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Effect of yogic practices on physical and physiological variables among adolescent school boys

K. Ratna Sabapathy

Part-Time PhD Scholar in Yoga Science, Faculty of Yoga Sciences and Therapy, Meenakshi Academy of Higher Education and Research, No.12, Vembuliamman Koil Street, West K.K.Nagar, Chennai-78, Tamil Nadu, India.
Email: saba_yoga@hotmail.com,

Dr. R. Elangovan

Professor & Head, Faculty of Yoga Sciences and Therapy, Meenakshi Academy of Higher Education and Research, No.12, Vembuliamman Koil Street, West K.K.Nagar, Chennai-78, Tamil Nadu, India.
Email: relangovantnpesu@gmail.com

Abstract---The purpose of the random group experimental study was to find out the effect of yogic practices on Physical and Physiological variables among Adolescent School Boys. 30 Adolescent Boys were selected from Chennai, between the age group of 14 and 19 years and they were divided into two groups I, and II with 15 subjects each. It was hypothesized that there would be significant differences among the Adolescent School Boys on Physical and Physiological variables. Preliminary test was taken for two Groups on Physical and Physiological variables before the start of the training program. Group I subjects were given Yogic practices for 45 minutes, 6 days a week for a total period of eight weeks. Group II (Control Group) were in active rest. After the experimental period, the two groups were retested again on the same selected dependent variable. Analysis of co-variance (ANCOVA) was used to find out the significant differences between the experimental group and the control group. The test of significance was fixed at 0.05 level of confidence. The results of the study proved that the Experimental Group showed significant differences on Physical and Physiological variables than the Control Group due to Yogic practices among Adolescent School Boys. The hypothesis was accepted at 0.05 level of confidence. Hence it is concluded that Yogic practices are beneficial to the Adolescent School Boys to maintain healthy Physical and Physiological variables.

Keywords---Yogic practices, Adolescent stage, Boys, Respiratory Rate & Systolic blood pressure.

I. Motivation of Research

Adolescence is the butterfly age crucial for growth and development childhood and adulthood. Adolescence also called as Teen's age is between 10 and 19 years. 16% of world's population covers Adolescents and 19% constituting Indian population as mentions in the Census of India 2011. During this period, Adolescents undergo drastic psycho social and physiological changes making them more prone to stress.

Adolescents find difficult in facing the problems at Home and school. Losing friends, fearing less attention of parents makes them more in secured. Also adding to it, face the problems due to high expectations of teachers, parents and peer groups are the causes of stress among this age group. Failure in this age group hurts their ego and self confidence. Another reason for stress is due to unrealistic goal fixing beyond the capacities of own self.

Signs and Symptoms of among Adolescents Boys

Depression, Anxiety, Insomnia, Eating Habits, Emotional Behavior, Physical Pain, Missing Periods, Health Issues, Nervous Behavior, Risky Behavior, Educational Problems, Increased Irritability, Changes in Socialization, Difficulty Concentration, Negative Talk, and General Sense of Worry. Yoga is a union of mind-body practice with a combination of practices such as Asanas, Pranayama and meditation/relaxation. Benefits of Yogic Practices for Adolescent

1. Enhances Self-image and confidence
2. Relieves daily stress
3. Maintains hormonal balance
4. Resistance against ailments like, asthma and diabetes
5. Weight Maintenance
6. Promotes mental clarity
7. Improves memory and concentration
8. Promotes rejuvenation Enhances Flexibility
9. Good Postural Development

Statement of the problem

The purpose of the study was to find out the effect of yogic practices on Physical and Physiological variables among Adolescent School Boys.

Hypothesis

It was hypothesized that there would be significant differences on Physical and Physiological variables among Adolescent School Boys due to yogic practices than the control group.

Research Objectives

The objective of the study was to find out whether there would be any significant difference on physical variable such as Respiratory rate due to yogic practices among Adolescent School Boys.

The objective of the study was to find out whether there would be any significant difference on physiological variable such as Systolic blood pressure due to yogic practices among Adolescent School Boys.

Delimitations

- The study was delimited to the Adolescent School boys only.
- The age group of the subjects was aged between 14 and 19 years only.
- The study was delimited to Adolescent School Boys residing in Chennai only.
- The study was delimited to the Independent variable Yogic practices only.
- The study was delimited to the following dependent variables only - Physical variable such as Respiratory rate and Physiological variable such as Systolic blood pressure only.

