



# International Journal of Allied Practice, Research and Review

Website: [www.ijaprr.com](http://www.ijaprr.com) (ISSN 2350-1294)

## Statistical Study of the Yoga on Mental Health among Children of the Residential School

Hari Singh<sup>a</sup>, Chandra Shekhar<sup>b</sup> and Sachin Kumar<sup>b</sup>

<sup>a</sup>Department of Physical Education, JJT University, Jhunjhunu, Rajasthan 333001 (India).

<sup>b</sup>Department of Mathematics, Birla Institute of Technology and Science, Pilani, Rajasthan 333031 (India).

**Abstract** - This paper summarizes the statistical evidence on the effects of yoga interventions on various components of mental health. Tension, stress, anxiety, depression or traumatic experiences are some mental illness. Adolescence is a stage in one's life when a variety of mental health problems are more likely to develop. In the present study, yoga has been shown to be effective in reducing mental imbalance conditions. We perform our study over school children of age group 8-14 of Birla Education Trust's residential school at Pilani. We involve 276 male and female students from Birla Public School, Birla Balika Vidyapeeth, Birla School for an experiment. Different tests are conducted before and after yoga to measure mental status and results are compared statistically. All inferences are depicted in tables and conclusions are drawn in the last.

**Keywords:** Residential School, Aged 8-14 years, Mental health, SLCT, DLST, IQ, DMT, MA, PA

### I. Introduction

Mental health is defined by the World Health Organization (WHO) as 'a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community'. Hostel students in residential schools remain away from their family in a very different environment. At the age of 8-14 years their curiosity is at the peak and this confronts them with challenges related to stress management. They usually rely more on peers for the solution to most of their problems. Here arises the need to create an environment which is conducive to their mental health and inner strength.

Tension, stress, anxiety, depression or traumatic experiences are some mental illness. Yoga involves concentration on the breath and body, which makes the great way to soothe a person's mind and relieve the worries

Meditation and other stress-reduction techniques have been deliberated as potential treatments for depression and anxiety. Yoga has become progressively more well-liked in recent decades. Available reviews of a ample variety of yoga practices imply they can reduce the impact of embellished stress responses and may be helpful for both anxiety and depression. In this respect, yoga functions like other

self-soothing techniques, such as meditation, relaxation, exercise, or even socializing with friends. Ross (2013) and Taspinar (2014) explored that physical activity has a positive effect on people's mental health and well-being. The aim of this study was to compare the effects of yoga and resistance exercises on mental health and well-being in sedentary adults. Conboy et al. (2013) assessed qualitatively about yoga program applied to high school by nesting interview in randomized controlled group.

Available reviews of a wide range of yoga practices suggest they can reduce the impact of exaggerated stress responses and may be helpful for both anxiety and depression. In this respect, yoga functions like other self-soothing techniques, such as meditation, relaxation, exercise, or even socializing with friends. A systematic review was carried out by Kirkwood et al. (2005) and Pilkington et al. (2005) for the research evidence on the effectiveness of yoga for the treatment of anxiety and anxiety disorders.

Most outcome measures exhibited in research article by Khalsa et al. (2012) a pattern of worsening in the control group over time, whereas changes in the yoga group over time were either minimal or showed slight improvements. Their preliminary results suggested that implementation of yoga is acceptable and feasible in a secondary school setting and had the potential of playing a protective or preventive role in maintaining mental health. White (2012) investigated the efficacy of mindfulness training through yoga with school-age girls to reduce perceived stress, enhance coping abilities, self-esteem, and self-regulation, and explore the relationship between the dose of the intervention and outcomes. Conboy et al. (2013) assessed qualitatively about yoga program applied to high school by nesting interview in randomized controlled group. Uncontrolled pilot study was examined by Butzer et al. (2015) to examine the effects of a classroom-based yoga intervention on cortisol concentrations and perceived behavior in children of second and third standard. Their results suggested that school-based yoga might be advantageous for stress management and behavior. Frank et al. (2014) assessed the effectiveness of a universal yoga-based social-emotional wellness promotion program, Transformative Life Skills, on indicators of adolescent emotional distress, prosocial behavior, and attitudes toward violence in a high-risk sample. Results of their pilot study provided evidence of the potential for Transformative Life Skills to influence important student social-emotional outcomes among high-risk youth.

