COMPARATIVE EFFECTS OF YOGIC PRACTICES ON SELECTED PSYCHOLOGICAL BEHAVIOURS OF SCHOOL BOYS

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INTRODUCTION

The roots of yoga can be traced back over 5,000 years. Early writings of yoga were transcribed on palm leaves, but due to their fragile nature, little evidence of the beginning of yoga remains. The beginnings of yoga were developed by the Indus valley civilization in India. Yoga was mentioned in the Vedas, one of the oldest sacred texts. Over the years, Vedic priests refined and documented their practices of yoga in texts such as the Bhagavad-Gita, but it wasn't until Patanjali's Yoga Sutras that yoga was systematically presented. Centuries after Patanjali, various yoga masters created a system of practices to rejuvenate the body and prolong life. These beliefs and practices led to the creation of Hatha yoga.

Yoga has become increasingly popular in Western cultures as a means of exercise and fitness training; however, it is still depicted as trendy as evidenced by an April 2001 Time magazine cover story on "The Power of Yoga." There is a need to have yoga better recognized by the health care community as a complement to conventional medical care. Over the last 10 years, a growing number of research studies have shown that the practice of Hatha Yoga can improve strength and flexibility, and may help control such physiological variables as blood pressure, respiration and heart rate, and metabolic rate to improve overall exercise capacity. This review presents a summary of medically substantiated information about the health benefits of yoga for healthy people and for people compromised by musculoskeletal and cardiopulmonary disease.

Hatha-Yoga has become increasingly popular in western countries as a method for coping with stress. However, little is known about the physiological and psychological effects of yoga practice. We measured heart rate, blood pressure, the hormones cortisol, prolactin and growth hormone and certain psychological parameters in a yoga practicing group and a control group of young female volunteers reading in a comfortable position during the experimental period. There were no substantial differences between the groups concerning endocrine parameters and blood pressure. The course of heart rate was significantly different; the yoga group had a decrease during the yoga practice. Significant differences between both groups were found in psychological parameters. In the personality inventory the yoga group showed markedly higher scores in life satisfaction and lower scores in excitability, aggressiveness, openness, emotionality and somatic complaints. Significant differences could also be observed concerning coping with stress and the mood at the end of the experiment. The yoga group had significant higher scores in high spirits and extravertedness.

METHOD AND MATERIAL

For the purpose of this study 90 boys of Bharati Vidyapeeth High School, Dhankawadi, Pune - 43 (Maharashtra) were selected as subjects at random and their age ranged from 15 to 18 years.

All the subjects were randomly assigned to two experimental groups (A and B) and one control group (C), each consisting of 30 subjects. The experimental treatments programme I and programme II of different volume and density of various yogic practices were also assigned to

the groups at random. The groups A and B were treated as experimental groups and were administered yogic training programmes of different volume and density respectively for six days of a week for a period of ten weeks. The group 'C' served as control group and continued attending the school but did not participate in any kind of training programme. Hence the study made was of the complete randomised group design. The pre and post tests were taken for all the subjects before and after the training respectively.

VARIABLES SELECTED AND CRITERION MEASURE:

S. No.	Variables	Criterion Measure
I.	Psychological behaviours	
	Social maturity	Standard Questionnaires: Social Maturity Scale developed by Nalini Rao
	Mental health	Mental Health Battery developed by A.K. Singh & Alpanasen Gupta
	Academic anxiety	Academic Anxiety Scale developed by A.K. Singh & Alpanasen Gupta

