International Journal of Yoga, Physiotherapy and Physical Education
ISSN: 2456-5067
Impact Factor: RJIF 5.24
www.sportsjournal.in
Volume 2; Issue 5; September 2017; Page No. 76-81

Effects of a pranayama interpolation on lipid profile of young adults

Parmjit Kaur
Research Scholar (Ph.D.), Department of Physical Education, Guru Nanak Dev University, Amritsar, Punjab, India

Abstract
The objective of the study was to find out the effect a Pranayama Interpolation on Lipid Profile. The researcher collected the data of fifteen (N=15) young male adults of Department of Physical Education (T),Guru Nanak Dev University, Amritsar (Punjab) between the age group of 21-29 years were selected. The Statistical Package for the Social Sciences (SPSS) version 16.0 was used for all analysis. Student t test for paired samples was utilized to compare the means of the pre-test and the post-test. The level of significance was set at 0.05. It is evident from results that significant differences were noted on Lipid Profile Variables between pre-test and post-test in Low Density Lipoprotein Cholesterol (LDL-Cholesterol) and S. Cholesterol/HDLC Ratio of male athletes.

Keywords: pranayama, lipid profile, cholesterol, triglycerides, lipoprotein

Introduction
Yoga is a methodical effort to attain perfect harmony of the mind, body and soul through the control of the different elements of the human nature-spiritual, physical and psychical. Yoga has two firm bases. They are the physical and spiritual. A proper exercise of yoga and pranayama prepares the body and the mind of a yoga practitioner to make spiritual progress. The spiritual aspect is basically the control of the mind and self-realisation. Yoga does not deal only with mental and physical techniques of self-development, but also with direct control of the inner energy such as Pranayama. Pranayama is one of the most important features of yoga. This is mainly the regulation of 'breath' when one inhales air from one part of the nose and exhales it from the other. The most of the research studies claims that a regular practice of pranayama can prevent and cure fatal diseases like cancer, heart ailments, diabetes, blood pressure, liver disorders and serious gynecological problems.
Today Pranayama has involved as an alternative system of medicine. More and more people are learning and doing it regularly. By practicing pranayama systematically, they have benefitted a lot. Moreover, it involves minimum expense and has no side-effects. The best time for a yoga schedule and pranayama is early morning. One can enjoy the fresh air during this period. Finally, yogic practices are universal. The birth place of yoga may be in India, but it is for all humanity. It is meant to improve health and spread happiness.

Methods and Materials
This is an exploratory study in which the method of data collection and analysis was quantitatively. The purposive sampling technique was used to attain the objectives of the study. The purpose of this study was to find out the significant difference of pre-test and post-test on Lipid Profile Variables i.e., S. Cholesterol, S. Triglycerides, High Density Lipoprotein Cholesterol (HDL-Cholesterol), Low Density Lipoprotein Cholesterol (LDL- Cholesterol), VLDL Cholesterol, TG/ HDLC Ratio, S. Cholesterol/HDLC of young male adults of Guru Nanak Dev University.
The young male adults were subjected to a 3-week yogic training Programme. The training was consisting of a variety of Pranayama:

- Anuloma Viloma Pranayama (Alternate Nostril)
- Bhastrika Pranayama (Both Nostrils Together)
- Kapal Bhati Pranayama

