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Effect of hatha yoga practices on selected health related physical fitness variables among coastal area school boys

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Abstract

The purpose of the study was to find out the effect of hatha yoga practices on selected health related physical fitness variables among coastal area school boys. To achieve the purpose of the study investigator selected 50 coastal area school boys for experiment group (n= 25), control group (n=25). Their ages ranges from 14 to 16 years. The group were tested prior (pre-test) and after six weeks (post-test). The following variables such as cardiovascular endurance, muscular endurance and flexibility were selected for this study. Cardiovascular endurance was tested with 12-min Cooper's test, muscular endurance was tested with sit-up test and flexibility was tested with sit and reach test. The collected data were analyzed statistically by Analysis of Co-Variance (ANCOVA) and Scheffe's post-hoc test. From the analysis of data it was proved that there is significant improvement on cardiovascular endurance, muscular endurance and flexibility. It was concluded that the hatha yoga practices effectively improved on selected health related physical fitness variables among coastal area school boys.

Keywords: Hatha yoga, coastal area school boys, cardiovascular endurance, muscular endurance and flexibility

Introduction

Yoga is very popular now a days and it is now well known to the whole world. It is not a mere exercise but yoga in real sense is union with God. All mystic practices and discipline that lead to this Divine union are dealt under the word yoga (Suman Krishan Kumar, 2015) [6]. The prime aim of asanas is to help us tread the path to higher consciousness so we can begin to understand and know our relationship with existence (Swami Satyaananda Saraswati, 2013) [7]. Hatha yoga is one of the many forms or paths of yoga, it focuses on overall fitness through pranayamas (breath-control exercises), asanas (yoga postures), and chanda (meditation). Like other forms of yoga, hatha yoga is purported to quiet the mind and focus the concentration; however, of all the yoga traditions, the importance of physical fitness is emphasized most in hatha yoga (Saper R.B 2004) [5]. Cardiovascular endurance may be defined as "the ability of sustain a serious of repetitions of an activity without unduly the physiological systems that furnish the fuel and oxygen to the muscles". In other words, "endurance is the result of a physiological capacity of the individual to sustain movement over a period of time". (Yobu, 2010) [9]. Muscular endurance can be defined as "the ability of muscle group to apply force repeatedly or to sustain a contraction for a certain period of time". For example, if we want to measure the endurance of the abdominal muscles, we could determine how many times these muscles can contract in a given period. (Yobu, 2010) [9]. Flexibility is concerned with the range of movement in a joint. It limits the degrees to which some parts of the body can bend, twist or move by means of flexion and extension of muscles. It also depends upon the ligaments that surround the joints. (Yobu, 2010) [9].

Methodology

The purpose of the study was to find out the effect of hatha yoga practices on selected health related physical fitness variables among coastal area school boys. To achieve the purpose of the study investigator selected 50 coastal area school boys. Experimental group (n=25), Control group (n=25). Their ages ranges from 14 to 16 years.

The following variables such as cardiovascular endurance, muscular endurance and flexibility were selected for this study. Cardiovascular endurance, muscular endurance and flexibility were selected for this study. The experimental group went to hatha yoga practices for 6 weeks. Cardiovascular endurance was tested with 12-min Cooper's test, muscular endurance was tested with push up test and flexibility was tested with sit and reach test. The collected data were analyzed statistically by Analysis of Co-Variance (ANCOVA).

Training Programme

During the training period the experimental group underwent six weeks of hatha yoga practices. The duration of training were planned for 40 minutes that is from the morning 6.30am to 7.15pm on Mondays, Wednesdays and Fridays. After

completion of six weeks of experimental period, the participants were retested as the pre test. All the subjects involved in this study were carefully monitored throughout the experimental period. Each session 45 minutes consist of opening prayer and warm up 5 min exercise followed by Suryanamaskar, Tadasana, Urdhva Hastasana, Utthanasana, Prasarita Padottanasana, Adhomukha Svanasana, Uthitha Trikonasana, Ustrasana, Virasana, Adhomukha Virasana, Janushirsasana, Paschimotasana, Upavistakonasana, Shalabasana. In Pranayama session we used Ujjai pranayama and Viloma pranayama, further the session end with Meditation and Relaxation.

