

What's Normal?

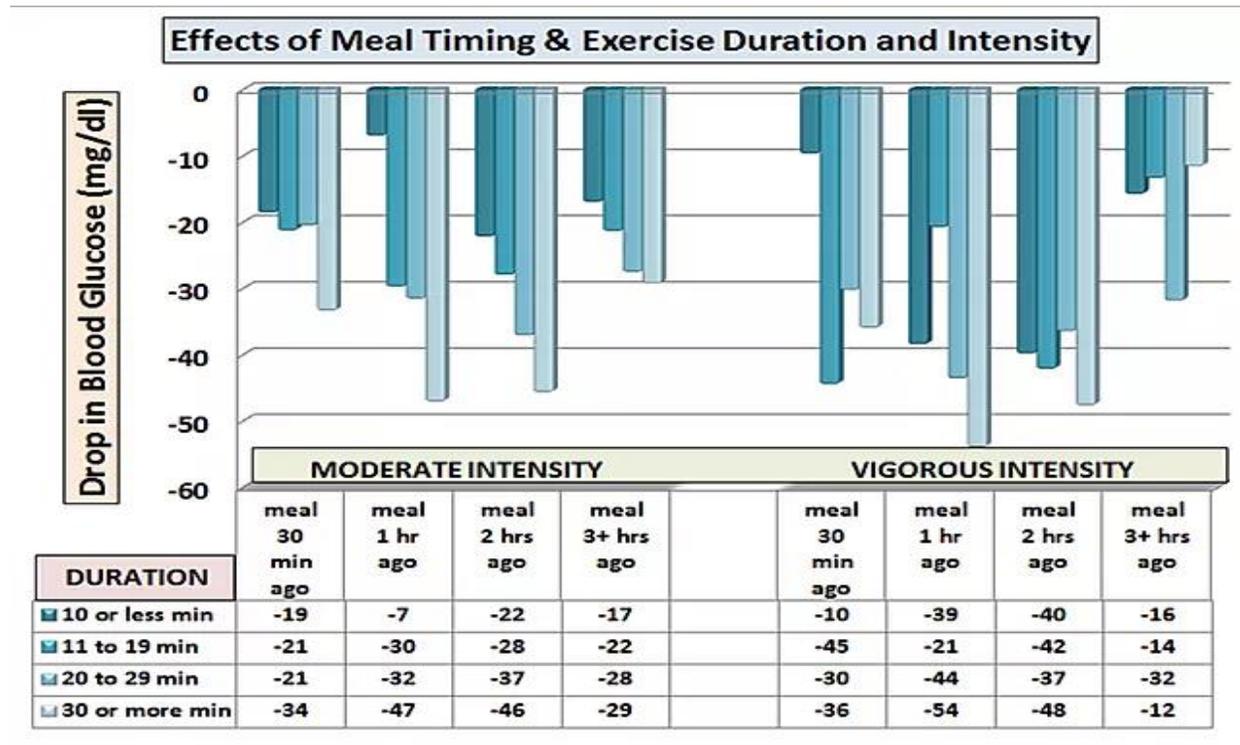
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Although every person is unique, you can start to predict your own blood glucose responses to exercise based on what others experience--and then fine-tune your own regimen changes.

In the recent past, the Diabetes Hands Foundation ran the "Big Blue Test" (BBT, in honor of World Diabetes Day on November 14) to raise awareness about the importance of physical activity in managing diabetes and improving health. Using online avenues, people with diabetes voluntarily engaged in a variety of physical activities for anywhere from less than 10 to more than 30 minutes and reported their blood glucose responses. From the BBT, you can learn a lot about what is a "normal" response to getting your diabetes in motion.

The chart below shows what over 5,000 people with diabetes (90 percent of them insulin users) reported as their blood glucose change in the BBT when they did different durations and intensities of exercise and how the time they last ate affected their results. The average drop in blood glucose they reported is just the change (that is, their starting glucose minus their after-exercise reading). If you start with blood glucose levels that are too high or too low, your response will likely be different than you see just looking at the average responses of a large group of people--but at least it's a place to start when trying to predict your own unique response. Get out your meter and do your own BBT! **Conversion *** 18 mg/dL of blood glucose = 1 mmol/L of blood glucose**



