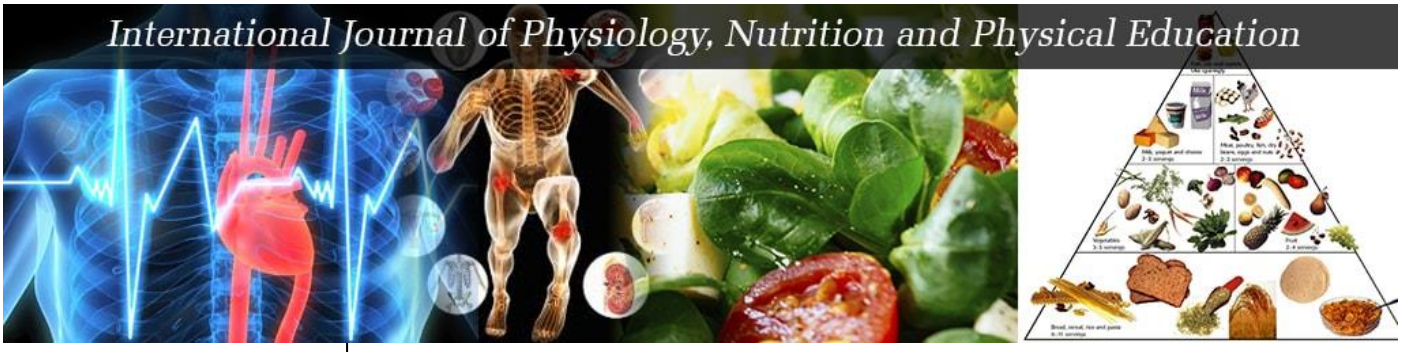

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Effect of aerobic exercise and yoga programme on PSYCO: Physiological factors associated with stress

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Abstract
The purpose of the study was to examine the physiological and psychological factors associated with stress of Engineering College students and the inter-related changes on the psycho physiological factors associated with stress as a result of using yoga and aerobic exercise programmes as methods to handle stress. 12 engineering students participated in 12 weeks yoga programme; and 13 students participated in a 12 weeks aerobic exercise program and 24 students were in control group. The control group did nothing during 12 weeks. Each subject answered the State – Trait Anxiety Inventory before and after the 12 weeks programme. The STAI measured physiological factors. Psychological measurements of heart rate and skin temperature were taken before and after the 12 weeks programme. An analysis of covariance was used to determine difference between and among the treatment group. A Dunn's post hoc analysis was used to determine which contrast was significant. All statistical analyses were performed at the .05 level of significance. The Trait anxiety was significant between the control group and the aerobic exercise group (Significant of F = 0.040). Heart rate was significant between the control group and the yoga group (Significant of F = 0.038). All others' contrast were not significant.

Keywords: aerobic exercise, yoga, PSYCO, physiological

Introduction
Selye, has identified stress as a state manifested by a specific syndrome consisting of all the non – specifically induced changes within biological system. The psychological effects of stress are easily recognized. They are unable to concentrate anger, insomnia, poor self concept or self image, inability to make decisions, depression and memory loss or forgetfulness. Stress will also take toll on one's physical well – being. The body physiologically responds to stress by reducing biochemical and hormones which cause an increase in heart rate, blood pressure and respiration. Engineering students' level of stress may vary from semester to semester, as well as from week to week and day to day. The demands placed on a student are many. Some demands placed on a student may place on himself and still others are placed on the student by others, such as their parents and teachers.

The engineering students begin to feel the stress and soon he is not sleeping well and feels anxious and restless. When studying, the student cannot remember information and ultimately cannot recall the information at a time, when the information is required. At the same time, relationships become strained. By developing relaxation strategies and then using as coping strategies before or during stressful situations, and do better in academic performance and get along better with others.

Methodology
Forty Nine (N 49) male engineering students for 3rd t and 4th semester (different branches) of College of Engineering, Thiruvananthapuram were selected and divided into three groups. Two were training groups (N 12 & N 13 each) and the other one is control group (24). All the groups were tested for the following variables before and after administering aerobic and yoga training programme to the training groups for 12 weeks. (1) State Anxiety (2) Trait Anxiety (3) Heart Rate (4) Skin Temperature.

Aerobic Exercise Programme

In this study one of the experimental group was administered aerobic exercise programme. The aerobic exercise workout for 20 minutes contains sustained running and walking. Each session consisted of 5 minutes stretching exercise before and after running or walking. The total time required for each session was 30 minutes. The group met five times a week for 12 weeks.

Yoga Programme

The other experimental group was administered yoga programme. The yoga programme structured in such a way that started and finished with 'corpse pose' and slowly made up to do 'Sooryanamaskar' followed by 7 asanas 2 to 3 times. The Group met five times a week for 12 weeks. The practiced asanas are;

1. The Head Stand
2. Shoulder Stand And Plough
3. The Fish Pose
4. Head To Knee Pose
5. Cobra And The Bow Pose
6. Half Spinal Twist
7. Triangle Position

The control group did not participate in any training programme.

Analysis of Data and Discussion Of Result

The data collected by adopting above procedure were statistically analysed. The results are presented in the following tables.

Table 1: Comparison of Selected PSYCO – Physiological Variables Between Different Treatment Groups

Sl No:	Variables	Sig of F
1	State Anxiety	.547
2	Trait Anxiety	.040*
3	Heart Rate	-.038*
4	Skin Temperature	-.672
Significant at 0.05 level		

The summary of the analysis of covariance for the selected variables i.e., State Anxiety, Trait Anxiety, Heart Rate and Skin Temperature is presented in Table - 1. The significance of mean values of trait anxiety 0.040 and the significance of mean values of heart rate -.038, which indicates significant difference between experimental and control groups and among the treatment group.

