



EFFECT OF PRANAYAMA ON SELECTED PHYSIOLOGICAL VARIABLES OF PHYSICAL EDUCATION PROFESSIONAL STUDENTS

Physical Education

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ABSTRACT

Ninety students, age ranging between 18 to 22 years and studying professional physical education courses were randomly selected as subjects. They were assigned randomly into two experimental groups (A and B) and one control group (C), each consisting of 30 subjects. The experimental groups A and B were given pranayama treatment separately. The Gr. A was assigned with Bhastrika and Ujjayi Pranayama. Gr. B was allotted with Kapalbhathi and Anuloma-viloma pranayama. The control group continued participating in the normal programme of the college. The duration of treatment was 6 weeks. Following physiological variables were being tested prior to the treatment as well as post treatment. The tested dependant variables are: 1. Anaerobic Power, 2. Vital Capacity, 3. Resting Heart Rate, 4. Resting Respiratory Rate and 5. Total Body Fat Percentage. The data was examined by applying analysis of covariance. It was found that six weeks pranayama practice resulted significant improvements on Anaerobic Power, Vital Capacity, Resting Heart Rate, Resting Respiratory Rate and Total Body Fat Percentage on physical education professional students.

KEYWORDS

Pranayama, Physiological Variables, Anaerobic Power, Vital Capacity, Resting Heart Rate, Resting Respiratory Rate, Total Body Fat Percentage Physical Education Professional students.

INTRODUCTION:

Pranayama is a science which imparts knowledge related to the control of the vital energies through controlled breathing. By the practice of Pranayama, mind becomes calm, tranquil, and psychosomatic diseases are prevented. Rajkumar (2010), done a research on "The Impact of Yogic practices and Physical Exercises on Selected Physical Variables among Inter-collegiate Soccer Players". The yogic practice group showed significant improvement on flexibility. The physical exercises group showed significant improvement on speed, agility, then the other two groups after 12 weeks of training. Sinha conducted a research on "Energy cost and Cardio respiratory Changes during the Practice of Surya Namaskar" and found that as an aerobic exercise Surya Namaskar seemed to be ideal as it involves both static stretching and slow dynamic component of exercise with optimal stress on the cardio-respiratory system.

The purpose of the study was to ascertain the effect of pranayama on selected physiological variables of physical education professional students.

METHODOLOGY:

Ninety students, age ranging between 18 to 22 years and studying professional physical education courses were randomly selected as subjects. They were assigned randomly into two experimental groups (A and B) and one control group (C), each consisting of 30 subjects. The experimental groups A and B were given pranayama treatment separately. The Gr. A was assigned with Bhastrika and Ujjayi Pranayama. Gr. B was allotted with Kapalbhathi and Anuloma-viloma pranayama. The control group continued participating in the normal programme of the college. The duration of the treatment was six weeks and six days in a week. The treatment was given 30 minutes duration both in morning and evening of the day. The selected physiological variables were being tested prior to the treatment as well as post treatment of selected pranayamas on experimental groups. The dependant variables are: Anaerobic Power, Vital Capacity, Resting Heart Rate, Resting Respiratory Rate and Total Body Fat Percentage. The data were examined by applying analysis of covariance.

Findings:

Table – 1: Analysis Of Co-variance Of The Means Of Two Experimental Groups And The Control Group In Anaerobic Power Performance

	Groups			Sum of Squares	df	Means sum of squares	F-ratio
	Gr. A	Gr. B	Control				

Pre-test Means	72.53	72.10	72.43	A 0.03	2	1.54	0.03
				W	87	46.45	
Posttest Means	74.30	73.50	71.96	A 1.07	2	42.17	1.07
				W	87	39.36	
Adjusted Posttest Means	74.15	73.71	71.90	A 6.74*	2	42.69	6.74*
				W	86	6.32	

*significant at 0.05 level of significance, N=90, A=among means variance, W=Within Group variance, F-Ratio needed for significance at 0.05 level of significance = 3.10 (2, 87) and 3.10 (2, 86).

The analysis of co-variance for Anaerobic Power performance indicated that the resultant F-ratio of 0.03 was insignificant in case of pre-test means. Thus, the pre-test means of all the groups didn't differ significantly. Also the post-test means of all the three groups yielded F-ratio of 1.07 which was also insignificant. The difference between the groups in adjusted posttest means was found significant as the obtained F-ratio was 6.74.

