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Effect of Yoga on Selected Physical and Physiological Variables of Physical Education Students

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Abstract: *According to medical scientists, yoga therapy is successful because of the balance created in the nervous and endocrine systems which directly influences all the other systems and organs of the body. Yoga acts both as a "Curative therapy". The very essence of yoga lies in attaining mental peace, improved concentration powers, a relaxed state of living and harmony in relationship.Regular practice of asana, pranayama and meditation can help such diverse, ailments such as diabetes, blood pressure, digestive disorders, arthritis, arteriosclerosis, chronic fatigue, asthma, varicose veins and heart conditions. Laboratory tests have proved the yogi's increased abilities of consciously controlling autonomic or involuntary functions, such as temperature, heartbeat and blood pressure.The study was undertaken with the aim to observe the effect of yoga(asana &pranayama) onselected physical & physiological variables of physical education B.P.ED (Bachelor of Physical Education) and M.P.ED (Master of Physical Education) students.For this study total 40 male students were selected as subject from SGGS Khalsa College Mahilpur, Punjab, India. Their age ranged between 18-24 years. Students were given the treatment of selected yogicasana &pranayama for 12 weeks Result shows that the regular practice of yoga improvedphysical variables (Muscular strength & endurance of trunk; and flexibility) & physiologicalvariables (Pulse Rate, Vital Capacity & Peak Flow Rate) significantly.*

I. Introductions

The most important benefit of yoga is physical and mental therapy.**I**ndians have given great importance to 'yoga' and 'physical exercises' not only to prevent or cure the physical ailments/diseases but to keep fit also. The great ancient Rishis, Vedas and Purans also have given much importance to physical fitness (Uppal&Gautam, 2006). Traditionally lord Shiva is regarded as the Original founder of yoga. It is believed that this secret divine Science of life, revealed to enlightened sages in meditation, was firstly narrated by lord Shiva to his wife Parvati for "Upliftment of humanity". Hiranyagarbha has been proclaimed as the veryfirst teacher of yoga. Yoga is an ancient science of physical, mental and spiritual development. Yoga has become increasingly popular in Western cultures as a means of exercise and fitness training. Yoga is ultimate for developing harmony among body, mind and spirit. Yoga asana are ways of moving and/or holding the body in different position. Yoga asana has several exercises or postures that work wonders on fitness and health. Varying widely in application and style, these exercises (postures) gently stretch and explore all parts of body. Yoga asana boost physical strength, stamina and flexibility, improve blood circulation, enhance posture and muscle tone and bestow greater powers of concentration and self-control.Through the practice of yoga, we become aware of the connection between our emotional, mental and physical levels On the other hand pranayama is one of the five principles of Yoga or breathing and exercise which promote proper breathing.The ultimate goal of yoga is to make it possible for you to be able to fuse together the gross material (annamaya), physical (pranamaya), mental (manomaya), intellectual (vijnanamaya) and spiritual (anandamaya) levels within your being. In a Yogic point of view, proper breathing is to bring more oxygen to the blood and to the brain, and to the control Prana or the vital life energy. The union of these two Yogic Principles is considered as the highest form of purification and self-discipline, covering both mind and body.

Purpose of the Study

The purpose of the present study was to find out the effect of yoga on selected physical & physiological variables of physical education B.P.ED (Bachelor of Physical Education) and M.P.ED (Master of Physical Education) students.

II. Methodology

Subjects

Total 40 male subjects were selected for this study. 25B.P.ED (Bachelor of Physical Education) and 15 M.P.ED (Master of Physical Education) students from SGGS Khalsa College Mahilpur, Indiawere taken as sample. Their age ranged between 18-24 years.

Variable

Physical Measures

- Muscular strength (dynamic) & muscular endurance of arm & shoulders.
- Muscular strength & endurance (trunk).
- Speed and agility.
- Explosive strength of legs.
- Speed of lower extremities & explosive strength.
- Cardio-vascular endurance.
- Flexibility.

