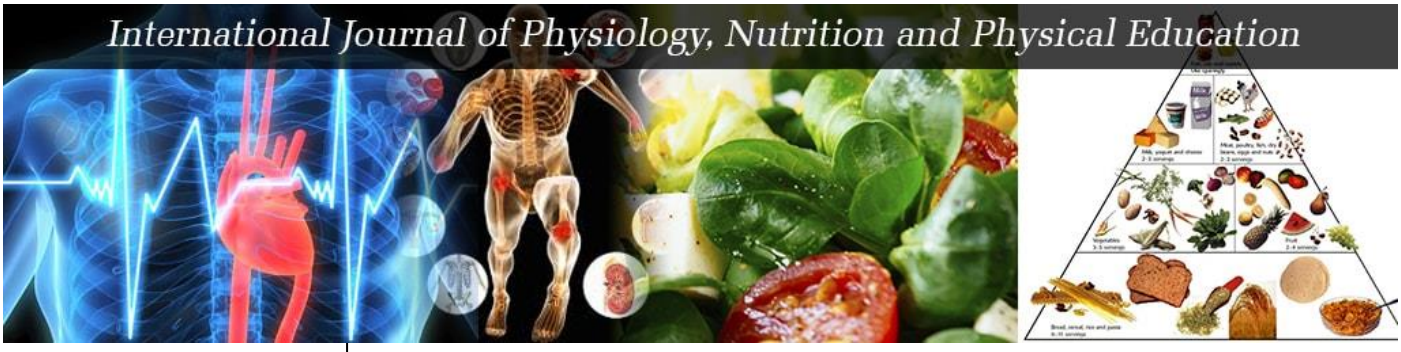

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Impact of 12-weeks of yoga and walking programme on quality of life of diabetic type-2 patients

Dr. Prashant Kumar Rai and Dr. Krishnakant

Abstract
The purpose of the present study was to find out effect of 12-weeks of Yoga Versus Walking Programme on Quality of life of Diabetic Type-2 Patients.
Methodology: For this purpose 10 male Diabetic Type-2 Patients of Azamgarh District with age ranging from 45-55 year were selected as subject for the study. The criterion measures for the study was Quality of life which was measures by Whoqol-Bref Questionnaire.
Result: The result of the study indicates that there was insignificant differences exist between pre and post-test when it was measured after treatment of yoga, walking and control group on diabetic type-2 patient.

Keywords: Yoga practices, brisk walking, quality of life and diabetic type-2 patient

Introduction
Good health is acquired when one follows a healthy diet, regular exercise, positive thinking, unhurried pace of living, and a sublime faith in the divine. Disease manifests in the body when nature's health laws are transgressed. Yogic discipline with its Asanas, Pranayama, and meditation is a way to good health. This ancient therapy helps in treating diseases, which eventually improves personal efficiency and assists in achieving mental peace. When yoga becomes a lifestyle, it effects a radical transformation in an individual. Any health conscious person can turn to yoga and reap the benefits it offers.
The complications which can arise due to poor control of blood glucose are the same in both the forms of diabetes. Thus diabetes can affect the eyes, kidney and nerves. In addition, because diabetes leads to increase in circulating body fats, it causes an increase in heart disease, stroke, and disease on the feet. It is important for us to remember that diabetes is a chronic illness. Though by various means, it can be controlled, a lifelong effort is needed for this.
Diabetes mellitus is a well-known psychosomatic disorder. The causation factors of this disease are sedentary habits, physical and mental stress of strain. It is also well known that diabetes could be very well controlled with the help of medicine, exercise and diet regulation.
The Goal of the therapy is to maintain blood glucose to as near normal as possible. This is associated with fewer complications in the long run. The danger of low blood sugar during therapy has to be carefully tackled. There are varieties of user friendly gadgets for home monitoring. Periodic laboratory check-up is essential for counter checks.
Diabetes mellitus afflicts millions of Indians. While it was previously thought that diabetes is a disease mostly confined to Western Countries, recent studies have shown that Indians have in fact a higher chance of developing diabetes. In fact, diabetes affects approximately 10% of adult middle class urban Indians and rivals heart disease as a cause for morbidity and death. Thus the research scholar was interested to find out impact of 12- weeks of yoga and walking programme on quality of life of diabetic type-2 patients.

Material and Methods
Total 30 male diabetic type-II patients of Azamgarh district with age ranging from 45 to 55 years, were selected as a subject of the study. The subjects were divided into three categories of 10 subjects in each control group (CG), yogic group (YG) and walking group (WG).

Selection of Variables

Based on available literatures, supervisory guidance and researchers own understanding, the Criterion measures for the study was Quality of life.