Results and Discussion

Result On Cardiovascular Endurance

Table I: Analysis of Covariance on Cardiovascular Endurance of Experimental Group and Control Groups (Score in Meters)

	Exp	Con	Sum of Variance	Sum of Squares	Df	Mean square	F ratio
Pre	1340	1323	Between	3528.000	1	3528.000	2.09
			Within	81180.000	48	1691.250	
Post	1360	1324	Between	15664.500	1	15664.500	11.80*
			Within	63696.000	48	1327.000	
Adjusted	1352.76	1331.83	Between	5248.591	1	5248.591	70.76*
			Within	3486.249	47	74.176	

*Significant at 0.05 level of confidence for 1 and 48 (df) = 4.04, 1 and 47 (df) = 4.05

The table-I shows that the pre-test mean values on cardiovascular endurance of Hatha yoga practices and Control Group were 1340 and 1323 respectively. The obtained 'F' value of 2.09 for pre-test scores on cardiovascular endurance, which was lesser than the table value of 4.04 for significance with df 1 and 48 at 0.05 level of confidence.

The post-test mean values on cardiovascular endurance of Hatha yoga practices and Control Group were 1360 and 1324 respectively. The obtained 'F' value of 11.80 for post test scores on cardiovascular endurance, which was higher than the table value of 4.04 for significance with df 1 and 48 at

0.05 level of confidence.

The adjusted post-test mean values on cardiovascular endurance for Hatha yoga practices and Control Group were 1352.76 and 1331.83 respectively. The obtained 'F' value of 70.76 for adjusted post-test scores on cardiovascular endurance, which was higher than the table value of 4.05 for significance with df 1 and 47 at 0.05 level of confidence.

The pre, post and adjusted means on cardio vascular endurance were presented through bar diagram for better understanding of the results of this study in Figure-1.

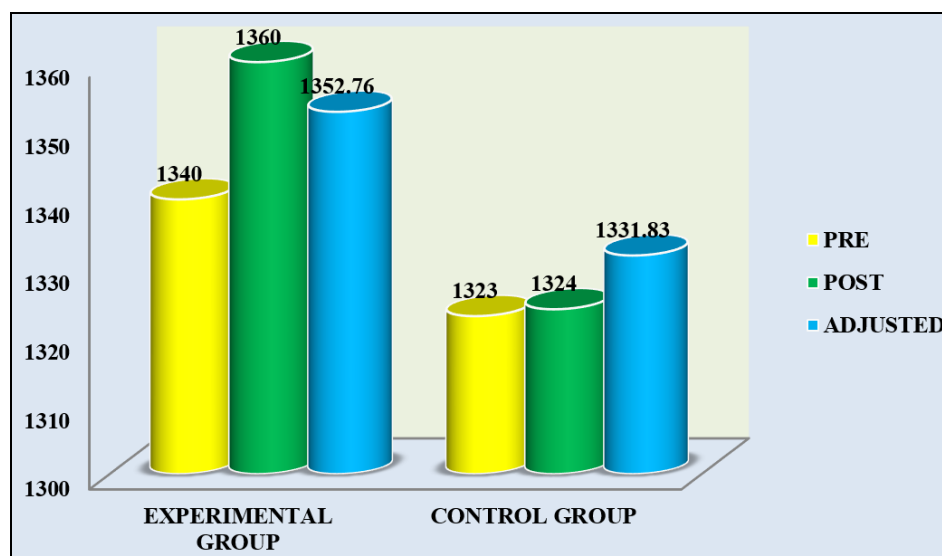


Fig 1: Pre, Post and Adjusted Post Test differences of the experimental and control groups on cardio vascular endurance result on muscular endurance

Table II: Analysis of covariance on muscular endurance of experimental group and control groups (Score in Numbers)

