



## Effects of Yoga, Power Yoga And Pilates on Selected Bio-Chemical Variables of College Women Students

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### ABSTRACT

The present study was designed to determine the effects of yoga power yoga and Pilates on selected Bio-Chemical variables of College women students. To attain the purpose, sixty (N=60) women College students studying in Euphrasia Training College for women, Kattor, Kerala, India during the year 2014-2015 were randomly selected as subjects. The subjects were assigned at random into four groups of fifteen each (n=15). Group-I underwent Yoga Practice, Group-II underwent Power yoga Practice, Group-III underwent Pilates Exercise and Group-IV acted as Control. The dependent variables selected for this study were Total Cholesterol (TC) and Triglycerides (TGL). Total Cholesterol (TC) was assessed by Calorimetric method, Triglycerides(TGL) was assessed by Blood samples test. All the subjects were tested prior to and immediately after the training for all the selected variables. Data were collected and statistically analyzed using ANCOVA. Scheffe's post hoc test was applied to determine the significant difference between the paired means. In all the cases 0.05 level of significance was fixed. The results of the study showed that there was a significant difference was found among all the Experimental groups namely Yoga Practice, Power yoga Practice and Pilates Exercise groups had significantly increase in the Total Cholesterol (TC) and Triglycerides (TGL). Further the results of the study showed Pilates Exercises group was found to be better than the Yoga Practice group and Power yoga Practice group in Total Cholesterol (TC) and Triglycerides (TGL).

### KEYWORDS

Yoga Practice, Power yoga Practice and Pilates Exercise, Total Cholesterol (TC) Triglycerides(TGL)

### INTRODUCTION

Yoga has a hoary past. The importance for the spiritual attainment has been recognized throughout the ages by all the systems of Indian philosophy. There is no doubt that the essence of yoga has been considered in the spiritual upliftment of man. One may question as to how then yoga is related to the physical education and whether yoga will not be pulled down from its highest pedestal in doing this. It is necessary, therefore, to clear the concepts of yoga and physical education first (*Gharote, 1976*).

In other systems of physical exercises, the internal organs of the body mostly do not get proper exercise, while yogasana gives sufficient exercise to the internal organs of the body. Yogasanas have a greater impact on the mind and the senses than the other physical exercises with the result that yogasanas help to develop one's physical and mental powers to calm the mind and control the senses. Yogasanas make possible not only physical and mental development but also intellectual and spiritual development. Asanas require the least possible use of physical energy. Yogasanas are called a 'non-violent activity' (*Sharma, 1984*).

Power yoga is a form of yoga that is based on a choreographed sequence of poses known as asana, and during the process, the joints in the body unwind, muscles get relaxed and the energy gets moved. When an athlete performs power yoga, they build strength and flexibility and are able to focus better as tension in the mind and body is released.

Power yoga follows a particular sequence of poses, like sun salutation, warrior pose, balancing pose and then the triangle pose. Next are the floor practices and the seated postures, and finally the savasana or meditation, which is the most important part of power yoga practice. This enables you to incorporate all the subtle changes made during the practice.

Pilates is a physical fitness system developed in the early 20th century by Joseph Pilates. It is practiced worldwide, and es-

pecially in western countries such as Canada, the United States and the United Kingdom. As of 2005, there were 11 million people practicing the discipline regularly and 14,000 instructors in the United States (*Ellin, 2005*).

### METHODOLOGY

The study was conducted on sixty (N=60) women College students studying in Euphrasia Training College for women, Kattor, Kerala, India during the year 2014-2015 were selected as subjects. Subjects were randomly assigned equally into four groups. Group-I underwent Yoga Practice, Group-II underwent Power yoga, Group-III underwent Pilates and Group-IV acted as Control. The experimental groups underwent the respective training for a period of 12 weeks (3 days/week), whereas the control remain as normal with the sedentary life.

Among the various Bio-Chemical fitness parameters only Total Cholesterol (TC) and Triglycerides (TGL) were selected as dependent variables. Total Cholesterol (TC) was assessed by Calorimetric method (*Natarajan, 2014*), Triglycerides (TGL) was assessed by Blood samples test (*Natarajan, 2014*). All the four groups were tested on selected Total Cholesterol (TC) and Triglycerides (TGL) were analyzed before and after the training period.

