

Effect of Asanas and Pranayama on Weight of Males School Going Children

Dr. Uday Bhanu Kundu

Assistant Professor, Lakshmi Bai National Institute of Physical Education, NERC, Guwahati, Assam, India.

Abstract- Yoga, an ancient culture of Indian heritage, regular practice leads to ideal physical, mental, intellectual, and spiritual health. Asana and Pranayama are the yogic practices. These have a number of beneficial physiological effects on various systems in our body. The present work was taken up as data reported on the effect of Asanas and Pranayama on weight of males school going children. To know whether there is any change in weight in the subjects practicing Asanas, Pranayama & combination of Asana Pranayama and with that of subjects not practicing any type of yoga. 120 male student volunteers from Muni International School, A-2/16-18, Mohan Garden, Uttam Nagar New Delhi-110059, India, of age between 8 to 10 years were selected. Subjects were equally assigned to the four groups by using random sampling procedure i.e. three experimental groups and one control group. The experimental Group A was administered Asanas (30 subjects), Group B was administered Pranayama (30 subjects) and Group C was administered combination of Asana Pranayama (30 subjects), and Group D control group (30 subjects) was given no training of an experimental period of twelve weeks. They practiced Asanas and pranayama for 45 minutes, six days a week and Sunday has been observed as weekly off. Asanas and combination of Asana Pranayama can significantly reduce the Weight of school going children.

Index Terms- Asana, Pranayama, and Weights.

I. INTRODUCTION

“Yoga is not an ancient myth buried in oblivion. It is the most valuable inheritance of the present. It is the essential need of today and the culture tomorrow.”

Swami Satyananda Saraswati

The world yoga means ‘unity’ or ‘oneness’ and is derived from the Sanskrit word Yuj which means ‘to join’. This unity or joining is described in spiritual terms as the union of the individual consciousness with the universal consciousness. On a more practical level, yoga is a means of balancing and harmonizing the body, mind and emotions. This is done through the practice of Asana, Pranayama, Mudra, Bandha, Shatkarma and Meditation, and must be achieved before union can take place with the higher reality (Swami Satyananda Saraswati, 2004). The restraint of the mind-stuff from taking various forms is yoga (Swami Vivekananda’s translation) or Yoga is the control of thought-waves in the mind (as translated by Swami Prabhavananda of Sri Ramkrishna Math). The Maharsi further observes: “thereafter the soul abides in its real self. In other

words, yoga lies in being one’s real self. Yogic practices, an ancient culture of Indian heritage, have led to ideal physical, mental, intellectual, and spiritual health. Yoga has a number of beneficial physiological effects on various systems in our body. Regular yogic practices have been shown to cause profound improvement (Subbalakshmi NK, Saxena SK, Urmimala, D’Souza UJA, 2005) in cardiorespiratory, thermoregulatory (Madanmohan, Sivasubramanian KM, Balakrishnan S, Gopalakrishnan M, Prakash ES, 2008) and psychologic functions in healthy individuals (Ray US, Mukhopadhyaya S, Purkayastha SS, Asnani V, Tomer OS, Prashad R, 2001). Yogic practices have been also found to be most useful in alleviating hypertension (Murugesan R, Govindarajulu N, Bera TK, 2000), bronchial asthma (Sathyaprabha TN, Murthy H, Murthy BT, 2001), diabetes mellitus (Telles S, Naveen KV, 1997) and coronary artery disease (Manchanda SC, Narang R, Reddy KS, Sachdeva U, Prabhakaran D, Dharmanand S, 2000). A previous study has shown that there is significant increase in PEF in pranayama practicing school children (Sivapriya DV, Subamalani S, Shyamala T., 2010). Combination of various type of Asanas, pranayama has also led to significant increase in hand grip strength, hand grip endurance, maximum expiratory pressure, maximum inspiratory pressure, forced expiratory volume, forced expiratory volume in first second and peak flow rate (Madanmohan, Lakshmi J, Kaviraja U, Ananda BB, 2003). Fifteen days regular practice of different types of pranayama (Ankad RB, Balachandra AS, Herur A, Patil S, Chinagudi S, Shashikala GV, 2011) and practice of asanas, pranayamas & suryanamaskara (Makwana K, Khirwadkar N, Gupta HC, 1988) has led to increase in the mean breath holding time significantly alone with other parameters. There is a need to know the effect of Asanas and Pranayama training alone on weight, so that benefits, if any, could be obtained by its practice.