Physiological Measures

- Resting Pulse Rate
- Vital Capacity
- Peak Flow Rate

Tests: Following tests were utilized for the present study:-

Tests used for Physiological variables

Muscular strength (dynamic) & endurance of arm & shoulders	: Pulls-ups
Muscular strength & endurance (trunk)	: Bent-knee sit ups
Speed and agility	: Shuttle-run
Explosive strength of legs	: Standing board jump
Speed of lower extremities & explosive strength	: 50 yards dash
Cardio-vascular endurance	: 12 min. run & walk
Flexibility	: Sit & Reach test

Tests conducted for Physiological variables

Resting Pulse Rate	: Stop Watch
Vital Capacity	: Spiro meter
Peak Flow Rate	: Peak Flow Rate

Data Collection

All data were collected, in the month of August and October 2013 when they were attending their regular classes. The researcher him-self specialize in yoga and administered the yoga programme. The subjects were participated in yoga programme five days in a week at indoor hall, only for a period of 12 weeks. Necessary instruction wasgiven by yoga instructor, to the subject before the administration of programme. Confidentiality of response was guaranteed. The required data in different components was collected from the students during first for morning classes.

Aahperyouth physical fitness test; and sit & reach test for measuring physical fitness variables organized at 1st, 2ndand 3rd day while physiological measurement were taken 4th day. After collection of pre-test scores on all the selected variables, subjects participated in yoga programme. After collection of 12 weeks yoga programme, post- test was conducted and all data were collected (as pre-test was collected) on all health variables.

Statistical Procedure

For analysis of the data collected from B.P.ED (Bachelor of Physical Education) and M.P.ED (Master of Physical Education) students, Mean and SD was computed. To find out the effect of yoga on selected physical & physiological variables of students, 't' test was applied. For testing the hypothesis the level of significance was set at .05 levels.

III. Discussion And Findings

Table 1 shows the comparison of means of selected physical variables of pre test scores. In pull-ups mean value of pre- test in 12.2 and post- test is 13.38. In bent-knee sit ups mean value of pre- test is 38.42 and post- test is 43.31. inshuttle-run mean value of pre- test is 10.46 and post- test is 10.32. In standing broad jump mean value of pre -test is 224.36 and post- test is 229.7. In 50 yards dash mean value of pre- test is 7.19 and post- test is 7.01. In 12 min. run & walk mean value of pre- test is 2578.4 and post- test is 2648.2. in flexibility value of pre- test is 17.23 and post- test is 24.54.

Table 1: CompressionOf Means Of Selected Physical Variables Of Pre Test & Post Test Scores

Components	Group	Mean	SD	T
Muscular strength & endurance(Pulls-ups, in count)	Pre- test	12.2	5.34	0.948
	Post- test	13.38	5.78	
Muscular strength & endurance(Bent-knee sit ups, in count)	Pre- test	38.42	9.35	2.473*
	Post- test	43.31	8.3	
Speed and agility(Shuttle-run, in seconds)	Pre -test	10.46	2.48	0.217
	Post- test	10.32	3.24	
Explosive strength(Standing board jump, in cm)	Pre -test	224.36	25.4	0.877
	Post- test	229.7	28.9	
Speed of lower extremities & explosive strength	Pre -test	7.19	1.47	0.527
(50yards dash, in seconds)	Post- test	7.01	1.58	
Cardio-vascular endurance(12 min. run & walk, in meter)				0.822
	Pre- test	2578.4	362	
Flexibility(in cm)	Post- test	2648.2	396.52	6.217*
	Pre -test	17.23	4.32	
	Post- test	24.54	6.03	

* **Significant at .05 level**

't' value required to be significant at .05 level with 38 degree of freedom is 2.021

There is significant difference found between the means of selected physical variables (Muscular strength & endurance of trunk; and flexibility) of physical education students, as 't' value required to be significant is 2.021 and calculated value is more compare to tabulated value. Raub (2002), reported after his study that Yoga can improve strength and flexibility. Ray et al. (2001), also reported that shoulders, hip, trunk and neck flexibility improved due to yogic exercises. Cowen & Adams (2005) also reported significant improvements in upper body and trunk between the means of selected physical variables (Muscular strength(dynamic) & muscular endurance of arm & shoulders; Speed and agility; Explosive strength of leg; Speed of lower extremities & explosive strength; Cardio-vascular endurance) of physical education students, as't' value required to be significant is 1.98 and calculated value is less compare to tabulated value.