II. Review of Related Literature

Hagins M et.al., (2013) studied to find out the effectiveness of yoga for reducing blood pressure in adults with hypertension and to assess the modifying influences of type and length of yoga intervention and type of comparison group. Methods. Academic Search Premier, AltHealthWatch, BIOSIS/Biological Abstracts, CINAHL, Cochrane Library, Embase, MEDLINE, PsycINFO, PsycARTICLES, Natural Standard, and Web of Science databases were screened for controlled studies from 1966 to March 2013. Two authors independently assessed risk of bias using the Cochrane Risk of Bias Tool. Results. All 17 studies included in the review had unclear or high risk of bias. Yoga had a modest but significant effect on systolic blood pressure (SBP) (-4.17 [-6.35, -1.99], $P = 0.0002$) and diastolic blood pressure (DBP) (-3.62 [-4.92, -1.60], $P = 0.0001$). Subgroup analyses demonstrated significant reductions in blood pressure for (1) interventions incorporating 3 basic elements of yoga practice (postures, meditation, and breathing) (SBP: -8.17 mmHg [-12.45, -3.89]; DBP: -6.14 mmHg [-9.39, -2.89]) but not for more limited yoga interventions; (2) yoga compared to no treatment (SBP: -7.96 mmHg [-10.65, -5.27]) but not for exercise. Conclusion. Yoga can be preliminarily recommended as an effective intervention for reducing blood pressure. Additional rigorous controlled trials are warranted to further investigate the potential benefits of yoga.

Jens Granath et.al., (2003) conducted a study in stress management program based on cognitive behavioural therapy principles was compared with a Kundaliniyoga program. A study sample of 26 women and 7 men from a large Swedish company were divided randomly into 2 groups for each of the different forms of intervention; a total of 4 groups. The groups were instructed by trained group leaders and 10 sessions were held with each of groups, over a period of 4 months. Psychological (self-rated stress and stress behaviour, anger, exhaustion,

quality of life) and physiological (blood pressure, heart rate, urinary catecholamines, salivary cortisol) measurements obtained before and after treatment showed significant improvements on most of the variables in both groups as well as medium-to-high effect sizes. However, no significant difference was found between the 2 programs. The results indicate that both cognitive behaviour therapy and yoga are promising stress management techniques.

III. Methodology and Substance

The random group study was conducted on Adolescent School Boys from Chennai city only from Jan 2021 to Mar 2022. A total 60 subjects boys of aged between 14 and 19 years were for in this study.

Study Design: Random group study

Study Location: Chennai.

Study Duration: Jan 2021 to Mar 2022.

Sample size: 30 subjects.

Sample size calculation: The sample size was selected random group sampling design. The target population from which we randomly selected our sample was considered 120 subjects. The test of significance was fixed at 0.05 level of confidence. The sample size obtained for this study was 15 subjects for each group.

Subjects & selection method: Preliminary test was taken for the two groups (A and B) on the selected dependent variable - Physical variable such as Respiratory rate and Physiological variable such as Systolic blood pressure.

Statistical analysis : Analysis of co-variance (ANCOVA) was used to find out the significant differences between experimental groups and the control group. The test of significance was fixed at 0.05 level of confidence. The tests were performed to test for differences in proportions of categorical variables between two or more groups. The level $P < 0.05$ was considered as the cutoff value or significance.

IV. Results

The data pertaining to the variable collected from the groups before and after the training period were statistically analyzed by using analysis of covariance (ANCOVA) to determine the significant difference and the hypothesis was tested at 0.05 level of confidence. The obtained F-ratio value for the Physical variable such as Respiratory rate and Physiological variable such as Systolic blood pressure were greater than the table value, indicating that there was a significant difference among the post-test and adjusted post-test means of the yogic practice group than the control group on selected Physical and Physiological variables.

Table 1
Analysis of covariance of the means of two experimental group and the control group on respiratory rate (Breath / Minute)

Tests/ Groups	EX. GR-I	CG - II	SV	Sum Squares	of Df	Mean Squares	"F" Ratio
Pre Test	25.47	25.93	B	1.63	1	1.63	0.52
			W	88.67	28	3.17	
Post Test	15.80	26.07	B	790.53	1	790.53	431.20
			W	51.33	28	1.83	*
Adjusted Post Test	15.91	25.96	B	744.36	1	744.36	611.53
			W	32.86	27	1.22	*

* Significant at 0.05 level of confidence.(Table F ratio at 0.05 level, of confidence for df 1 and 28= 4.2, 1and 27= 4.21)

Table 1 shows that obtained F value on pretest scores 0.52 was lesser than the required F value of 4.2 to be significant at 0.05 level. This proved that there was no significant difference between the groups a pretest and post-test and the randomization at the pretest was equal. The post test scores analysis proved that there was significant difference between the groups, as obtained F value 431.20 was greater than the required F value of 4.21. This proved that the differences between the post-test means of the subjects were significant mentioned in Table I. Taking into consideration the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value 611.53 was greater than the required F value of 4.21. The ordered adjusted means on Respiratory Rate was presented through bar diagram for better understanding of the results of this study in Figure - 2. This proved that there was a significant difference among the means due to eight weeks of yogic practices on respiratory Rate in line with the study conducted by Jens Granath, et.al., (2006).

