

# Influence of Yogic Practices and Aerobic Exercises on Serum Protein Level

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## Abstract

The purpose of the study was to find out the relative influence of yogic practices and aerobic exercises on serum protein level. Forty five players from Thiru.Vi.Ka. Govt. Arts College, Tiruvarur, were randomly selected as subjects. The subjects were divided equally into three groups namely control group, aerobic exercise group and yogic practices group. The aerobic exercise group and yogic practices group underwent selected aerobic exercises and yogic practices respectively. The experimental period was 12 weeks, six days a week, 40 minutes per day. But the control group was not given any sort of special training. The criterion measure selected for this study was serum protein level and it was tested before and after the experimental period. The initial and final scores of all three groups were obtained. To find out the significant mean differences, the analysis of co-variance statistical technique was employed. Further the scheffe's post-hoc test was used to identify which group has shown better. The training effect of yogic practices and aerobic exercises evidenced significant influence over the serum protein level. When compared, the yogic practices group had better impact than aerobic exercise group.

**Key Words: Yoga, Aerobic, Serum Protein**

## Introduction

Yoga is the oldest known science of self-development. Yogic exercises are confined to minimum motions involved with a low temperature. Further by influencing the automatic nervous system, the yogic exercises ensure better food utilization and improved nourishment besides proper relaxation due to voluntary control of individuals. Aerobic exercise refers to energetic physical activity that requires high levels of oxygen. It involves rhythmical action of the body over a distance or against gravity as occurs in dancing, jogging, running, swimming or certain calisthenics. Performing aerobic exercises directly affect the physiological aspects of the body (*Martha Davis, 1996*).

Protein is an organic compound formed from amino acids. It is a basic food stuff which forms muscle tissue,

hormones, enzymes, etc., Proteins are used as auxiliary fuels during muscular work. Some stored amino acids link with fats and form lipoproteins. The proteins are more essentials for the growth and repair of the tissues of the body (*Mariakutikan, 2003*). Players regularly indulge themselves in physical activities to achieve their goal. In order to maintain repair and growth of the tissues, the protein is more essential. Apart from regular diet and ingestion of protein, the yogic practices and aerobic exercises enhance the protein level of the player. Hence the investigator decided to find out the relative influence of yogic practices and aerobic exercises on serum protein level among players at college level.

## Materials and Methods

Forty-five male college players from Thiru.Vi.Ka. Govt. Arts College, Tiruvarur, affiliated to Bharathidasan University, Tiruchirappalli, Tamilnadu were randomly selected as subjects for this study. Their age ranged from 18 to 25 years. The selected subjects were divided into three groups namely control group, aerobic exercise group and yogic practices group. The aerobic exercise group underwent Easy run, Interval run, Fartlek run, Steps climbing, Cycling and jumping rope. The yogic practices group underwent Asanas namely Padmasana, Vajrasana, Paschimothasana, Matsyasana, Vakrasana, Yogomudra, Chakkarasana, Ardha Sirasana, Bhujangasana, Salabasana, Sarvangasana, Dhanurasana, Halasana and Savasana. They were also made to perform Pranayama namely Nadi Sudhi, Nadi Shodhana, Sitali and Kapalabhathi as well as meditation which included Breath counting meditation and Mantra meditation. The experimental period was 12 weeks, six days a week – 40 minutes per day where as the control group was not given any sort of special training. The criterion measure – serum protein level was tested before and after experimental period and the initial and final scores of all the three groups were obtained.

To study the outcome between yogic practices group and aerobic exercise group along with control group and to find out the significant mean differences the Analysis of Co-Variance statistical technique was employed. Further, the Scheffe's post-hoc test was computed to find out which group has grown up better. (Clarke and Clarke, 1972).

**Results**

In table 2, the results of One-way ANOVA for both initial and final test

scores of serum protein level are presented. From the table it can be seen that the calculated F value of 0.049 for initial test among three groups were insignificant ( $P > 0.05$ ) indicating that the random sampling was successful. The calculated F value of 12.845 for final test among the control, aerobic exercise and yogic practices groups were greater than the table value of 3.222 indicating that it was significant at 0.05 levels ( $P < 0.05$ ). The final F value indicated that there were significant differences in serum protein level among the groups in the final test because of the treatment effect. Since the F value for final test was significant the ANCOVA was computed.