### ANALYSIS OF THE DATA

The data collected from the experimental groups and control group on prior and after experimentation on selected variables were statistically examined by analysis of covariance (ANCOVA) was used to determine differences, if any among the adjusted post test means on selected criterion variables separately. Whenever they obtained f-ratio value in the simple effect was significant the Scheffe's test was applied as post hoc test to determine the paired mean differences, if any. In all the cases 0.05 level of significance was fixed.

The Analysis of covariance (ANCOVA) on Total Cholesterol (TC) and Triglycerides (TGL) of Experimental Groups and Control group have been analyzed and presented in Table -1.

**Table – 1**  
**Values of Analysis of Covariance for Experimental Groups and Control Group on Total Cholesterol (TC) and Triglycerides (TGL)**

Certain Variables	Adjusted Post test Means				Source of Variance	Sum of Squares	df	Mean Squares	‘F’ Ratio
	Yoga Practice Group (I)	Power Yoga Practice Group (II)	Pilates Exercise Group (III)	Control Group (IV)					
<b>Total Cholesterol (TC)</b>	182.18	179.74	177.20	189.54	Between With in	1273.38 478.33	3 55	424.46 8.70	48.81*
<b>Triglycerides (TGL)</b>	104.45	103.66	99.80	109.49	Between With in	712.78 122.98	3 55	237.59 2.24	106.26*

**\* Significant at.05 level of confidence**  
**(The table value required for Significance at 0.05 level with df 3 and 55 is 2.77)**

Table-1 shows that the adjusted post test mean value of Total Cholesterol (TC) for yoga practice group, power yoga practice group, Pilates exercises group and control group is 182.18, 179.74, 177.20 and 189.54 respectively. The obtained F-ratio of 48.81 for the adjusted post test mean is more than the table value of 2.77 for df 3 and 55 required for significance at 0.05 level of confidence.

Further the table-1 showed that the adjusted post test mean value of Triglycerides (TGL) for yoga practice group, power yoga practice group, Pilates exercises group and control group is 104.45, 103.66, 99.80 and 109.46 respectively. The

obtained F-ratio of 106.24 for the adjusted post test mean is more than the table value of 2.77 for df 3 and 55 required for significance at 0.05 level of confidence.

The results of the study indicate that there are significant differences among the adjusted post test means of experimental groups on the increase of Total Cholesterol (TC) and Triglycerides (TGL).

To determine which of the paired means had a significant difference, Scheffe’s test was applied as Post hoc test and the results are presented in Table-2.

**Table - 2**  
**The Scheffe’s test for the differences between the adjusted post tests paired means on Total Cholesterol (TC) and Triglycerides (TGL)**

Certain Variables	Adjusted Post test Means				Mean Difference	Confidence Interval
	Yoga Practice Group (I)	Power Yoga Practice Group (II)	Pilates Exercise Group (III)	Control Group (IV)		
<b>Total Cholesterol (TC)</b>	182.18	179.74	--	--	2.44*	1.84
	182.18	--	177.20	--	4.98*	1.84
	182.18	--	--	189.54	7.36*	1.84
	--	179.74	177.20	--	2.54*	1.84
	--	179.74	--	189.54	9.80*	1.84
	--	--	177.20	189.54	12.34*	1.84
<b>Triglycerides (TGL)</b>	104.45	103.66	--	--	0.79	0.93
	104.45	--	99.80	--	4.65*	0.93
	104.45	--	--	109.49	5.04*	0.93
	--	103.66	99.80	--	3.86*	0.93
	--	103.66	--	109.49	5.83*	0.93
	--	--	99.80	109.49	9.69*	0.93

**\* Significant at.05 level of confidence**

Table-2 shows that the adjusted post test mean differences on Total Cholesterol (TC) between yoga practice group and power yoga practice group, yoga practice group and Pilates exercise group, yoga practice group and Control group, power yoga practice group and Pilates exercise group, power yoga practice group and control group, Pilates exercise group and Control group are 2.44, 4.98, 7.36, 2.54, 9.80 and 12.34 respectively and they are greater than the confidence interval value 1.84, which shows significant differences at 0.05 level of confidence.