II. OBJECTIVES OF THE STUDY

- To study the effect of Asanas on Weight.
- To study the effect of Pranayama on Weight.
- To study the combination effect of Asana Pranayama on Weight
- To compare the effect of Asanas and Pranayama and their combination on Weight.
- To compare the three treatments and its effect on the Weight.

III. HYPOTHESES

- H1** There will be significant effect of Asanas Practice on **Weight** of school going children.
H2 There will be significant effect of Pranayama Practice on **Weight** of school going children.
H3 There will be significant effect of Asana Pranayama Practice on **Weight** of school going children.
H4 There will not be any significant different between three treatment groups.

IV. SELECTION OF SUBJECTS

One hundred twenty (120) school going boys were selected randomly as subjects in the age group of 8-10 years from Muni International School, A-2/16-18, Mohan Garden, Uttam Nagar New Delhi-110059, India. The subjects were divided into three treatment groups and one control group using random method. Group A was allotted Asanas treatment group consisted of 30 subjects, Group B was allotted Pranayama treatment group consisted of 30 subjects, Group C was allotted combination of Asana Pranayama treatment group consisted of 30 subjects and Group D control group consisted of 30 subjects. The study was confined to 12 weeks of training programme.

V. EXPERIMENTAL PROTOCOL

A period of twelve weeks in the month of August to November 2012, the climate condition was rainy and atmospheric temperature was varying from 25⁰ C to 38⁰ C. Experimental population of 90 subjects were assembled in Activity Hall at Muni International School, A-2/16-18, Mohan Garden, Uttam Nagar, New Delhi-110059, India. Experimental training was executed from 9:00 AM onwards for 45 minutes, for six days a week and Sunday has been observed as weekly off. Each subjects of the experimental group was ready to learn Asanas and Pranayamas. Group 'A' acts as Asanas Group, 'B' acts as Pranayama group, Group 'C' acts as Combination of

Asana and Pranayama group and Group 'D' acts as control group which did not participate in the training programme. The subjects of experimental group 'A' practiced Asana (Surya Namaskar, Sarvangasana, Matsyasana, Halasana, Bhujangasana, Shalvhasana, Dhanurasana, [Chakrasana](#), Ardha Matsyendrasana, Paschimottanasana, Vajrasana, Yogamudra, Standing kati chakrasana, Tadasana and Shavasana) and group 'B' practiced Pranayama (Anuloma Vilom and Bhastrika) and group 'C' practiced combination of Asana and Pranayama (Surya Namaskar, Sarvangasana, Matsyasana, Halasana, Bhujangasana, Shalvhasana, Dhanurasana, [Chakrasana](#), Ardha Matsyendrasana, Paschimottanasana, Vajrasana, Yogamudra, Standing kati chakrasana, Shavasana, Anuloma Vilom pranayama and Bhastrika pranayama).

VI. PREPARATION OF TREATMENT PROGRAMME

For the purpose of the study "Effect of Asanas and Pranayama on Selected Anthropometric and Psycho-Physiological Variables of School Going Children" the training programme consisted of three experimental groups (one control group). Keeping in mind the basic philosophy behind practicing Yoga that is "*Sthira Sukham Asanam*" (Patanjali), the deep rooted meaning that has been taken as a guide line while execution of a training no body has been forced to do on an above his capacity on the contrary it has been observed by research scholar improvement has taken place like students could able to attend better posture and sustain it. Even in case of pranayama the magnitude has been increased like retention and frequency of stroke.

Three experts Yoga trainer were involved to administer the training simultaneously to all three experimental groups. All the training groups were supervised by the scholar.

VII. TOOL USED

Weight was recorded on kilogram (Kg) with the help of Weighing machine.