Table – 2: Paired Adjusted Final Means and Differences between Means for the two Experimental Groups and Control Group in Anaerobic Power Performance

Means			Difference between means	Critical difference for adjusted means
Gr. A	Gr. B	Control Gr.		
74.15	73.71		0.44	1.28
74.15		71.90	2.25*	1.28
	73.71	71.90	1.81*	1.28

*Significant at 0.05 level

It was evident from above Table that significant difference was found between adjusted final mean of Pranayama group A and control group; Pranayama group B and control group; the difference between means was higher than critical difference for adjusted means. On the other hand insignificant difference was found between the adjusted final means of Pranayama group A and Pranayama group B.

Table – 3: Analysis of Co-Variance of the Means of Two Experimental Groups and the Control Group in Vital Capacity Performance.

	Groups			Sum of Squares	df	Means sum of squares	F-ratio
	Gr. A	Gr. B	Control				

Pre-test Means	3.65	3.64	3.55	A	0.18	2	0.09	0.46
				W	16.93	87	0.19	
Posttest Means	3.78	3.88	3.53	A	1.94	2	0.97	5.83*
				W	14.46	87	0.16	
Adjusted Posttest Means	3.77	3.87	3.55	A	1.61	2	0.80	5.38*
				W	12.89	86	0.15	

*significant at 0.05 level of significance, N= 90, A =Among means variance, W=Within Group variance, F-Ratio needed for significance at 0.05 level of significance=3.10 (2, 87) and 3.10 (2, 86).

The analysis of co-variance for Vital Capacity performance indicated that the resultant F-ratio of 0.46 was insignificant in case of pre-test means of all the groups. The post test means of all the three groups yielded F-ratio of 5.83, which was significant at 0.05 level of confidence. The difference between the adjusted posttest means was found significant as the obtained F-ratio was 5.38.

Table – 4: Paired Adjusted Final Means and Differences between Means for the Two Experimental Groups and Control Group in Vital Capacity Performance

Means			Difference between means	Critical difference for adjusted means
Gr.A	Gr. B	Control Gr.		
3.77	3.87		0.10	0.19
3.77		3.55	0.22*	0.19
	3.87	3.55	0.32*	0.19

*Significant at 0.05 level

It was evident from Table-4 that significant difference was found between adjusted final mean of Gr. A and control group; Gr. B and control group since the difference between means was higher than critical difference for adjusted means. On the other hand insignificant difference was found between adjusted final means of Gr. A and Gr. B.

Table –5: Analysis of Co-Variance of the Means of Two Experimental Groups and the Control Group in Resting Heart Rate Performance

	Groups			Sum of Squares	df	Means sum of squares	F-ratio
	Gr. A	Gr. B	Control				
Pre-test Means	64.26	66.16	65.40	A 54.84	2	27.42	1.13
				W 2099.21	87	24.12	
Posttest Means	62.12	63.70	65.03	A 129.40	2	64.70	2.66
				W 2113.96	87	24.29	
Adjusted Posttest Means	63.03	62.87	64.92	A 77.50	2	38.75	10.96*
				W 303.85	86	3.53	

*significant at 0.05 level of significance, N=90, A= among means variance, W=Within Group variance, F-Ratio needed for significance at 0.05 level of significance=3.10 (2, 87) and 3.10 (2, 86).

The analysis of co-variance for Resting Heart Rate performance indicated that the resultant F-ratio of 1.13 was insignificant in case of pre-test means of all the groups. The post-test means of all the three groups yielded F-ratio of 2.66, which was insignificant at 0.05 level of confidence. The difference between the adjusted posttest means was found significant as the obtained F-ratio was 10.96.

Table – 6: Paired Adjusted Final Means and Differences between Means for the Two Experimental Groups and Control Group in Resting Heart Rate Performance

Means			Difference between means	Critical difference for adjusted means
Gr.A	Gr. B	Control Gr.		
63.03	62.87		0.16	0.96
63.03		64.92	1.89*	0.96
	62.87	64.92	2.05*	0.96

*Significant at 0.05 level

It was evident from Table 6 that significant difference was observed between adjusted final means of Gr. A and control group; Gr. B and control group. On the other hand insignificant difference was found between the adjusted final means of Gr. A and Group B.

