

Effects of aerobic exercise on fatigue level and quality of life in type-2 diabetes people, A cross – sectional observational study

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Abstract

Introduction: Fatigue, sleepiness, tiredness, lacking of energy and exhaustion are words commonly used in everyday life interchangeably. Fatigue may also be related to psychological factors such as depression, emotional distress, and it's also related to the diagnosis or intensity of diabetes self-management regimens. It's also related to lifestyle issues such as lack of exercise, overweight, and mostly common in type-2 diabetes. Diabetes mellitus a major public health problem. Aerobic exercise is accepted as a therapeutic strategy for type-2 diabetes because of its beneficial effects on glycaemic profile.

Objective: The purpose of the study was to observe the effects of aerobic exercise on fatigue level and quality of life in type -2 diabetes persons.

Materials and Methods: 12 subjects (7 females; 5 males) randomly selected were given aerobic exercise given for 1 month. The effect of aerobic exercise were measured by Patients health questionnaire (PHQ-9) (quality of life) and Fatigue severity scales (FSS) for fatigue levels. The means of pre and post intervention data were measured using a paired t –test.

Conclusion: There was significant difference between pre and post PHQ-9 & FSS after 4 weeks of aerobic exercise in type 2 diabetes mellitus patients.

Keywords: Aerobic exercise, Diabetes mellitus, PHQ-9, FSS.

Introduction

Fatigue, sleepiness, tiredness, lacking of energy, and exhaustion are words commonly used in everyday conversations. Fatigue is also defined as a multi causal, multidimensional sensation in which we can include physiological, psychological, and situational components. Fatigue is a common and painful complaint among people with type 2 diabetes.² Tiredness, lack of energy, and exhaustion like symptoms are also found in other medical disorders. Fatigue is more in type-2 diabetes patients, impacting the quality of life (QoL) due to the complex management strategies. Suggested factors include hyper/hypoglycaemia,³ number of complications,⁴⁻⁵ and depression.⁶ Fatigue impacts functional capacity which has been seen in patients with other chronic disorders.^{7,8} Functional capacity of type 2 diabetes patients is further affected due to due to low cardio respiratory fitness⁹ low physical activity levels¹⁰ and high body mass index (BMI). Previous studies have suggested that individuals with diabetes covered less distance during a 6 minute walk test (6MWT) as compared to age and sex matched controls. However, the impact of fatigue on QoL and functional status has not yet been investigated in patients with diabetes¹¹. Previous studies have focussed on specific causes of fatigue in diabetes patients, and concluded that multiple factors contribute to fatigue in patients with chronic illness.^{12,13} The factors responsible for fatigue in type-2 diabetes patients are physiological components of the underlying disease, complications which occur due treatment and the psychological components which include depression and anxiety.^{14,21} Hyperglycaemia is also one of the causes for fatigue in type-2 diabetes patients¹⁶.

Numerous complications like sleep problems,¹⁷ chronic pain,¹⁸ overweight¹⁹ and obesity may cause higher fatigue levels.²⁰ The relationship between fatigue and the possible physiological and psychological factors in individuals with type 2 diabetes is still unknown.^{22,24} Aerobic exercises are one of the available strategies for type 2 diabetes patients. Aerobic exercise training is used in health promotion and different rehabilitation programs to improve physical strength & endurance. They are also effective in reducing fatigue levels and maintain the quality of life in type-2 diabetes people. Therefore the purpose of present study was to observe the effect of aerobic exercises on fatigue levels and quality of life in type-2 diabetes patients.

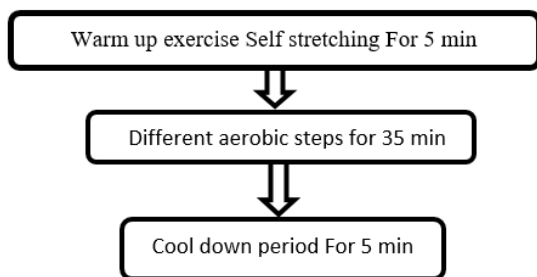
Materials and Methods

Total 12 type-2 diabetic patients were recruited from a clinic in Ahmadabad, Gujarat. A cross – sectional observational study design was used for the study. The included participant were diabetic patients with disease duration > 2 years, age between 40 to 50 years, 5males, & 7-females. Patients with any neurological, musculoskeletal or cardiovascular problems, any recent surgery were excluded. Ethical clearance was taken from institutional ethics committee. The participants were informed about the procedure thoroughly and signed informed consent obtained from them.

According to ACSM guidelines, an aerobic exercise protocol was designed for the type-2 diabetic patients. Pre intervention, FSS (fatigue severity scale) and PHQ-9 (patients health questionnaire -9) were measured. Aerobic exercises were done for 45 minutes, 5 days / week, for 4

weeks. After completion of 4 weeks, the FSS & PHQ-9 scores were again taken

The following exercise was given to every participant.



Statistical analysis

The statistical calculation was done using SPSS software version 20. Statistical significance was evaluated between pre & post score of FSS & PHQ-9 by using paired t-test. Significance was assumed at p<0.05.

Results

Statistical significant differences were found in PHQ 9 scores and FSS scores (p<0.05). The post intervention mean values suggest improvements for both scores (Table 1 and Table 2)

Table 1: The PHQ-9 questionnaire scores pre and post intervention (n= 12)

PHQ-9 Score	Mean ±SD	t value	P value
Pre	16.00±1.47	11.89	0.001
Post	10.16±1.11		

Table 2: The FSS e scores pre and post intervention (n= 12)

FSS Score	Mean ±SD	t value	P value
Pre	45.5±10.67	11.57	0.001
Post	31.5±8.42		

Discussion

The purpose of the study was to observe the effect of aerobics exercise on fatigue level & quality of life in type-2 diabetes patients. The results of the current study demonstrates that fatigue level is decreased & quality of life improved after aerobic exercise in type-2 diabetes patients.

Similar to the results of this study in chronic conditions or diseases, aerobic exercises have resulted in reduction in fatigue levels. Previous studies conducted on community dwelling older adults also suggest that increasing physical activity levels had important implication in reducing fatigue level.²⁵ Similarly a study on multiple sclerosis patients, who received combination therapy including aerobic exercise also suggests that aerobic exercise helpful to reduce fatigue level and also improve quality of life.²⁶ It is important for health care providers treating the patient with type 2 diabetes to address their fatigue issues. Health care providers should use complaints of fatigue as a starting

point for further evaluation of co morbid conditions. In conclusion, results of this study suggested that interventions strategies should be developed to reduce the burden of fatigue in individuals with type 2 diabetes.

Source of funding

Self

Conflict of interest

Nil.

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