VIII. RESULTS

TABLE-1
DESCRIPTIVE STATISTICS OF THE DATA MEASURED IN THE POST TESTING WEIGHT

TREATMENT GROUP	MEAN	STD. DEVIATION	N
Asanas Group	28.47	5.24	30
Pranayama Group	26.91	6.09	30
Asana Pranayama Group	25.67	5.86	30
Control Group	28.64	6.14	30
Total	27.42	5.90	120

Table no.1 indicates the values of descriptive statistics of the experimental Groups (Asanas Group, Pranayama Group, Asana Pranayama Group) & Control Group for anthropometric variable of weight, which shows that the mean and S.D. values of Asanas

Group, Pranayama Group, Asana Pranayama Group and the Control Group were found to be 28.47±5.24, 26.91±6.09, 25.67±5.86, and 28.64±6.14 respectively. For the total subject the mean and S.D. was 27.42±5.90.

TABLE-2
DESCRIPTIVE STATISTICS OF THE DATA MEASURED IN THE POST-TESTING AFTER ADJUSTMENT WITH THE INITIAL DIFFERENCE WEIGHT

TREATMENT GROUP	MEAN	STD. ERROR	95% CONFIDENCE INTERVAL	
			LOWER BOUND	UPPER BOUND
Asanas Group	27.24 ^a	0.058	27.13	27.36
Pranayama Group	27.51 ^a	0.057	27.40	27.63
Asana Pranayama Group	27.33 ^a	0.058	27.22	27.45
Control Group	27.60 ^a	0.058	27.48	27.71

(a) Covariates appearing in the model are evaluated at the following values: general weight scale for children pre test = 27.49.

The mean and standard error of different post-testing Groups after adjustment have been shown in table 2. Which is for Asanas Group 27.24 & 0.058, Pranayama Group 27.51 & 0.057, Asana Pranayama Group 27.33 & 0.058 and Control Group 27.60 & 0.058.

TABLE-3
ANCOVA TABLE FOR THE POST-TEST DATA ON WEIGHT

SOURCE	SUM OF SQUARES	DF	MEAN SQUARE	F	SIG. ^a (p-value)
Pre Weight Scale For Children	4131.66	1	4131.66	4.186E4	0.00
Treatment Group	2.41	3	0.80	8.15	0.00
Error	11.35	115	0.09		
Corrected Total	4145.43	119			

Table no. 3 indicates the values test of difference between the subject effects, which shows that there was a significant difference in pre test values of anthropometric variable of weight for the four selected Groups, as the value was found to be 4.186E4 (E4 means that the numerical error which represent the

point after 4digits) which proves to be the base of Analysis of Co-Variance. Also, a significant difference was found between the post test values of the experimental and Control Group as the value was found to be 8.15, which was significant at 0.05 level.

TABLE-4
POST HOC COMPARISON FOR THE GROUP MEANS IN POST-MEASUREMENT ADJUSTED WITH THE INITIAL DIFFERENCES WEIGHT

(I) TREATMENT GROUP	(J) TREATMENT GROUP	MEAN DIFFERENCE (I-J)	SIG. ^a (p-value)
Asanas Group	Pranayama Group	-0.27*	0.001
	Asana Pranayama Group	-0.09	0.27
	Control Group	-0.35*	0.00
Pranayama Group	Asanas Group	0.27*	0.001
	Asana Pranayama Group	0.18*	0.02
	Control Group	-0.08	0.30
Asana Pranayama Group	Asanas Group	0.09	0.27
	Pranayama Group	-0.18*	0.02
	Control Group	-0.26*	0.002

Control Group	Asanas Group	0.35*	0.00
	Pranayama Group	0.08	0.30
	Asana Pranayama Group	0.26*	0.002