Table 2: Means, Standard Deviation And Adjusted Means For State Anxiety

	Pre test		Post test		Adjusted mean for post test
	Mean	SD	Mean	SD	
Control	36.63	11.92	36.04	13.96	36.67
Yoga	42.50	12.08	38.00	13.89	35.25
Aerobic Exercise	35.31	13.39	30.38	16.00	32.00
Grand Mean = 35.02					

Table 3: Means, Standard Deviation And Adjusted Means For Trait Anxiety

	Pre test		Post test		Adjusted mean for post test
	Mean	SD	Mean	SD	
Control	39.13	11.91	36.71	12.19	37.03
Yoga	44.50	12.00	38.00	10.61	34.34
Aerobic Exercise	35.62	10.01	29.00	8.47	32.25
Grand Mean = 35.10					

Table 4: Means, Standard Deviation And Adjusted Means For Heart Rate

	Pre test		Post test		Adjusted mean for post test
	Mean	SD	Mean	SD	
Control	74.63	9.10	73.00	8.89	72.35
Yoga	66.67	19.06	62.06	12.14	63.78
Aerobic Exercise	74.05	8.52	71.04	7.81	70.59
Grand Mean = 69.80					

Table 5: Means, Standard Deviation And Adjusted Means For Skin Temperature

	Pre test		Post test		Adjusted mean for post test
	Mean	SD	Mean	SD	
Control	82.25	9.89	86.57	6.35	86.85
Yoga	87.25	7.48	87.79	12.18	87.57
Aerobic Exercise	88.38	6.03	84.56	12.80	84.22

Grand Mean = 86.33

Table 2 to 5 shows pre and post test mean, standard deviation and adjusted mean for post test of 3 groups.

Table 6: Dunn's Post HOC Analysis For The Trait Anxiety

	Means	Control group	Yoga group	Exercise group
Control group	37.03	37.03	34.34	32.25
Yoga group	37.03		2.69	4.78*
Aerobic Exercise group	32.25			2.09
Critical difference values at the P < .05 level for: Control vs Yoga = 4.36 Control vs Exercise = 4.25 Yoga vs Exercise = 4.94 *Indicates significance at the 0.05 level				

Table 6 shows the summary of the Dunn's test for the Trait Anxiety Test. The critical difference value was 4.36. The significant difference between the control group and the exercise group which had a value of 4.78*

Table 7: Dunn's Post HOC Analysis For The Heart Rate

	Means	Control group	Yoga group	Exercise group
Control group	72.38	72.38	63.78	70.59
Yoga group	63.78		8.86*	1.79
Aerobic Exercise group	70.59			6.81
Critical difference values at the P < .05 level for: Control vs Yoga = 7.22* Control vs Aerobic = 7.04 Exercise group = 8.18 Indicates significance at the 0.05 level				

Table -7 shows the summary of the Dunn's post hoc test for the heart rate. The significant difference occurred between the control group and the yoga group which had a value of 8.86.

Discussion of Findings

The study examined the physiological and psychological factors associated with stress of Engineering college students and the inter related changes occurred as a result of using yoga and aerobic exercise techniques as methods to manage stress.

The results of the analysis of covariance using the pretest as the covariance revealed there was a positive effect on the trait anxiety between the control group and the aerobic exercise group after the treatment intervention. There was also a positive effect on heart rate between the control group and the yoga group after the treatment intervention.

The significant effect of the aerobic exercise programme on their trait score may suggest that over time, subjects found that exercise generally produced a more relaxed sensation. When speaking with the subjects in the aerobic exercise group and reading their journals, they stated that exercising made them feel more energetic, helped them clear their minds, feelings of confidence accomplishment, pride in oneself, Self-esteem, tolerance and alertness.

The significant effect of their heart rate may be the result of the training. The lowered heart rate for yoga group suggests that 12 weeks programme had an effect on the autonomic nervous systems. Specifically, regular practice of yoga can reduce the activity of sympathetic nervous system (SNS) and increase the activity of the parasympathetic nervous system (PNS). As a result, possibility of reducing physiological responses such as heart rate, respiration and blood pressure.

There was no significant changes in the physiological measurements of skin temperature and also no significant changes in the psychological scores of yoga group.

Conclusions

Based on the findings of the present study, the following conclusions were drawn;

- There were no significant changes in state anxiety, heart rate and skin temperature for the aerobic exercise group.
- There were no significant changes in state and trait anxiety and skin temperature for the yoga group.
- The aerobic exercise programme had a significant effect on trait anxiety scores
- The yoga programme had a significant effect of heart rate.

Reference

1. Bicer S. The effect 12 weeks of aerobic training on social maturity development, self esteem and body image among school students. International Journal of Sport Studies 2013.
2. Kenney WL. Physiology of Sport and Exercise. 6th Edition. Human kinetics 2015.
3. Alfermann D, Stoll O. Effects of physical exercise on self-concept and wellbeing. International Journal of Sport Psychology 2000.
4. Everly G. A Clinical guide to the treant of the human stress responses. New York: Plenum Press 1989.
5. Powell TJ, Enright SJ. Anxiety and stress management. New York: Routiedge 1990.
6. Rice PL. Stress and health: principles and practice for coping and wellness. California: Brooks/Cole Publishing 1987.
7. Roth DL, Holmes DS. Influence of aerobic exercise training and relaxation training on physical and psychological health following stressful life events. Psychosomatic medicine 1987.
8. Selye H. The stress of life. McGraw-Hill: New York 1976.