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Physical Activity as an Educational and Contribution Tool Health in the Control of Diabetes Level

Lulzim IBRI
University of Prizren

Shemsi MORINA
University of Prizren

Abstract

Diabetes is a group of metabolic disorders associated with the inability to maintain normal blood glucose parameters. The relationship between diabetes and physical activity depends on a number of factors such as; level of disease development, diet, regular physical activity, physiology of people with diabetes, etc. The purpose of this paper is to clarify the impact of physical activity as an educational tool and health contributor in controlling and maintaining the level of normal blood sugar parameters to people with various diabetes.

Keywords**:** *physical activity, diabetes, health, blood sugar level*.

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Introduction

Diabetes is a disease of impaired metabolism that is associated with the inability to maintain normal blood glucose parameters, and is divided into two categories: type 1 diabetes, which is more common to Children, and type 2 diabetes, the most common to adults. Physical activity has been shown to have a number of positive effects to Diabetics and is therefore also recommended for Children with diabetes. One of the roles of Educator, Teacher, Physical Education Teacher is to encourage children with diabetes to regularly participate in school sports activities, develop

special skills, become more optimistic, gain self-confidence and learn to benefit from physical exercises. (Peppa, Asonitou, Koutsouki 2011). Diabetes is a rapidly growing disease. About four million deaths each year worldwide are attributed to complications of diabetes. This insidious disease reduces life expectancy by about fifteen years (Vuori, 2004). The most common symptoms of this "secret killer" disease are: frequent urination, increased thirst, constant hunger, leg pain, insomnia, vision loss, etc. Due to complications such as retinal damage leading to blindness, kidney disease, coronary heart disease, stroke, amputation of limbs, problems during pregnancy, etc. Diabetes has high costs and poses a heavy burden on health services (Vuori, 2004). The purpose of this paper is to explain the impact of physical activity as an educational tool and health contributor in maintaining normal blood sugar parameters in various diabetics.

Division of diabetes

The human body with diabetes, unable to produce insulin causes damage to the pancreas which is responsible for producing insulin. Type 1 diabetes accounts for about 10% of new cases of diabetes. Type 2 diabetes is a type of diabetes in which the human body is unable to recognize and accept the hormone insulin, which is found in the bloodstream and requires drugs that work to allow insulin to be drawn from the blood into the cells. Type 2 diabetes begins with the onset of insulin resistance. Risk factors for developing type 2 diabetes are obesity, sedentary lifestyle, insufficient physical activity and foods rich in saturated fats. Type 2 diabetes is more common in the elderly and accounts for about 90% of all diabetes diagnoses (Henske, 2016). The relationship between diabetes and physical activity depends on a number of factors such as: the type of disease of the person with diabetes, the way of eating, daily physical activity, etc. For people with diabetes, Physical activity is recommended because it reduces body weight, which improves the effectiveness of insulin in the human body and facilitates the control of normal blood glucose levels (Henske, 2016). Some of the most common contributions that physical activity as an educational-health tool gives to people affected by diabetes, are that physical activity helps these Diabetics to strengthen the body, improve physical condition, lose weight and make it easier diabetes level control. People affected by diabetes without physical activity find it very difficult to control it, due to the need to balance carbohydrate intake with insulin intake (Riddel, 2017). Even when this relationship is established successfully, it can easily lead to large oscillations of blood glucose levels, due to factors such as stress, getting cold, smoking, etc. The biggest obstacle posed

by physical activity is that it cannot be easily measured e.g. if we measure physical activity in time and exercise at time intervals of 30, 45, 60, 90 or 120 minutes, then the intensity of exercise often changes and does not depend on the duration of physical activity. This can very easily lead to a drop in blood glucose levels (hypoglycemia), especially to Diabetic persons who are prone to hypoglycemia (Henske, 2016). Hypoglycemia can be manifested by a variety of symptoms that vary from person to person, but the most common are general weakness, feelings of drowsiness and fatigue, confusion, fever, and occasional loss of consciousness. Loss of consciousness can lead to physical injury which is caused by a fall or even death if the unconscious person does not receive a glucose injection (WHO, 2018). To healthy people during physical activity the body stops the secretion of insulin and increases the consumption of glycogen (the reserve form of glucose) by the muscles and liver. The body of a healthy person is able to very quickly balance the rate at which glucose is broken down and glycogen is produced. To people with type 1 diabetes, this balancing mechanism is disrupted because not only can the body not control the amount of insulin in the blood, but it also slows down the production of glycogen. This, directly leads to the use of more glucose to create reserve glycogen than is available for use in the case of physical activity. This phenomenon directly leads to excess insulin in the blood resulting in hypoglycemia (WHO, 2018). Due to the fear of hypoglycemia, Diabetics often know to consume sugary foods before physical activity in order to make energy available to the body during physical activity. In situations where blood glucose levels are high, hyperglycemia most often appears at the end of physical activity. It means that at the end of physical activity, the level of adrenaline in the blood is quite high as well as the level of glucose in the blood, but the need for glucose is significantly reduced which causes hyperglycemia. If hyperglycemia is not affected, sores can appear which cannot close on their own and damage to internal organs can occur, most often they are the kidneys and eyes. Hyperglycemia caused by physical activity is not easy to predict or control, due to the fact that hyperglycemia, unlike hypoglycemia, occurs after the end of physical activity, which makes it much more difficult to predict the level of exercises that are optimal to avoid hyperglycemia (WHO, 2018).

