



Effect of Yoga Exercises on selected Physiological Variables of School Girls

Usha D. Kodgire:

Dept. of physical education
S.R.T.M.U. Nanded (Maharashtra)

Maduri Waghchure :

Chandrashekhar Agashe College of Physical Education,
Pune.(Maharashtra)

Received: 01 March 2013

Reviewed & Received: 01 March 2013

Abstract

Yoga is Indigenous activity; Yoga has been accepted by human Society for its innate values towards the improvement in human health originated of India. Yoga has more impact on various physiological systems.

The study was designed to investigate the effect of Yoga exercises on selected physiological variable of School girls. To achieve the purpose of Girls were selected from N.H. High School Nanded as subjects they were divided into two groups i.e. Control Group & Experimental Group. Control Group was not given any specific training practice. Experimental Group assigned Yoga for 12 weeks. Criterion variables were Blood pressure, Respiratory rate, Heart rate, Vo₂ max. All the dependent variable were assessed before & after training period of 12 weeks. Analysis of covariance was assists to find out the post test mean difference among the treatment groups. Yoga group showed significant reduction in systolic blood pressure (CD=0.68, P<0.01), significant reduction in respiratory rate (C.D. = 0.78, P<0.01), significant reduction in pulse rate (C.D. =0.61, P<0.01) & significant improvement in vo₂ max (C.D. =0.56, P<0.1).Control Group did not show any significant differences in all variables.

Keywords: Yoga Exercise, Physiology

INTRODUCTION

Physical fitness of Indian school girls, to day, is really questionable. Easily access of modern amenities restricts them to do hard physical labour. Gradually, they become sedentary. In their sedentary lives, physical inactivity leads towards most common metabolic disorders that may cause not only the morbidity and mortality, but also cause numerous health complications.

In fact, physical inactivity among school girls often carries a negative social stigma that affects health along with declined physical fitness. To achieve their normal improvement of factors of physical fitness in growing age, various researches investigated the effects of different physical activities on sports performance and associated variables of physical fitness (Mac Raw, 1989; Sherwood and Selder, 1979; Spirduso and Clifford, 1978; Spirduso *et al.* 1988).

Similar studies in the area of Yoga exercises also revealed that Yoga proved to be a better intervention for improving physical fitness variables of schools students (Bera and Rajapurkar, 1993; Ganguly, 1981; Gharote, 1976 a; Gharote, 1976 b; Moorthy, 1983). Other associated reports revealed that both physical exercise, yoga and their combination showed significantly better as well as consistent results to improve the variables of health and fitness (Moorthy, 1982; Pushparajan, 1988). Thus, it is clear that yoga training brings positive changes in physical fitness by altering Psycho-neuro-physiological and biochemical variables even for school going children.

It is apparent from these reports that Yoga can be judiciously used as an intervention for improving physiological variable of the school girls as selected in this study.

Thus, the role of Yoga exercises on body functions for school girls is really significant.

As Yoga has been accepted by human society for its innate values towards the improvement in human health, experiment to Yoga for health and fitness benefit was strategically planned in this study, entitled, "*Effect of Yoga Exercises on selected Physiological Variables of School Girls*".

MATERIALS AND METHOD

The investigator has used a parallel group method of true experimental design that consists of one Control Group and one Experimental Group.

Subject-The investigation was carried out in the Narhar Kurundkar High School, Kautha, Nanded. Sixty girls (n=60), aged 13 to 15 years, as selected from the population two hundred students of the said school, were randomly assigned in to two groups viz., Exp.Gr. A (Yoga), and Control. Each group consists of 30 students. As per school health record, all the students were found clinically normal.

After the pre-test with the physiological test the Exp. Gr. Yoga underwent a training programme of selected Yoga practices; whereas the Control group did not participate in any of the above training programme.

Yoga training programme to the subjects of the Exp.Gr.Yoga has been imparted daily for 60 minutes in the morning. These training programmes were imparted six days in a week except Sunday and holidays for a total period of 12 weeks (three months). The subjects of the Control Group did not participated in

yoga activities

After the experimental period is over, the subjects of all the groups were post-tested with the physiological Tests

1) Dependent variable

- **Physiological Variables**

Yoga activities are mostly aerobic in nature; they have more impact on various physiological systems. Further, aerobic activities influence one's circulatory process that, in fact, changes respiratory rate, heart rate and VO₂ max. Thus, selection of following dependent variables seems to be justified:

1. Blood pressure (systolic and diastolic blood pressure),
2. Respiratory rate,
3. Heart Rate, and
4. VO₂ Max test.

2) Independent Variables

A set of selected Yoga exercises for Experimental Group Yoga as the independent variables for this study.

Data analysis

The data collected were analysed primarily by the descriptive statistics. Further, looking towards the nature of design of the present study, ANCOVA followed by Scheffe's post hoc test were applied for data analysis.

