

Effects of Yogic Practices and Physical Exercises on Breath Holding Time among Type II Diabetes Patients

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Abstract – The present study was done to find out the effect of yogic practices and physical exercises on breath holding time among type II diabetes patients. To achieve this purpose, thirty Type II women diabetic patients (n = 30) from Rajah Muthiah Medical College, Annamalai University were randomly selected as subjects. The age of the subjects ranged from 35 to 40 years. The subjects divided into three equal groups of ten subjects each (n = 10). In which, group I underwent yogic practices (YG), group II underwent physical exercises (PG) for six days per week for twelve weeks and group III acted as control (CG) who did not undergo any special training programme apart from their regular activities. The selected criterion variable such as breath holding time was assessed by using holding the breath for maximum duration before and after the training period. The data collected was analysed by administering the Analysis of Covariance (ANCOVA). Scheffe's test was also administered as post hoc test to determine if there existed any paired mean difference. From the results of the study, it was found that there was a significant increase ($p \leq 0.05$) in breath holding time of training groups when compared to control group.

Key Words – Yogic Practice, Physical Exercise, Breath Holding Time, Diabetes

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INTRODUCTION

Yoga is one of the orthodox systems of Indian philosophy. Yoga is a complete science of life that originated in India many thousands of years ago. It is the oldest system of personal development in the world, encompassing body, mind and spirit. Physical exercise is a bodily activity that develops and maintains physical fitness and overall health. It is often practiced to strengthen muscles and the cardiovascular system, and to improve athletic skills. Physical exercise can improve the health of internal system and the efficiency of external movements. Such an adaptation to one kind of stress may also prepare the person physically and emotionally to resist other stresses life.

MATERIALS AND METHODS

This study involved the experimentation of yoga practices and physical exercises on breath holding time among type II Diabetes patients. Only, type II women diabetes patients from Rajah Muthiah Medical College and Hospital, Annamalai University, were randomly selected as subject. Their age were ranged between 35 and 40 years. The selected thirty subjects were divided into three groups of ten each. Out of which, group I (n = 10) underwent yogic

practices, group II (n = 10) underwent physical exercises and group III (n = 10) remained as control. The training programme was carried out for six days per week during morning session only (6 am to 8 am) for twelve weeks. Breath holding time was selected as criterion variable and it was measured by using holding the breath for maximum duration. Both experimental groups initially performed thorough warming up exercises. After that group I performed the following yoga exercises. These are the exercises were given, padmasan, halasan, vajrasan, bhujangasan, dhanurasana, vakhrasan, patchimoththanasan, trikonasan and with moderate intensity. Group II performed the following physical exercises. These are the exercises were given, stretching, calisthenics, sit-ups and with moderate intensity.

DATA ANALYSIS

Mean and standard deviation were calculated for breath holding time for the entire tree group. The data obtained were subjected to analysis of covariance (ANCOVA). And it was found out that the 'F' value was significant for adjusted post-test mean, Scheffe's test was administered as post

hoc test to test the significant difference at 0.05 level between the paired mean.

Table I. Analysis of covariance for Breath holding time of experimental groups and control group

Test	YG	PG	CG	SOV	SS	df	MS	F
Pre test	Mean	30.60	30.90	30.90	B	0.60	2	0.30
	S.D.	1.265	2.998	2.846	W	168.20	27	6.230
Post test	Mean	32.80	32.90	30.60	B	33.80	2	16.90
	S.D.	1.476	3.143	2.836	W	180.90	27	6.70
Adjusted Post test	Mean	32.986	32.807	30.507	B	38.192	2	19.096
					W	34.914	26	1.343

* Significant at .05 level of confidence.

(The table value required for significance at .05 level of confidence with df 2 and 27 and 2 and 26 were 3.35 and 3.37 respectively).

