

OBSERVATIONS

The Big Blue Test: Effects of 14 Minutes of Physical Activity on Blood Glucose Levels

For most with diabetes, physical activity has a blood glucose lowering effect (1). Hypoglycemia (i.e., blood glucose <65 mg/dL) resulting from exercise is a concern, particularly for insulin users (2). This study was undertaken to document the glycemic effects of engaging in 14 min of any physical activity done for the Big Blue Test (BBT; conducted by the Diabetes Hands Foundation), along with the incidence of hypoglycemia, in both insulin (78.9%) and noninsulin (21.1%) users. In 2011, all 3,916 BBT participants self-reported their diabetes status, physical activity performed, self-monitored blood glucose values before and after exercise, and use of supplemental insulin. Walking was the most common activity (40.0%), followed by running/jogging (13.3%), cycling (8.5%), dance (8.0%), and exercise conditioning machines (7.4%). Although 89.2% of all participants experienced a decrease in blood glucose levels, declines were significantly greater in insulin users (-35.2 ± 0.7 vs. -23.0 ± 1.0 ; $P < 0.05$) and more insulin users (3.9%) experienced postexercise hypoglycemia (121 vs. 4; $P < 0.05$), as expected (3). However, this small incidence of hypoglycemia suggests that a relatively

short duration of exercise carries a fairly low risk. Only 0.8% of participants (23 insulin and 10 noninsulin users) recorded no change in blood glucose levels, whereas 10.0% of insulin users and 10.3% of noninsulin users had increased levels. Thus, the 2011 BBT has demonstrated that participation in 14 min of varying types of physical activity effectively lowers blood glucose levels in most individuals with diabetes. In type 1 diabetes, insulin administration, food intake, and exercise have to be carefully matched to avoid either hypoglycemia or hyperglycemia, whereas individuals with type 2 diabetes usually experience a glycemic reduction due to physical activity (4,5).

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the integrity of the data and the accuracy of the data analysis.

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