RESULTS

Result on Systolic Blood Pressure

- Yoga training showed significant reduction in systolic blood pressure which is remained at the lower limit of normal range (CD=0.68, p<0.01).
- Controlled subjects did not show any change in systolic blood pressure scores (CD=0.12, p>0.05).

Result on Diastolic Blood Pressure

- Yoga training did not show any change in diastolic blood pressure which in fact remained at the normal range (CD=0.08, p>0.05).
- For controlled subjects the scores of diastolic blood pressure were unaffected (CD=0.10, p>0.05).

Result on Respiratory Rate

- Yoga training showed significant reduction in respiratory rate which is remained below the normal range (CD=0.78, p<0.01).
- Controlled subjects did not show any change in respiratory rate scores (CD=0.10, p>0.05).

Result on Pulse Rate

- Yoga training showed significant reduction in pulse rate which is remained at the lower limit of the normal range (CD=0.61, p<0.01).
- Controlled subjects did not show any change in pulse rate (CD=0.15, p>0.05).

Result on VO₂

- Yoga training showed significant improvement in VO₂ max (CD=0.56, p<0.01).

- Controlled subjects did not show any change in VO₂ max (CD=0.13, p>0.05).

FINDINGS

Analysis of physiological variables revealed that –

- Yoga training showed significant reduction in systolic blood pressure which remained at the lower limit of normal range (CD=0.68, p<0.01).

Yoga training did not show any change in diastolic blood pressure which in fact remained at the normal range (CD=0.08, p>0.05).

Yoga training showed significant reduction in respiratory rate which is remained below the normal range (CD=0.78, p<0.01).

Yoga training showed significant reduction in pulse rate which is remained at the lower limit of the normal range (CD=0.61, p<0.01).

Yoga training showed significant improvement in VO₂ max (CD=0.56, p<0.01).

CONCLUSION

- Yoga reduces systolic blood pressure; respiratory rate and pulse rate whereas no change is recorded in diastolic blood pressure by the interventions. Yoga training increases VO₂ max. This indicates that a Yoga exercise is very good to improve circulo-respiratory efficiency of the school girls.
- Thus, Yoga activities to improve almost all the selected physiological variables in school girls.

REFERENCES

- Adrian, M.J. (1981). Flexibility In Aging Adult. In E.L. Smith And R.C. Serfass, (Eds.), *Exercise And Aging: The Scientific Basis*. N.J.: Ensolow Hillside.
- American Academy Of Paediatrics Committees On Sports Medicine And School Health. (1987). Physical Fitness And The Schools. *Paediatrics*, 80, 449-450.
- American Alliance For Health, Physical Education, Recreation And Dance. (1984). *Technical Manual: Health Related Physical Fitness*. Reston , V.A. : Aahperd.
- American Alliance For Health, Physical Education, Recreation And Dance. (1989). *Physical Fitness Test Manual*. Reston, V.A. : Aahperd.
- American College Of Sports Medicine. (1988). Physical Fitness In Children And Youth. *Medicine And Science In Sports And Exercise*, 20, 422-423.
- Anand, B.K. (1993). Yoga And Medical Sciences. *Ind. J. Physiol. Pharmacol.*, 35, 84.
- Baumbartner, T.A., And Jackson, A.S. (1982). *Measurement For Evaluation In Physical Education* (2nd Ed.). Boston: Houghton Mifflin.
- Boileau, R.A., Wilmore, J.H., Lohman, T.G. Slaughter, M.H. And Riner, W.F. (1981). Estimation Of Body Density From Skin Fold Thickness, Body

- Circumference And Skeletal Widths In Boys Aged 8 To 11 Years Comparison Of Two Samples. *Human Biology*, 53, 575-592.
- Burris, B. (1970). Reliability And Validity Of The Twelve Minute Run Test For College Women. *Paper Read At Aahper Convention*, Seattle.
- Burwell, C.S. *Et Al.* (1956). Extreme Obesity Associated With Alveolar Hyperventilation A Pickwickian Syndrome. *Am. J. Med.* 21, 811.
- Buxton, D. (1957). Extension Of The Kraus-Weber Test. *Research Quarterly*, 28, 210-217.
- Caspersen, C.J., Christenson, G.M., & Pollard, R.A. (1986). Status Of The 1990 Physical Fitness And Exercise Objectives Evidence From Nhis 1985. *Public Health Reports*, 101, 587-592.
- Chakrabarti, B.K., Ghosh, H.N. And Sahana, S.N. (1972). *Modern Human Physiology*. Calcutta : The New Book Stall.
- Christen, J.; Stols, Samek L, I. (1969). On Determination Of Physical Fitness By The Step Up Test., *Journal Of Sports Medicine And Physical Fitness*, 5,2, 62.
- Clerk, Harriet L.(1943). A Functional Physical Fitness Test For College Women. *Journal Of Health, Physical Education And Recreation*, 14, 358-59.
- Clerk, H. Harrison.(1967). *An Application Of Measurement To Health And Physical Education*. New Delhi: Prentice-Hall, Inc.

