

Effect of Walking on Fasting Blood Sugar in Type 2 Diabetes

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Abstract: People are encouraged to reduce their inactivity rather than to do more exercise. The aim of walking is to involve large muscle groups, and possible to continue it for long periods of time. A total of 25 male and female adult subjects with regular treatment for Type 2 diabetes more than one year were selected to measure Fasting Blood Sugar levels before and after walking for 30 minutes. There is a significant change in Fasting Blood Sugar after walking for 30 minutes with p -value <0.001 . Walking for half an hour fits well as it play a central role in preventing long term complications in the management of type 2 Diabetic patients.

Key words: Type 2 diabetes, Fasting Blood Sugar, Walking for 30 minutes.

I. Introduction

Attempts to make diabetic patients participation in regular exercise activities are disappointing with high dropout rates. Various barriers to regular exercise have been described such as health problems, lack of time or energy, no exercise partner, no support in family, expense and being unaccustomed to taking exercise.

Even though walking is a complex activity, it is common knowledge that it is carried out more or less automatically. The multiple positive benefits of walking are reduced cardiovascular risk, Blood Pressure, reduction in body weight, fat and maintenance of muscle mass. It is useful for lowering plasma glucose during and following exercise to increase insulin sensitivity. As exercise continues blood glucose and eventually Free Fatty Acids become important sources. Glucose and Free Fatty Acids are the primary blood borne fuels. This switch from local circulatory fuels and from carbohydrate to lipid is important for endurance exercise since local fuels are limited. With physical exercise, there is also increase in blood flow to the working muscle. This adaptation ensures delivery of glucose to the muscle and provides FFA, which have been released by adrenergic stimulation of fat cell lipolysis. To maintain normal glycemic levels during exercise the increase in glucose utilization by working muscle must be balanced by an increase in hepatic glucose output.

II. Materials And Methods

The present study was conducted in the department of Physiology, Siddhartha Medical College, Vijayawada. Selection of the subjects was done in the Diabetic clinic organized by department of General Medicine at Government General Hospital, Vijayawada, Andhra Pradesh. Prior to the commencement of the study consent was obtained from the College Ethical Committee and written consent was obtained from the subjects. Each subject was informed in detail of its objective, the aim of the research protocol and the method to be used. Along with routine lab investigations, Fasting Blood Sugar samples were taken before and after walking for 30 minutes in type 2 diabetes patients. A total of 25 male and female adult subjects with regular treatment for type 2 diabetes more than one year were selected whose physical activities are minimal in their daily life and advised them to do walking for 30 minutes. Subject's Fasting Blood Sugar levels before walking and after walking for 30 minutes was considered as control group case group respectively.

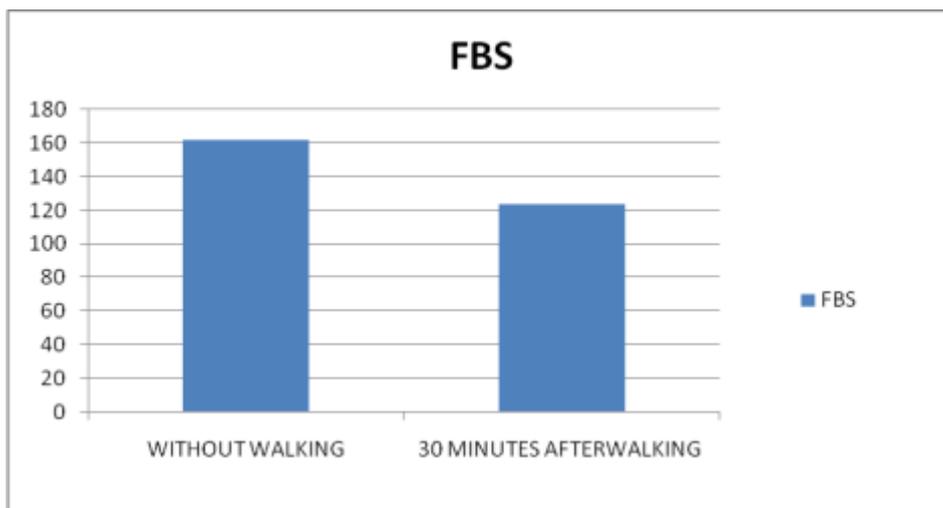
III. Results

A total of 25 adult male & female subjects were examined. FBS was significantly affected after 30 minutes walking in type 2 diabetic patients.

Table showing comparison of FBS before & after walking for 30 minutes:

Parameter	Without walking (MEAN \pm SD)	Walking after 30 minutes (MEAN \pm SD)	p- value
FBS	162 \pm 7.24	124 \pm 6.45	< 0.001

Mean and Standard Deviation of FBS without walking and after walking for 30 minutes were being compared in the table. The data obtained was analyzed by using unpaired student's t- test.



There was a significant decrease in FBS during 30 minutes of walking when compared to subjects without walking in type 2 diabetic patients with p- value less than 0.001.

IV. Results

Diet and exercise play a central role in preventing long term complications and the first line of treatment in type 2 Diabetic patients. But they may need drugs to control glycemic levels. Compared to sedentary individuals, those who take regularly (more than 5 days a week) a brisk walk for 30 minutes a day or any other equivalent exercise are much healthier. A further increase in intensity or duration of exercise doesn't confer any significant additional benefit in terms of longevity or freedom from disease. More intense exercise confers the effects of training in terms of superior performance and higher cardio respiratory reserve. But since an average person is primarily interested only in staying healthy, intense exercise is not necessary.

A healthy individual is capable of maintaining blood glucose level within a narrow range. FBS level varies between 70-110 mg/dl. Maintenance of homeostasis during exercise requires precise functioning of several regulatory systems. These include cardiopulmonary responses that ensure delivery of oxygen and substrates to the working tissues and removal of metabolic byproducts, the regulation of insulin and counter regulatory hormone secretion by neural and endocrine system and regulation of metabolism in liver, muscle and adipose tissue. This finely tuned metabolic response to exercise is often altered in diabetic patients.

Exercise enhances insulin binding to its receptor on muscle cell membrane. Insulin is actually a modulator of glucose transport during exercise and that exercise magnifies its effect. The changes in concentration of insulin and glucagon prevent decreases in blood glucose level during exercise, initially by stimulating hepatic glycogenolysis and later by increased hepatic gluconeogenesis. The factors involved in the mechanism of increased glucose uptake during and after exercise are increasing rate of blood flow to the exercising muscle, a change in energy status of the muscle and increase in insulin binding. Cellular signaling mechanisms that stimulate the glucose transporter also play a role.

V. Conclusion

Decreased Fasting Blood Sugar after 30 minutes walk is due to adrenergic inhibition of insulin secretion & decrease in circulating plasma insulin level. Decreased FBS is considered beneficial in the treatment of diabetes mellitus. Attainment of ideal body weight, improvement in self image, decrease in hypertension, lipid related cardiovascular risk factors can all be achieved by diabetic person walking for 30 minutes duration.

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