Research Paper | *International Journal of Physical Education,* Vol. 4 No. 2 (October, 2011) : 169-172

Effect of 12 weeks walking programme on selected biochemical parameters among middle aged type II diabetic patients

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Received : *July, 2011;* **Revised :** *August, 2011;* **Accepted :** *September, 2011*

ABSTRACT

The effect of 12 weeks walking programme on selected biochemical parameters among middle aged men type II diabetic patients was investigated. To achieve the purpose of this study, 40 middle aged men type-II diabetic patients from Pondicherry region were randomly selected as subjects and their age ranged from 35 to 40 years. The selected subjects were divided into two groups of twenty subjects each. Group I considered as experimental group who were underwent 12 weeks of walking exercise. Group II considered as control who did not undergo any special training programme. All the subjects of the two groups were tested on selected biochemical variables such as, blood glucose level (fasting condition) and postprandial glucose level (after the meal glucose level) at before the commencement of walking exercise (pre-test) and immediately after the walking exercise for a period of twelve weeks (post-test). From the results it was concluded that walking exercise which was followed in this study has much influence on blood glucose level (fasting condition) and postprandial glucose level (after the meal glucose level). Hence, it is recommended to the men type II diabetic patients to adapt walking exercise to improve their health.

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Rajendran, K. (2011). The effect of 12 weeks walking programme on selected biochemical parameters among middle aged type II diabetic patients. *Internat. J. Phy. Edu.*, **4** (1) : 169-172.

Key words : Walking, Diabetes mellitus, Blood sugar level

Walking is an aerobic exercise that is accessible to many segments of the population as it is convenient, easy and low cost, because exercise intensity during walking is generally below the lactate threshold, walking is considered a typical low-intensity exercise.

Walking is probably the easiest way one can burn his calories and reduce fat deposits and it is the most ignored also. People tend to go for high tech. gym workouts but easily forget that a simple running exercise like walking can help them get far more benefits' walking is an excellent means of improving cardio-vascular health, bone density and physical fitness.

Walking provides an alternate source of healing for diabetes. The secretion of stress hormones, due to faulty diet, hectic lifestyle or wrong thinking is controlled by the exercise of walking. The human body is a smoothly functioning food processor, transforming sugars, starches and other components of your diet into energy - the energy you need to perform the daily tasks of life (sitting, walking, lifting, etc.). For those, who suffer from diabetes, the transformation of foodstuffs into energy does not occur in as nearly an effective manner due to problems with insulin.

Type-II diabetes is believed to develop when, the receptors on cells in the body that normally on cells in the body that normally respond to the action fail to be stimulated by it. This is known as insulin resistance. In response this more insulin may be produced, and this over-production exhausted insulin manufacturing cells in the pancreas. It also develops when there is simply insufficient insulin available and the insulin that is available may be abnormal and therefore doesn't work properly.

METHODOLOGY

Selection of subjects:

The prime purpose of this study was to explore the effects of walking exercise on selected biochemical parameters among middle-aged men type II diabetic patients. To achieve the purpose of this study, 40 middle aged men type-II diabetic patients from Pondicherry region, were randomly selected as subjects. The age of the subjects ranged from 35 to 40 years. The selected subjects were divided into two groups of twenty subjects each. Group I considered as experimental group who were underwent walking exercise for 12 weeks and group II considered as control who did not undergo any special training programme.

Selection of variables and tests:

The selected independent variable was walking exercise and the dependent variables were blood glucose level (fasting condition) and postprandial blood glucose level (after meal blood glucose level). The blood sugar level at fasting condition and postprandial glucose level after the meal were estimated by using the o-tuluidine reagent by the method of Dubowski modified by Sasaki and Matsui (1972). The selected biochemical parameters were tested in the medical laboratory, Pondicherry Medical College, Pondicherry.

Training protocol:

During the experimental period, Group I, the experimental group underwent walking exercise for twelve weeks, 3 days per week alternative days. On every day of the training session, the exercises done were approximately 45 to 60 min, which included warming up and relaxation. Group II acted as control who did not participate any special training programme or strenuous physical exercise apart from their day to day activities.

Experimental design and statistical technique :

In the present study, random group design was used. The data were collected on selected biochemical parameters such as, blood glucose level (fasting condition) and postprandial glucose (after the meal glucose level) at before and immediately after the 12 weeks of walking exercise as pre and post test.

Analysis of covariance (Anne L. Rothstein, 1985) was applied to find out significant difference, if any, between the experimental and control group as a result of twelve weeks of walking exercise. The level of significance of test "F" ratio obtained by the analysis of covariance was fixed at 0.05 level of confidence, which was considered to be appropriate.

OBSERVATIONS AND DISCUSSION

The effects of walking exercise on selected biochemical parameters among middle aged men type-II diabetic patients were determined by subjecting the collected data to the analysis of covariance separately and the results are presented below.

Analysis of blood glucose level (fasting condition):

Analysis of covariance of data on blood glucose level (fasting condition) between pre and post tests of experimental and control group is given in Table 1.

