Reply to Dr. Chacko

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TO THE EDITOR: We thank Dr. Chacko (2) for reading our recently published article (3) and providing comments. In her first point, she makes the argument that moderate intensity exercise 45 min after a meal improves postprandial glycemia more effectively compared with higher intensity exercise. This statement was made based on findings from three different studies consisting of three different populations of individuals and not one study comparing high and moderate intensity exercise in the same subjects. Having a repeated-measures experimental design is important to control for individual variability. In our opinion, given this fault in the available data, this statement is premature and lacks adequate experimental evidence. Unfortunately, no study has directly examined how the intensity of exercise performed in the postprandial period alters glycemia in the same individual with type 2 diabetes. Furthermore, other studies have examined how exercise intensity alters glycemia in individuals with type 2 diabetes. In a recently published study by Mitranun et al. (4), interval training (a form of higher intensity exercise training, reaching 85% \( \dot{V}O_{2\text{peak}} \)) improved glycemia, aerobic fitness, and endothelium-dependent vasodilation to a greater extent compared with continuous, moderate intensity exercise (reaching 65% \( \dot{V}O_{2\text{peak}} \)). These findings contrast with Dr. Chacko’s belief that moderate intensity exercise is better for glycemia. We would like to point out that there are other cardiovascular disease risk factors other than glycemia in individuals with type 2 diabetes (i.e., aerobic fitness, triglyceride levels, endothelial function), and when identifying the optimal exercise intensity, it is important to consider the effect of exercise intensity on as many of these risk factors as possible. In addition, although the different exercise intensities may affect glycemia differently, our paper demonstrates that exercise timing may be critical in individuals with type 2 diabetes, particularly around a dinner meal when individuals are only 4- to 5-h postprandial.

In her second point, Dr. Chacko claims that the total area under the curve (AUC) is the legitimate way to go when quantifying postprandial responses. We respectfully disagree with her opinion, because other studies have shown that the incremental AUC more accurately describes postprandial responses, whereas the total area under the curve is strongly related to fasting levels in individuals with or without type 2 diabetes (1). Because most individuals will have variable fasting glucose or triglyceride concentrations before a meal in a repeated-measures design study (due to day to day variability and different premeal manipulations such as physical inactivity or exercise), it is important to correct for this variability using the incremental AUC. This way, the effect of exercise on postprandial responses can more accurately be evaluated.

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REFERENCES