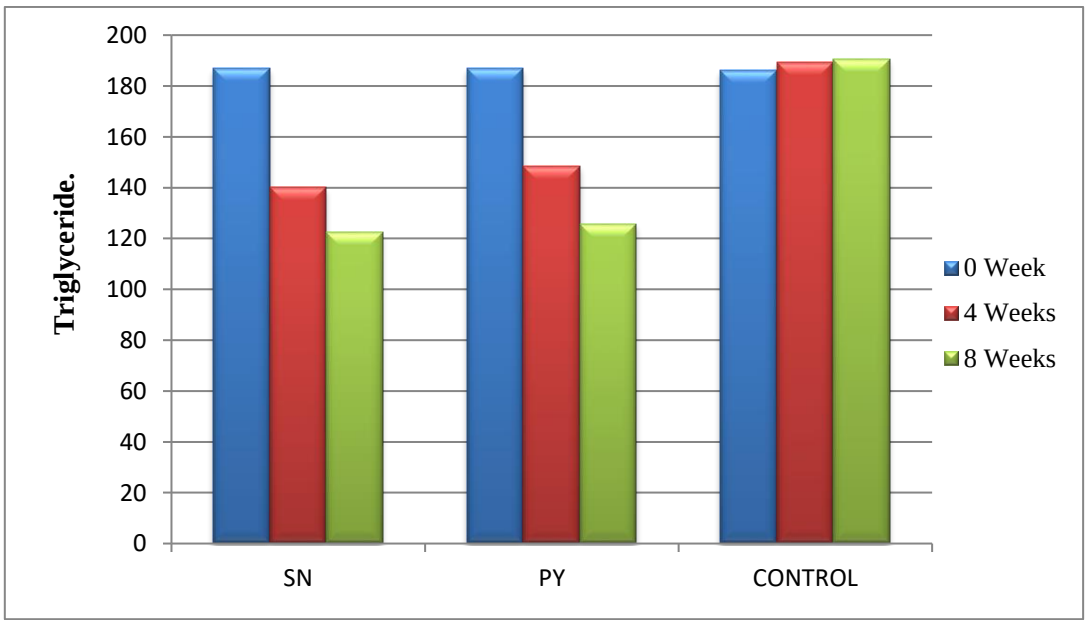

Figure 1:Means of all the experimental treatments with all the three levels of time duration for Triglyceride.

Table 02- F Tests Of Between-Subjects Effects For Triglyceride

Sources	Type III SS	df	MSS	F	Sig.	Partial Eta^2
Intercept	3635605.96	1	3635605.96	710.018	.000	.944
Group	41340.95	2	20670.47	4.037*	.025	.161
Error (Group)	215058.47	42	5120.44			

***Significant at 0.05 level**

Table 02 indicating that the obtained p-value .025 is found significant at .05 level of significance. So that it was evident that there was a significant difference among the various groups and the value of Eta square was indicating that the 16.1% variability were shown by the groups in Triglyceride.

Table 03- F Tests Of Within-Subjects Effects For Triglyceride

Source		Type III SS	Df	MSS	F	Sig.	Partial Eta^2
Greenhouse-Geisser	Time	38150.32	1.21	31463.54	60.27*	.000	.589
	Time×Group	23834.80	2.42	9828.58	18.82*	.000	.473
	Error (Time)	26585.42	50.92	522.04			

***Significant at 0.05 level**

It was evident from table 03 that the obtained p-value .000 is found significant at .05 level of significance. So that it was indicating that the significant difference among the various levels of time durations were found. And the value of Eta Square also indicating that, the 58.9% variability was shown by the time durations in Triglyceride. BonferroniPost-Hoc test was applied and pair wise mean comparisons of the groups have been computed and shown in table below:

A significant interaction effect was also found between time duration and groups as the obtained p-value .000 is lesser than .05. And the value of Eta square also indicates that the 47.3% variability was shown by the time durations and groups in Triglyceride.

A significant interaction effect was also found between time duration and groups as the obtained p-value (.000) is lesser than .05. So that Post-Hoc test was applied and pair wise mean comparisons of the groups have been computed. And for this, three one way ANOVAs and three Repeated measure ANOVAs were applied at 0.016 level of significance and shown in table below:

Table 04- Anova Table For Triglyceride Among Different Groups Of Yogic Pratice In Different Levels Of Time

Time	Sources	SS	df	MSS	F	Sig.
0 Week	Between Groups	4.26	2	2.13	.001	.999
	Within Groups	105599.07	42	2514.26		
	Total	105603.34	44			
4 Weeks	Between Groups	20743.92	2	10371.9	5.47	.009
	Within Groups	79609.31	42	1895.46		
	Total	100353.24	44			
8 Weeks	Between Groups	44427.56	2	22213.7	16.53*	.000
	Within Groups	56435.50	42	1343.70		
	Total	100863.07	44			

***Significant at 0.016 level (Adjusted Alpha)**

Table 04 revealed that the significant difference was found among the various groups in 8 weeks at 0.016 level of significance. And no significant difference was found among the various groups in 0 week and in 8 weeks in Triglyceride.
As the F value of 8 weeks (16.53) were found significant, BonferroniPost-Hoc test was applied and pair wise mean comparisons of the groups have been computed and shown in table below:

Table 05- Bonferroni Post-Hoc Test For Pairwise Comparisons Of Various Groups Of Yogic Practice In Different Time Duration For Triglyceride

Time	A (SN)	B (PY)	C (Control)	Mean Difference	Sig.
	122.32	125.88		-3.56	1.00
8 Weeks	122.32		190.68	-68.36*	.000
		125.88	190.68	-64.80*	.000

***Significant at 0.016 level (Adjusted Alpha)**

Table 05 depicts that a significant difference was found between the pair A-C and pair B-C (P=.000) in 8 weeks. And no significant difference was found between pair A-B at 0.016level of significance.

DISCUSSION

The result of the study on Triglycerides shows that all the experimental groups A and B brought about significant improvement after the training. The results of the study also indicate that there was a significant difference on Triglycerides between the Suryanamaskar and Pragaya yoga group. However, Suryanamaskar Practice group was found to be better in reducing the Triglycerides level in blood than Pragaya yoga Practice group. The result of this study on Triglycerides (TG) has in line with the study conducted by Tundwala, Gupta, Kumar, Singh (2012).

CONCLUSION

The present investigation reveals that both Suryanamaskar and Pragya Yoga contribute to a significant decline in triglyceride concentrations among sedentary middle-aged men compared to the control group. While Suryanamaskar demonstrated slightly greater reductions, the variation was not statistically meaningful, suggesting that both practices are nearly equivalent in promoting glucose regulation. Pragya Yoga, due to its simplicity and ease of adoption, may serve as a practical starting point for beginners, whereas Suryanamaskar could offer additional advantages with continued practice.
These outcomes highlight the promise of traditional yogic techniques as non-pharmacological measures for enhancing metabolic health. Integrating such practices into lifestyle modification programs may provide a culturally appropriate and cost-effective strategy for preventing and managing disturbances in glucose regulation. Future research with larger populations, extended intervention durations, and mechanistic analyses is recommended to better clarify the comparative effectiveness and long-term benefits of these approaches.

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