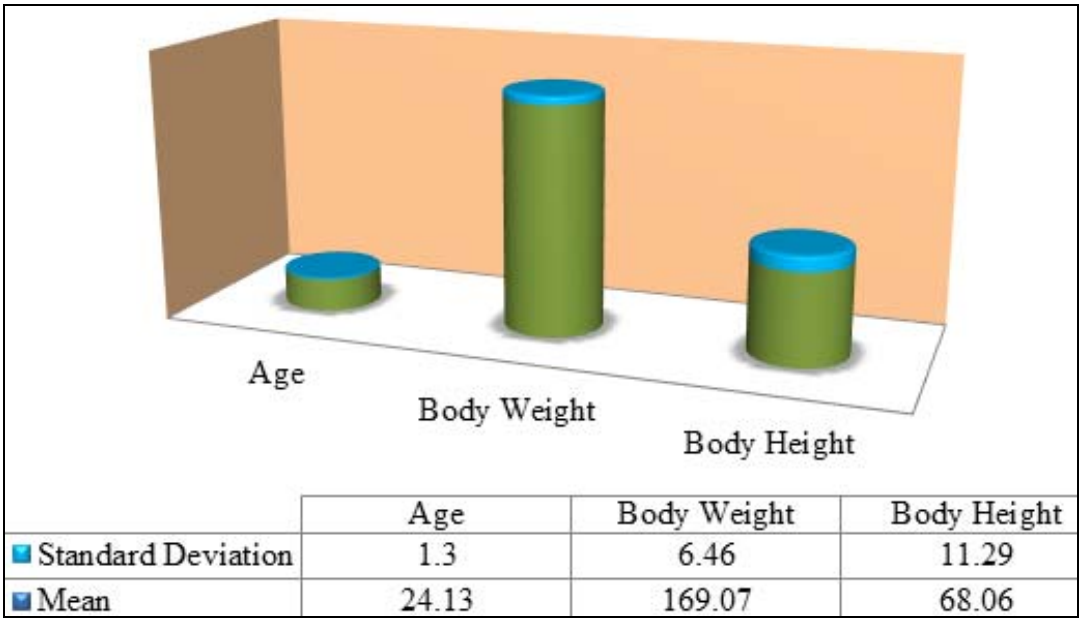
Selection of Subjects
For the purpose of the present study, fifteen (N=15), young male adults of Department of Physical Education (T), Guru Nanak Dev University, Amritsar (Punjab) between the age group of 21-29 years were selected. The details of average Age, Body Weight and Body Height of subjects are exhibited in table-1.
All the subjects were informed about the objective and protocol of the study.

Table 1: Distribution and Demographics of young male adults (N=15) of Department of Physical Education (T), Guru Nanak Dev University, Amritsar.

Variables	Sample Size (N=30)
	Group-A: Male (N_1=15)
	Mean±S.D.
Age (yr)	24.13±1.30
Body Weight (kg)	169.07±6.46
Body Height (cm)	68.06±11.29

N; sample size, SD; standard deviation, yr; Years, kg; kilograms, cm; Centimetre's'.

The details of average Age, Body Weight and Body Height of young male adults of Department of Physical Education (T), Guru Nanak Dev University, Amritsar (Punjab) are exhibited in figure-1.



	Age	Body Weight	Body Height
Standard Deviation	1.3	6.46	11.29
Mean	24.13	169.07	68.06

Fig 1: Average age, body weight and body height of young male adults.

Administration of test and collection of data

The data on Lipid Profile variables i.e., S. Cholesterol, S. Triglycerides, High Density Lipoprotein Cholesterol (HDL-Cholesterol), Low Density Lipoprotein Cholesterol (LDL-Cholesterol), VLDL Cholesterol, TG/ HDLC Ratio, S. Cholesterol/HDLC Ratio were assessed in the laboratory of Health Centre, Guru Nanak Dev University, Amritsar. The data was collected on young male adults of Guru Nanak Dev University, Amritsar before (pre-test) and after (post-test) the training period of 3 week.

Statistical Technique

Statistical analyses were performed using the Statistical Package for the Social Sciences for Windows version 16.0 software (SPSS Inc., Chicago, IL). Data is expressed as the mean ± SD. Student t test for paired samples was utilized to compare the means of the pre-test and the post-test. The level of significance was set at 0.05.

Analysis of Results

Table 2: Descriptive statistics (Mean & Standard Deviation) and paired sample t-test of Lipid Profile variables i.e., S. Cholesterol, S. Triglycerides, High Density Lipoprotein Cholesterol (HDL-Cholesterol), Low Density Lipoprotein Cholesterol (LDL-Cholesterol),VLDL Cholesterol, TG/HDLC RATIO, S. Cholesterol/HDLC RATIO of young male adults of Guru Nanak Dev University.