Table – I shows that the pre-test means on breath holding time of yogic practice, physical exercise and control groups were 30.60 ± 1.265 , 30.90 ± 2.998 and 30.90 ± 2.846 respectively. The obtained 'F' ratio value of 0.048 for pre-test score of yogic practice, physical exercise and control groups on breath holding time was less than the required table value of 3.35 for significance with df 2 and 27 at .05 level of confidence. The post-test mean values of breath holding time for yogic practice, physical exercise and control groups were 32.80 ± 1.476 , 32.90 ± 3.143 and 30.60 ± 2.836 respectively. The obtained 'F' ratio value of 2.522 as per the post-test scores among the yogic practice group, physical exercise group and the control group was lesser than the significance value 3.35 at 0.05 level of significance. The adjusted post-test mean values of yogic practice, physical exercise and control groups were 32.986, 32.807 and 30.507 respectively. The obtained 'F' ratio value of 14.221 for adjusted post-test scores of yogic practice, physical exercise and control groups was higher than the required table value of 3.37 for significance with df 2 and 26 at .05 level of confidence.

Hence, the results of the study showed that there was a significance difference exists between yoga practices group, physical exercise group and control group on breath holding time. To analyse which of the paired means had significant improvement, Scheffé's test was applied as post-hoc test. The result of the follow-up test was as presented in Table II.

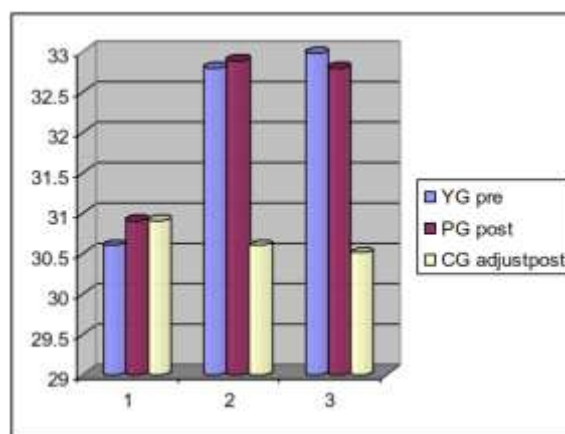
Table II. Scheffe's post hoc test for mean difference between groups of Breath holding time

YG	PG	CG	MD	CI
32.986		30.507	2.479*	1.3455
32.986	32.807		0.179	1.3455
	32.807	30.507	2.30*	1.3455

*Significant, $p \leq 0.05$

According to Table –II the mean difference among the adjusted post-test mean in breath holding time when compared between the yogic practice group, the control group, the physical exercise group and the control group were 2.479 and 2.30 which was significant at .05 level of confidence. The value 0.179 was insignificant when the adjusted post-test mean difference between yogic practice group and physical exercise group at 0.05 level of confidence. It may be concluded from the results of the study that yogic practice and physical exercise are better tools to improve the breath holding time. It may also be concluded from the results of the study that the yogic practice group have significantly improve the breath holding time than the physical exercise group and control group. It also showed that there was insignificant difference between two experimental groups. The pre, post and adjusted post test mean values of experimental groups and control group on breath holding time was graphically represented in the figure 1.

Figure 1: The pre, post and adjusted post test mean values of experimental groups and control group on breath holding time



DISCUSSION

The results of this study indicated that the effect of yogic practices and physical exercises on breath holding time among type II diabetes patients. Our work shows that yogic practice and physical exercise are capable of increasing breath holding time level in women type II diabetes patients. Many previous studies have shown physical exercise is beneficial and decreases diabetes (Neil & Hopkins, 2006 and Ronald et al. 2004) in women patients. Innes & Vincent (2007) and Sharma *et al.* (2008) concluded that yogic practice appeared to decrease the diabetes in men and women. Sahay et al (1991) and Mc Call (2007), concluded that yoga training normalize the level of sugar in blood. Thirty minutes per day of vigorous exercise, has sustained beneficial effects on breath holding time (Cole et al. 1999 and Jouven et al. 2005). No previous studies have attempted to compare the responses of resting pulse rate to yogic practice and physical exercise in women diabetes patients. There are a some studies

suggested that yogic practice may also helps to increase the breath holding time (Barnes et al. 2004, Bharshankar et al. 2003 and Selvamurthy et al. 1983). The findings of Indla & Narhare (2011) and Sarang & Tels (2000) revealed that yoga training must reduce the heart rate. Kirsten et al (2003) pointed that regular physical training reduces pulse rate. Therefore, the present study was designed to determine the effect of yogic practices and physical exercises on breath holding time among type II diabetes patients

CONCLUSION

In the physiological variable such as breath holding time were significantly altered for both the training groups. The breath holding time was significantly improved better for yogic practice group than the physical exercise group when compared with the control group.

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