Fig 1.Comparison of Mean Difference in Pull-ups.

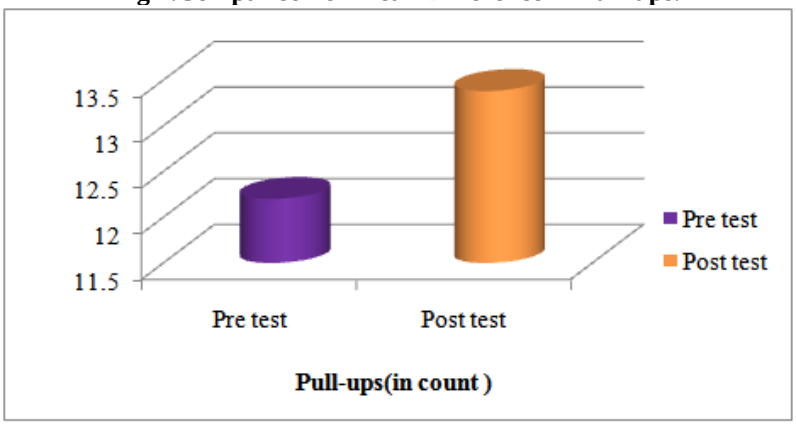


Fig. 2 - Comparison of Mean Difference in Sit-ups.