Lipid Profile (S. Cholesterol)						
Group	**Number**	**Mean**	**Standard Deviation**	**Standard Error of the Mean**	**t-value**	***p*-value**
Experiment (Pre-test)	15	177.07	10.30	2.66	1.84	0.08
Experimental (Post-test)	15	171.40	11.10	2.86		
S. Triglycerides						
Experiment (Pre-test)	15	140.20	8.83	2.28	0.03	0.97
Experimental (Post-test)	15	140.00	23.02	5.94		
High Density Lipoprotein Cholesterol (HDL-Cholesterol)						
Experiment (Pre-test)	15	43.53	3.18	0.82	1.63	0.12
Experimental (Post-test)	15	45.40	3.11	0.80		
Low Density Lipoprotein Cholesterol (LDL-Cholesterol)						
Experiment (Pre-test)	15	105.49	9.09	2.34	2.23	0.04*
Experimental (Post-test)	15	98.00	12.42	3.20		
VLDL Cholesterol						
Experiment (Pre-test)	15	28.04	1.76	0.45	0.03	0.97
Experimental (Post-test)	15	28.00	4.40	1.18		
TG/ HDLC Ratio						
Experiment (Pre-test)	15	3.23	0.32	0.08	0.69	0.49
Experimental (Post-test)	15	3.11	0.68	0.17		
S. Cholesterol/HDLC Ratio						
Experiment (Pre-test)	15	4.08	0.34	0.08	2.37	0.03*
Experimental (Post-test)	15	3.79	0.42	0.11		

2(a). S. Cholesterol

A glance at Table 2 shows the Mean and Standard Deviation values of S. Cholesterol of pre-test and post-test of young male adults was 177.07±10.30 and 171.40±11.10 respectively. The t-value and p-value in case of young male adults was 1.84 and 0.08 as show in the Figure 2.

No significant differences were noted between pre-test and post-test in S. Cholesterol since the calculated value of (t = 1.84) is smaller than tabulated value of $t_{0.05}$ (14) = 2.1448 for the selected degree of freedom and level of significance. The data does suggest that the difference between pre-test and post-test of young male adults of S. Cholesterol is insignificant. The t-test and p-value for the (Pre-Test & Post-Test) on the variable S. Cholesterol has been presented graphically in Figure 2(a).

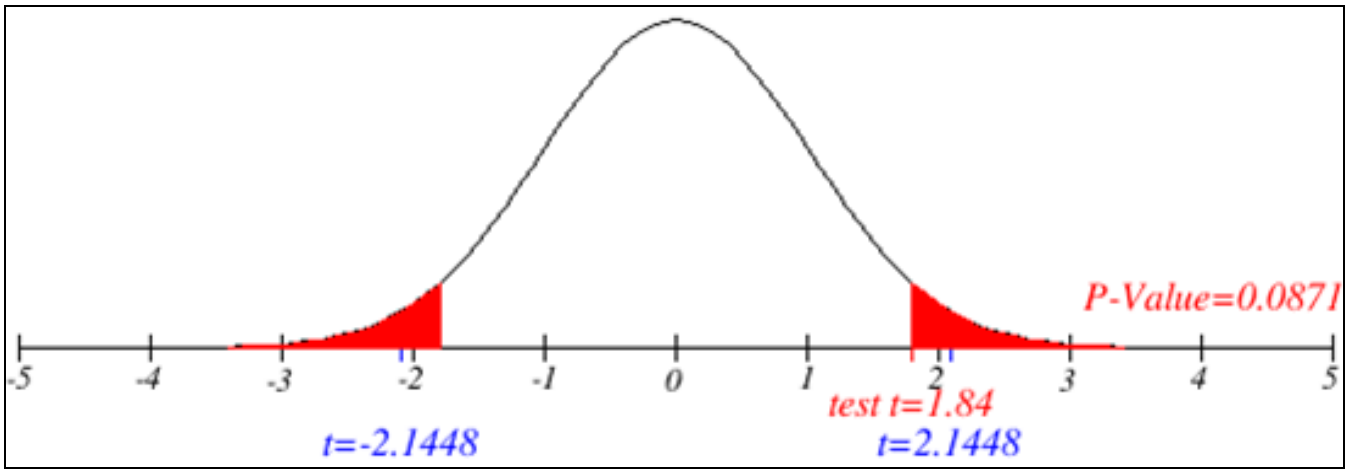


Fig 2(a): 2(a). t-test and p-value of (Pre-Test & Post-Test) of the young male adults on the variable S. Cholesterol.

2(b). S. Triglycerides

A glance at Table 2 shows the Mean and Standard Deviation values of S. Triglycerides of pre-test and post-test of young male adults was 140.20±8.83 and 140.00±23.02 respectively. The t-value and p-value in case of young male adults was 0.03 and 0.97 as show in the Figure 2.

No significant differences were noted between pre-test and post-test in S. Triglycerides since the calculated value of (t = 0.03) is smaller than tabulated value of $t_{0.05}$ (14) = 2.1448 for the selected degree of freedom and level of significance. The data does suggest that the difference between pre-test and post-test of young male adults of S. Triglycerides is insignificant. The t-test and p-value for the (Pre-Test & Post-Test) on the variable S. Triglycerides has been presented graphically in Figure 2(b).