Training Programme

Experimental Treatment Programme I

S. No.	Yogic Practice	1st Week				2nd Week				3rd, 4th, 5th, 6th,7th 8th, 9th & 10th Week			
		Dura. (Sec.)	Reco. (Sec.)	Repet	Time (Sec.)	Dura. (Sec.)	Reco. (Sec.)	Repet	Time (Sec.)	Dura. (Sec.)	Reco. (Sec.)	Repet	Time (Sec.)
1.	Prayer	One starting prayer in Sanskrit followed by English translation											120
2.	Suryanamaskar	60	60	01	120	60	60	01	120	60	60	01	120
ASANAS													
3.	Tadasana	30	30	01	60	45	45	01	90	60	60	01	120
4.	Veerasana	30	30	01	60	45	45	01	90	60	60	01	120
5.	Trikonasana	30	30	01	60	45	45	01	90	60	60	01	120
6.	Paschimottana	30	30	01	60	45	45	01	90	60	60	01	120
7.	Ushtrasana	30	30	01	60	45	45	01	90	60	60	01	120
8.	Ardhamatsyendra	30	30	01	60	45	45	01	90	60	60	01	120
9.	Sarvangasana	30	30	01	60	45	45	01	90	60	60	01	120
10.	Matsyasana	30	30	01	60	45	45	01	90	60	60	01	120
11.	Halasana	30	30	01	60	45	45	01	90	60	60	01	120
12.	Bhujangasana	30	30	01	60	45	45	01	90	60	60	01	120
13.	Shalabhasana	30	30	01	60	45	45	01	90	60	60	01	120
14.	Dhanurasana	30	30	01	60	45	45	01	90	60	60	01	120
PRANAYAMAS													
15.	Anuloma-viloma	04 consecutive rounds followed by 120 sec. of recovery in between							240	02 consecutive sets of 04 rounds followed by 120 sec. of recovery in between the set			480
16.	Bhramari	04 consecutive rounds followed by 120 sec. of recovery in between							240	02 consecutive sets of 04 rounds followed by 120 sec. of recovery in between the set			480
KRIYAS													
17.	Kapalabhati	05 consecutive strokes followed by 05 sec. of recovery							10	02 sets of 30 consecutive strokes followed by 60 sec. of			180

				recovery in between	
18.	Tratak	Once in a week (Wednesday)	300	Once in a week (Wednesday)	300
MEDITATION					
19.	Mantra Meditation	10 recitation of 'Ram'/ 'Positive Thought' with deep breathing	300	20 recitation of 'Ram'/ 'Positive Thought' with deep breathing	600
20.	Ending Prayer with Recitation of Omkar	One ending prayer in Sanskrit with English translation followed by recitation of three 'OMKARS'			120
TOTAL TIME OF PROGRAMME I: 3960 Seconds / 66 Minutes / 01 Hour 06 Minutes					

*For recovery between each standing and sitting asana the subject closed their eyes, body parts were relaxed and tried to vitalize themselves by concentrating their thoughts on a point. And for recovery in each asana in supine and pro-line position Shavasana and Makarasana were performed.

Training Programme

Experimental Treatment Programme II

S. No.	Yogic Practice	1st Week			Time (Sec.)	2nd Week			Time (Sec.)	3rd, 4th, 5th, 6th,7th, 8th, 9th, & 10th Week			Time (Sec.)
		Dura. (Sec.)	Reco. (Sec.)	Repet.		Dura. (Sec.)	Reco. (Sec.)	Repet.		Dura. (Sec.)	Reco. (Sec.)	Repet.	
1.	Prayer	One starting prayer in Sanskrit followed by English translation							120	Two starting prayers in Sanskrit followed by English translation in between			240
2.	Suryanamaskar	60	60	01	120	60	60	01	120	40	20	02	120
ASANAS													
3.	Tadasana	30	30	01	60	45	45	01	90	40	20	02	120
4.	Veerasana	30	30	01	60	45	45	01	90	40	20	02	120
5.	Trikonasana	30	30	01	60	45	45	01	90	40	20	02	120
6.	Paschimottana	30	30	01	60	45	45	01	90	40	20	02	120
7.	Ushtrasana	30	30	01	60	45	45	01	90	40	20	02	120
8.	Ardhamatsyendra	30	30	01	60	45	45	01	90	40	20	02	120
9.	Sarvangasana	30	30	01	60	45	45	01	90	40	20	02	120
10.	Matsyasana	30	30	01	60	45	45	01	90	40	20	02	120
11.	Halasana	30	30	01	60	45	45	01	90	40	20	02	120
12.	Bhujangasana	30	30	01	60	45	45	01	90	40	20	02	120
13.	Shalabhasana	30	30	01	60	45	45	01	90	40	20	02	120
14.	Dhanurasana	30	30	01	60	45	45	01	90	40	20	02	120
PRANAYAMAS													
	Anuloma-viloma	04 consecutive rounds followed by 120 sec. of recovery in between							240	03 consecutive sets of 04 rounds followed by 80 sec. of recovery in between the set			480
	Bhramari	04 consecutive rounds followed by 120 sec. of recovery in between							240	03 consecutive sets of 04 rounds followed by 80 sec. of recovery in between the set			480
KRIYAS													
	Kapalabhati	05 consecutive strokes followed by 05 sec. of recovery							10	03 sets of 30 consecutive strokes followed by 30 sec. of recovery in between			180
MEDITATION													
	Mantra Meditation	10 recitation of 'Ram'/ 'Positive Thought' with deep breathing							300	30 recitation of 'Ram'/ 'Positive Thought' with deep breathing			600
	Ending Prayer with Recitation of Omkar	One ending prayer in Sanskrit with English translation followed by recitation of three 'OMKARS'							120				
TOTAL TIME Of PROGRAMME II: 3960 Seconds / 66 Minutes / 01 Hour 06 Minutes													