Based on estimated marginal means

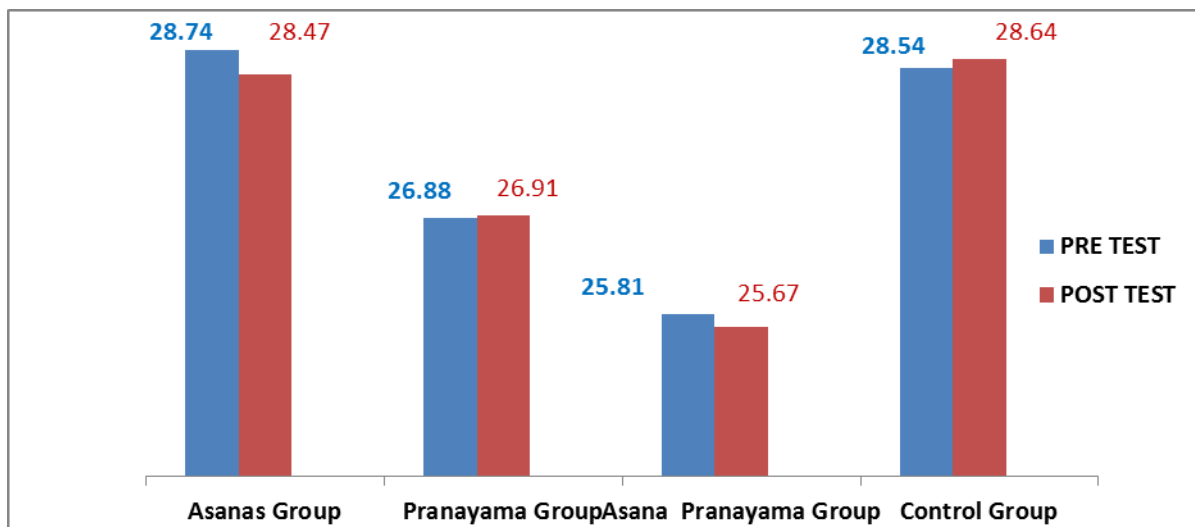
a. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

* The mean difference is significant at the 0.05 level.

Table no. 4 indicates the values of post hoc test for the selected Groups for anthropometric variable of weight, which shows that a significant difference was found between the post test values of Asanas Group and the Control Group as the value was found to be 0.35 which was significant at 0.05 level, the post

test values of Pranayama Group and the Control Group as the value was found to be 0.08 which was not significant at 0.05 level, Asana Pranayama Group and the Control Group as the value was found to be 0.26 which was significant at 0.05 level.

FIGURE:-1



COMPARISON OF THE MEANS ON WEIGHT OF THE CONTROL GROUP AND THREE EXPERIMENTAL GROUPS

INTERPRETATION OF FINDINGS

The values of the means and standard deviations for the data on weight in the different Groups during the post testing is shown in the table 1.

Further, adjusted means and standard deviation for the data on weight of different Groups during post testing have been shown in table 2. This may be noted that these values are different from that of the unadjusted values shown in table 1. The advantage of using the ANCOVA is that the differences in the post-testing means are compensated for the initial difference in the scores. In other words, it may be said that the effect of covariate is eliminated in comparing the effectiveness of the treatment Groups during post-test.

Table 3 shows the F –value for comparing the adjusted means of the four treatment Groups (Asanas Group, Pranayama Group, Asana Parnayama Group and Control Group) during post-testing. Since p-value for the F- statistic is 0.00 which is less than 0.05, so of it is significant. Thus, the null hypothesis of no difference among the adjusted post-means for the data on weight in four treatment Groups may be rejected at 5% level.

Since F-statistic is significant, post hoc comparison has been made for the adjusted means of the four treatment Groups which

is shown in table 4. It may be noted here that p-value for the mean difference between Asanas Group and Control Group is 0.00, Asana Pranayama Group and Control Group is 0.002. all these p-values are less than 0.05 and hence they are significant at 5% level, but in case of Pranayama Group and Control Group is 0.30 these p-values is higher than 0.05 and hence it is not significant at 5% level, Thus, the following conclusions can be drawn:

- There is a significant difference between the adjusted means of the Asanas Group and Control Group on the data of anthropometric variable weight during post-test.
- There is not a significant difference between the adjusted means of the Pranayama Group and Control Group on the data of anthropometric variable weight during post-test.

There is a significant difference between the adjusted means of the Asana Pranayama Group and Control Group on the data of anthropometric variable weight during post-test.

In order to find as to which treatment is best, one can see the adjusted means values of different treatment Groups during post-testing given in table 2. Clubbing these adjusted means with the three conclusions mentioned above.

Hence, it may be inferred that Asanas and Asana Pranayama are equally effective in decreasing the weight among the subjects in comparison to that of the Control Group.