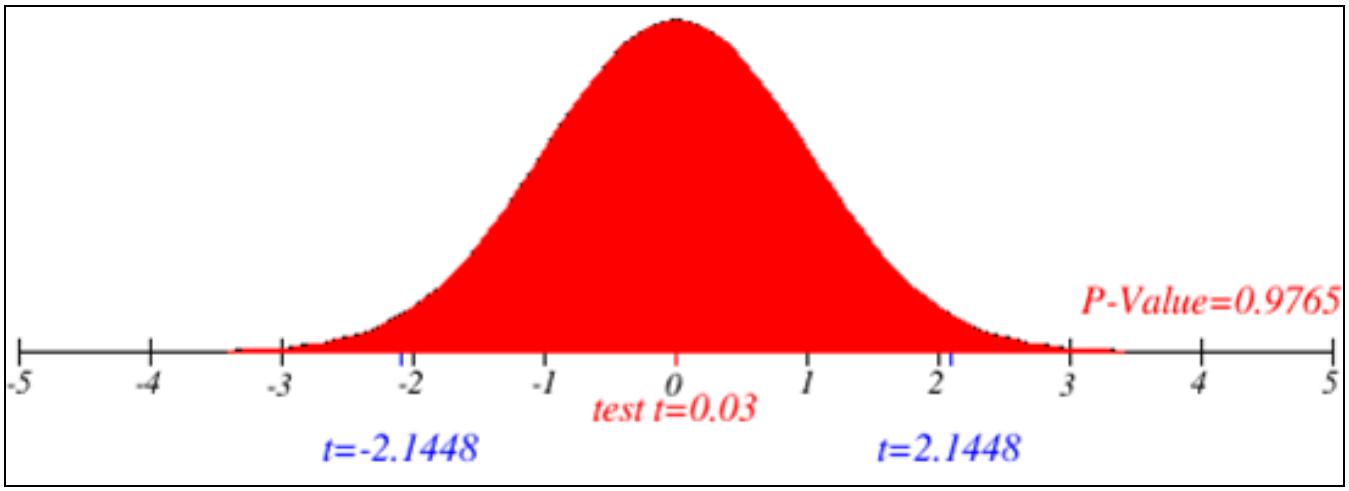


Fig 2(b): t-test and p-value of (Pre-Test & Post-Test) of the young male adults on the variable S. Triglycerides.

2(c). High Density Lipoprotein Cholesterol (HDL - Cholesterol)

A glance at Table 2 shows the Mean and Standard Deviation values of High Density Lipoprotein Cholesterol (HDL - Cholesterol) of pre-test and post-test of young male adults was 45.53±3.18 and 45.40±3.11 respectively. The t-value and p-value in case of young male adults was 1.63and 0.12 as show in the Figure 2.

No significant differences were noted between pre-test and post-test in High Density Lipoprotein Cholesterol (HDL - Cholesterol) since the calculated value of (t = 1.63) is smaller than tabulated value of $t_{0.05}$ (14) = 2.1448 for the selected

degree of freedom and level of significance. The data does suggest that the difference between pre-test and post-test of young male adults of High Density Lipoprotein Cholesterol (HDL - Cholesterol) is insignificant. The t-test and p-value for the (Pre-Test & Post-Test) on the variable High Density Lipoprotein Cholesterol (HDL - Cholesterol) has been presented graphically in Figure 2 (c).