*For recovery between each standing and sitting asana the subject closed their eyes, body parts were relaxed and tried to vitalize themselves by concentrating their thoughts on a point. And for recovery in each asana in supine and pro-line position Shavasana and Makarasana were performed.

RESULT AND DISCUSSION:

The analysis of results and findings of Psychological behaviours i.e. Social maturity, Mental health and Academic anxiety preferred for the present study are exposed from Table - II to Table - IV A by the researcher under Section – I.

COMPUTATION OF ANALYSIS OF COVARIANCE AND LSD POST HOC TEST FOR SOCIAL MATURITY

The following table illustrates the statistical result of the influence of programme I and II of yogic practices on social maturity. The ordered adjusted means and difference between the means of the groups under study are also presented in the Table – II A.

TABLE – II
ANALYSIS OF COVARIANCE OF THE MEANS OF TWO EXPERIMENTAL GROUPS AND THE CONTROL GROUP ON SOCIAL MATURITY

Mean	Experimental Group 01	Experimental Group 02	Control Group	SV	SS	df	MSS	F-ratio
Pre	184.87	186.93	185.20	BG	73.86	2	36.93	0.03
				WG	87156.13	87	1001.79	
Post	199.97	204.87	187.40	BG	4870.15	2	2435.07	2.07
				WG	102323.60	87	1176.13	
Adjusted Mean	200.75	203.63	187.86	BG	4231.07	2	2115.53	9.66*
				WG	18832.02	86	218.97	

* Significant at 0.05 level
Tab. $F_{0.05}$ (2, 87) 3.11, Tab. $F_{0.05}$ (2, 86) 3.11,

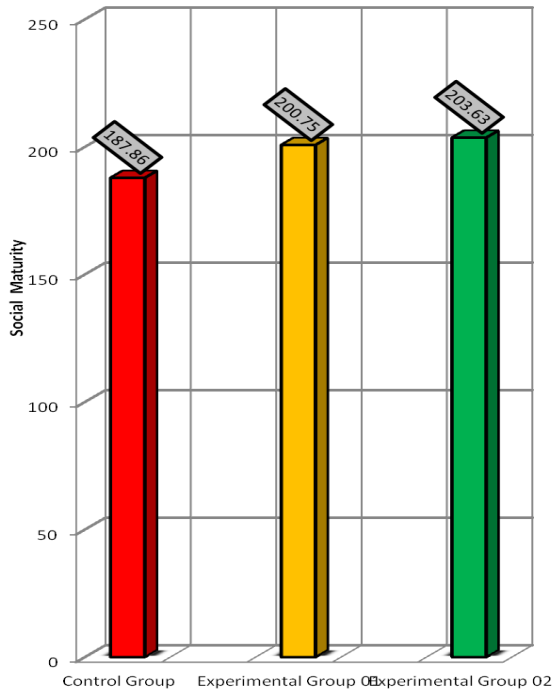
Table - II shows the result for social maturity levels of three groups. The pre test means of social maturity were 185.20 for control group, 184.87 for experimental group I (programme I) and 186.93 for experimental group II (programme II). The obtained F ratio 0.03 was lesser than the table F ratio 3.11 at 0.05 level of the degrees of freedom 2 and 87.
The post test means of social maturity were 187.40 for control group, 199.97 for experimental group I (programme I) and 204.87 for experimental group II (programme II). The obtained F ratio 2.07 was lesser than the table F ratio 3.11 at 0.05 level of the degrees of freedom 2 and 87.
The adjusted post test means of social maturity were 187.86 for control group, 200.75 for experimental group I (programme I) and 203.63 for experimental group II (programme II). The obtained F ratio 9.66 was greater than the table F ratio 3.11 at 0.05 level of the degrees of freedom 2 and 86. Hence it was significant and LSD post hoc test was used.

