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Investigating the Effects of Yoga and Pranayama on Enhancing Physical Fitness in Adolescent Girls

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Abstract

Yoga is regarded as a methodical effort towards self-perfection through development of latent potential on the physical, vital, mental, intellectual and spiritual levels. The purpose of the study was to examine the effect of various yogic exercises and pranayama on selected physical fitness components of female adolescents. For the purpose of the study thirty female students studying at Sri Aurobindo Residential High School were randomly selected as subjects. Among them fifteen were allotted to the experimental group and the remaining fifteen were considered as control. Their age ranged between 13 to 16 years. Physical fitness test was conducted during pre and posttest situations on 100 meters, 200 meters, standing broad jump, shot put and long jump. These subject under experimental group were provided systematic training on yoga and pranayama for a duration of six weeks as per the experiment protocol. The statistical techniques employed for this study were Mean Standard Deviation and t-ratio to find out significant differences between the Mean scores of the groups. The obtained value of 't' was tested for significance at 0.05 level of confidence. Except shot put and standing broad jump there were no significant differences between the remaining components between the two groups. Further, there was absolutely no difference in the pre and posttest scores of experimental group. Detailed discussion on findings is presented in this paper.

Keywords: Yoga, pranayama, physical fitness, adolescents.

Introduction

Physical Education and Sports are increasingly becoming a major force in Indian life. Exercise is considered an acceptable method for improving and maintaining physical and emotional health. A growing body of evidence supports the belief that yoga benefits physical and mental health. Yoga is a mind and body practice with historical origins in ancient Indian philosophy. Like other meditative movement practices used for health purposes, various styles of yoga typically combine physical postures, breathing techniques, and meditation or relaxation. It is regarded as a methodical effort towards self-perfection through development of latent potential on the physical, vital, mental, intellectual and spiritual levels.

Yoga is an ancient discipline designed to bring balance and health to the physical, mental, emotional, and spiritual dimensions of the individual. Yoga is the oldest system of personal development encompassing body, mind, and spirit. The word yoga is derived from the Sanskrit root Yuj, which means to join or to yoke. In philosophical terms, yoga refers to the union of the individual self with the universal self (Hadi 2007). Yoga is an ancient Indian practice, first described in Vedic scriptures around 2500 B.C., which utilizes mental and physical exercises to attain Samadhi, or the union of the individual self with the infinite (Lidell ;1983) [9].

Although yoga has been practiced for centuries in most parts of the world, most of the theory behind the practice has not yet been systematically studied using the rigorous tools of modern medical science. In the past several years, the scientific community has begun in earnest to seek out answers to some of the questions about yoga's efficacy. The studies comparing the effects of yoga and exercise seem to indicate that, in both healthy and diseased populations, yoga may be as effective as or better than exercise at improving a variety of health-related outcome measures (Ross & Thomas, 2010) [12].

The physical exercises in the form of asanas may increase patient's physical flexibility, coordination, and strength, while the breathing practices and meditation may calm and focus the mind to develop greater awareness and diminish anxiety (Kirkwood, *et al*. 2005) [5] and thus result in higher quality of life. Other beneficial effects might involve a reduction of distress, blood pressure, and improvements in resilience, mood, and metabolic regulation (Yang, 2007) [7].

Research addressing the effects of hatha yoga on all the health-related aspects of physical fitness defined in terms of muscular strength and endurance, flexibility, cardiorespiratory

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endurance, and body composition, in the same subjects have found to be in scanty.

Objective of the Study

The purpose of the study is to examine the effect of various yogic exercises and pranayama on selected physical fitness components of female adolescents.

Methodology

For the purpose of the study thirty female students studying at Sri Aurobindo Residential High School were randomly selected as subjects. Among them fifteen were allotted to the experimental group and the remaining fifteen were considered as control. Their age ranged between 13 to 16 years. Physical fitness test was conducted during pre and posttest situations on 100 meters, 200 meters, standing broad jump, shot put and long jump. These subject under experimental group were provided systematic training on yoga and pranayama for a duration of six weeks as per the experiment protocol. The statistical techniques employed for this study were Mean Standard Deviation and t-ratio to find out significant differences between the Mean scores of the groups. The obtained value of 't' was tested for significance at 0.05 level of confidence.