Table 1 shows that the pre-test mean values on blood glucose level (fasting condition) for experimental and control groups were 262.10 and 261.35, respectively. The obtained "F" ratio value 0.24 for pre-test score on blood glucose level (fasting condition) which was lesser than the required table value 4.096 for significance with df 1 and 38. The post-test mean values on blood glucose level (fasting condition) for experimental and control groups were 140.15 and 260.05 and "F" ratio value 1930.70 for post test scores on blood glucose level (fasting condition) which was higher than the table value 4.096 for significance with df 1 and 38. The adjusted post-test mean values on blood glucose level (fasting condition) for experimental and control groups were 140.15 and 260:06 respectively. The obtained "F" ratio value 1939.52 for adjusted post test mean values on blood glucose level (fasting condition) which was higher than the required table value 4.104 for significance with df 1 and 37. The result of the study showed that there was a significant difference between experimental and control group on blood glucose level (fasting condition).

Table 1: Analysis of covariance of data on blood glucose level (fasting condition) between pre and post test of experimental and control group

Test	Exp group	Control group	Source of variance	Sum of squares	d.f.	Mean squares	F- Ratio
Pre-test							
Mean	262.10	261.35	Between	5.63	1	5.63	0.24
S.D.	4.17	5.44	Within	892.35	38	23.48	
Post-test							
Mean	140.15	260.05	Between	143760. 10	1	143760.1 0	1930.70*
S.D.	11.13	5.00	Within	2829.50	38	74.46	
Adjusted post test							
Mean	140.15	260.06	Between	142884. 31	1	142884.3 1	1939.52*

* indicates significance of value at P=0.05. (The table value required for significance at 0.05 level with df 1 and 38 and 1 and 37 are 4.096 and4.104, respectively).

Table 2: Analysis of covariance of data on postprandial glucose level (filter the meal glucose level) between pre and post test of experimental and control group

Test	Exp group	Control group	Source of variance	Sum of squares	d.f.	Mean squares	F-ratio
Pre-test							
Mean	302.05		between	0.03	1	0.03	0.001
S.D.	4.97	5.89	Within	1126.95	38	29.66	
Post-test							
Mean	256.10	302.15	Between	21206.03	1	21206.03	533.49*
S.D.	7.50	4.83	Within	1510.35	38	39.75	
Adjusted post test							
Mean	256.11	302.15	Between	21198.93	1	21198.93	527.47*
			Within	1487.03	37	40.19	

* indicates significance of value at P=0.05

(The table value required for significance at 0.05 level with df 1 and 38 and 1 and 37 are 4.096 and 4.104, respectively)

Analysis of postprandial glucose level (After the meal glucose level):

Analysis of covariance of data on postprandial glucose level (After the meal glucose level) between pre- and post-tests of experimental and control group is given in Table 2.

Table 2 shows that pre-test means values on postprandial glucose level (after the meal glucose level) for experimental and control groups were 302.05 and 302.00, respectively. The obtained "F" ratio value 0.001 for pre-test score on postprandial glucose level (after the meal glucose level) which was lesser than the required table value 4.096 for significance with df 1 and 38. The post test mean values on postprandial glucose level (after the meal glucose level) for experimental and control groups were 256.10 and 302.15 and "F" ratio value 533.49 for post test scores on postprandial glucose level (after the meal glucose level) which was higher than the table value 4.096 for significance with df 1 and 38. The adjusted post test mean values on postprandial glucose level (after the meal glucose level) for experimental and control groups were 256.11 and 302.15, respectively. The obtained "F" ratio value 527.47 for adjusted post test mean values on postprandial glucose level (after the meal glucose level) which was higher than the required table value 4.104 for significance with df 1 and 37. The result of the study showed that there was a significant difference between experimental and control group on postprandial glucose level (after the meal glucose level).

It was concluded that walking exercise which was followed in this study has much influence on blood glucose level (fasting condition; and postprandial glucose level (after the meal glucose level). The results confirm the findings of Alexander (2008); Aljasir *et al.* (2008); Anne (1985); Rothstein, Gordon (2008); Innes and Vincent (2007); Jain *et al.* (1993); Kosuri and Sridhar (2005); Manjunatha *et al.* (2005); Sahay (2007). Hence, it is recommended to the men type II diabetic patients to adapt walking exercise to improve their health.

Conslusion:

There was a significant difference between experimental and control groups on blood glucose level at fasting condition and postprandial glucose *i.e.*, after meals blood glucose level.

There was a significant reduction on selected biochemical parameters such as, blood glucose level at fasting condition and postprandial glucose *i.e.*, after meals blood glucose level due to twelve weeks of walking exercise. However, the reduction was in favour of experimental group.

From the present study, it is concluded that the walking exercise has much influence on selected biochemical parameters. Hence, it is recommended to the middle-aged men type II diabetic patients to adopt this training package to improve their health.

The present investigation attempt was not made to control with the diet. Hence, further studies may be conducted to explore the effects of walking exercise on biochemical parameters after considering diet as one of the controling factors.

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