Effect of Asanas and Pranayama on Selected Anthropometric and Psycho-Physiological Variables of School Going Children

By

Uday Bhanu Kundu

(Research Scholar, DPRESS, University of Delhi)

A SUMMARY OF THE STUDY

Guided By

Dr. Tarak Nath Pramanik

(Assistant Professor)

I.G.I.P.E.S.S., New Delhi

ADVISORY COMMITTEE MEMBERS:

Dr. Ashok Singh (Associate Professor)

Dr. Samiran Chakraborty (Associate Professor)

Dr. Lalit Sharma (Associate Professor)
Effect of Asanas and Pranayama on Selected Anthropometric and Psycho-Physiological Variables of School Going Children

STATEMENT OF THE PROBLEM

Effect of Asanas and Pranayama on Selected Anthropometric and Psycho-Physiological Variables of School Going Children.

OBJECTIVES OF THE STUDY

Looking towards the nature of this study, the researcher has investigated the following objectives in perspective:

- To study the effect of asanas on anthropometric and psycho-physiological variables of school going children.
- To study the effect of pranayama on anthropometric and psycho-physiological variables of school going children.
- To study the combination effect of asana pranayama on anthropometric and psycho-physiological variables of school going children.
- To compare the effect of asanas and pranayama and their combination on anthropometric and psycho-physiological variables of school going children.
- To compare the three treatments and its effect on the selected variables.

HYPOTHESES

The research scholar has substantially gone through available literature on Asanas and Pranayama on selected anthropometric and psycho-physiological variables and on the basis of his own understanding it was hypothesized:

H1 There will be a significant effect of Asanas Practice on selected Anthropometric and Psycho-Physiological variables of school going children.

H2 There will be a significant effect of Pranayama Practice on selected Anthropometric and Psycho-Physiological variables of school going children.

H3 There will be a significant effect of Asana Pranayama Practice on selected Anthropometric and Psycho-Physiological variables of school going children.
H4 There will not be any significant deference among three treatment groups.

DELIMITATIONS

1. The study was delimited to the practice of following selected Asanas.
   Surya Namaskar, Sarvangasana, Matsyasana, Halasana, Bhujangasana, Shalvhasana,
   Dhanurasana, Chakrasana, Ardha Matsyendrasana, Paschimottanasana, Vajrasana,
   Yogamudra, Standing kati chakrasana, Tadasana, Shavasana.
2. The study was delimited to the following selected pranayama techniques.
   Anuloma Vilom pranayama, Bhastrika pranayama.
3. The study was delimited to the following anthropometric measurement.
   Height, Weight, B.M.I. (Body mass index), Body fat percentage (%).
4. The study was also delimited to the psychological variables
   Self concept (Behaviour, Intellectual and school status, Physical appearance and
   attributes, Anxiety, Popularity, Happiness and satisfaction), Anxiety, Stress.
5. The study was delimited to the following measures of physiological variables.
   Vital capacity, Peak flow rate, Resting pulse rate, Resting respiratory rate, Maximum
   breath holding time (Positive breath holding time, Negative breath holding time).
6. The study was delimited to school going male students of West Delhi in age group of 8-
   10 years.
7. The study was also delimited to 120 school going male students of West Delhi.
8. The study was confined to twelve weeks of training programme.

SELECTION OF SUBJECT

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. All the subjects those were selected for the
study did not carry out the training programme for the entire training programme of twelve
weeks.
SELECTION OF VARIABLES

With the consultation of guide and other expert in the field of physical education and sports with the support of scientific literature, journals, magazines and keeping feasibility criteria in mind following variables were selected for the purpose of the present study.

**Anthropometric variables:** (Height, Weight, B.M.I., Body Fat Percentage).

**Psychological variables:** {Self Concept (Behaviour, Intellectual and School Status, Physical Appearance and Attributes, Anxiety, Popularity, Happiness And Satisfaction) Anxiety, Stress}

**Physiological Variables:** {Vital Capacity, Peak Follow Rate, Resting Pulse Rate, Resting Respiratory Rate, Maximum Breath Holding Time (Positive Breath Holding Time, Negative Breath Holding Time)}.

DESIGN OF THE STUDY

Pre test post test random group design was used for the present study. Three experimental groups and one control group consisting of 30 subjects were selected. The experimental treatment to each of the groups assigned randomly by drawing lots. The experimental groups had done asanas, pranayama and their combination of asana pranayama for a period of twelve weeks. The control group had not participated in any activity during the experimental period.

CRITERION MEASURES FOR DATA COLLECTION

**Height**
Height was recorded on centimeter (Cm) with the help of Gulick Tape.

**Weight**
Weight was recorded on kilogram (Kg). Weighing machine.

**B.M.I (Body mass index)**
B.M.I was recorded on kg/m², B.M.I = Mass(Kg) / [Height (M)]²

**Body fat percentage(%)**
Body fat was measured by the lenge skin fold calipers and the sum of the skin fold thickness of all the four sites of the body was converted in to percentage by body fat as suggested Durnin & Womersley.
Self concept
Self concept scores of the subject were obtained by using children’s self concept scale (CSCS) by Dr. S.P Ahluwalia and Dr. Hari Shankar Singh.

