

Type 1 diabetes is an autoimmune disease that causes complete or near complete destruction of the insulin secreting beta cells of the pancreas. Because of imperfect insulin supplementation during exercise, individuals with type 1 diabetes are susceptible to low blood sugar (hypoglycaemia) during and after aerobic exercise and high blood sugar (hyperglycemia) during anaerobic exercise. Few studies have examined the effects of combined aerobic and anaerobic exercise on blood glucose changes during and after exercise in patients with type 1 diabetes. In this study, interstitial glucose levels were measured using new technology (continuous glucose monitoring by Medtronic Canada) during both aerobic cycling and aerobic cycling with brief periods of anaerobic exercise (i.e. heavy resistance cycling) in a blinded fashion (n=11 athletes with type 1 in a cross over design). The total amount of work performed and the duration of exercise was identical between sessions. During exercise, heart rate, respiratory exchange ratio, oxygen utilization, ventilation and blood lactate levels were higher during continuous cycling with intermittent high-intensity exercise vs. continuous moderate-intensity exercise alone. Despite these marked cardiorespiratory differences between trials, there was no difference in the reduction of interstitial glucose or plasma glucose levels during exercise. However, nocturnal (night time) glucose levels were higher in continuous moderate-intensity exercise ;with intermittent high-intensity cycling compared with continuous moderate-intensity cycling alone. Compared with continuous moderate-intensity exercise alone, continuous moderate-intensity;+ intermittent high-intensity exercise was associated with less post-exercise hypoglycaemia. Simply stated, this study shows that continuous moderate-intensity exercise ;mixed with intermittent high-intensity exercise bouts are a better form of exercise than continuous aerobic exercise for hypoglycaemia prevention individuals with Type1 diabetes.

Reference: Iscoe KE, **Riddell MC**. [Continuous moderate-intensity exercise with or without intermittent high-intensity work: effects on acute and late glycaemia in athletes with Type 1 diabetes mellitus](#). Diabet Med. 2011 Jul;28(7):824-32.

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