International Journal of Physical Education, Vol. 4 No. 1 (April, 2011) : 20-22

Research Paper :

Effect of Suryanamaskar and Aerobic exercise on selected physiological variables among sedentary men students of Pondicherry University

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Received : *September 2010;* **Accepted :** *November, 2010*

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ABSTRACT

The purpose of the study was to determine the effect of Suryanamaskar and aerobic exercise on selected physiological variables among sedentary men students of Pondicherry University. The students were divided by three groups' suryanamaskar, aerobic group and control group, each consisting of 10 students. It was hypothesized that there would be significant changes in the Suryanamaskar group and aerobics group on physiological variables. The experimental groups under went the Suryanamaskar and aerobics exercise training for a period of twelve weeks, whereas the control group did not involve in any strenuous physical activity during the course of study. However experimental groups and control groups were permitted to go their routine curriculum. The study was formulated as a random group design. The subjects were tested at the beginning (pre-test) and at the end of the experimental period (post-test) taken after twelve weeks. ANOCOVA was used for statistical analyzed. The results of this study showed that Suryanamaskar groups and aerobics groups can be an effective training to improve a physiological variable.

Vinothkumar, P., Anburaj, E. and Samraj, P. (2011). Effect of Suryanamaskar and Aerobic exercise on selected physiological variables among sedentary men students of Pondicherry University. *Internat. J. Phy. Edu.*, **4** (1) : 20-22.

Key words : Suryanamaskar, Aerobic exercise, Physiological, Vo2 max, Resting pulse

Suryanamaskar is a well-known and vital technique within the yogic repertoire. Its versatility and application make it one of the most useful methods to induce a healthy vigorous and active life and at the same time prepare of spiritual awakening and resultant expansion of awareness. In recent years more and more people have moved away from mere spirituals and are turning to yoga as a method for exploring and improving their lives. Thought the need for techniques to enhance physical, mental and spiritual evolution has been recognized, the fast pace of modern living makes it difficult for even the most determined individual to implement the yoga practice. It is the practice, which is the most important.

Aerobic exercise is the key component of health. In order to be healthy, we have to exercise regularly. It may be difficult to take the time out of your busy schedule to engage in physical activity but exercise helps your mind, emotions and your body in your so many ways. Exercise can help you to lose weight and tone muscle. It will make you look better, but it also releases endorphins and other chemicals that stabilize and improve moods.

Gore and Bhole (1982) conducted to find out the effect on 10 days of training in asanas, the students were taken up for experiments. Pulse rate near wrist joints was measured before and immediately after the following three conditions given with the sufficient rest in between. The pulse rate showed a great variation due to different types of muscular activities involved in them. Any activity of an isometric nature increases muscle tensions and muscles have to be released by with drawing ones effort to its optimum level. Naturally relaxed muscles will put less strain and demands on heart.

Kelly and Kaiser(2007) conducted a study on the aerobic-exercise training improves ventilator efficiency in overweight children The objective of this study was to investigate the effect of an 8-week aerobic-exercise training program on ventilatory threshold and ventilator efficiency in overweight children. Twenty overweight children (BMI > 85th percentile) performed a graded cycle exercise test at baseline and were then randomly assigned to 8 weeks of stationary cycling (n = 10) or a no exercising control group (n = 10). Ventilatory variables were examined at ventilatory threshold (VT), which was

determined via the Dmax method. After 8 weeks, significant improvements occurred in the exercise group compared with the control group for oxygen uptake at VT (exercise = 1.03 +/- 0.13 to 1.32 +/- 0.12 L/min vs. control = 1.20 +/- 0.10 to 1.11 +/- 0.10 L/min, $p < .05$) and ventilatory equivalent of carbon dioxide (VE/VCO2) at VT (exercise = 32.8 +/- 0.80 to 31.0 +/- 0.53 vs. control = 30.3 +/- 0.88 to 31.7 +/- 0.91, $p < .05$). Aerobic-exercise training might help reverse the decrements in cardiopulmonary function observed over time in overweight children.

METHODOLOGY

The purpose of this study was to find out the effect of suryanamashkar and aerobics training on selected physiological variables of university male student. To achieve this purpose 30 male student were selected randomly, from Pondicherry University. They were in the age group of 20 to 25 each subject was oriented with the procedure for the administration of the test. They participated in the training programme voluntarily and cheerfully without any compulsion.

Selection of variables:

The following variables were selected to this study:
– Vo_2 max
– Resting pulse rate

Statistical technique:

The analysis of covariance (ANOCOVA) was applied in order to list the difference in mean gains for significances in the analysis of covariance, the final means were adjusted for difference in initial means and the adjusted means were tested for significance. Scheffe's post hoc test also used to find out the difference between the paired means.

OBSERVATIONS AND DISCUSSION

From Table 1 it can be observed that there was marginal difference in pre-test mean on $V0_2$ max of all three groups, whereas the difference in post-test $V0_2$ max level across the groups was remarkable. The post-test mean $V0_2$ max scores were 35.58, 39.51and 41.53 for control group, Suryanamaskar group and aerobic training group, respectively.