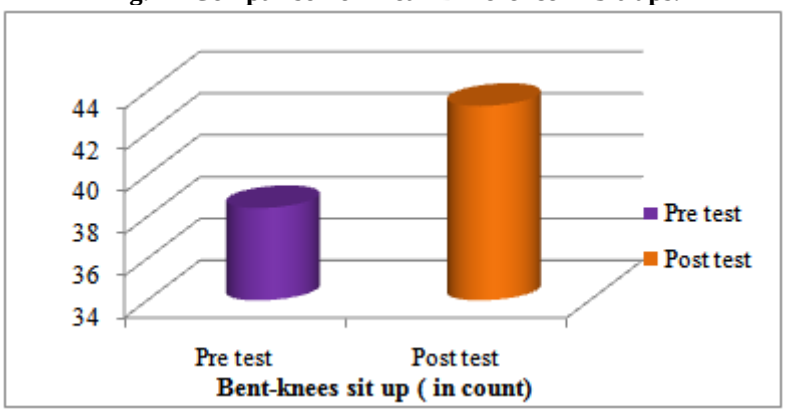


Fig. 3 - Comparison of Mean Difference in Shuttle Run

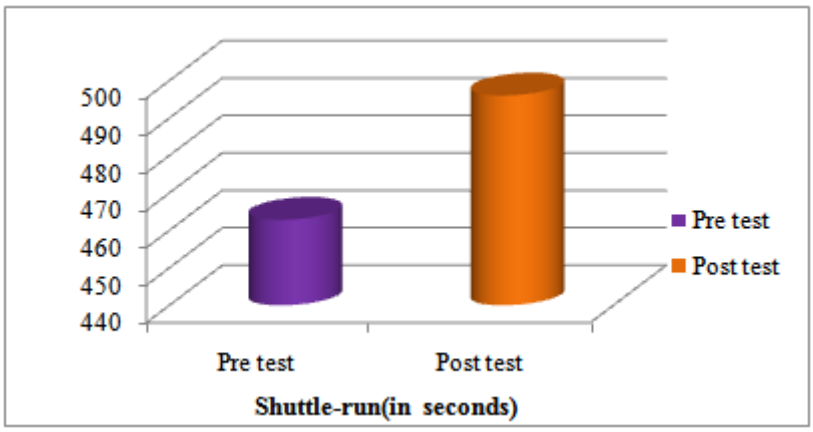


Fig. 4 - Comparison of Mean Difference in SBJ

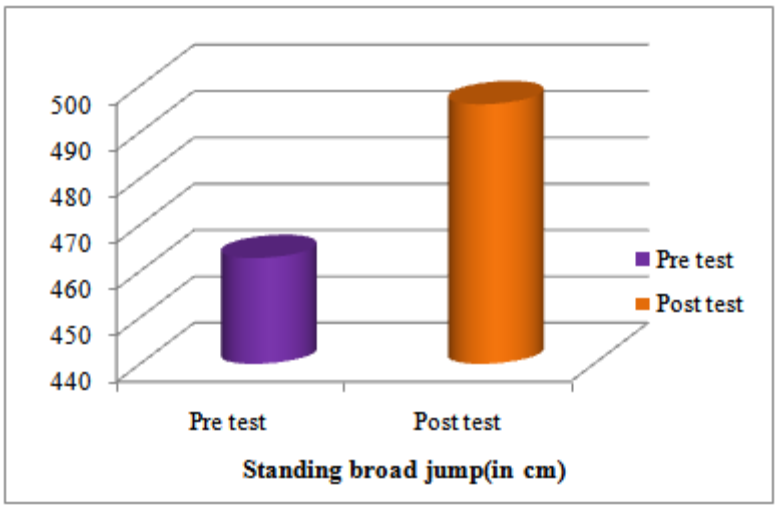


Fig. 5 - Comparison of Mean Difference in 50 Yards dash (in seconds)

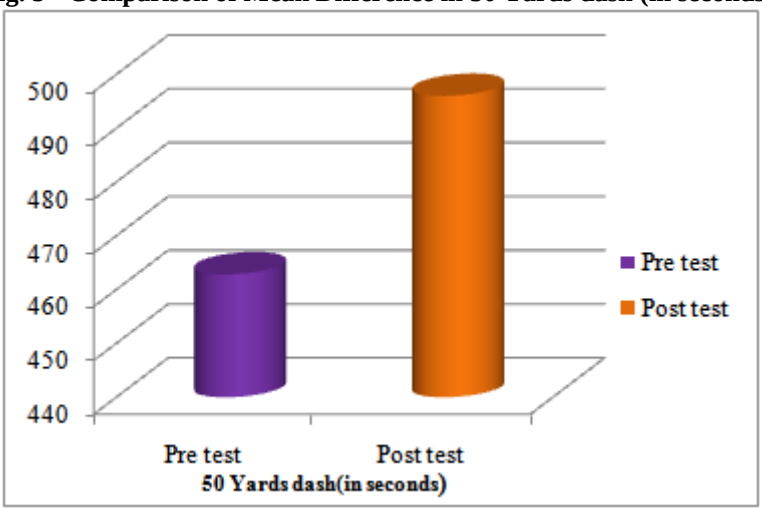


Fig. 6 - Comparison of Mean Difference in 12 min. run &walk (in meter)

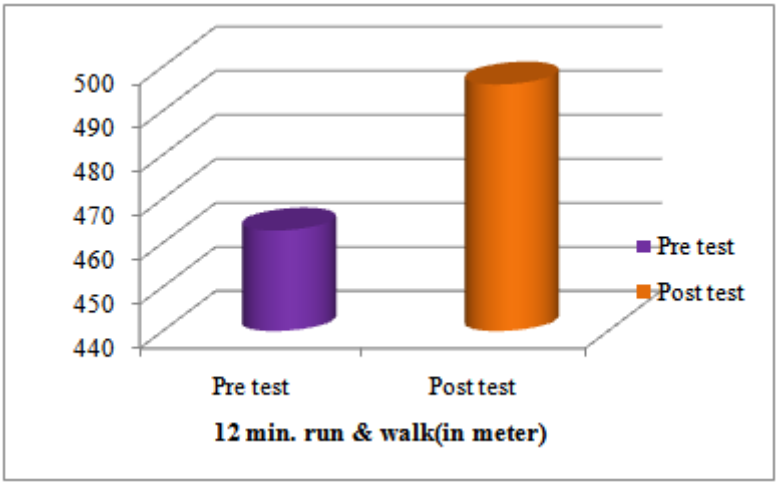


Fig. 7 - Comparison of Mean Difference in Flexibility (in cm)