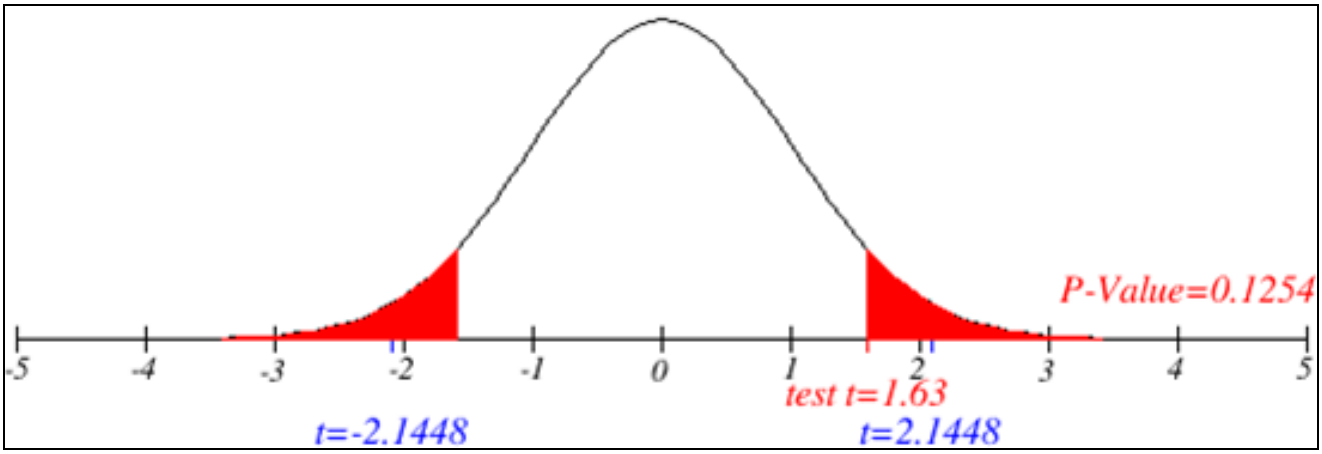


Fig 2(c): t-test and p-value of (Pre-Test & Post-Test) of the young male adults on the variable High Density Lipoprotein Cholesterol (HDL - Cholesterol).

2(d). Low Density Lipoprotein Cholesterol (LDL - Cholesterol)

A glance at Table 1 shows the Mean and Standard Deviation values of Low Density Lipoprotein Cholesterol (LDL - Cholesterol) of pre-test and post-test of young male adults was 105.49±9.09 and 98.00±12.42 respectively. The t-value and p-value in case of young male adults was 2.23 and 0.04* as show in the Figure 2.

Significant differences were noted between pre-test and post-test in Low Density Lipoprotein Cholesterol (LDL - Cholesterol) since the calculated value of (t = 2.23) is greater than tabulated value of $t_{0.05}$ (14) = 2.1448 for the selected degree of freedom and level of significance. The data does suggest that the difference between pre-test and post-test of young male adults of Low Density Lipoprotein Cholesterol (LDL - Cholesterol) is significant. The t-test and p-value for the (Pre-Test & Post-Test) on the variable Low Density Lipoprotein Cholesterol (LDL - Cholesterol) has been presented graphically in Figure 2(d).

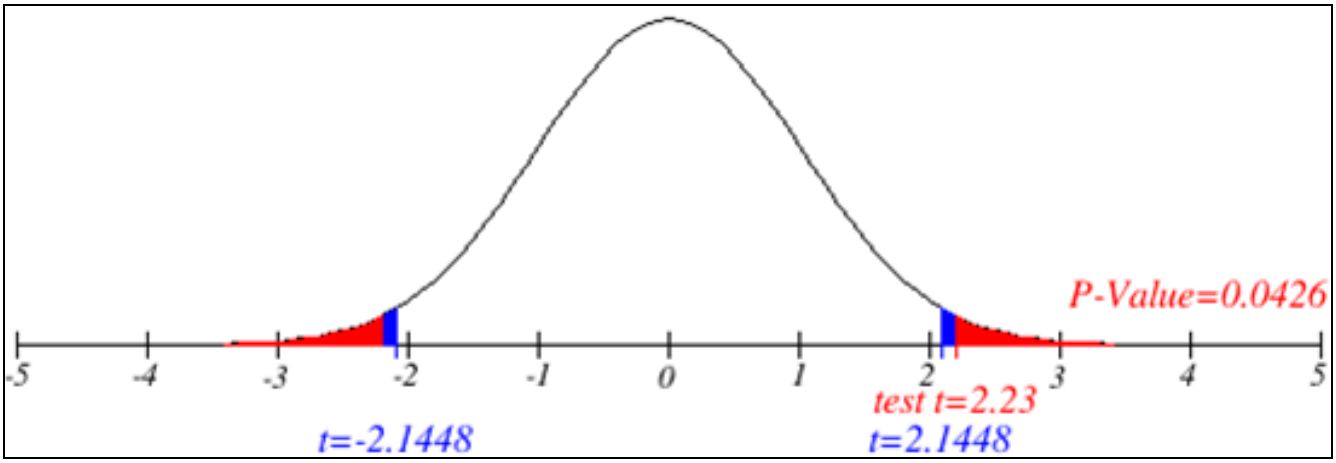


Fig 2(d): t-test and p-value of (Pre-Test & Post-Test) of the young male adults on the variable Low Density Lipoprotein Cholesterol (LDL - Cholesterol).

