

A Prospective Study of Physical Activity and Its Role in Management and Prevention of Diabetes

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Abstract

Physical activity may be a therapeutic tool in a variety of patients with, or at risk for diabetes. Recent evidence has shown that increased physical activity in conjunction with dietary changes can prevent individuals heading towards diabetes. Physical activity plays an independent role in protection against diabetes. Present study indicates that in a total sample of 1000 subjects, 359 persons are performing physical activities and 641 are doing sitting type of work. Borderline, newly detected, known and total diabetic subjects are more in subjects performing sitting type of work than physical work. Men are more physically active than women. Physical activity is more in rural population in borderline and newly detected diabetic subjects but in known cases it is more in urban population. Hence the risk of developing diabetes is more in urban population. In the total population (1000) only 38 subjects (3.8%) were doing exercise daily. Similarly in the present study, borderline, newly detected, known and total diabetic subjects are more in physically inactive persons. The significance of this study, thus, lies in the fact that the individuals are unaware of their disease status and more having a sedentary life style. These findings indicate that promotion of physical activity is important in the prevention of diabetes mellitus.

Key Words: Diabetes, Physical activity, Sedentary, Borderline, Newly detected diabetics

Introduction

Diabetes is such a complex disease with many different forms. Physical activity is any bodily movement produced by skeletal muscles resulting in energy expenditure. Therefore this includes sports and leisure activities of all forms. Physical activity and exercise helps tune the "human machine" and help to make our organs, muscles, bones and arteries more efficient. This is our way of counter attacking and we can reduce the chances of getting an illness or a disease. Aristotle and the Indian physician, Sushruta, suggested the use of exercise in the treatment of diabetic patients as early as 600 B.C. and during late last century and early this century many physicians claimed that the need for insulin decreased in exercising patients.

During physical activity, whole-body oxygen consumption may increase by as much as 20-fold and even greater increases may occur in the working

muscles. To meet its energy needs under these circumstances, skeletal muscle uses, at a greatly increased rate, its own stores of glycogen and triglycerides, as well as free fatty acids (FFAs) derived from the breakdown of adipose tissue triglycerides and glucose released from the liver. To preserve central nervous system function, blood glucose levels are remarkably well maintained during physical activity. The metabolic adjustments that preserve normoglycaemia during physical activity are in large part hormonally mediated. A decrease in plasma insulin and the presence of glucagons appear to be necessary for the early increase in hepatic glucose production during physical activity, and during prolonged exercise, increases in plasma glucagon and catecholamine appear to play a key role. These hormonal adaptations are essentially lost in insulin-deficient patients with type 1 diabetes. As a consequence, when such individuals have too little insulin in their circulation due to