



ISSN: 2456-0057

IJPNPE 2019; 4(1): 325-329

© 2019 IJPNPE

www.journalofsports.com

Received: 10-11-2018

Accepted: 14-12-2018

**Satya Narayan**

Ph.D. Scholar, Department of  
Physical Education, Faculty of  
Arts, BHU, Varanasi,  
Uttar Pradesh, India

**Dr. Akhil Mehrotra**

Assistant Professor, Department  
of Physical Education, Faculty  
of Arts, BHU, Varanasi,  
Uttar Pradesh, India

## Effect of calisthenics and yogasanas on health related physical fitness component flexibility of junior high school boys

**Satya Narayan and Dr. Akhil Mehrotra**

### Abstract

The purpose of this study was to find out the Effect of calisthenics and yogasanas on health related physical fitness component flexibility of Junior High School Boys. In this study eighty (80) Junior High School Boys were selected randomly from Central Hindu Boys School Varanasi, Uttar Pradesh. Their age range was from 11 to 15 years. The selected subject was divided into four equal groups of twenty subjects each. There were three experimental groups namely calisthenics exercise (Group I), yogasanas (Group II), and combined (calisthenics and yogasanas) (Group III) and one control group (Group IV). ANCOVA and "Paired T- Test" were applied to test the significant changes in the quantitative variables muscular strength. Level of significance was set 0.05.

**Keywords:** Calisthenics, yogasana, flexibility

### Introduction

Physical education and sports, being an integral part of education, experiences the impact of scientific advancements. Now sports are able to give outstanding performance because involvement of scientifically substantiated training methods and means of execution of sports exercise such as sports techniques and tactics, improvement of sports gear and equipment as well as other components and conditions of sports training.

Modern thinkers in education emphasis that best individual is one who is physically fit, mentally sound, emotionally balanced and socially well adjusted. Calisthenics exercises and Yogasanas practices are the important tool in this regard. An attempt is made in this field by way of comparing the effects of calisthenics exercises, Yogasana practices independently and also combined on selected physical and physiological variables in case of male students.

Exercise proves elementary in measuring the effect of exercise and training on various systems of the human body. The exercise responses may vary with different types of exercises and training programs (i.e., strength, endurance, and speed) age, sex and level of fitness. The activity needed for different categories of people is tailored to their capabilities. Quality of life is ensured in the people by this activity. Today it has a unique opportunity of potentially contributing toward the positive-healthier life style in every individual (Sandhya Tiwari).

### Material and method

To achieve the purpose of the study eighty (80) Junior High School Boys were selected randomly from Central Hindu Boys School Varanasi, Uttar Pradesh. Their age range was from 11 to 15 years. The selected subject was divided into four equal groups of twenty subjects each. There were three experimental groups namely calisthenics exercise (Group I), yogasanas (Group II), and combined (calisthenics and yogasanas) Group III and one control group Group IV was subjected to a treatment for 8 weeks (6 days per week per group). All the subjects participated in the research voluntarily and cheerfully without any compulsion. School curriculum has regular physical education classes in which they learn calisthenics, indigenous activities, yogic exercise and major games and sports.

### Correspondence

**Satya Narayan**

Ph.D. Scholar, Department of  
Physical Education, Faculty of  
Arts, BHU, Varanasi,  
Uttar Pradesh, India

**Selection of variables**

**A-Independent variables**

1. Calisthenics exercise
2. Yogasanas Combined

3. Calisthenics and Yogasanas

**B- Dependent variables**

1. Flexibility (trunk)

Criterion Measures

S. No	Variables	Test/Instruments	Unit of Measurement	Estimated Effect
1	Flexibility(trunk)	Sit and reach test	Inches	To Measure Trunk Flexibility

**Design of the Study**

Pre Test, Post Test Randomized Group Designed was used.