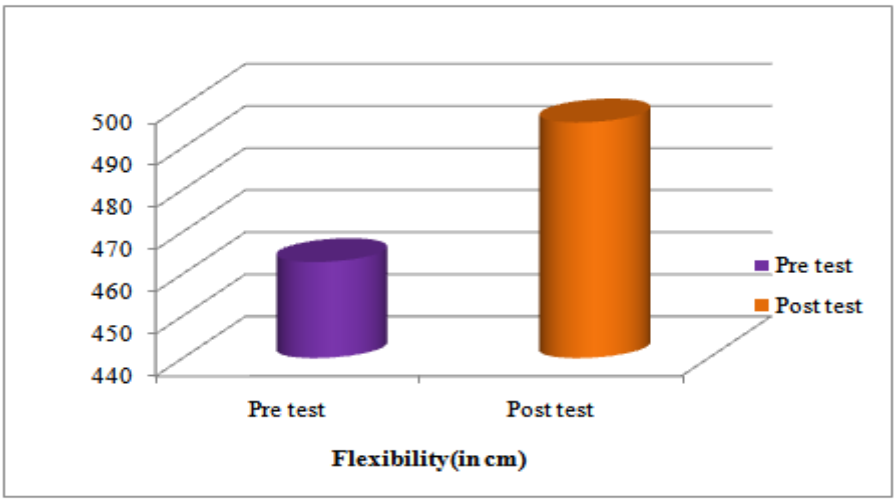


Table 2 shows the comparison of means of selected physical variable of pre- test & post test scores. In pulse rate mean value of pre- test is 72.47 and post- test is 69.03.In vital capacity mean value of pre -test is 2998.56 and post- test is 3221.24. In pack flow rate mean value of pre- test is 462.84 and post- test is 496.03.

Table 2: Comparison Of Means of Selected Physiology Variables Of Pre Test & Post Testscores

Components	Group	Mean	S.D.	t
PulseRate	Pro- test	72.47	5.39	2.595*
	Post- test	69.03	6.42	
Vital Capacity	Pro -test	2998.56	346.73	2.628*
	Post -test	3221.24	408.56	
Peak Flow Rate	Pro -test	462.84	69.49	2.127*
	Post - test	496.03	70.05	

* **Significant at .05 level**

't' value required to be significant at .05 level with 38 degree of freedom is 2.021

There is significant difference found between the means of all selected physiological variables (pulse rate, vital capacity & peak flow rate) of physical education students. Raub, (2002) reported to that Yoga may help control such physiological variables as blood pressure, respiration and heart rate, metabolic rate to improve overall exercise capacity. Harinath, (2004)also reported that yogic practicesfor 3 months resulted in an improvement in cardio-respiratory performance. Joshi (1992) also reported that six weeks courses in 'pranayama' improve ventilatory function in the form of lowered respiratory rate, and increases in the forced vital capacity , forced expiratory volume , maximum voluntary ventilation , peak expiratory flow rate , and prolongation of breath holding time. Yadav and Das (2001) also reported significant increase in forced vital capacity, forced expiatory volume and peak expiratory flow rate and the end of 12 weeks yoga training.