The results of the study further have revealed that there is a significant difference in Total Cholesterol (TC) between the adjusted post test means of yoga practice group and power yoga practice group, yoga practice group and Pilates exercise

group, yoga practice group and Control group, power yoga practice group and Pilates exercise group, power yoga practice group and control group, Pilates exercise group and Control group.

Further the Table-2 shows that the adjusted post test mean differences on Triglycerides (TGL) between yoga practice group and Pilates exercise group, yoga practice group and Control group, power yoga practice group and Pilates exercise group, power yoga practice group and control group, Pilates exercise group and Control group are 4.65, 5.04, 3.86, 5.83 and 9.69 respectively and they are greater than the confidence interval value 0.93, which shows significant differences at 0.05 level of confidence. The values between yoga practice group and power yoga practice group is 0.79 which is lesser

than the confidence interval value 0.93, which showed insignificant differences.

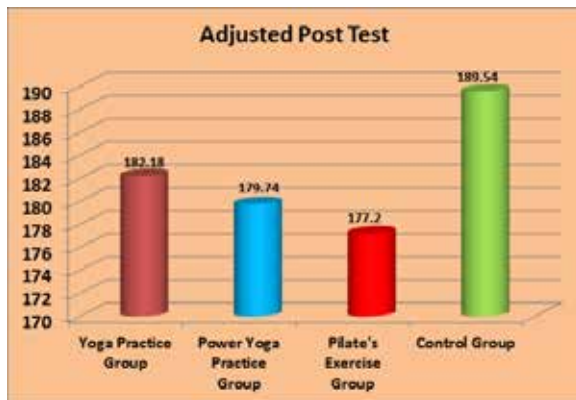
The results of the study further have revealed that there is a significant difference in Triglycerides (TGL) between the adjusted post test means of yoga practice group and Pilates exercise group, yoga practice group and Control group, power yoga practice group and Pilates exercise group, power yoga practice group and control group, Pilates exercise group and Control group. Further the results showed the differences between yoga practice group and power yoga practice group, is insignificant.

However, the improvement in Total Cholesterol (TC) and Triglycerides (TGL) was significantly higher for Pilate's exercise group than other Experimental groups.

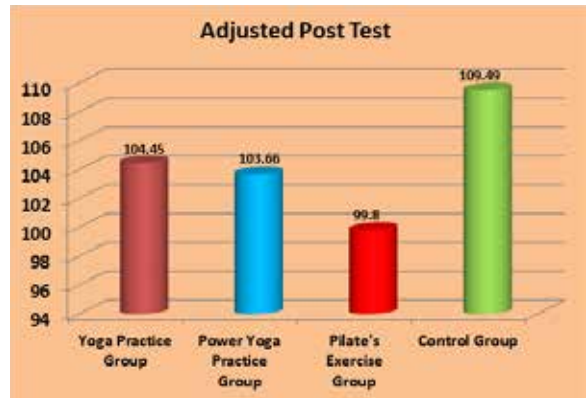
It may be concluded that the Pilate's exercise group has exhibited better than the other experimental groups in improving Total Cholesterol (TC) and Triglycerides (TGL).

The adjusted post test mean values of experimental groups on Total Cholesterol (TC) and Triglycerides (TGL) are graphically represented in the Figure -1 & 2.

**Figure-1**  
**Bar diagram on ordered adjusted means of Total Cholesterol (TC) (In mg/dL)**



**Figure-2**  
**Bar diagram on ordered adjusted means of Triglycerides (TGL) (In mg/dL)**



**CONCLUSION**

From the analysis of the data, the following conclusions were drawn.

1. Significant differences in achievement were found between Yoga Practice group, Power yoga Practice group, Pilate's exercises group and Control group in the selected criterion variables such as Total Cholesterol (TC) and Triglycerides (TGL).
2. The Experimental groups namely, Yoga Practice group, Power yoga Practice group, Pilate's exercises group and Control group had significantly improved in Bio-Chemical variables such as Total Cholesterol (TC) and Triglycerides (TGL).
3. The Pilates Exercises was found to be better than the Yoga Practice group, Power yoga Practice group, Pilate's exercises group and Control group in increasing Total Cholesterol (TC) and Triglycerides (TGL).

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