Ross et al. (2013) and Taspinar et al. (2014) explored that physical activity has a positive effect on people's mental health and well-being. The aim of this study was to compare the effects of yoga and resistance exercises on mental health and well-being in sedentary adults.

Usefulness of yoga, parayanam, meditation etc in residential school motivate us to study statistical model in detail and to visualize the importance of yoga on children development more efficiently. The purpose of this study is threefold. The first is to suggest suitable yoga, prayanam, meditation rhythm for school curriculum. The second is to propose suitable test to measure mental status and development effectively and quantify abstract entities and third to perform statistical investigation of effect of yoga on school children's mental health. Thus the objectives of the present study are to show the effects of regular exercise, meditation and parayanam on growing children by comparing MA, PA and IQ parameters of residential school children involving a larger sample size. The rest of the paper is organized as follows: In section 2, we give the method of selection of sample for study of advantages of yoga in school curriculum. In next section 3, we present statistical analysis and testing of hypothesis to recommend to include yoga in school curriculum and discuss benefits of yoga for adolescence. In last, conclusion is remarked.

## **II. Research Methodology and Materials**

Age Old Indian culture conducted *Upnayan Samskara* of boys and girls at the age of 8 and laid stress on routine practice of *Surya Namaskara* and *Gayatri Mantra* recitation. Yoga has proved itself as the most effective tool to help people improve their various aspects like IQ, EQ, Memory and ability to fight

stress. If practiced regularly under the guidance of experts, *Yogic Asanas* bring recognizable improvement in the learning efficiency, behavior and ability to overcome anxiety. We conducted a research on hostel students of three BET residential schools of Pilani, namely Birla Public School, Birla Balika Vidyapeeth and Birla High School.

For research on mental health we conducted three tests Letter Digit Substitution Test, Six Letter Cancellation Test and Draw a Man Test.

- The Letter Digit Substitution Test (LDST) first originated from Neurological Assessment of Wechsler in 1955. Initially it was in Digit Symbol form but later various researchers brought changes in it. In 1981 Wechsler developed its new format and presented it.
- The Six Letter Cancellation Test has 22x14 randomly arranged letters. Six target letters are given at the top of the exercise. Subjects are asked to cancel as many target letters as they can in 90 seconds.
- The Draw a Person test is evaluates the psychological and cognitive aspects of children and adolescents. This test was originally named Draw a Person test by Florence Good enough in her book titled Measurement of Intelligence by Drawings (1926). In this the children are expected to draw whole persons- a man, a woman and themselves whichever way they like. It is common to measure intelligence in children.

We investigate the effect of Yoga on hostel students of age group 8-14. Improvement in mental health was measured with the help of the above mentioned tools.

**Table1: Frequency distribution of students**

Variable	%	N
<b>School name</b>		
BPS	54.3	150
BBVP	20.3	56
BSP	25.4	70
<b>Sex</b>		
Male	79.7	220
Female	20.3	56
<b>Religion</b>		
Hindu	96.4	266
Non-hindu	3.6	10
<b>Residential status</b>		
Rural	29.2	80
Urban	70.8	194

More than half of the students (54.3%) were selected from Birla Public School, based on the population. 20 % were female students from Birla Balika Vidyapeeth and more than one fourth were from the Birla School Pilani. About 80 were male students and rest were females. Since there were very few observations from Muslim, Jain, Sikh etc., so they were merged into non-Hindu category. Majority of the students belonged to urban category (70.8%) and about 30% were from rural areas. This sample of size n = 276 is categorized as controlled group (50%) and uncontrolled group (50%). The subjects represented almost all socio-economic sections and religions.