It can be noted that the VO_2 max was higher for the respondent groups with Suryanamaskar compared to that of other two groups. From the result of ANOVA, it is understood that the F ratio 1.55 for pre-test mean of Vo_2 max has no significant difference among the three groups before the training progamme. The 'F' ratio 11.29 for post-test means of Vo_2 has shown a significant different among the groups after the training programme. The calculated F value was higher than the table value 5.48 at 0.01 level. Hence, the result has shown an effect on the training programme on Vo_2 max between the Suryanamaskar and aerobic training groups.

The analysis of covariance was carried out to find out the F ratio for the adjusted post-test means. The obtained F ratio 13.41 was higher than the table value 3.35 at 0.05 level and 5.52 at 0.01 level of confidence. Hence, it is concluded that there was a significant improvement on Vo_2 max among the three groups.

From Table 2 it is seen that there was a significant difference between control group and Suryanamaskar group as the mean difference 4.114 is higher the CI value 4.051 at 0.01 level. There was also significant difference between control group and aerobic groups as the mean difference 6.627 is higher than the CI values 4.051 at 0.01 level. There was no significant difference between the Suryanamaskar and aerobic group as the men difference 2.513 is very less than the CI value 3.1798 at 0.05 level. It is shown that there is due to effect on Vo_2 max.

Table 1 : Analysis of variance/covariance

Test measures	Mean scores			Analysis of variance and covariance				
	Control group I	Suryanamaskar experimental group II	Aerobic experimental group III	Sources of variance	Sum of squares	Degrees of freedom	Means square	F ratio
Pre-test	36.08	35.50	33.94	Between	24.35	2	12.179	1.55
				Within	211.03	27	7.816	
Post-test	35.58	39.51	41.53	Between	183.29	2	91.645	11.29**
				Within	219.06	27	8.114	
Adjusted post-test	35.29	39.41	41.92	Between	204.22	2	102.11	13.41**
				Within	197.95	26	7.614	

* and ** indicate significant of value at P= 0.05 and P=0.01
Required table value df (2, 27) at 0.05 level: 3.35, at 0.01 levels: 5.48,
Required table value df (2, 26) at 0.05 level: 3.37 df (2, 26) at 0.01 level: 5.52

Table 2: Scheffe's Post-hoc test

Mean value			Mean difference	Level of significant
Control I	Suryanamaskar II	Aerobic III		
-	39.410	41.923	2.513	NS
35.296	-	41.923	6.627	0.01
35.296	39.410	-	4.114	0.01

L.S= Level of significant, C.I= Confidence Interval, Scheffe's C.I at 0.05 level: 3.1798, Scheffe's C.I at 0.01 level: 4.0516

Table 4: Scheffe's post-hoc test

Mean value			Mean difference	Level of significant
Control I	Suryanamaskar II	Aerobic III		
70.883	68.934	-	1.949	0.05
70.883	-	68.883	2.000	0.05
-	68.934	68.883	0.051	NS

L.S= Level of significant C.I= Confidence Interval ,Scheffe's C.I at 0.05 levels: 1.6515, Scheffe's C.I at 0.01 level: 2.104

Table 3: Analysis of variance/covariance

Test measures	Mean scores			Analysis of variance and covariance				
	(Control) Group I	(Suryanamaskar) Group II	(Aerobic) Group III	Sources of variance	Sum of squares	Degree of freedom	Means square	F ratio
Pre-test	71.0	71.4	71.0	Between	1.06	2	.533	.058
				Within	250.4	27	9.27	
Post-test	7.08	69.10	68.80	Between	23.26	2	11.63	2.093
				Within	150.1	27	5.55	
Adjusted post-test	70.88	68.93	68.88	Between	25.93	2	12.98	6.322**

* and ** indicate significance of values at P= 0.05 and P=0.01
Required table value df (2, 27) at 0.05 level: 3.35 at 0.01 level: 5.48
Required table value df (2, 26) at 0.05 level: 3.37 df (2, 26) at 0.01 level: 5.52

From Table 3 it can be observed that there was marginal difference in pre-test mean on pulse rate of all the three groups, whereas the difference in post-test pulse rate level across the groups was remarkable. The post-test mean pulse rate scores were 7.08, 69.10 and 68.80 for control group, Suryanamaskar group and aerobic training group, respectively. It can be noted that the pulse rate was higher for the respondent group with Suryanamaskar compared to that of other two groups. From the result of ANOVA, it is understood that F ratio 0.058 for pre-test means of pulse rate has no significant difference among the groups before the training programme. The F ratio 2.093 for post test mean of pulse rate has no significant difference among the groups after the training programme.

The analysis of covariance was carried out to find out the 'F' ratio for the adjusted post test means. The obtained F ratio 6.322 was higher than the table values of 5.48 at 0.01 level. Hence, it is concluded that there was a significant difference on pulse rate among the three groups.

From Table 4 it is seen that there was a significant difference between control group and suryanamaskar group as the mean difference 1.949 was higher than the CI value 1.6515 at 0.05 level. It is also seen a significant difference between control group and aerobic group as the mean difference 2.00 is higher than the CI values 1.6515 at 0.05 level. There was no significant difference between Suryanamaskar and aerobic groups as the mean difference 0.051 level is very less than the CI value 1.6515 at 0.05 level. This also shows that there was significant effect due to Suryanamaskar training on pulse rate.

Conclusion:

Physiological variable Vo_2max has shown improved significant changes due to Suryanamaskar and aerobic exercise when compared to the control group.

Physiological variable, pulse rate has shown improved significant changes due to Suryanamaskar and aerobic exercise when compared to the control group.

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