Findings

The results are depicted in the following tables and representation are graphically shown as below. Mean, Standard Deviation and 't' ratio of experimental and control group during posttest for 100mts is presented in Table. 1.

Table 1: Posttest Mean, Standard Deviation and 'T' Ratio of Both Groups for 100 Mts (N = 30)

Sl. No.	Groups	Criterion measure	Mean	Standard Deviation	't' Ratio
1	Experimental	100 mts sprint	22.88	2.25	1.3091*
2	Controlled		22.17	1.75	

*Tables values require for significance at 0.05 level is 2.048

Pre and posttest scores of experimental group and 't' test for dependent variables or matched pair t test was made use for analysis. The results are depicted in Table 2.

Table 2: Significance of Difference between Pre and Posttest Scores of Experimental Group (100 mts)

Group	Scores	Mean	S.D.	't' ratio
Experimental	Pre test	23.69	2.66	1.18*
	Posttest	22.88		

*Tables values required for significance at 0.05 level is 2.145.

Mean, Standard Deviation and 't' ratio of experimental and control group during posttest for 200m race is presented in Table 3.

Table 3: Posttest Mean, Standard Deviation and 'T' Ratio of Both Groups (N=30)

Sl. No.	Groups	Criterion Measure	Mean	Standard Deviation	't' Ratio
1	Experimental	200 mts sprint	45.32	5.08	0.2647*
2	Controlled		45.71	2.43	

*Tables values required for significance at 0.05 level is 2.048

The results pertaining to pre and posttest scores of experimental group was tested for 0.05 level of confidence at 14 degrees of freedom and the results are depicted in Table 4.

Table 4: Significance of Difference between Pre and Posttest Scores of Experimental Group (200 mts)

Group	Scores	Mean	S.D.	't' ratio
Experimental	Pre test	46.35	4.45	0.88*
	Posttest	45.32		

*Tables values required for significance at 0.05 level is 2.145.

Mean, Standard Deviation and 't' ratio of experimental and control group during posttest for shot put is presented in Table. 5.

Table 5: Posttest Mean, Standard Deviation and 'T' Ratio of Both Groups (N=30)

Sl. No.	Groups	Criterion Measure	Mean	Standard Deviation	't' Ratio
1	Experimental	Shot put	4.42	0.69	2.1579*
2	Controlled		3.92	0.56	

*Tables values required for significance at 0.05 level is 2.048

The results pertaining to pre and posttest scores of experimental group are depicted in Table 6.

Table 6: Significance of Difference between Pre and Posttest Scores of Experimental Group (Shot Put)

Group	Scores	Mean	S.D.	't' ratio
Experimental	Pre test	4.28	0.84	0.670*
	Posttest	4.42		

*Tables values required for significance at 0.05 level is 2.145.

Mean, Standard Deviation and 't' ratio of experimental and control group during posttest for standing broad jump is presented in Table. 7.

Table 7: Posttest Mean, Standard Deviation and 'T' Ratio of Both Groups (N=30)

Sl. No.	Groups	Criterion Measure	Mean	Standard Deviation	't' Ratio
1	Experimental	Standing Broad Jump	1.64	0.20	5.0761*
2	Controlled		1.34	0.10	

*Tables values required for significance at 0.05 level is 2.048

The results pertaining to pre and posttest scores of experimental group are depicted in Table 8.

Table 8: Significance of Difference between Pre and Posttest Scores of Experimental Group (Standing Broad Jump)

Group	Scores	Mean	S.D.	't' ratio
Experimental	Pre test	1.51	0.26	1.8832*
	Posttest	1.64		

*Tables values required for significance at 0.05 level is 2.145.

Conclusion

The results of the present cross-sectional study shows that there is significant difference in the shot put and standing broad jump ability of experimental group due to practice of yogic exercises and pranayamas for a period of 6 weeks. Similarly there is no significant difference in physical fitness of female adolescents in 100mts and 200mts.

Recommendation

Following recommendations are given on the basis of present study:

i). The load magnitude has to be given due importance in conducting future studies in similar lines.

ii). The basic fitness especially core strength has to be considerably improved in order to start with higher load and avoid injuries.

iii). Eating habits have to be regulated for intended results on adolescence health and fitness aspects of children.

iv). Specificity of training has to be kept in mind while planning for similar studies.

v). A similar study with adolescence boy's subjects can be conducted to elicit the effects of various types of exercise interventions.

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