TABLE - II A
ORDERED ADJUSTED MEAN DIFFERENCES OF LSD
POST HOC TEST OF SOCIAL MATURITY

C.G.	E.G.P.I	E.G.P.II	Mean Difference	C. D. Value
187.86	200.75		12.89*	7.64
187.86		203.63	15.77*	
	200.75	203.63	2.88	

* Significant at 0.05 level
C.G. = Control Group
E.G.P.I = Exp. Group Prog. I and E.G.P.II = Exp. Group Prog. II

Table - II A shows adjusted post test means of three groups. The adjusted means for control, experimental group I (programme I) and experiment group II (programme II) were 187.86, 200.75 and 203.63. The mean difference between control and experimental group I (programme I) and experimental group II (programme II) were 12.89, and 15.77 respectively. While the mean difference between experimental group I (programme I) and experimental group II (programme II) was 2.88. The LSD critical difference value was 7.64. Hence, there is the significant difference among control group and experimental group I (programme I) and experimental group II (programme II) and there is no significant difference between experimental group I (programme I) and experimental group II (programme II). Graphical presentation of adjusted mean differences of social maturity.



COMPUTATION OF ANALYSIS OF COVARIANCE AND LSD POST HOC TEST FOR MENTAL HEALTH

The following table illustrates the statistical result of the influence of programme I and II of yogic practices on mental health of the subjects under present study. The ordered adjusted means and difference between the means of the groups under study are also presented in the Table – III A.

TABLE - III
ANALYSIS OF COVARIANCE OF THE MEANS OF TWO EXPERIMENTAL GROUPS AND THE CONTROL GROUP ON MENTAL HEALTH

Mean	Experimental Group 01 (YMRP)	Experimental Group 02 (APEP)	Control Group	SV	SS	df	Mss	F-ratio
Pre	82.10	80.80	82.33	BG	40.95	2	20.47	0.16
				WG	11030.17	87	126.78	
Post	89.57	90.90	83.47	BG	942.42	2	471.21	3.65*
				WG	11217.53	87	128.93	
Adjusted Mean	89.28	91.66	82.99	BG	1201.08	2	600.53	12.79*

* Significant at 0.05 level
Tab. $F_{0.05}$ (2, 87) 3.11 and Tab. $F_{0.05}$ (2, 86) 3.11,

Table - III shows the result for mental health levels of three groups. The pre test means of mental health were 82.33 for control group, 82.10 for experimental group I (programme I) and 80.80 for experimental group II (programme II). The obtained F ratio 0.16 was lesser than the table F ratio 3.11 at 0.05 level of the degrees of freedom 2 and 87.

The post test means of mental health were 83.47 for control group, 89.57 for experimental group I (programme I) and 90.90 for experimental group II (programme II). The obtained F ratio 3.65 was greater than the table F ratio 3.11 at 0.05 level of the degrees of freedom 2 and 87.