After recording statistics of both controlled and uncontrolled group, controlled group underwent through different kind of yogas, exercise and pranayam etc which are listed below.

### **Breathing exercise:**

1. Sashank Shwasak (Sasankas breathing)
2. Vyaghra Shwasa (Tiger breathing)
3. Shwana (Dog breathing)

### **Shithilikarana Vyayama (Yogic Loosening)**

1. Ankle strearching
2. Padahastasana Ardha cakrasana chalana (forward backward bending)
3. Trikonasana Chalana (side bending)
4. Ardha Chakrasana (side bending)
5. Suryanamasakar (12 Steps, 3 Rounds )

### **Asana**

1. Ardhakati Chakrasana
2. Padhastasan
3. Tadasana
4. Bhujngasana
5. Shalabhasana
6. Dhanurasana
7. Sarwngasana
8. Halasana
9. Chakrasana
10. Paschimothanasan
11. Ardhmatsayandrasana
12. Ustrasana
13. Yogamudrasana

### **Pranayama**

Vibhagiya Pranayanama (Sectional breathing)

1. Anulomvilom (Balansig)
2. Sitali or sitkari (cooling breath)
3. Bhramari pranayam

### **Meditation**

Nadanusandhan (A-kara- 5 round, U-kara-5 round, M-kara- 5 round, A – U – M – 5 round) chanting. The controlled group' children were supervised with systematic and routine yogas and pranayam regularly 1 hour/day for 6 days/week along with other regular academic and non-academic activities and regular nutritional diet.

The students suffering from cardiopulmonary disorders, endocrine disorders, obesity, anemia and any chronic diseases were excluded in this study. Written consent was taken from parents and principals of both the schools as students were minor. The ethical clearance for the study was obtained from the ethical committee of BET society.

### **Statistical Discussion**

#### **Table 2: Descriptive statistics**

Group Statistics					
	Yoga status	N	Mean	Std. Deviation	Std. Error Mean
S.L.C.T.	Before yoga	138	42.41	13.126	1.117
	After yoga	138	61.48	10.229	.871
D.L.S.T.	Before yoga	138	73.50	16.444	1.400
	After yoga	138	89.12	9.655	.822
D.M.T.	Before yoga	138	42.59	12.146	1.034
	After yoga	136	53.85	10.383	.890
M.A.	Before yoga	138	9.78	2.108	.179
	After yoga	136	11.86	1.936	.166
P.A.	Before yoga	138	11.97	1.454	.124
	After yoga	136	12.27	1.451	.124
I.Q.	Before yoga	138	83.47	22.617	1.925
	After yoga	136	98.08	21.468	1.841

Table 3: t-test

	T	Sig. (Two tailed)	Mean Difference
S.L.C.T.	-13.458	.000	-19.065
D.L.S.T.	-9.625	.000	-15.623
D.M.T.	-8.252	.000	-11.259
M.A.	-8.510	.000	-2.080
P.A.	-1.694	.091	-.297
I.Q.	-5.485	.000	-14.610

Table 4: Descriptive statistics

Group Statistics					
	Sex	N	Mean	Std. Deviation	Std. Error Mean
S.L.C.T.	Male	220	51.07	14.748	.994
	Female	56	55.39	16.264	2.173
D.L.S.T.	Male	220	81.05	15.837	1.068
	Female	56	82.34	14.558	1.945
D.M.T.	Male	218	46.75	12.925	.875
	Female	56	53.75	9.547	1.276
M.A.	Male	218	10.57	2.318	.157
	Female	56	11.78	1.809	.242
P.A.	Male	218	12.00	1.509	.102
	Female	56	12.59	1.132	.151
I.Q.	Male	218	89.93	24.802	1.680
	Female	56	93.82	15.229	2.035