To Control weight all the treatments proved to be effective as among all the Groups after treatment weight has shown downwards trends but Asanas was most effective as difference between pre and post test was 0.26, in case of experimental Group which was under gone Asana Pranayama together training was less effective. Still difference between pre and post test was 0.14. Which can be seen clearly in graphical representation that is figure-1.

IX. DISCUSSION

Table 3 was referred back into the result section. It could be seen from the table that there was a significant difference in case of weight after administrating the different training programme namely Asanas, Pranayama and combination of Asana Pranayama.

The post hoc test (Table 4) revealed that weight was significantly decreased in Asanas Group among the three experimental programme followed by combination of Asana Pranayama programme respectively. But in case of Pranayama programme there is not a significant difference between the adjusted means of the Pranayama Group and Control Group on the data of anthropometric variable weight during post-test.

The effectiveness of Asanas programme in comparison to other training programme may be due to the reason that Asanas programme decrease weight. Therefore, proposed hypothesis has been accepted in case of weight. But in case of Pranayama programme it was found that there is not a significant difference between the adjusted means of the Pranayama Group and Control Group on the data of anthropometric variable weight during post-test because Pranayama is related to the breathing exercises due to this reason it was found that there is not a significant difference between the adjusted means of the Pranayama Group and Control Group in case of weight.

X. CONCLUSIONS

Asanas and combination of Asana Pranayama can significantly reduce the Weight of school going children.

REFERENCES

- [1] Swami Satyananda Saraswati (2004) Asana Pranayama Mudra Bandha. Yoga Publications Trust, Munger, Bihar, India, pp:1-2.
- [2] J.C Singhal (2009) Yoga Perceived and Practised by Sages of India. Abhishek Prakashan, C-30, IIInd Floor, New Moti Nagar, New Delhi-15, PP:2-3.
- [3] Patanjali's Vision of Oneness, An Interpretive Translation by Swami Venkatesananda. Dailyreadings.com/ys1-1.htm.