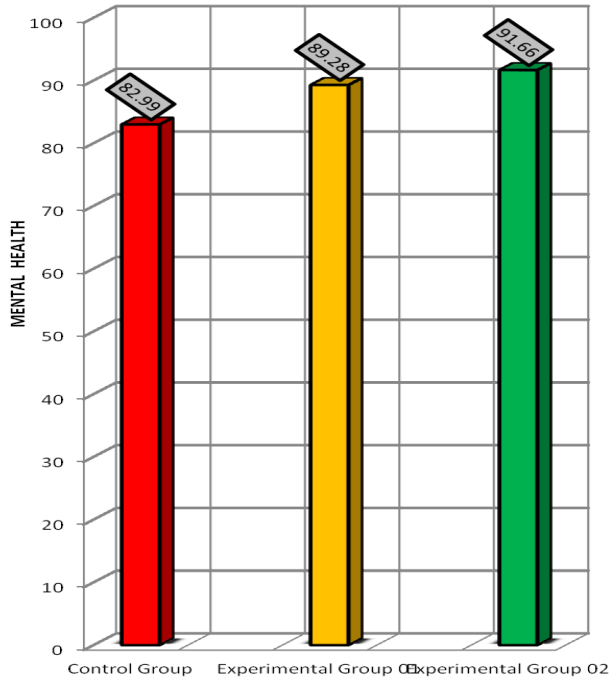
The adjusted post test means of mental health were 82.99 for control group, 89.28 for experimental group I (programme I) and 91.66 for experimental group II (programme II). The obtained F ratio 12.79 was greater than the table F ratio 3.11 at 0.05 level of the degrees of freedom 2 and 86. Hence it was significant and LSD post hoc test was used.

TABLE - III A
ORDERED ADJUSTED MEAN DIFFERENCES OF LSD
POST HOC TEST OF MENTAL HEALTH

C.G.	E.G.P.I	E.G.P.II	Mean Difference	C. D. Value
82.99	89.28		6.29*	
82.99		91.66	8.67*	3.53
	89.28	91.66	2.38	

* Significant at 0.05 level
C.G. = Control Group, E.G.P.I = Exp. Group Prog. I and E.G.P.II = Exp. Group Prog. II

Table - III A shows at adjusted post test means of three groups. The adjusted means for control, experimental group I (programme I) and experiment group II (programme II) were 82.99, 89.28 and 91.66. The mean difference between control and experimental group I (programme I) and experimental group II (programme II) were 6.29 and 8.67 respectively. While the mean difference between experimental group I (programme I) and experimental group II (programme II) was 2.38. The LSD critical difference value was 3.53. Hence, there is the significant difference among control group and experimental group I (programme I) and experimental group II (programme II) and there is no significant difference between experimental group I (programme I) and experimental group II (programme II). Graphical presentation of adjusted mean differences of mental health.



COMPUTATION OF ANALYSIS OF COVARIANCE AND LSD POST HOC TEST FOR ACADEMIC ANXIETY

The following table illustrates the statistical result of the influence of programme I and II of yogic practices on academic anxiety of the subjects under present study. The ordered adjusted means and difference between the means of the groups under study are also presented in the Table – IV A.

TABLE - IV
ANALYSIS OF COVARIANCE OF THE MEANS OF TWO EXPERIMENTAL GROUPS AND THE CONTROL GROUP ON ACADEMIC ANXIETY

Mean	Experimental Group 01 (YMRP)	Experimental Group 02 (APEP)	Control Group	SV	SS	df	Mss	F-ratio
Pre	16.17	16.17	16.03	BG	0.35	2	0.17	0.98
				WG	157.30	87	1.80	
Post	15.13	15.00	16.13	BG	23.02	2	11.51	5.72*
				WG	174.93	87	2.01	
Adjusted Mean	15.10	14.97	16.20	BG	27.43	2	13.71	13.69*

* Significant at 0.05 level

Tab. $F_{0.05}$ (2, 87) 3.11 and Tab. $F_{0.05}$ (2, 86) 3.11,

Table - IV shows the result for academic anxiety levels of three groups. The pre test means of academic anxiety were 16.03 for control group, 16.17 for experimental group I (programme I) and 16.17 for experimental group II (programme II). The obtained F ratio 0.98 was lesser than the table F ratio 3.11 at 0.05 level of the degrees of freedom 2 and 87.

The post test means of academic anxiety were 16.13 for control group, 15.13 for experimental group I (programme I) and 15.00 for experimental group II (programme II). The obtained F ratio 5.72 was greater than the table F ratio 3.11 at 0.05 level of the degrees of freedom 2 and 87.