	Exp	Con	Sum of Variance	Sum of Squares	df	Mean square	F ratio
Pre	13.96	14.08	Between	0.18	1	0.180	0.12
			Within	74.80	48	1.56	
Post	18.52	16.16	Between	69.62	1	69.62	14.81*
			Within	225.60	48	4.70	
Adjusted	18.58	16.06	Between	77.13	1	77.13	25.58*
			Within	141.74	47	3.02	

*Significant at 0.05 level of confidence for 1 and 48 (df) =4.04, 1 and 47 (df) = 4.05

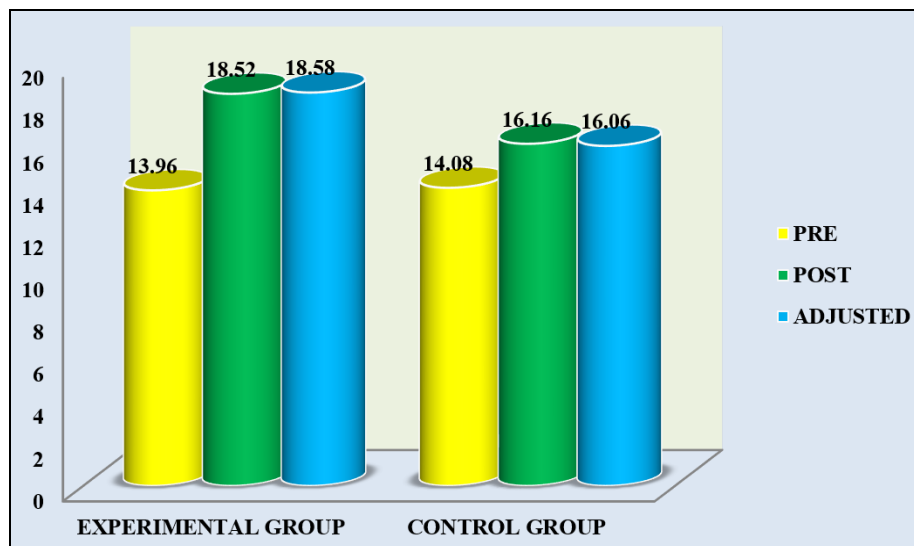
The table-II shows that the pre-test mean values on muscular endurance of Hatha yoga practices and Control Group were 13.96 and 14.08 respectively. The obtained 'F' value of 0.12 for pre-test scores on muscular endurance, which was lesser than the table value of 4.04 for significance with df 1 and 48 at 0.05 level of confidence.

The post-test mean values on muscular endurance of Hatha yoga practices and Control Group were 18.52 and 16.16 respectively. The obtained 'F' value of 14.81 for post test scores on muscular endurance, which was higher than the table value of 4.04 for significance with df 1 and 48 at 0.05

level of confidence.

The adjusted post-test mean values on muscular endurance for Hatha yoga practices and Control Group were 18.58 and 16.06 respectively. The obtained 'F' value of 25.76 for adjusted post-test scores on muscular endurance, which was higher than the table value of 4.05 for significance with df 1 and 47 at 0.05 level of confidence.

The pre, post and adjusted means on muscular endurance were presented through bar diagram for better understanding of the results of this study in Figure-2.

**Fig 2:** Pre, Post and Adjusted Post Test differences of the experimental and control groups on muscular endurance

Result on Flexibility

Table III: Analysis of covariance on flexibility of experimental group and control groups (Score in Centimeter)

	Exp	Cont	Sum of Variance	Sum of Squares	df	Mean square	F ratio
Pre	24.35	24.45	Between	0.13	1	0.13	0.23
			Within	25.90	48	0.54	
Post	24.86	24.21	Between	5.31	1	5.31	8.72*
			Within	29.26	48	0.61	
Adjusted	24.91	24.16	Between	6.94	1	6.94	54.74*
			Within	5.96	47	0.13	

*Significant at 0.05 level of confidence for 1 and 48(df) =4.04, 1 and 47 (df) = 4.05

The table III shows that the pre-test mean values on flexibility of Hatha yoga practices and Control Group were 23.35 and 24.45 respectively. The obtained 'F' value of 0.23 for pre-test scores on flexibility, which was lesser than the table value of 4.04 for significance with df 1 and 48 at 0.05 level of confidence.

