



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

Name(s) Johnnie B. Elliott	Project Number J1006
Project Title Diabetes and Exercise	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The goal of this project is to determine the effect of exercise on the blood glucose levels of people with Type 1 diabetes. When people eat carbohydrates, they are turned into glucose, or sugar, and enter the bloodstream using a hormone called insulin that converts it into energy. When the pancreas stops making insulin, it results in the illness known as Type 1 diabetes. Overall, I plan to help people with diabetes have better control of their blood glucose to avoid serious health complications.</p> <p>Methods/Materials The blood glucose levels of a person with Type 1 diabetes and a person without diabetes were recorded four times a day during two separate weeks. Two major influences on blood glucose levels were controlled in this setting -- the amount/type of food and the physical activity. The testing tools included blood glucose monitors that measure glucose levels in milligrams per deciliter (mg/dL); calibrated test strips that are placed into the monitor; and lancets, spring-loaded needles used to draw a sample of blood.</p> <p>Results Even during sustained exercise and insulin therapy, it was difficult to control the blood glucose levels of the person with Type 1 diabetes (normal blood glucose levels range from 70 to 120 mg/dL). During the initial eight-day period, blood glucose levels were rarely within the normal range.</p> <p>Conclusions/Discussion People with Type 1 diabetes must balance their insulin intake with constantly changing factors # food, physical activity, stress, hormonal changes, growth, illness, and fatigue. In everyone, blood-glucose levels are influenced by factors including estrogen, testosterone, thyroid hormone, and emotional and physical stress hormones. Research indicated that growth hormones were influencing this experiment. Without diabetes, the endocrine system releases insulin as needed. With diabetes, a blood glucose test is the only way to determine if other factors are influencing blood glucose levels, so treatment is merely reactive.</p>	
Summary Statement This project is to determine the effect of exercise on blood glucose levels of a person with Type 1 diabetes.	
Help Received I received assistance from my sister, who bravely volunteered to be the control in this experiment.	