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Effect of 8-weeks yogasana practice on physiological fitness status of female young athletes

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Abstract

The purpose of this study was to find out the effects of 6-weeks yogasana practice on physiological fitness status of female young athletes.

Material and Methods: Data were collected on thirty (N=30) female subjects between the age group of 18-24 years (Mean \pm SD: age 21.03 ± 1.30 years, body mass 63.40 ± 2.36 kg, height 1.62 ± 0.022 m) from Degree college of Physical Education, Amravati. The subjects were purposively assigned into two groups: Group-A: Experimental (N₁=15) and Group-B: Control (N₂=15). The experimental group was subjected to 8-weeks yogasana practice consisting of daily sessions lasting 40- 45 min each. The following variables were recorded (Body fat percentage, muscle strength, flexibility). T-test was used to assess the independent data differences between-group and for dependent data to assess the post-Pre differences. The level of significance was set at $P < 0.05$.

Keywords: 8 week Training, body fat %, muscle strength, flexibility, muscle endurance, cardiovascular endurance

Introduction

The practice of yoga has been around for thousands of years, and has done wonders for many people's physical, mental, and spiritual wellbeing over those years. There are many aspects to yoga. In short, yoga is a system of physical exercises or postures (called asanas). Asana is one of the eight limbs of classical Yoga, which states that poses should be steady and comfortable, firm yet relaxed helping a practitioner to become more aware of their body, mind, and environment. Yoga comes from Sanskrit, and means to yoke or to join together. A description of the physical yoga postures was found in the Yoga Sutras, which was apparently written in 3000 BC by Patanjali, who was a Sanskrit scholar and an Indian physician.

When a person practices yoga, with yogic attitude (attitude of patience, persistent practice, overcoming obstacles within self, that is, trouncing laziness, anger, delusion, and desire for being different or better than others), there are several changes in physiology.

These reviews have contributed to the large body of research evidence attesting to the positive health benefits of yoga. Many of the studies compared yoga to other treatment modalities, most commonly to exercise, meditation, and traditional medicine. However, very little research has been conducted on possible fundamental mechanisms for the effects of yoga practice on physiological fitness status and as a result the present study was conducted to find out the effects of 8-weeks yogasana practice on physiological fitness status of female young athletes.

Material and Methods

Subjects: Data were collected on thirty (N=30) female subjects between the age group of 18-24 years (Mean \pm SD: age 21.01 ± 1.26 years, body mass 64.20 ± 2.28 kg, height 1.62 ± 0.020 m) from Degree college of Physical Education, Amravati. The subjects were purposively assigned into two groups: Group-A: Experimental (N₁=15) and Group-B: Control (N₂=15). All participants were informed about the objective and protocol of the study before providing written informed consent. Descriptive characteristics of the subjects are shown in table 1. The criterion of the subject's inclusion was that they have an optimal physical fitness level.

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Table 1: Demographics of respondents

Variables	Sample Size (N=30)	
	Group-A: Experimental (N ₁ =15)	Group-B: Control (N ₂ =15)
	Mean ± SD	Mean ± SD
Age (years)	21.01±1.26	20.65 ±1.17
Body Mass (kg)	64.20 ± 2.28	62.46 ± 1.59
Body Height (m)	1.62± 0.020	1.62±0.02

Methodology

Prior to participating, the subjects read and signed an informed consent form. The experimental group was subjected to 8-weeks yogasana practice consisting of daily sessions lasting 45 min each. The details of yoga asanas are shown in table 2. The following variables were recorded: Body fat %, muscle strength, flexibility. The physiological fitness components were measured using a test battery that had been taken from different international physical fitness test batteries (AAHPER youth fitness test, AAHPERD physical best, Fitness Gram, President's Challenge, YMCA Youth Fitness Test, Chrysler Fund/AAU test and Euro fit Test Battery). Body composition was calculated by taking the sum of three skinfolds from three different sites (chest, abdominal, thigh) on the right side of the body and calculated by Jackson and Pollock's equation to estimate body fat. Lower back and hamstring flexibility was measured by a modified sit and reach test (Jackson and Pollack, 1985). Muscle strength was determined by a handgrip test, and the 1 min sit-up test used to measure muscle endurance.