- [4] Swami Kavalayananda(2002). Pranayama. Kaivalyadham, Lonavala, India, 9th ed.
- [5] Dr. P.D. Sharma(1999) Yogasana and Pranayama for Health. Gala Publisher, Ahmedabad, India.
- [6] Barrow, Harold M. and Mc. Gee, Rosemary(1979) A Practical Approach to Measurement in Physical Education, Philadelphia: Lea and Febiger.
- [7] Charles H. Bert and N.B. Taylor (1972), London, Chapman and Hall Limited, p:156.
- [8] David H. Clarke (1975), Expertise Physiology, New Jersey Prentice Hall; p-159.
- [9] Edward L. Fox, Richard W. Bowers, Merle L. Foss., The Physiological Basis Of Physical Education And Athletics, (Wm.C. Brown Publishers Dubuque, Iowa, IVth Edition), p.225-232.
- [10] Hastad, Douglas N. and Lacy, Alan C. (1994), Measurement and Evaluation in Physical Education and Exercise Science, 2nd Edition. Scottsdale, Arizona: Gorsuch Scarisbrick.
- [11] Harold M. Barrow, Man and movement, (Philadelphia Publication, 3rd Edition), p. 80.
- [12] Keith Bell (1983). Championship Thinking, The Athletes Guide To Winning Performance In All Sports, London: Prentice Hall, P.152.
- [13] Omo, Yoga For Young India, vitasta publishing pvt. Ltd. 2/15, Ansari Road, Daryaganj, New Delhi-110002.
- [14] Singh, Ajmer et.al. (2001). Modern Text Book of Physical Education Health and Sports, Ludhiana: Kalyani Publishers.
- [15] Swami Gitananda Giri. Yoga: Step-By-Step, Satya Press, Ananda Ashram, Pondicherry .
- [16] Swami Gitananda Giri and Meenakshi Devi Bhavanani. Yoga and Sports, Satya Press, Ananda Ashram, Pondicherry .
- [17] Verma , J.P.(2000). A Text Book on Sports Statistics, Gwalior: Venus Publication.
- [18] Verma , J.P. Statistical Methods For Sports And Physical Education, Tata McGraw Hill Education Private Limited, New Delhi.
- [19] Subbalakshmi NK, Saxena SK, Urmimala, D'Souza UJA(2005). Immediate effect of 'Nadi-shodhana Pranayama' on selected parameters of cardiovascular, pulmonary, and higher functions of brain. Thai J Physiol Sci. 18(2):10-6. 2.
- [20] Madanmohan, Sivasubramanian KM, Balakrishnan S, Gopalakrishnan M, Prakash ES(2008). Effect of six weeks yoga training on weight loss following step test, respiratory pressures, handgrip strength and handgrip endurance in young healthy subjects. Indian J Physiol Pharmacol. 52(2):164-70.
- [21] Ray US, Mukhopadhyaya S, Purkayastha SS, Asnani V, Tomer OS, Prashad R, et al(2001). Effect of yogic exercises on physical and mental health of young fellowship course trainees. Indian J Physiol Pharmacol. Jan;45(1):37-53.
- [22] Murugesan R, Govindarajulu N, Bera TK(2000). Effect of selected yogic practices on the management of hypertension. Indian J Physiol Pharmacol. Apr;44(2):207-10. 5.
- [23] Telles S, Naveen KV(1997). Yoga for rehabilitation: An overview. Indian J Med Sci. Apr;51(4):123-7.
- [24] Manchanda SC, Narang R, Reddy KS, Sachdeva U, Prabhakaran D, Dharmanand S, et al(2000). Retardation of coronary atherosclerosis with yoga lifestyle intervention. J Assoc Physicians India. Jul;48(7):687-94.
- [25] Sivapriya DV, Subamalani S, Shyamala T(2010). Effect of nadi shodhana pranayama on respiratory parameters. Recent Research in Science and Technology. 2(11):32-39.
- [26] Madanmohan, Lakshmi J, Kaviraja U, Ananda BB(2003). Effect of yoga training on handgrip, respiratory pressures and pulmonary function. Indian J Physiol Pharmacol. 47(4):387-392.
- [27] Candy S, Sheena S, Dandona PK(2009). A study of the effect of yoga training on pulmonary functions in patients with bronchial asthma. Indian J Physiol Pharmacol. 53(2):169-174.
- [28] Ankad RB, Balachandra AS, Herur A, Patil S, Chinagudi S, Shashikala GV(2011). Effect of Short Term Pranayama and Meditation on respiratory parameters in healthy individuals. International Journal of Collaborative Research on Internal Medicine & Public Health. 3(6):430-437.
- [29] Makwana K, Khirwadkar N, Gupta HC(1988). Effect of short term yoga practice on ventilator function tests. Ind J Physiol Pharmacol. 32(3):202-206.

- [30] Dewan(2003)Journal of Educational Research and Extension.Vol. 41(3), July-Sep. (2004)
- [31] Graver et.al (1988) Role of Yoga in the treatment of Psychoneurosis, PGI Psychiatry, 29 253 -258.
- [32] Kochar.H.C (1972) Yoga practice as a variable in neuroticism, Peak
- [33] Kochar,H.C(1976)Influence of Yogic Practices on mental Fatigue. Yoga-Mimansa Vol. 28 (2), 3.
- [34] Kochar, H.C (1976-77) Effect of yogic practices on immediate memory, Yoga Mimansa 18,57- 61.
- [35] Mangal, S.K(2002) Advance Educational Psychology, Prentice Hall of India Private Lim.
- [36] Pratap, V. (1971) Investigation on Trataka, collected papers on yoga, Lonavala, Kaivalyadhama,16.
- [37] Tirth, Omanand (1960) Patanjali Yog Paradeep, Geeta Press Gorkhpur. Sahu.R.J & Bhole.M.V. (1983) Effect of three week Yogic training programme on psychomotor performance, Yoga Mimansa,22,59-62.
- [38] Bijalani RL. Understanding medical physiology, 3 edition, Jaypee brothers, Noida.2004; p. 897.

AUTHORS

First Author – Dr. Uday Bhanu Kundu, (Ph.D), Assistant Professor, Lakshmbai National Institute of Physical Education, NERC, Guwahati-782402, Assam, India, email address- uday_kundu@yahoo.in , contact number-07896456504, 09800899872.