Anxiety
The anxiety scores of the subjects were obtained by using general anxiety scale for children (GASC) by Dr. Anil Kumar.

Stress
The stress scores of the subject were obtained by using stress inventory for school students (SISS) by Seema Rani and Dr. Basant Bahadur Singh.

Vital capacity
Vital capacity was obtained to the nearest C.C with the help of dry spirometer.

Peak flow rate
Pick flow rate was recorded to the nearest liter per minute with the help of peak flow meter.

Resting pulse rate
Resting pulse rate was recorded as the number of pulse beats per minute during the state of rest with the help of stopwatch.

Resting respiratory rate
Resting respiratory rate was recorded by the rate of respiration in unit counts per minute by carefully watching the moment of the abdomen and measured by the stopwatch.

Maximum breathing holding time
Maximum breathing holding time was recorded to nearest second by using stopwatch.

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 25° C to 38° 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. Research scholar gave a proforma for all experimental groups. 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.

ADMINISTRATION OF TRAINING PROGRAMME

All the subjects were assembled at the activity hall of Muni International School, A-2/16-18, Mohan Garden, Uttam Nagar, New Delhi-110059, India and were briefed on the three types of training. The three experimental groups (A,B,C) were administered three type of practices i.e. Asanas, Pranayama and Combination of Asana and Pranayama. Group “D” as a control group did not participate in any kind of practice except the regular routine of work.

The training was conducted for a period of twelve weeks, six days a week excluding the time consumed for conducting pre test and post test. The scholar demonstrated the training to each group, all the subjects of the experimental groups participated in their respective training programme. Sufficient and required recovery time was provided in between the tests.

The training programme was administered in the activity hall of Muni International School, A-2/16-18, Mohan Garden, Uttam Nagar, New Delhi-110059 by the investigator himself.

The training programme was administered for a period of twelve weeks, six days a week. The subjects were classified into four groups (A, B, C, D) consisting of 30 subjects each.

Group D was the control group and A, B, C groups were experimental groups. Three types of experimental training programme were developed after exhaustive consultation with experts through literature review and critical deliberation with exercise physiologist, psychologist, specialist in the field of anthropometric and other valued specialists.

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. Yoga training programme for each experimental group (A, B, C) respectively Asanas, Pranayama and Combination of Asana Pranayama. In per day each training session was 45 minutes duration. Rest period between Asanas group, Pranayama group and combination of Asana Pranayama group was decrease as the training progressed 4th, 7th and 10th weeks.
COLLECTION OF DATA

The data for the purpose of the study was collected from Muni International School, A-2/16-18, Mohan Garden, Uttam Nagar New Delhi-110059, India. The data was collected before the start of the experiment (i.e. pre-test) and at the end of the treatment period (i.e. post test). All the scores were collected on the first day before the start of training experimental programme to the experimental group and repeated after completion of training programme.

STATISTICAL ANALYSIS

The analysis of covariance (ANCOVA) was applied to find out the effect of Asanas and Pranayama on selected anthropometric and psycho-physiological variables of school going children at significance level of 0.05. Further to see the significance difference between group means and least significant difference Post Hoc Test of significance was applied.

CONCLUSIONS

On the basis of obtained result and within the limitations of this study, the following conclusions were drawn:

1. Significant improvement was not found in Height as a result of the experimental treatment in all the three experimental groups.

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

3. Asanas and combination of Asana Pranayama can significantly reduce the B.M.I of school going children.

4. Significant improvement was not found in Body fat percentage (%) as a result of the experimental treatment in all the three experimental groups.

5. Asanas, Pranayama and combination of Asana Pranayama also improve the Behaviour of school going children.
6. Asanas, Pranayama and combination of Asana Pranayama also improve the Intellectual and school status of school going children.

7. Asanas, Pranayama and combination of Asana Pranayama also improve the Physical appearance and attributes of school going children.

8. Asanas, Pranayama and combination of Asana Pranayama also decrease the Anxiety of school going children.

9. Asanas, Pranayama and combination of Asana Pranayama also improve the Popularity of school going children.

10. Asanas, Pranayama and combination of Asana Pranayama also improve the Happiness and satisfaction of school going children.

11. Asanas, Pranayama and combination of Asana Pranayama also improve the self concept of school going children.

12. Asanas, Pranayama and combination of Asana Pranayama also decrease the Anxiety of school going children.

13. Asanas, Pranayama and combination of Asana Pranayama also decrease the Stress of school going children.

14. Significant improvement was found in Vital capacity performance as a result of the experimental treatment in all the three experimental groups.

15. Significant improvement was found in Peak flow rate performance as a result of the experimental treatment in all the three experimental groups.

16. Asanas, Pranayama and combination of Asana Pranayama can significantly reduce the Resting pulse rate of school going children.

17. Asanas, Pranayama and combination of Asana Pranayama can significantly reduce the Resting respiratory rate of school going children.

18. Significant improvement was found in Maximum breath holding time (Positive) performance as a result of the experimental treatment in all the three experimental groups.
19. Significant improvement was found in Maximum breath holding time (Negative) performance as a result of the experimental treatment in all the three experimental groups.