

ASK THE EXPERT: Exercise and children with type 1 diabetes



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Physical exercise should be encouraged in all children including children with diabetes. Exercise provides a child an improved sense of well being, teaches discipline and helps in leading a normal childhood. Along with that exercise limits the rise of blood glucose after meals and helps in weight control. Exercise also aids in keeping heart rate, blood pressure and lipid levels normal.

Understanding Diabetes

Diabetes is the name given to group of metabolic disorders characterised by high blood sugar levels. Type 1 diabetes is an autoimmune disorder (body's own immune system attacks and destroys the insulin-producing cells in the pancreas) that mostly affects children and young people. Most people with type 2 diabetes mellitus are of middle age or old, are overweight and have family history of type 2 diabetes. In this form of diabetes, the pancreas still produces some insulin. Treatment of type 2 diabetes includes diet control, exercise and in some cases oral drugs and/or insulin. It is a progressive disorder and treatment keeps on changing. A person diagnosed with type 1 diabetes needs to take insulin injections throughout life.

Type 1 diabetes and exercise

People with type 1 diabetes are not able to produce any insulin and so effects of exercise on blood glucose levels have to be managed.

Every Child Should Play



There can be different impacts of physical activity on a person with type 1 diabetes. It is important to understand impact of physical activity on diabetes and plan exercise session so that a child with diabetes can be safe before, during and after exercise.

Effect of activity on type 1 diabetes

Hypoglycaemia

- Any aerobic activity like walking, running, swimming or cycling can result in low blood sugar levels both during and after the exercise.
- Hypoglycaemia is more likely to happen if the activity is prolonged and intense.
- The most likely time of hypoglycaemia is 1 to 3 hours after taking of short acting insulin.
- Hypoglycaemia is more likely to happen if child injects near the active muscle used while exercising like thigh before a football match. Abdomen is good site for injection before running.
- No food or less food intake prior to any activity can increase the chance of developing hypoglycaemia.

Hyperglycaemia

- Activities like sprinting or weight lifting and short periods of any intense activity can cause an increase in blood glucose levels due to release of hormones like adrenalin and glucagon.
- Less quantity of insulin and excessive food intake can also result in hyperglycaemia.
- Stress of any activity can result in immediate hyperglycaemia and subsequently hypoglycaemia, some hours later

Diabetic ketoacidosis

- Exercising when blood glucose levels are continuously high and there are low levels of circulating insulin can result in diabetic ketoacidosis. Diabetic ketoacidosis can be life threatening if not treated on time.

Education essential to manage diabetes and have full benefits of exercise

- If blood glucose monitoring is not possible frequently, then child should be encouraged to participate in lower intensity activity daily at approximately same time.
- Ideally the child or person should monitor their blood glucose values before participating in physical activity.
- Do not exercise when sugars are very high or low or when ketones are positive in blood and urine.
- Physical activity should also be limited or avoided if there is an acute illness, or there is inadequate food or water during the activity or afterwards.
- All activity should allow eating snack like apple or 2 biscuits every 30 minute during exercise.

- Have something like hard candy or juice handy in case blood sugar level drops too low.
- After prolonged activity, the child should have an additional snack like biscuits with milk or a scoop of ice-cream (containing fat or protein) to prevent later hypoglycaemia.
- It is good to drink plenty of water before, during and after exercising.
- Child should wear proper shoes and socks that fit well and are comfortable during exercise. This is to prevent any kind of foot injury.
- Ensure that the child with diabetes should always carry their diabetes identification card while going outside or for exercise, even in their own neighbourhood.

Ultimate goal for treatment

The ultimate goal for treatment is to maintain blood glucose levels near normal. Just as there is no one medication that works for all people with diabetes there is no single way of exercising. So, a person with diabetes needs to be active and should adopt any of the sports, exercise or even activity like walking or dancing in the daily routine. Try to get about 30 minutes of exercise at least in a day. If you have not exercised, start by doing 5 to 10 minutes a day and increase by five or ten minutes each week until you're up to speed. If you are planning to do any new kind of workout, please consult your doctor. Exercise in any form is always considered beneficial for every one of us; children with diabetes are no different

Current Indian Scenario

Adequate management of type 1 diabetes requires intensive insulin treatment, monitoring and life style changes. Economic deprivation in a large segment of population has definitely an impact on medication and nutrition but exercise like walking can be done by every one of us.

Changing Diabetes in Children (CDiC) program

Novo Nordisk Education Foundation along with 21 specialized centres across India has tried to address the critical gap in the management of type 1 diabetes through its CDiC program for economically underprivileged children with type 1 diabetes. The 4000 children registered in the program are provided with free doctor consultations, human insulin, glucometer, strips, HbA_{1c} test, other essential diagnostic tests and diabetes education on regular basis. CDiC aims to support normal and healthy childhood in these children with type 1 diabetes, so that they grow into healthy adults.

If you would like to have more information on type 1 diabetes you can write to us at:

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