2(e). VLDL Cholesterol

A glance at Table 1 shows the Mean and Standard Deviation values of VLDL Cholesterol of pre-test and post-test of young male adults was 28.04±1.76 and 28.00±4.40 respectively. The t-value and p-value in case of young male adults was 0.03 and 0.97 as show in the Figure 2.

No significant differences were noted between pre-test and post-test in VLDL Cholesterol since the calculated value of (t = 0.03) is smaller than tabulated value of $t_{0.05}$ (14) = 2.1448 for the selected degree of freedom and level of significance. The data does suggest that the difference between pre-test and post-test of young male adults of VLDL Cholesterol is insignificant. The t-test and p-value for the (Pre-Test & Post-Test) on the variable VLDL Cholesterol has been presented graphically in Figure 2 (e).

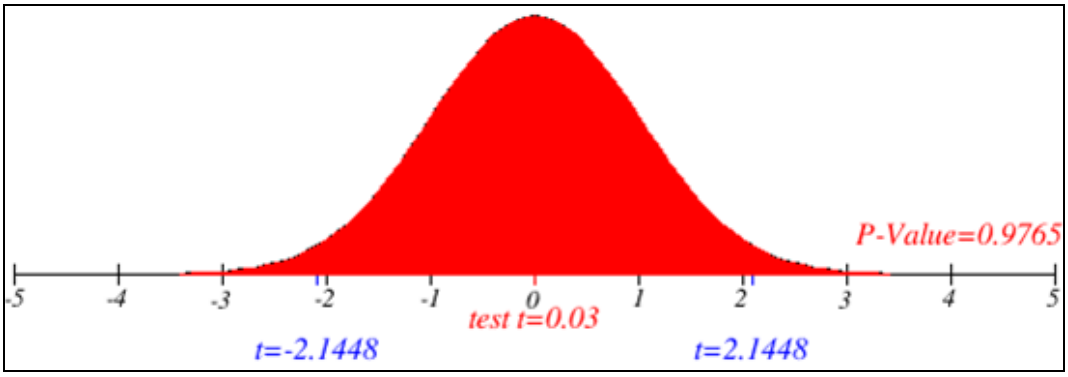


Fig 2(e): t-test and p-value of (Pre-Test & Post-Test) of the young male adults on the variable VLDL Cholesterol.

2(f). TG/ HDLC Ratio

A glance at Table 2 shows the Mean and Standard Deviation values of TG/ HDLC Ratio of pre-test and post-test of young male adults was 3.23±0.32 and 3.11±0.68 respectively. The t-value and p-value in case of young male adults was 0.69 and 0.49 as show in the Figure 2.

No significant differences were noted between pre-test and post-test in TG/ HDLC Ratio since the calculated value of (t = 0.69) is smaller than tabulated value of $t_{0.05}$ (14) = 2.1448 for the selected degree of freedom and level of significance. The data does suggest that the difference between pre-test and post-test of young male adults of TG/ HDLC Ratio is insignificant. The t-test and p-value for the (Pre-Test & Post-Test) on the variable TG/ HDLC Ratio has been presented graphically in Figure 2 (f).

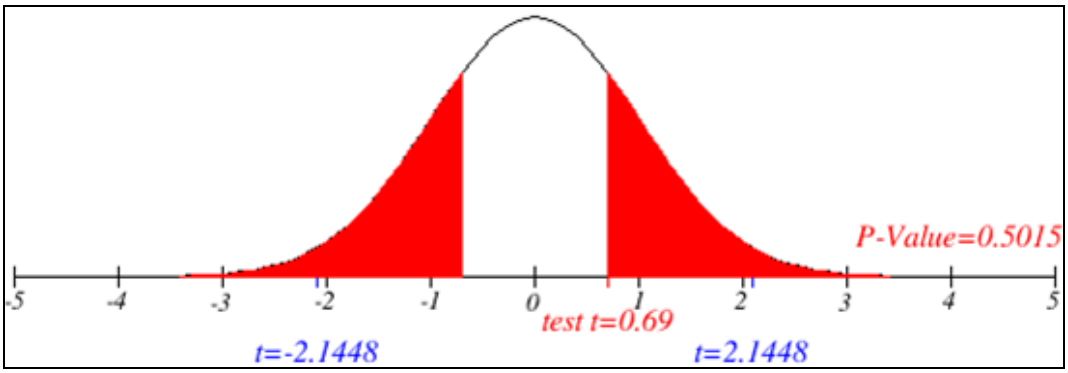


Fig 2(f): t-test and p-value of (Pre-Test & Post-Test) of the young male adults on the variable TG/ HDLC Ratio**.**