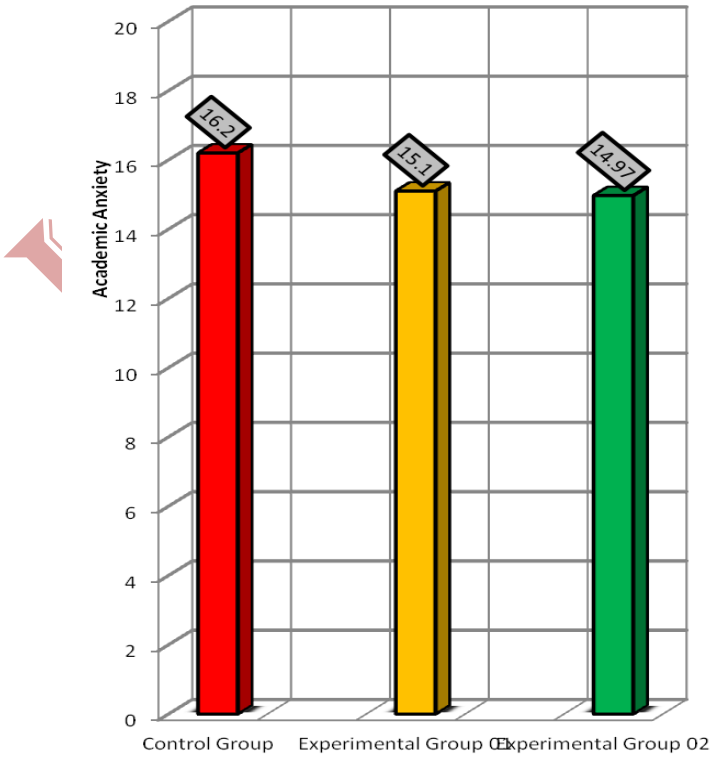
The adjusted post test means of academic anxiety were 16.20 for control group, 15.10 for experimental group I (programme I) and 14.97 for experimental group II (programme II). The obtained F ratio 13.69 was greater than the table F ratio 3.11 at 0.05 level of the degrees of freedom 2 and 86. Hence it was significant and LSD post hoc test was used.

TABLE - IV A
ORDERED ADJUSTED MEAN DIFFERENCES OF LSD POST HOC TEST OF ACADEMIC ANXIETY

C.G.	E.G.P.I	E.G.P.II	Mean Difference	C. D. Value
16.20	15.10		1.1*	0.5
16.20		14.97	1.23*	
	15.10	14.97	0.13	

* Significant at 0.05 level
C.G. = Control Group, E.G.P.I = Exp. Group Prog. I and E.G.P.II = Exp. Group Prog. II

Table - IV A shows adjusted post test means of three groups. The adjusted means for control, experimental group I (programme I) and experiment group II (programme II) were 16.20, 15.10 and 14.97. The mean difference between control and experimental group I (programme I) and experimental group II (programme II) were 1.1 and 1.23 respectively. While the mean difference between experimental group I (programme I) and experimental group II (programme II) was 0.13. The LSD critical difference value was 0.5. Hence, there is the significant difference among control group and experimental group I (programme I) and experimental group II (programme II) and there is no significant difference between experimental group I (programme I) and experimental group II (programme II).



GRAPHICAL PRESENTATION OF ADJUSTED MEAN DIFFERENCES OF ACADEMIC ANXIETY

DISCUSSION OF FINDINGS

The result of the study indicated that there was significant differences among experimental and control groups on selected psychological behaviours i.e. social maturity, mental health and academic anxiety.

CONCLUSIONS

Within the limitations of the study, the following conclusions have been drawn.

- The social maturity level was significantly improved due to the influence of ten weeks of programme I and programme II of yogic practices.
- Programme II was better in improving social maturity than programme I.
- The mental health was significantly improved due to the influence of ten weeks of programme I and programme II of yogic practices.
- Programme II was better in improving mental health than programme I.
- The academic anxiety level was significantly reduced due to the influence of ten weeks of programme I and programme II of yogic practices.
- Programme II was better in reducing academic anxiety than programme I.

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