Last Word on Viewpoint: A time for exercise: the exercise window

Elsamma Chacko
Connecticut Valley Hospital, Middletown, Connecticut

Submitted 26 October 2016; accepted in final form 27 October 2016

TO THE EDITOR: Every participant in this Viewpoint (2) conversation about exercise timing as it applies to people with diabetes has contributed a unique perspective honed by years of dedicated work. Thank you.

Although all forms of exercise come with health benefits, I saw the postmeal glucose surge as the critical challenge and taming it as the primary goal of diabetes management. With this focus I elected not to address high-intensity exercise, meal composition, or lipids. In free-living circumstances I could also see problems of acceptance and adherence among people with diabetes, if the exercise was any more complex than, say, a brisk walk.

Specifically, I agree that high-intensity/fasted exercise (Boulé, Francois, McDonald in Ref. 1) and resistance exercise (Paoli in Ref. 1) offer significant health benefits. For example, as Boulé points out, a solid glycogen-depleting interval exercise, done premeal, offers excellent insulin sensitivity improvement (see Boulé in Ref. 1, Ref. 3 therein); the same exercise done postmeal does not help glycemia. In the mid-postprandial period, a high-intensity interval exercise of short enough duration to keep hepatic glucose at bay is what helps (4). Adding such an activity to the front of the daily aerobic routine three times a week may be beneficial.

The issue of meal composition/glycemic load is raised by Kruse, McDonald, and Sacchetti (see Ref. 1). Indeed, eating a breakfast itself lowers the glucose spike of lunch—the second meal phenomenon. Balancing the meal with protein, healthy fats, vegetables, and fiber lowers the glycemic load of the meal, moderates the glucose spike, and improves satiety. A timely mid-postprandial exercise further lowers glucose surges of breakfast, lunch, and supper (van Dijk, Ref. 5, Fig. 1 therein).

McDonald and Yardley (see Ref. 1) raise the serious issue of hypoglycemia in type 1 diabetes. We addressed this in a recent note (3). Nelson’s subjects could do moderate exercise at 30 min postmeal for 35 min to normalize glucose levels—without causing hypoglycemia—in both healthy individuals and people with type 1 diabetes (7). It could be that when exercise stops within the mid-postprandial interval, the glucose still coming in from the gut offers some insurance against hypoglycemia. Additionally, exercise may obviate the need for preprandial insulin in some cases.

Volume of exercise is significant (van Dijk, Ref. 4). Thirty minutes of brisk walk every day exceed the current recommendations for moderate-intensity exercise.

McDonald mentions lipids. Premeal (Sacchetti, Ref. 3) and postmeal (5) exercises improve lipids. When Heden and colleagues (5) compared premeal vs postdinner in type 2 diabetes, postdinner resistance exercise was better for triglycerides and glucose.

The issue of practicality (Kruse and McDonald, see Ref. 1) is challenging. Personalized meals and exercise programs can be designed around work schedules, to some extent, for better adherence. Some early risers and retired people may not mind postbreakfast exercise. Among others, some with 1-h lunch breaks can walk after lunch. Perhaps those with half-hour lunch breaks may drink a healthy shake of 2–3 carbs at 11:30 AM and walk at 12 PM if that is feasible. Walking after dinner is an option, but high-intensity exercise later in the day may increase the risk for nocturnal hypoglycemia (6).

The effects on hypoglycemia and cardiometabolic markers need to be established by focusing research efforts during the mid-postprandial period and fasting hours.

AUTHOR CONTRIBUTIONS
E.C. drafted manuscript; E.C. edited and revised manuscript; E.C. approved final version of manuscript.

DISCLOSURES
No conflicts of interest, financial or otherwise, are declared by the author(s).

REFERENCES