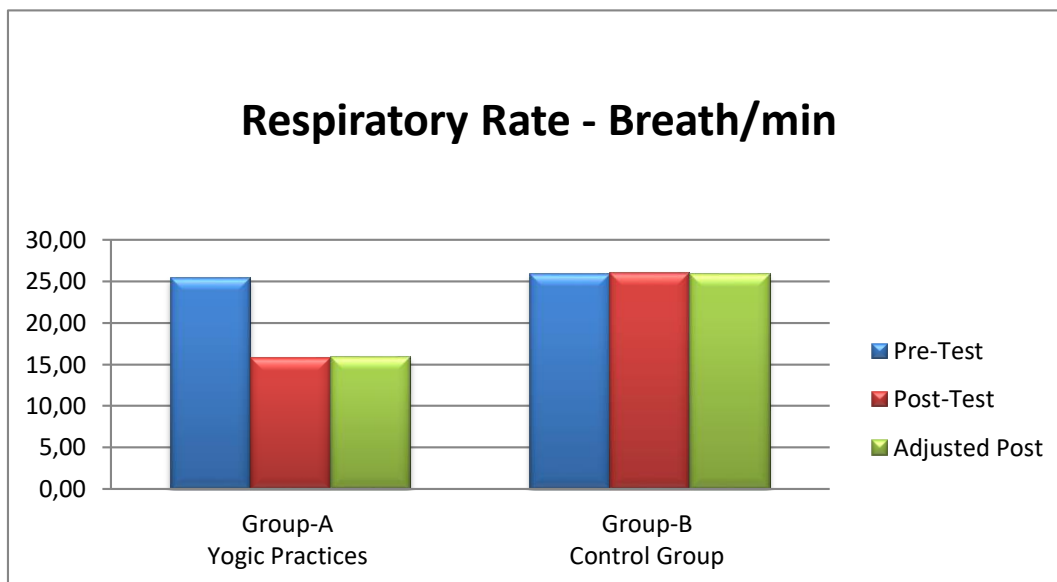


Figure – 2. Bar diagram showing the mean differences among the groups on on respiratory rate (Breath / Minute)

* Significant at 0.05 level of confidence.(Table F ratio at 0.05 level, of confidence for df 1 and 28 = 4.2 and 27 = 4.21)

Table 2
Analysis of covariance of the means of two experimental group and the control group on systolic blood pressure (mmHg)

Tests/ Groups	EX. GR-I	CG – II	SV	Sum Squares	of Df	Mean Squares	“F” Ratio
Pre Test	132.53	133.20	B	3.33	1	0.71	0.03
			W	3178.13	28	3.33	
Post Test	120.60	131.87	B	952.03	1	113.50	12.18*
			W	2189.33	28	952.03	
Adjusted Post Test	120.79	131.68	B	888.65	1	78.19	20.34*
			W	1179.36	27	888.65	

* Significant at 0.05 level of confidence. (Table F ratio at 0.05 level, of confidence for df 1 and 28= 4.2, 1 and 27= 4.21)

Table 1 shows that obtained F value on pretest scores 0.03 was lesser than the required F value of 4.2 to be significant at 0.05 level. This proved that there was no significant difference between the groups a pretest and post-test and the randomization at the pretest was equal. The post test scores analysis proved that there was significant difference between the groups, as obtained F value 12.18 was greater than the required F value of 4.21. This proved that the differences between the post-test means of the subjects were significant mentioned in Table 2. Taking into consideration the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value 20.34 was greater than the required F value of 4.21. This proved

that there was a significant difference among the means due to eight weeks of yogic practices on Systolic Blood Pressure in line with the study conducted by Hagins M et.al., (2013). The ordered adjusted means on Systolic Blood Pressure was presented through bar diagram for better understanding of the results of this study in Figure - 2.