Collection of Data

The yogic program as well as walking program were administered on experimental groups for the period of twelve weeks while the control group did not get any kind of training program. Before the administration of yogic and walking program, the selected tests were administered on both the experimental and control groups to collect pre-test data. After the completion of twelve weeks of yogic and walking program, again the same selected tests were conducted to collect the post training data.

Experimental Design

For the study pre-test – post-test design, which consisted of experimental groups (n=10) was used.

Yogic Group (YG)	O1	T	O2
Walking Group (WG)	O1	T	O2
Control Group (CG)	O1		O2

O1 = Pre Observation, O2 = Post Observation T = Treatment

Selection of Yogic Practices

The following yogic practices were selected as per literatures and guidance of experts.

- Surya Namaskar
- Asana of standing position
  Tadasana
  Trikonasana
- Asana of sitting position
  Paschimotanasana
  Ardhmatsyendrasna
- Lying on prone position
  Salabhasan
  Dhanurasana
- Lying on supine position
  Uttanpadasan
  Pawanmuktasan
  Setubandhasan
  Naukasana
- Inverted position
  Vipritakarni
  Sarvangasana with help
- Relaxative
  Makarasana
  Shavasana
- Bandha
  Uddiyan Bandha
  Mula Bandha
  Jalandhar Bandha
- Pranayama
  Bhastrika
  Kapalbhati
  Bahya Pranayama
- Meditation
  Pranadharna

The yogic program was administered in following manners

Surya Namaskar
↓
Asana of standing position
↓
Asana of sitting position
↓
Lying on prone position
↓
Lying on supine position
↓
Inverted position
↓
Relaxative
↓
Bandha
↓
Pranayama
↓
Meditation

Table 1: Distribution of Training Components for Type II Diabetic Patients for the period of Twelve Weeks Yoga Practices and Walking Program

	Weeks 1st to 4th	**Weeks 5rd to 8th**	**Weeks 9th to12th**
For Yogic Group			
Duration	35 minutes	40 minutes	45 minutes
Walking Group			
Intensity	2.0 mph to 2.5mph	2.5 mph to 3.0 mph	3.0 mph to 4.0 mph
Duration	35 minutes	40 minutes	45 minutes
Volume	9.385 to 11.732 km/week	11.732 to 16.09 km/week	16.09 to 24.135 km/week

Quality of life (WHOQOL-BREF)

Quality of life was measured by World Health Organization Quality of Life questionnaire brief version.

The WHOQOL-BREF (Field Trial Version) produces four domain scores. There are also two items that are examined separately: question 1 asks about an individual's overall perception of quality of life and question 2 asks about an individual's overall perception of his or her health. Domain scores are scaled in a positive direction (i.e. higher scores denote higher quality of life). The mean score of items within each domain is used to calculate the domain score. Mean scores are then multiplied by 4 in order to make domain scores comparable with the scores used in the WHOQOL-100, and subsequently transformed to a 0-100 scale. A method for the manual calculation of individual scores is below:

Physical domain = ((6-Q3) + (6-Q4) + Q10 + Q15 + Q16 + Q17 + Q18) x 4.

Psychological domain = (Q5 + Q6 + Q7 + Q11 + Q19 + (6-Q26)) x 4.

Social Relationships domain = (Q20 + Q21 + Q22) x 4.

Environment domain = (Q8 + Q9 + Q12 + Q13 + Q14 + Q23 + Q24 + Q25) x 4.

Equations for computing domain Scores

	Equations for computing domain score	Raw Score	Transformed Score*	
Domain 1	(6+Q3)+(6+Q4)+Q10+Q15+Q16+Q17+Q18 ☐ + ☐ + ☐ + ☐ + ☐ + ☐ + ☐	=	4-20	0-100
Domain 2	Q5+Q6+Q7+Q11+Q19+(6-Q26) ☐+☐ +☐+ ☐ + ☐ + ☐	=		
Domain 3	Q20+Q21+Q22 ☐ + ☐ + ☐	=		
Domain 4	Q8+Q9+Q12+Q13+Q14+Q23+Q24+Q25 ☐+☐+ ☐ + ☐ + ☐ + ☐ + ☐ + ☐	=		

Findings of the Study

The results pertaining to analysis of co-variance between experimental groups and control group on diabetic type 2 patients for pre-test - post-test respectively have been presented in table No.2.1 to 2.5

Table 2.1: Descriptive Statistics of Quality of Life of Yoga, Walking and Control Groups in Pre-Test and Post-Test

Descriptive Statistics	Yoga Group		Walking Group		Control Group	
	Pre test	Post test	Pre test	Post test	Pre test	Post test
Mean	159.60	232.20	153.40	225.90	154.70	145.10
Std. Error of Mean	4.771	5.968	3.998	7.512	6.222	3.206
Std. Deviation	15.086	18.873	12.642	23.755	19.675	10.137
Minimum	140	204	135	192	116	128
Maximum	192	258	172	255	187	163
N	10	10	10	10	10	10

The table showing descriptive statistics of data indicates mean, standard error, standard deviation and sample variance along with the range showing minimum and maximum score of the subjects. The kurtosis and skewness score presented along with the standard error of kurtosis and standard error of skewness itself indicates the scientific authenticity of the data gathered.