Table: Yogasana

Sr. No.	Yogasana	
1.	Standing Postures	Utthita Parsvakona asana
		Alan asana
		Viravhadra asana
		Parivrta Trikon asana
2.	Balancing Postures	Nav asana
		Vrks asana
		Vasistha asana
		Nataraj asana
		Bhujang asana
3.	Backward/Forward Bending Postures	Ustrasana
		Paschimottana asana
		Hanuman asana

Design of the Study

This is an exploratory study that has employed methods of data collection and analysis quantitatively. The purpose of this study was to find out the effects of 8-weeks yogasana practice on physiological fitness status of female young athletes. The purposive sampling technique will be used to attain the objectives of the study.

Statistical Analysis

Student's t-test for independent data was used to assess the between-group differences and for dependent data to assess the Post-Pre differences. The level of significance was set at $P < 0.05$.

Results

Table 2: Significance of Differences between Pre-Test and Post-Test Means of Experimental Group and the Control Group with regard to Body fat %

Group	Number	Mean	S.D.	SEM	t-value	P-value
Experiment (Pre-test)	15	6.33	0.03	0.008	6.34*	0.000*
Experimental (Post-test)	15	6.43	0.03	0.008		
Control (Pre-test)	15	6.24	0.02	0.007	0.73	0.46
Control (Post-test)	15	6.25	0.02	0.008		

*Significant at 0.05 level Degree of freedom= 14

Table-2 presents the results of experimental group and the control group with regard to the variable body fat %. The descriptive statistics shows the Mean and SD values of body fat % of pre- test and post-test of experimental group was 6.33 ± 0.03 and 6.43 ± 0.03 respectively, whereas the Mean and SD values of body fat % of pre-test and post-test of control group was 6.24 ± 0.02 and 6.25 ± 0.02 . The "t" value in case of experimental group was 6.34* and for control group it was 0.73. The 't'-value in case of experimental group 6.34* as shown in the table above was found statistically significant ($P < 0.05$) Ho (null hypothesis) is rejected at 0.05 level of significance. As per the study the above remark can be given at 95% confidence.

Table 3: Significance of Differences between Pre-Test and Post-Test Means of Experimental Group and the Control Group with regard to Muscle Strength

Group	Number	Mean	S.D.	SEM	t-value	P-value
Experiment (Pre-test)	15	36.30	0.43	0.10	2.16*	0.04
Experimental (Post-test)	15	36.03	0.02	0.05		
Control (Pre-test)	15	35.03	0.01	0.004	0.70	1.00
Control (Post-test)	15	35.03	0.02	0.005		

*Significant at 0.05 level Degree of freedom= 14

Table-3 presents the results of experimental group and the control group with regard to the variable muscle strength. The descriptive statistics shows the Mean and SD values of muscle strength of pre-test and post-test of experimental group was 37.03 ± 0.44 and 37.03 ± 0.03 respectively, whereas the Mean and SD values of muscle strength of pre-test and post-test of control group was 36.03 ± 0.01 and 36.03 ± 0.02 . The "t" value in case of experimental group was 2.17* and for control group it was 0.71. The 't'-value in case of experimental group 2.17* as shown in the table above was found statistically significant ($P < 0.05$) Ho (null hypothesis) is rejected at 0.05 level of significance. As per the study the above remark can be given at 95% confidence.

Table 4: Significance of Differences between Pre-Test and Post-Test Means of Experimental Group and the Control Group with regard to Flexibility

Group	Number	Mean	S.D.	SEM	t-value	P-value
Experiment (Pre-test)	15	36.03	0.01	0.005	4.47*	0.00
Experimental (Post-test)	15	36.64	0.51	0.13		
Control (Pre-test)	15	35.04	0.02	0.004	1.11	0.2
Control (Post-test)	15	35.03	0.02	0.005		

*Significant at 0.05 level Degree of freedom= 14

Table-4 presents the results of experimental group and the control group with regard to the variable flexibility. The descriptive statistics shows the Mean and SD values of flexibility of pre-test and post-test of experimental group was 36.03 ± 0.01 and 36.64 ± 0.51 respectively, whereas the Mean and SD values of flexibility of pre-test and post-test of control group was 35.04 ± 0.02 and 35.03 ± 0.02 . The "t" value in case of experimental group was 4.47* and for control group it was 1.11. The 't'-value in case of experimental group 4.47* as shown in the table above was found statistically significant ($P < .05$) Ho (null hypothesis) is rejected at .05 level of significance. As per the study the above remark can be given at 95% confidence.

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