**Administration of Test**

1. First of all with the use of personal information questionnaire specification of each subject was registered.
2. Experimental group was divided into three group – Calisthenics group-I and Yogasanas group-II and combined (Calisthenic and Yogasanas) group III
3. This study was use control group- IV
4. Pre test in each group was done at the initiation of the study.
5. Post test was done in each group after 8 weeks Calisthenics, Yogasanas training and combined (Calisthenic and Yogasanas) group training.
6. Physiological variables of subjects was observed at the initiation and after 8 weeks of training.
7. Control group was go for regular schedule as usual.
8. The progressive training program of the Calisthenics and Yogasanas training was six (6) days a week for a period of (8) eight weeks (48 days) during regular and extra classes.

**Statistical Procedure**

The following statistical procedures are adopted-

The data was collected from the three groups on Sit and reach test. The data were statistically examined to find out whether there is any significant difference by applying the paired t-test and analysis of co-variance (ANCOVA). The level of significance was set at .05 level.

**Combined Training Program organized for all III group e.g. Calisthenic exercise for experiment group I, Yogasanas for experiment group II and Combined Calisthenic exercise and Yogasanas for experiment group III.**

**Warm-Up**

Before each session start students was perform general warming up (mild stretching exercises, light and briskly walking, light jogging, slow to fast running then stretching exercises for joints and all muscles groups and also surya namskar.

**Table 1:** I & II Weeks Calisthenic exercise and Yogasanas Training

Warm up	10 minutes
Calisthenic/Yogasanas training	30 minutes
Cool down	05 minutes
Total Time	45 minutes

Calisthenic Exercise 15 Minutes

No.	Exercise	No. of count	Repetition	No. of set	Total work done
1	<b>Free Hand Series of Exercise</b>				
	A. Both hand sideway and clap	16	1	2	16X2=32
	B. Jump and trunk forward bending	16	1	2	16X2=32
	C. bilateral trunk bending	16	1	2	16X2=32

Yogasanas 15 Minutes

No.	Asanas	Repetition	Set	Total workout
1	Tadasana	1	2	2X2=4
2	Hastapadasana	1	2	2X2=4
3	Ardhachakra asana	1	2	2X2=4
4	Padmasana	1	2	2X2=4
5	Vajrasana	1	2	2X2=4
6	Savasana	1	1	1X1=1

**Table 2:** III & IV Weeks Calisthenic exercise and Yogasanas Training  
Callisthenic Series of Exercise 15 Minutes

No.	Exercise	No. of count	Repetition	No. of set	Total work done
1	Free Hand Series of Exercise				
	A. Both hand sideway and clap	16	1	2	16X2=32
	B. Jump and trunk forward bending	16	1	2	16X2=32
	C. bilateral trunk bending	16	1	2	16X2=32
2	Light Dumbbell Series of exercise				
	A. Both arms sideway with Dumbbell	16	1	2	16X2=32
	B. Hopping with knee raising forward with dumbbell	16	1	2	16X2=32
	C. Both arms double clik	16	1	2	16X2=32

**Rest between same Exercises-:** 15 Seconds

**Rest between one Exercises to another (A to B) exercise -:** 30 Seconds

**Rest between Set of Exercise-:** 90 Seconds

**Equipment-** Light Dumbbell

## Yogasanas 15 Minutes

No.	Asanas	Repetition	Set	Total workout
1	Tadasana	1	2	1X2=2
2	Hastapadasan	1	2	1X2=2
3	Trikona asana	1	2	1X2=2
4	Ardhachakra asana	1	2	1X2=2
5	Padmasana	1	2	1X2=2
6	Vajrasana	1	2	1X2=2
7	Ardha matsyendra asana	1	2	1X2=2
8	Savasana	1	1	1X1=1

Rest between same Yogasana:- 15 Seconds

Rest between one Yogasana to another (A to B) Yogasana -: 30 Seconds

Rest between Set of Yogasana -: 90 Seconds

Equipment- Mat / Dari

**Table 3:** V & VI Weeks Calisthenic exercise and Yogasanas Training  
Callisthenic Series of Exercise 15 Minutes

No.	Exercise	No. of count	Repetition	No. of set	Total work done
1	Free Hand Series of Exercise				
	A. Both hand sideway and clap	16	1	1	16
	B. Jump and trunk forward bending	16	1	1	16
2	C. bilateral trunk bending	16	1	1	16
	Light Dumbbell Series of exercise				
	A. Both arms sideway with Dumbbell	16	1	1	16
3	B. Hopping with knee raising forward with dumbbell	16	1	1	16
	C. Both arms double click with Dumbbell	16	1	1	16
	Indian club series of exercise				
3	A. Both Hand swing with Indian Club	16	2	2	16X2=32
	B. Jumping and swimming arms upward with Indian Club	16	2	2	16X2=32