Table 5. T-test

	T	Sig. (Two tailed)	Mean Difference
S.L.C.T.	-1.918	.056	-4.325
D.L.S.T.	-.553	.581	-1.289
D.M.T.	-3.792	.000	-6.998
M.A.	-3.628	.000	-1.209
P.A.	-2.736	.007	-.590
I.Q.	-1.121	.263	-3.895

S.L.C.T.-Six letter cancellation test

D.L.S.T.-digital letter cancellation test  
D.M.T.-Draw man test  
M.A-Mental age  
P.A.-Physical age  
I.Q.-Intelligence quotient

### III. Conclusion

It is clear from the above analysis (table3) that the mean difference is highly significant among all the covariates under study as far as yoga status is concerned. Though it is not significant for all the covariates, when we classified the data with respect to gender (table 5). So it can be concluded from the above study that yoga improves the mental health and efficiency of brain significantly, and reduces the stress level.

Significant improvements were found in terms of all outcome measures in the Hatha Yoga Group and the resistance exercise group. No improvements were found in the Control Group. Hatha yoga more improved the dimensions fatigue, self-esteem, and quality of life, whilst resistance exercise training more improved body image. Hatha yoga and resistance exercise decreased depression symptoms at a similar level.

### IV. Acknowledgement

The authors would like to express their gratitude to all authorities and administrators of the BET and the schools for their valuable co-operation.

### V. References

1. Butzer, B., Day, D., Potts, A., Ryan, C., Coulombe, S. Davies, B., Elbert, M., Flynn, L., Khalsa, S.S. (2015): Effects of a classroom-based yoga intervention on cortisol and behavior in second- and third-grade students: A pilot study, *Journal of Evidence-Based Complementary and Alternative Medicine*, Vol. 20, pp 41-49.
2. Conboy, L.A., Noggle, J.J., Frey, J.L., Kudesia, R.S., Khalsa,S.S. (2013): Qualitative evaluation of a high school yoga program: Feasibility and perceived benefits, *EXPLORE: The Journal of Science and Healing*, Vol. 9, No. 3, pp 171-180.
3. Frank, J., Bose, B. and Clonan, A.S. (2014): Effectiveness of a school based yoga program on adolescent mental health, stress coping strategies, and attitudes toward violence: Findings from high risk sample, *Journal of Applied School Psychology*, Vol. 30, No. 1, pp 29-49.
4. Khalsa, S.S., Schultz, L.H., Cohen, D., Steiner, N. and Cope, S. (2012): Evaluation of the mental health benefits of yoga in a secondary school: A preliminary randomized controlled trial, *The Journal of Behavioural Health Services and Research*, Vol. 39, No. 1, pp 80-90.
5. Kirkwood G., Rampes, H., Tuffrey, V., Richardson, J. and Pilkington, K. (2005): Yoga for Anxiety: A Systematic Review of the Research, *British Journal of Sports Medicine*, Vol. 39, No. 12, pp 884-891.
6. Pilkington, K., Kirkwood G., Rampes, H., Richardson, J. (2005): Yoga for Depression: The Research Evidence, *Journal of Affective Disorders*, Vol. 89, No. 1-3, pp. 13-24.
7. Ross, A., Friedmann, E., Bevans, M. and Thomas, S. (2013): National survey of yoga practitioners: Mental and physical benefits, *Complementary Therapies in Medicine*, Vol. 21, No. 4, pp 313-323.
8. Taspinar, B., Aslan, U.B., Agbuga, B. and Taspinar, F. (2014): A comparison of the effects of hatta yoga and resistance exercise on mental health and well being in sedentary adults: A pilot study, *Complementary Therapies in Medicine*, Vol. 22, No. 3, pp 433-440.
9. White, L.S. (2012): Reducing stress in School-age girls through mindful yoga, *Journal of Pediatric Health Care*, Vol. 26, No. 1, pp 45-56.