Diabetes and physical activity

Some studies have shown that physical inactivity increases the risk of developing diabetes. The risk of diabetes also increases due to which it will be sedentary lifestyle, possibly also due to low

level of physical activity. (Folsom, Kushi, Hong, 2000). The maximum allowable heart rate is calculated by the formula "220 - age". For example, for a 40-year-old person, this is 180 beats per minute. This is the maximum theoretical rate of heart work and it is best to never approach this level. During a physical activity it is good to accelerate the heart rate to 60-80% of the theoretical maximum. If these recommendations are not followed, then it can lead to blindness or heart attack, in any case, we can choose the type of physical activity that gives us pleasure, brings benefits and prolongs life. If we feel that you have weakness, then care should be taken during physical activity. If tests show that proteins are present in the urine, then under the influence of physical activity they will increase even more. Physical activity is a burden on the kidneys and can accelerate the development of their deterioration. This is perhaps the only case where from physical activity it is not known what is the most beneficial or harmful. In any case, walking's in the fresh air, and light exercises for Diabetics, will be beneficial and will not harm the body. If you are energetically engaged in physical activity, then within the next 2-3 days protein can be found in the urine, even if the kidneys are functioning normally. This means that passing a urine test to check kidney function should be delayed for several days after a strenuous physical activity. Diabetics should refrain from practicing physical activity in case of rise in blood sugar values above 9.5 mmol / l, in which case it is best to postpone physical activity for the next day. When blood sugar levels fall below 3.9 mmol / l, then 2-6 grams of carbohydrates should be consumed, to prevent severe hypoglycemia. During physical activity, the blood sugar level should often be checked so that it is always under control. As a result of physical activity, endurance and strength will gradually increase. Over time, workloads will be normal and very easily affordable. In order to develop physically, you need to gradually increase the physical load, otherwise the physical form will begin to deteriorate. When practicing cycling, resistance should be gradually increased, so that the heart works faster and trains better. If we are walking, running or swimming, we should gradually increase the loads and the speed of movement. Even for walking it is recommended to use the same principle, of gradual increase of loads, one should walk in the same way as we are pushing to reach a meeting. Measure the number of steps with a pedometer or a special program installed on the smartphone. Try to walk longer, faster, carry some heavy objects with you and also let your hands move naturally, do the same when running. Under the threat of blindness, people with diabetes are banned and unable to engage in any sport that requires heavy physical load or rapid explosive movements, such as weight lifting, pushing, running, jumping, diving, basketball,

football, handball, martial sports etc. Those suffering from diabetes are usually recommended to take up walking, swimming, jogging or cycling. Of course, that walking is one of the most favorite and recommended activities, which can take place in any place, at any time and in any season. People with diabetes are advised to follow a diet through the consumption of low-value carbohydrates, through which blood sugar parameters can be brought to normal (4.9-6.1), then gradually the blood vessels in the eye will be strengthened and the risk of Hemorrhage will be eliminated and with this the options for physical activity will be expanded. Physical activity can be made affordable especially through light walking and running. It should be noted that recovery from diabetic retinopathy is an extremely slow process. It usually lasts for many months, but can last for several years. This can only be achieved if a healthy diet and regular physical activity are followed with dedication, to carefully control blood sugar and keep it always at normal values. All of these recommendations are important for people with diabetes. The key is not to overdo it or get hurt. We need to learn to listen to our body and give it the proper physical load.

Conclusion

Physical activity for diabetics is extremely recommended, because it affects body weight loss, which facilitates control and improves the effectiveness of drugs that are taken to control blood glucose levels. For people with diabetes, physical activity is an important challenge because of the impact it has on the human body. The biggest obstacle is the inability to measure the level of physical exercise. If this level is misjudged, hypoglycemia and hyperglycemia can easily occur. The optimal level of physical activity is different for each person suffering from diabetes, some Diabetics who live with more active forms of life have very little need for physical activity, because their need for physical activity, they meet through their activity daily (such as; walkings, going out with pets, etc.) while other Diabetics who live with less physical activity, must find the dose of physical activity that is optimal for them. We present here the benefits that regular physical activity brings to Diabetics, such as walking, running, cycling and swimming, which affect the improvement of human health. We have told how to find the physical activity that is the most appropriate, that it is very important to control blood sugar levels before, during and after physical activity. Those regular records should be kept to record the control of blood sugar level so that by passing the time we are able to assess how much physical activity positively affects the course of diabetes control. Physical activity for Diabetics, is a powerful way of impact to have better health

versus non-diabetic peers. People with diabetes have a better quality of life, as long as the disease is controlled. A person with a normal body weight, with blood pressure values below 140/80 mmHg, with blood lipid values below 200 mg / dl and with a blood sugar level below 10 mmol / L (180mg / dl) are part of a well-controlled diabetes. To both types of diabetes, regular physical activity can help improve these values, help control body weight and improve good body development. Physical activity also has other positive effects: lowers blood sugar levels, blood sugar is converted directly into energy and used to develop physical activity; the body needs less insulin, this is important so that the body does not go into hypoglycemia; blood pressure drops; fat metabolism increases, the body can produce energy from fat reserves that are needed for physical activity; blood circulation is stimulated: heartbeat and respiration are faster, blood is pumped faster through the body and cells are better supplied with oxygen; physical and mental well-being improves and physical activity has a preventative effect in the case of depression: in diabetes, depressive disorders are twice as common as those with a healthy metabolism. Physical activity reduces stress: the stress also affects blood sugar levels. Physical activity can greatly replace medication and improve quality of life.

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