Rest between same Exercises:- 15 Seconds

Rest between one Exercises to another (A to B) exercise -: 30 Seconds

Rest between Set of Exercise:- 90 Seconds

Equipment- Light Dumbbell and Indian club

## Yogasanas 15 Minutes

No.	Asanas	Repetition	Set	Total workout
1	Tadasana	1	2	1X2=2
2	Hastapadasan	1	2	1X2=2
3	Trikona asana	1	2	1X2=2
4	chakra asana	1	2	1X2=2
5	Padmasana	1	2	1X2=2
6	Supta vajrasana	1	2	1X2=2
7	Ardha matsyendra asana	1	2	1X2=2
8	Paschimottanasana	1	2	1X2=2
9	Halasana	1	2	1X2=2
10	Savasana	1	1	1X1=1

Rest between same Yogasana:- 15 Seconds

Rest between one Yogasana to another (A to B) Yogasana -: 30 Seconds

Rest between Set of Yogasana -: 90 Seconds

Equipment- Mat / Dari

**Table 4:** VII & VIII Weeks Calisthenic exercise and Yogasanas Training  
Calisthenic series of exercise 15 Minutes

No.	Exercise	No. of count	Repetition	No. of set	Total work done
1	Free Hand Series of Exercise				
	A. Both hand sideway and clap	16	1	1	16
	B. Jump and trunk forward bending	16	1	1	16
2	C. bilateral trunk bending	16	1	1	16
	Light Dumbbell Series of exercise				
	A. Both arms sideway with Dumbbell	16	1	1	16
3	B. Hopping with knee raising forward with dumbbell	16	1	1	16
	C. Both arms double click with Dumbbell	16	1	1	16
	Indian club series of exercise				
3	A. Both Hand swing with Indian Club	16	1	1	16
	B. Jumping and swimming arms upward with Indian Club	16	1	1	16
4	Lazium Series of Exercise				
	A. Dahine Baen Paon Harkat	16	1	1	16
	B. Lazium Chakkar	16	1	1	16

Rest between same Exercises:- 15 Seconds

Rest between one Exercises to another (A to B) exercise -: 30 Seconds

Rest between Set of Exercise:- 90 Seconds

Equipment- Light Dumbbell, Indian Club and Lazium

Yogasanas 15 Minutes

No.	Asanas	Repetition	Set	Total workout
1	Tadasana	1	2	1X2=2
2	Hastapadasan	1	2	1X2=2
3	Trikona asana	1	2	1X2=2
4	Chakra asana	1	2	1X2=2
5	Padmasana	1	2	1X2=2
6	vajrasana	1	2	1X2=2
7	Suptavajr asana	1	2	1X2=2
8	Ardha matsyendra asana	1	2	1X2=2
9	Paschimottanasana	1	2	1X2=2
10	Halasana	1	2	1X2=2
11	Bhujangasana	1	2	1X2=2
12	Savasana	1	1	1X1=1

Rest between same Yogasana:- 15 Seconds

Rest between one Yogasana to another (A to B) Yogasana :- 30 Seconds

Rest between Set of Yogasana :- 90 Seconds

Equipment- Mat / Dari

Cool Down:- 05 Minutes

At the end of each session students was made to perform cool down exercises (Limbering and stretching exercises followed by deep breathing relaxation exercises and Savasana to held

recovery as well as prevent injury).