**Table - 1: Mean and Standard Deviation for Initial and Final Test Scores of Serum Protein (g/dl)**

Group	Initial		Final	
	Mean	S.D.	Mean	S.D.
Control	6.504	0.291	6.251	0.134
Aerobic Exercise	6.505	0.364	6.541	0.371
Yogic Practices	6.471	0.353	6.839	0.387

**Table - 2: Results of ANOVA between Control, Aerobic Exercise and Yogic Practices Groups with respect to Serum Protein**

Test	Source of Variance	Sum of Squares	D.F.	Mean Square	F - Ratio
Initial	Between Groups	0.011	2	0.005	0.049
	Within Groups	4.793	42	0.114	
Final	Between Groups	2.599	2	1.299	12.845*
	Within Groups	4.249	42	0.101	

\* $P < 0.05$  Table F, df (2,42) (0.05) = 3.222

In table 3, the results of the ANCOVA for serum protein level are presented. In analysis of co-variance the final means were adjusted for differences in initial means and the adjusted means of control group, aerobic exercise group and yogic practices group on serum protein levels were tested for significance.

From the table it can be seen that the calculated F value of 20.044 among

three groups was greater than the table value 3.226 indicating that it was significant ( $P < 0.05$ ) for the degrees of freedom (2,41) at 0.05 level. The calculated F value indicated that there were significant differences in serum protein level among the groups because of the training effect of yogic practices and aerobic exercises. Since the F value was significant the scheffe's Post-hoc test was further computed to find out which group has grown up better (Clarke, 1972).

**Table - 3: Results of ANCOVA between Control, Aerobic Exercise and Yogic Practices Groups with respect to Serum Protein**

Source of Variance	Sum of Squares	D.F.	Mean Square	F
Between Groups	2.759	2	1.379	20.044*
Within Groups	2.822	41	0.0656	

\*  $P < 0.05$ , Table F, df (2,41) (0.05) = 3.226

**Table - 4: Scheffe's Post-hoc Test for Mean Differences Between Groups**

Control Group	Aerobic Exercise Group	Yogic Practices Group	Mean Difference	F-Ratio
6.245	6.535		0.29*	10.513*
6.245		6.841	0.596*	44.432*
	6.535	6.841	0.306*	11.720*

\*  $P < 0.05$ , Confidence interval value (0.05) = 0.236

In table 4, the results of scheffe's Post-hoc test are presented. From the table it can be seen that the mean differences between control group and aerobic exercise group was 0.29 ( $P < 0.05$ ) and the calculated F value was 10.512 ( $P < 0.05$ ). The mean differences between control group and yogic practices group was 0.596 ( $P < 0.05$ ) and the calculated F value was 44.432 ( $P < 0.05$ ). The mean differences between aerobic exercise group and yogic practices group was 0.306 ( $P < 0.05$ ) and the calculated F value was 11.720 ( $P < 0.05$ ). From that it can be clearly noticed that the yogic practices group responded to the training

with more positive influences on serum protein level when compared with aerobic exercise group and control group. The aerobic exercise group responded better when compared with the control group.

### Discussion

From the above findings it can be clearly seen that the level of serum protein has shown that there was an increase of serum protein level of players due to the training effects of both yogic practices and aerobic exercises.

Amino acids combine with one another to form proteins. The quantity of amino acids present at any given moment is the sum total of the absorbed amino acids and those derived from the breakdown of tissue protein. It is observed that yogic practices and aerobic exercises enhance the protein level in the blood because the players after exercise are in post absorptive state that is the amino acids absorbed by the intestine are taken up by blood to the various tissues for proper utilization. Meanwhile the tissue proteins are broken down in order to give energy but the amino acids liberated by the muscle, during exercise are not used as fuels instead they are stored in blood as protein (Rama Rao, 1998, Udupa, 1996)

Regarding the better improvement of yogic practices group when compared with the aerobic exercise group, yoga is practiced in static manner as well as slow dynamic manner according to its nature. The power of yoga lies in its stillness and hence oxidation of fuel is lesser (Krishnaraman & Suresh, 2003).

### Conclusion

Within the limitations, the results of the present study permit the following conclusion.

The training effect of aerobic exercises and yogic practices evidenced significant influences over the serum protein level. When the positive influences of the two methods were compared yogic practices had better influence than the aerobic exercise. Hence it can be deduced that the yogic practices and aerobic exercises have enhanced the serum protein level there by improving the vital function of growth and repair of body cells of the players.

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