Fig. 8 - Comparison of Mean Difference in Heart Rate

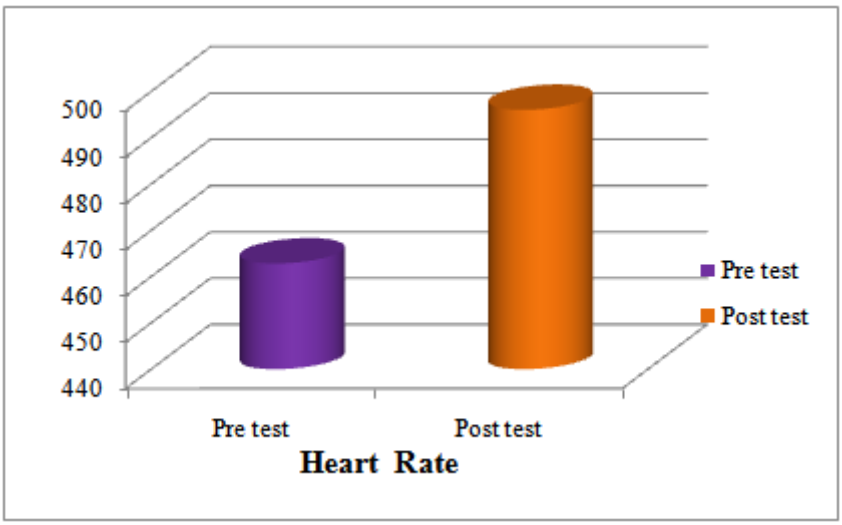


Fig. 9 - Comparison of Mean Difference in Vital Capacity

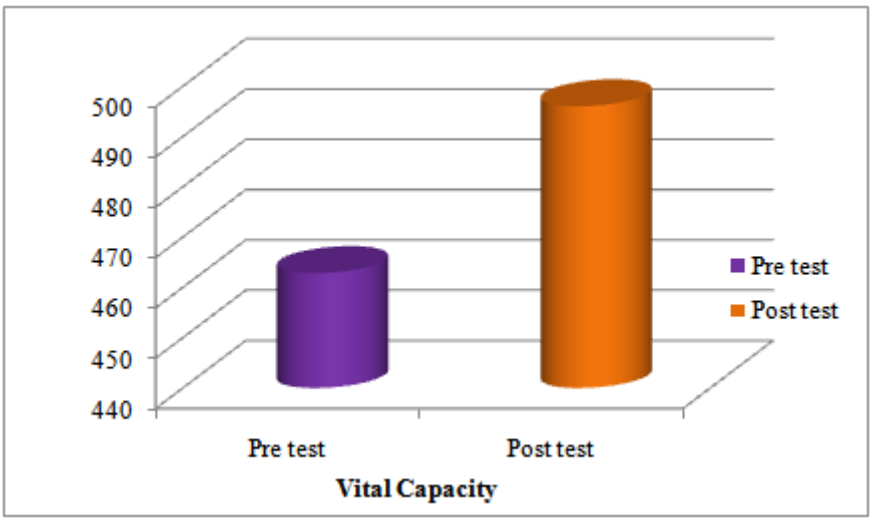
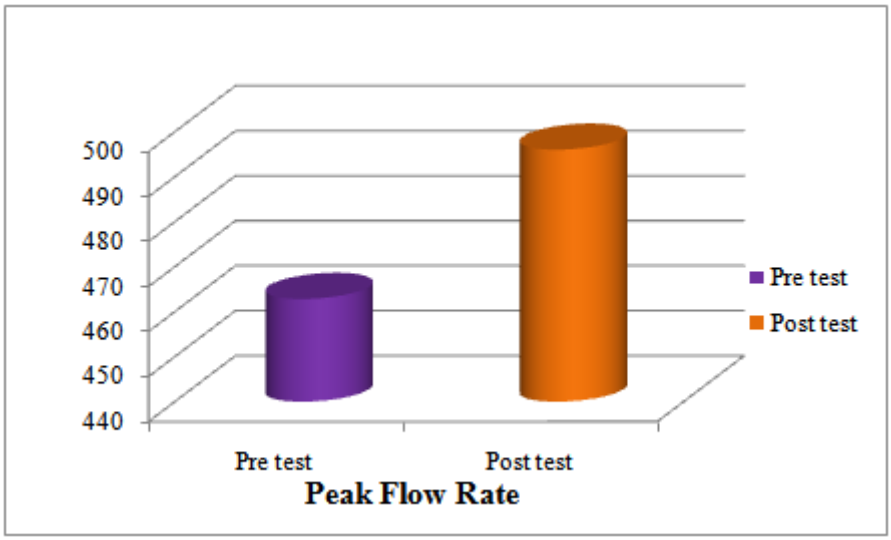


Fig. 10 - Comparison of Mean Difference in Peak Flow Rate



IV. Conclusions

- Twelve weeks Yoga training is beneficial for improvement in Muscular strength & endurance of trunk & flexibility of physical education students.
- Twelve weeks Yoga training significantly improved pulse rate, vital capacity &peak flow rate of physical education students.
- Twelve weeks Yoga training is not beneficial for improvement of Muscular strength(dynamic) & endurance of arm & shoulder; Speed and agility**;** Explosive strength of legs**;** Speed of lower extremities & explosive strength**;** Cardio-vascular endurance of physical education students.

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