Result of the Study

Table 5: Analysis of Co-Variance (ANCOVA) of Three Experimental Group and One Control Group in Relation to Flexibility (Sit and Reach Test in Inches)

Tests	Mean				SOV	SOS	df	MSS	F-ratio (p)
	Exp. Group1	Exp. Group2	Exp.3	Control Group					
Pre	2.367 (1.449)	2.300 (1.794)	2.625 (1.440)	2.300 (1.665)	A	1.433	3	.478	.188 (.904)
					W	193.259	76	2.543	
					Total	194.692	79		
Post	3.500 (1.504)	3.275 (1.915)	3.700 (1.633)	2.625 (1.738)	A	13.075	3	4.358	1.500 (.221)
					W	220.875	76	2.906	
					Total	233.950	79		
Adjusted Mean	3.531	3.375	3.468	2.725	Intercept	16.065	1	16.065	63.449 (.000)
					Cov_Pre	201.885	1	201.885	797.348 (.000)
					Group	8.291	3	2.764	10.915 (.000)
					Error	18.990	75	.253	
					Corrected Total	233.950	79		

SoV- Source of variance, SoS – sum of square, df- degree of freedom, MSS - mean sum of square, \* Significant at 0.05 level of significance, A = Among Means variance, W = Within Group variance, F = Ratio needed for significance at 0.05 level of significance = df (3,76) = 2.73, df (3, 75) = 2.73.

In pre test a statistically insignificant difference was found among the Experimental Groups (calisthenics and Yogasanas training) on the Total, F (3, 76) =0.188, p =0.904. As shown in Table-1 the mean score in Sit and reach was 2.367 for Experimental Group1, 2.300 for Experimental Group2, 2.625 Experimental Group 3 and 2.300 was for control groups. This shows that at initial level the groups were similar in nature. Likewise, in post test there were no significant mean differences on the mean score of Sit and reach was 3.500 for

Experimental Group1, 3.275 for Experimental Group2, 3.700 Experimental Group 3 and 2.625 was for control groups. Total in between the groups, F (3, 76) =1.500, p =0.221. Further, there was a significant difference in the calisthenics and Yogasanas training and Control Group on the adjusted mean score of Sit and reach(Flexibility trunk)of the subjects after controlling the effect of pre test score, F (3,75) =10.915, p =0.000

Table 6: Pair wise Comparisons of Three experimental and one control group in relation to flexibility (Sit and Reach in Inches) after a Eight Week Training Programme

Group	Yoga group		Calisthenics and Yoga group		Control group	
	Mean difference	Sig.	Mean difference	Sig.	Mean difference	Sig.
Calisthenics	.156	1.000				
			.063	1.000	.806*	.000
Yoga						
			-.093	1.000	.650*	.001
Calisthenics and Yoga					.743*	.000

Based on estimated marginal means

\*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Table shows the pair wise comparison of different groups. No

statistical significant difference was found in callisthenic and

yoga group( $p=1.00$ ,  $m.d.=0.156$ ), calisthenics and combination of calisthenics and yoga group( $p=1.00$   $m.d.=0.063$ ), yoga and combination of calisthenics and yoga group( $p=1.00$   $m.d.=0.093$ ), and found statistically significant

difference between calisthenics and control group( $p=0.000$   $m.d.=0.806$ ), yoga and control group ( $p=0.000$   $m.d.=0.650$ ) combination of calisthenics and yoga and control group ( $p=0.000$   $m.d.=0.743$ ).