2(g). S. Cholesterol/HDLC Ratio

A glance at Table 2 shows the Mean and Standard Deviation values of S. Cholesterol/HDLC Ratio of pre-test and post-test of young male adults was 4.08±0.34 and 3.79±0.42 respectively. The t-value and p-value in case of young male adults was 2.37 and 0.03* as show in the Figure 2.

Significant differences were noted between pre-test and post-test in S. Cholesterol/HDLC Ratio since the calculated value of (t = 2.37) is greater than tabulated value of $t_{0.05}$ (14) = 2.1448 for the selected degree of freedom and level of significance. The data does suggest that the difference between pre-test and post-test of young male adults of S. Cholesterol/HDLC Ratio is insignificant. The t-test and p-value for the (Pre-Test & Post-Test) on the variable S. Cholesterol/HDLC Ratio has been presented graphically in Figure 2 (g).

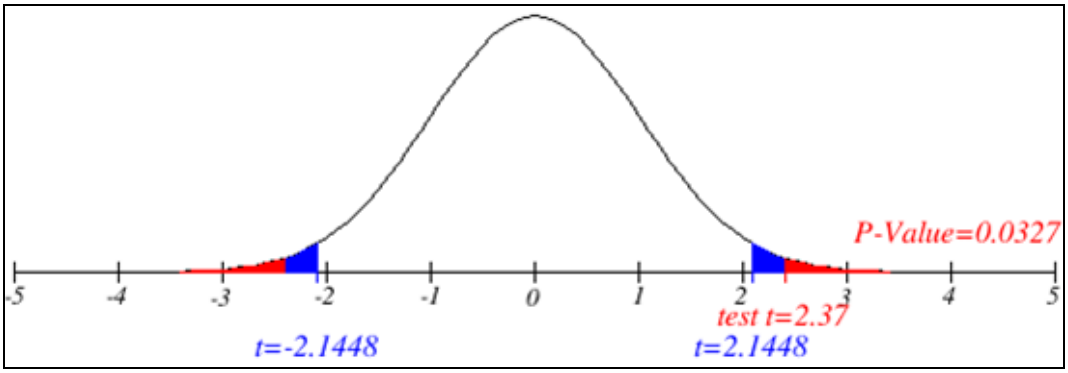
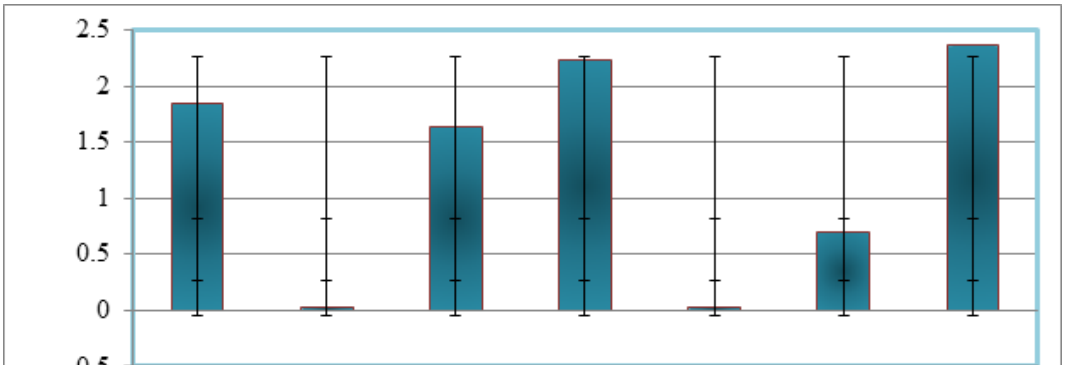


Fig 2(g): t-test and p-value of (Pre-Test & Post-Test) of the young male adults on the variable S. Cholesterol/HDLC Ratio.