The post-test mean values on flexibility of Hatha yoga practices and Control Group were 24.86 and 24.21 respectively. The obtained 'F' value of 8.72 for post test scores on flexibility, which was higher than the table value of 4.04 for significance with df 1 and 48 at 0.05 level of

confidence.

The adjusted post-test mean values on flexibility of Hatha yoga practices and Control Group were 24.91 and 24.16 respectively. The obtained 'F' value of 54.74 for adjusted post-test scores on flexibility, which was higher than the table value of 4.05 for significance with df 1 and 47 at 0.05 level of confidence.

The pre, post and adjusted means on flexibility were presented through bar diagram for better understanding of the results of this study in Figure-3.

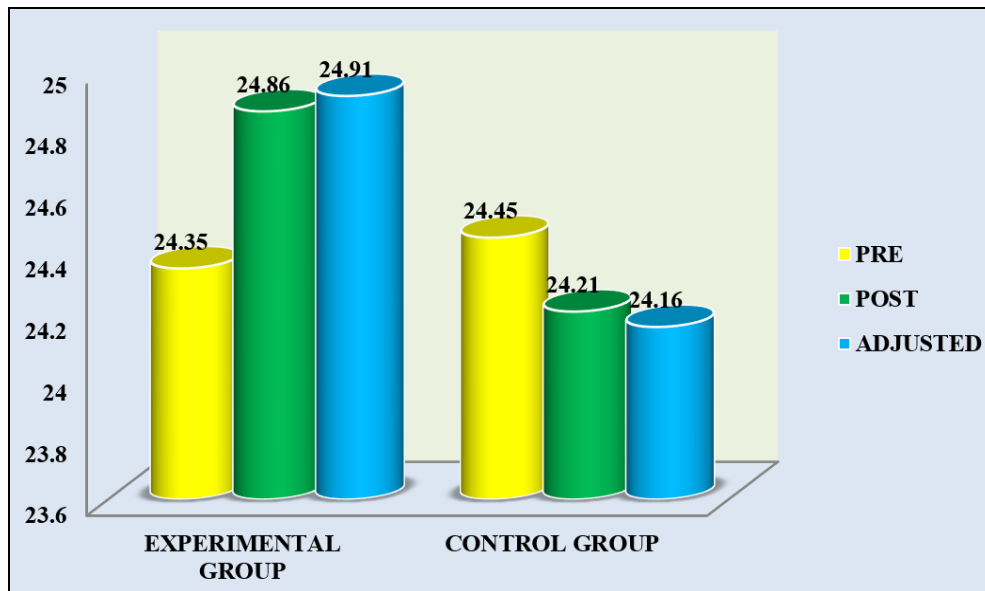


Fig 3: Pre, Post and Adjusted Post Test differences of the experimental and control groups on flexibility

Discussion on Findings

The discoveries of this investigation were in concurrence with the discoveries of Tran *et al.*, (2001) ^[8] who utilized hatha yoga practices to improve the health related physical fitness among 18 to 27 years male and female subjects. Bintari, *et al.*, (2021) ^[3] likewise tracked down that hatha yoga and suryanamaskar practices improves the flexibility and balance for women. Baklouti, S., *et al.*, (2001) ^[2] discovered hatha yoga practices significantly improves the cognitive functions in the elderly. Anbalagan, *et al.*, (2021) ^[1] tracked down that the significant effect on flexibility of hip joint, flexibility of shoulder joint, breath holding capacity, pulse rate of experimental group due to the effect of followed by hath yoga practices training when compared to the control group. Kumar & Parasuraman (2019) ^[4] proved that the strength and balance were significantly improved due to Ashtanga Vinyasa Surya Namaskar A&B (AVSN) practices among adolescence boys.

Conclusion

It was concluded that hatha yoga practices improved the selected health related fitness variables namely cardiovascular endurance, muscular endurance and flexibility among coastal area school boys.

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