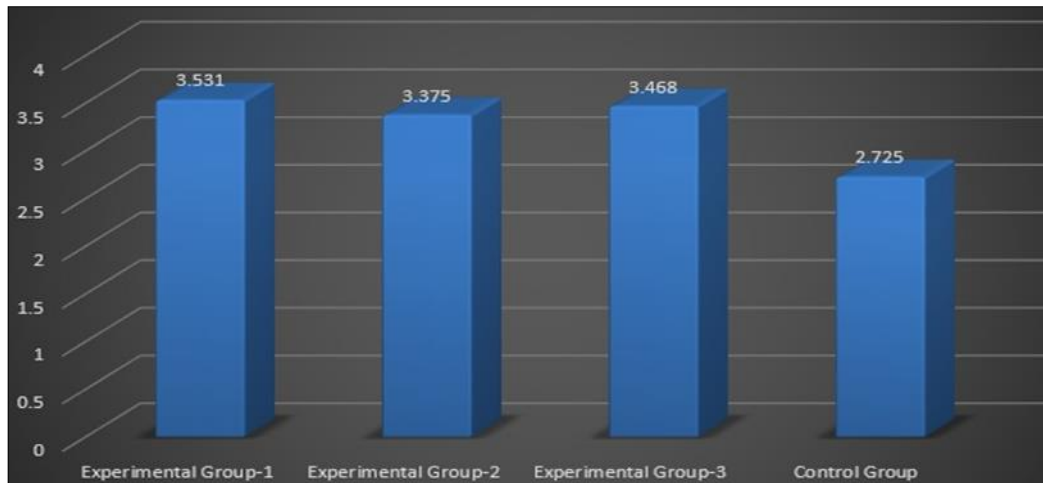


Fig 1: Experimental Groups

**Conclusion**

Significant effect was found in three experimental groups namely calisthenics group, yoga group, and combination of calisthenics and yoga group variables trunk flexibility in comparison to control group after eight weeks of training programme.

**Discussion and Finding**

- The result of the present study reveals that there was a significant difference found in the flexibility (trunk) of the student. As we all know that the Calisthenic exercise is a very effective in muscular development and improving the general co-ordination of the body. These exercises definitely improved the muscle tone and this improvement in the muscle tone and general co-ordination of the Calisthenic group have resulted into better flexibility in comparison to control group.
- Similar result were found between the yogic group and the control group this may again due to the regular practices of various asanas that require the great demand from the muscles. Performing asanas require attaining various postures that results into stretching of muscles and hence improved the flexibility of the children.

**References**

1. Aggarwal Yaksha. Encyclopedia of Physical Education, New Delhi, Anmol Publication, 2006.
2. Ajmeer Singh *et al.* Essential of Physical Education, Kalyani Publication, New Delhi, 2005.
3. Alagaonkar J. Sports Psychology, Vidyarthi Griha Prakashan Publishers, Pune, 1997.
4. Ananda R. The Complete Book of Yoga Harmony of Body Mind, Delhi: India, 1982.
5. Bucher Charles A. Foundation of Physical Education, St Louis: C.V. Mosby Company, 1979.
6. Clarke David H, Harrison Clarke H. Application of Measurement Health and Physical Education, New Jersey: Englewood cliffs Prentice Hall Inc, 1989.
7. Douglas Hastad N, Alan Lacy C. Measurement and Evaluation in Physical Education and Exercise Science, USA: Gorsuch Scarisbrick Publishers, 1994.
8. Babu Sekar K, Kulothagan P. Effect of Yogic Practices

- on Selected Physiological Variables of Men Hockey Players. Recent Treads in Yoga and Physical Education, 2011, I.
9. Chidambara Raja S. Effect of Yogic Practice and Physical Fitness on Flexibility, Anxiety and Blood Pressure. Indian Journal for Research in Physical Education and Sports Sciences. 2010, V.
10. Kaul Kumar H. Yogasanas for Every One, New Delhi: Surjeet Publications, 1992.
11. Kansal Devinder K. Test and Measurement in Sports and Physical Education, New Delhi: D.V.S Publications, 1996.
12. Clarke David H, Harrison Clarke H. Application of Measurement Health and Physical Education, New Jersey: Englewood cliffs Prentice Hall Inc, 1989.
13. Dhananjay Shaw, Rakesh Tomar. Doctoral Research in Physical Education and Its Sciences in Developed Countries, New Delhi: Vivek Thani Publications, 2000.
14. Sokkanathan G, Selvakumar R. Effect of Selected Yogic Practice on Muscular Endurance of School Children, Recent Treads in Yoga and Physical Education, 2011, I.
15. Manimakali KM, Chitra S. Effect of Yogasanas Practice on Flexibility among University Women, Recent Treads in Yoga and Physical Education, 2011, I.