	S.Cholestrol	S.Triglycerides	HDL-Cholesterol	LDL-Cholesterol	VLDL Cholesterol	TG/HDLC Ratio	S.Cholestrol/HDLC Ratio
t-value	1.84	0.03	1.63	2.23	0.03	0.69	2.37
p-value	0.08	0.97	0.12	0.04	0.97	0.49	0.03

Fig 3: t-value and p-value of (Pre-Test & Post-Test) of the young male adults on the variable S. Cholesterol, S. Triglycerides, High Density Lipoprotein Cholesterol (HDL-Cholesterol), Low Density Lipoprotein Cholesterol (LDL-Cholesterol), VLDL Cholesterol, TG/HDLC RATIO, S. Cholesterol/HDLC RATIO.

Discussion

It is evident from results that significant differences were noted on Lipid Profile Variables between pre-test and post-test in Low Density Lipoprotein Cholesterol (LDL- Cholesterol) and S. Cholesterol/HDLC Ratio of male athletes. Prasad *et al.* (2006) [5] studied the effect of Pranayama and yoga on lipid profile in Normal Healthy Volunteers 41 men and 23 ladies, to assess the effect of Pranayama and Yoga asanas on blood lipid profiles and free unsaturated fats, in two phases. In stage-I, Pranayama was educated for 30 days and in stage-II, yogic practices were added to Pranayama for an additional 60 days. A Significant decrease was seen in triglycerides, free unsaturated fats and VLDL-cholesterol in men and free unsaturated fats alone were diminished in ladies toward the finish of stage-I. A huge height of HDL cholesterol was seen just in the men toward the finish of stage-I. Toward the finish of stage-II, free unsaturated fats expanded in both men and ladies, and ladies showed a noteworthy fall in serum cholesterol, triglycerides, LDL and VLDL-cholesterol. The outcomes showed that HDL-cholesterol was lifted in men with Pranayama, while triglycerides and LDL cholesterol diminished in ladies after yoga asanas. The consequences of the present review demonstrate that Pranayama and yoga asanas can be useful in patients with lipid digestion issue, for example, coronary course malady, diabetes mellitus and dyslipidemia and so forth. Leela *et al.* (2013) [4] concluded that coronary heart disease is one of the real reasons for death and having a commonness of 10% in Indian populace. Dyslipidemia is one of the vital modifiable hazard consider. It starts atherosclerotic plaque arrangement, at long last bringing about degeneration of endothelial cell work, which upgrades the coagulability of blood by actuation of different components for which Apo lipoproteins have been ensnared. Different endeavors, for example, physical activities and dietary adjustments have been performed to control the lipid substance of blood. The point of present review was to know the impacts of Pranayama and Yoga on Apo lipoproteins, lipid profile and atherogenic list in solid subjects. In this review we enrolled a gathering of 30 solid age and sex coordinated subjects from whom blood was drawn prior and then afterward Pranayama and yoga for measure of Apo lipoproteins and lipid profile by immunoturbidimetric and enzymatic strategies, separately. Add up to Cholesterol, Triglycerides, LDL, Apo lipoproteins B100 were diminished and HDL, Apo lipoproteins A1 were expanded after Pranayama and Yoga.

References

1. Brems C, Colgan D, Freeman H, Freitas J, Justice L, Shean M, Sulenes K. Elements of yogic practice: Perceptions of students in healthcare programs. International Journal of Yoga. 2016; 9(2):121-129.
2. Dinesh T, Gaur GS, Sharma VK, Madanmohan Harichandra KKT, Grrishma B. Effect of 6 Weeks of Kapalabhati Pranayama Training on Peak Expiratory Flow Rate in Young, Healthy, Volunteers. Sch. Acad. J. Biosci. 2013; 1(4):111-114.
3. Gabriel A, Carranquea EF, Maldonadob FM, Verab Juan M, Manzanequeb MJ, *et al.* Hematological and biochemical modulation in regular yoga practitioners. Biomedical Research. 2012; 23(2):176-182.
4. Leela P, Mallikarjun CR, Prafulla M, Swapnali. Effect of Pranayama and Yoga on Apo lipoproteins, Lipid profile and Atherogenic index in Healthy subjects. An International Research Journal of Pharmacy and Plant science, 2013; 1(2).
5. Prasad KVV, Sunita MP, Raju SM, Reddy VBK, Sahay, Murthy KJR. Impact of pranayama and yoga on lipid profile in normal healthy volunteers. Journal of Exercise Physiology, 2006; 9(1).
6. Ross A, Thomus S. The health benefits of yoga and exercise: a review of comparison studies. Journal of alternative and complementary medicine, 2010; 16:1(3-12).