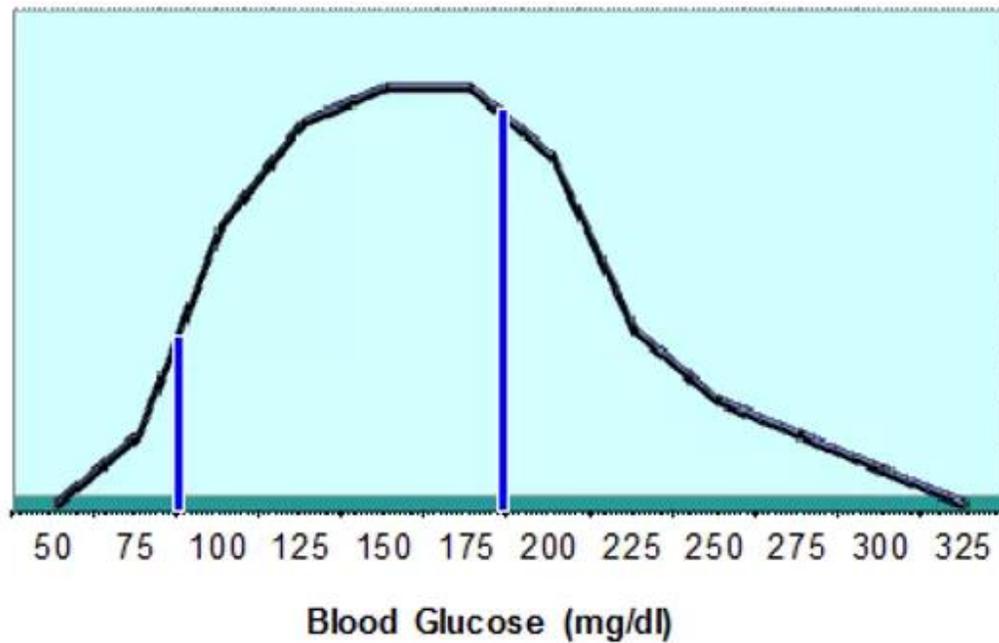
Exercise Type: Not surprisingly, people like to do a lot of different types of activities--one type certainly doesn't fit all! In the BBT, almost half of people simply walked, while others engaged in activities like running or jogging (12%), cycling (9%), conditioning machines (6%), dancing (6%), and others (not specified in the BBT--19%). The type of activity you choose to do is probably not nearly as critical as simply getting moving doing anything is. Pick what you enjoy doing most so you'll be more likely to keep doing it over time.

Exercise Intensity: The intensity of your activity can affect your blood glucose responses. Even in people without diabetes, doing vigorous exercise can raise blood glucose levels, at least temporarily. It has to do with the fact that your body needs carbs to use to fuel your activity. Since it's so important to have enough carbs available when you're doing intense workouts like interval training, your body releases hormones like adrenaline that can actually raise your blood glucose rather than lowering it. Even though the BBT participants reported a glucose drop when doing vigorous activity of any duration, those are just average values, and your response is likely to vary--especially when you're competing in an event (that increases mental stress) and not just exercising for fun or practice. In the actual BBT results, only 75% of exercisers had their glucose levels drop, about 9% stayed the same, and 15% had an increase rather than a drop.

Exercise Duration: Doing any activity for longer tends to cause more glucose to get used and for your levels to drop over time, but it also depends on whether you are well trained at doing that physical activity (and can use more fat as fuel). When you work out for longer, you'll usually have larger drops in blood glucose when during mild and moderate exercise, but your response to vigorous activity can be a bit more variable, especially when you haven't eaten anything for a while or if you exercise first thing in the morning before eating or taking insulin.

Exercise Timing: When you exercise can also easily affect your responses. In the BBT, we didn't record the time of day that people exercised, but we did ask them how long it had been since they'd last eaten (and presumably taken insulin to cover their food). Exercising 1 to 2 hours after eating caused about a 40 mg/dl drop in blood glucose levels with all types and intensities of exercise lumped together, but being active either 30 minutes after (-28 mg/dL) or more than 3 hours after eating (-21 mg/dL) caused less of a drop. The largest decrease, not surprisingly, was when people exercised longer (30+ minutes) and started 1 to 2 hours after eating (-47 mg/dL on average), which is when your insulin levels will be at their highest. Knowing when your injected or pumped insulin is peaking and taking your doses into account can help you predict your glucose changes. **Conversion *** 18 mg/dL of blood glucose = 1 mmol/L of blood glucose**

What to Aim For: For most individuals to perform optimally and feel their best during exercise, they aim to keep their blood glucose levels between 80 and 180 mg/dl (4.4 to 10 mmol/L), as shown in the graph that follows. Learn more about all of the other factors that affect your responses with the [“What Affects Blood Glucose pdf”](#).



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