Table – 7: Analysis of Co-Variance of the Means of Two Experimental Groups and the Control Group in Resting Respiratory Rate Performance

	Groups			Sum of Squares	df	Means sum of squares	F-ratio
	Gr. A	Gr. B	Control				

Pre-test Means	18.96	19.06	18.80	A	1.08	2	0.54	0.08
				W	589.63	87	6.77	
Posttest Means	16.50	16.76	18.83	A	97.86	2	48.93	7.61*
				W	559.03	87	6.42	
Adjusted Posttest Means	16.48	16.66	18.95	A	114.06	2	57.03	37.73*
				W	129.99	86	1.51	

*significant at 0.05 level of significance, N= 90, A= among means variance, W=Within Group variance, F-Ratio needed for significance at 0.05 level of significance=3.10 (2, 87) and 3.10 (2, 86).

The analysis of co-variance for Resting Respiratory Rate performance indicated that the resultant F-ratio of 0.08 was insignificant in case of pre-test means from. The post-test means of all three groups yielded F-ratio of 7.61 which was significant at 0.05 level of confidence. The difference between the adjusted posttest means was found significant as the obtained F-ratio was 37.73.

Table – 8: Paired Adjusted Final Means and Differences between Means for the Two Experimental Groups and Control Group in Resting Respiratory Rate Performance

Means			Difference between means	Critical difference for adjusted means
Gr.A	Gr. B	Control Gr.		
16.48	16.66		0.18	0.63
16.48		18.95	1.47*	0.63
	16.66	18.95	1.29*	0.63

*Significant at 0.05 level

It was clear from above Table that significant difference was found between adjusted final mean of Gr. A and control group; Gr. B and control group. Since the difference between means was higher than critical difference for adjusted means. On the other hand insignificance difference was found between the adjusted final means of Gr. A and Gr. B.

Table – 9: Analysis of Co-Variance of the Means of Two Experimental Groups and the Control group in Total Body Fat Percentage Performance

	Groups			Sum of Squares	df	Means sum of squares	F-ratio
	Gr. A	Gr. B	Control				
Pre-test Means	13.05	12.11	11.76	A 26.73	2	13.36	1.02
				W 1131.93	87	13.01	
Posttest Means	12.22	12.00	11.77	A 16.69	2	8.34	0.64
				W 1131.49	87	13.00	
Adjusted Posttest Means	12.03	12.19	12.31	A 1.16	2	0.58	9.39*
				W 5.32	86	0.06	

*significant at 0.05 level of significance, N= 90, A= among means variance, W=Within Group variance, F-Ratio needed for significance at 0.05 level of significance=3.10 (2, 87) and 3.10 (2, 86).

The analysis of co-variance for Total Body Fat Percentage performance indicated that the resultant F-ratio of 1.02 was insignificant in case of Pre-test means. The post-test means of all the three groups yielded F-ratio of 0.64 which was insignificant at 0.05 level of confidence. The difference between the adjusted post means was found significance as the obtained F-ratio was 9.39.

Table – 10: Paired Adjusted Final Means and Differences between Means for the Two Experimental Groups and Control Group in Total Body Fat Percentage Performance

Means			Difference between means	Critical difference for adjusted means
Gr.A	Gr. B	Control Gr.		
12.03	12.19		0.16*	0.12
12.03		12.31	0.28*	0.12
	12.19	12.31	0.12*	0.12

*Significant at 0.05 level

It was evident from Table-10 that significant difference was found between adjusted final mean of Group A and control group; Group B and control group, since the difference between means was higher than critical difference for adjusted means.

Discussion of Findings: The present study found that six weeks pranayama practice was having significant improvement on Anaerobic Power, Vital Capacity, Resting Heart Rate, Resting Respiratory Rate

and Total Body Fat Percentage on physical education professional students.

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1. Rajkumar, J. (2010) "The Impact of Yogic Practices and Physical Exercises on Selected Physiological Variables among inter-collegiate Soccer Players", Dissertation Abstracts International.
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