Table 2.2: Adjusted Post Test Means of Yoga, Walking and Control Groups in relation to Quality of Life

Groups	Mean	Std. Error
Yoga Group	2.301E2	5.227
Walking Group	2.273E2	5.200
Control Group	1.458E2	5.182

Table 2.3: Analysis of Variance of Comparison of Means of Yoga, Walking and Control Groups in relation to Quality of Life

		Sum of Squares	*df*	Mean Square	*F*	Sig.
Pre Test	Among Groups	213.800	2	106.900	.414*	.665
	Within Group	6970.900	27	258.181		
Post Test	Among Groups	47182.467	2	23591.233	69.164	.000
	Within Group	9209.400	27	341.089		

*Insignificant at .05 level

F value required to be significant at 2, 27 *df* = 3.35

In relation to pretest, table 2.3 revealed that the obtained '*F*' value of 0.414 was found to be insignificant at 0.05 level, since this value was found lower than the tabulated value 3.35 at 2, 27 *df*.

In relation to post test, significant difference was found among yoga, walking and control groups pertaining to Quality of Life, since *F* value of 69.164 was found significant at .05 level.

Table 2.4: Analysis of Covariance of Comparison of Adjusted Post Test Means of Yoga, Walking and Control Groups in relation to Quality of Life

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Contrast	45724.249	2	22862.125	85.316*	.000
Error	6967.199	26	267.969		

*Significant at .05 level

F value required to be significant at 2, 26 *df* = 3.37

Table 4.42 revealed that the obtained '*F*' value of 85.316 was found to be significant at 0.05 level, since this value was found higher than the tabulated value 3.37 at 2, 26 *df*.

Since the *F*-value was found to be significant, the Least Significant Difference (L.S.D.) Post Hoc Test was applied for inter-group comparison.

Table 2.5: Least Significant Difference (L.S.D.) Post Hoc Test for Comparison of the Adjusted Post Test Means of All Groups in relation to Quality of Life

(I) Groups	(J) Groups	Mean Difference (I-J)	CD
Yoga Group	Walking Group	2.784	15.05152
	Control Group	84.321*	
Walking Group	Control Group	81.537*	

*Significant at .05 level

Table 2.5 revealed that significant difference was found between yoga group and control group; walking group and control group. On the other hand insignificant difference was found between yoga group and walking group.

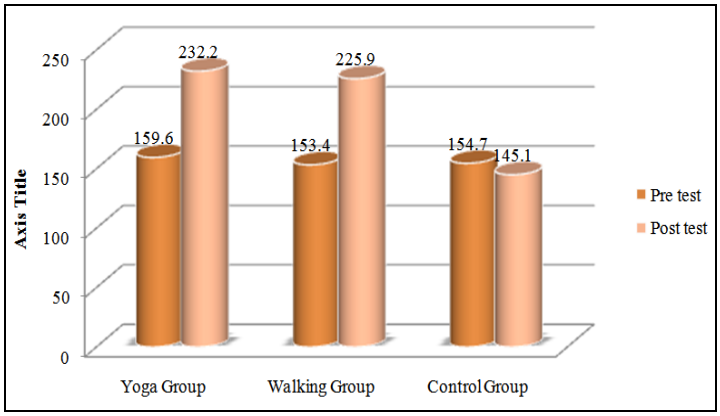

Fig 1: Graphical representation of the comparison of mean of yoga, walking and control groups in relation quality of life

Exercise training is an indispensable component in the medical treatment of patients with type-2 diabetes. Despite the well-known benefits of exercise, unfortunately the patients ignored this modality. The goal of this study was to investigate the effects of yoga versus walking on blood glucose, associated risk factors and quality of life of diabetic type- 2 patients. According to our observations, such exercise training could be safe, effective, and beneficial in diabetic patients. The training program must be tailored to each diabetic patient's specific limitations, individual needs and possibilities.

As we have discussed earlier that exercise and yogic practices have a very positive effect on the diabetic patients eventually improving the quality of life of the patients.

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