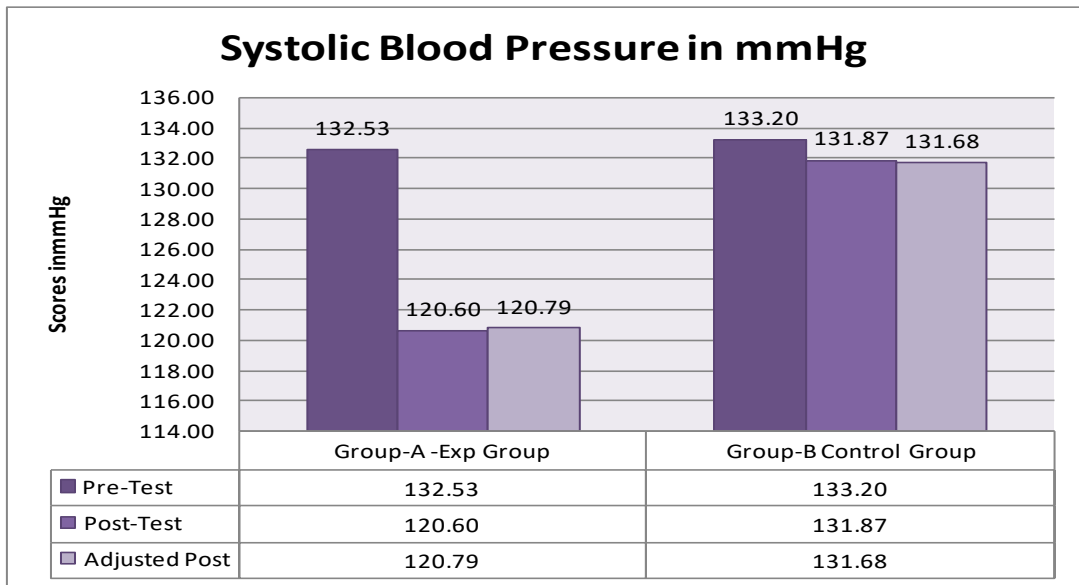


Figure – 2 bar diagram showing the mean differences among the groups on systolic blood pressure (SCORES IN mmHg)

* Significant at 0.05 level of confidence.(Table F ratio at 0.05 level, of confidence for df 1 and 28= 4.2, 1and 27= 4.21)

The results of the study showed that Physical and Physiological variables (decreased) significantly due to Yogic practices for Group-I than Group II. Hence the hypothesis was accepted at 0.05 level of confidence. The above findings were also substantiated by the observations made by experts such as Hagins, M., et.al., (2013) and Jens Granath, et.al., (2006).

V. Discussion on Hypothesis

It was hypothesized that there would be significant differences on selected Physical and Physiological variables due to yogic practices among Adolescent School Boys than the control group. The results proved that there were significant differences on Physical variable such as Respiratory rate and Physiological variable such as Systolic blood pressure (decreased) due to yogic practices than the control group among Adolescent School Boys.

VI. Conclusion

It is concluded that Physical variable such as Respiratory rate and Physiological variable such as Systolic blood pressure (decreased) due to yogic practices than

the control group among among Adolescent School Boys. Hence, yogic practices are beneficial among Adolescent School Boys.

References

- 1) "High blood pressure facts," Centers for Disease Control and Prevention Website, 2012, <http://www.cdc.gov/bloodpressure/facts.htm>.View at: [Google Scholar](#)
- 2) Dhami, R. Ilah M. A.-A., Kadhim, B. M., & Abdullhusein, H. S. (2020). A serological study to diagnose the causes of recurrent viral and immune miscarriage in aborted women who attend the shatrah general hospital. *International Journal of Health & Medical Sciences*, 3(1), 42-47. <https://doi.org/10.31295/ijhms.v3n1.131>
- 3) Granath, J., Ingvarsson, S., von Thiele, U., & Lundberg, U. (2006). Stress management: a randomized study of cognitive behavioural therapy and yoga. *Cognitive behaviour therapy*, 35(1), 3-10.
- 4) Hagins, M., Selfe, T., & Innes, K. (2013). Effectiveness of yoga for hypertension: systematic review and meta-analysis. *Evidence-Based Complementary and Alternative Medicine*, 2013.
- 5) N. R. Okonta, "Does yoga therapy reduce blood pressure in patients with hypertension?: an integrative review," *Holistic Nursing Practice*, vol. 26, pp. 137–141, 2012.View at: [Google Scholar](#).
- 6) Suryasa, I. W., Rodríguez-Gámez, M., & Koldoris, T. (2021). Get vaccinated when it is your turn and follow the local guidelines. *International Journal of Health Sciences*, 5(3), x-xv. <https://doi.org/10.53730/ijhs.v5n3.2938>
- 7) V.L. Roger, A. S. Go, D. M. Lloyd-Jones et al., "On behalf of the American Heart Association statistics committee and stroke statistics subcommittee. Heart disease and stroke statistics-2012 update: a report from the American Heart Association," *Circulation*, vol. 125, no. 1, pp. 188–197, 2012.View at: [Google Scholar](#).