

Type 1 diabetes is an autoimmune disease that results in the complete (or near complete) destruction of the insulin producing beta cells of the pancreas. To survive, insulin must be given to patients either by multiple daily injections or by an insulin pump. Although beneficial for a variety of health and fitness reasons, exercise can cause major disturbances in blood glucose levels in patients living with type 1 diabetes, since skeletal muscle rapidly consumes blood glucose as a fuel during the activity and this consumption slows in recovery. The purpose of this study was to compare blood sugar control during (and after) acute exercise in patients with type 1 diabetes who were on multiple daily insulin injections (MDI) with those who take insulin via an insulin pump. We hypothesized that an insulin pump may allow for better glucose control than daily insulin injections since temporary basal insulin rate changes for exercise are possible. Nineteen (16 male, three female) physically active individuals with type 1 diabetes took part in this study. Glucose levels, as measured by an implantable interstitial glucose sensor, were measured during 45 min of aerobic exercise (cycling or running at 60% peak aerobic capacity) and during 6 h of post-exercise recovery in 9 patients on MDI and in 10 patients on a pump. Both MDI and pump patients had similar reductions in glucose levels during exercise, but control was better (more stable and less post-exercise high blood glucose) in recovery in those wearing an insulin pump. Among individuals performing regular moderate-to-heavy intensity aerobic exercise, use of an insulin pump helps to control blood sugars better in the time in recovery from exercise, but is not superior during the activity when compared with multiple daily insulin injections.

Reference: Yardley JE, Iscoe KE, Sigal RJ, Kenny GP, Perkins BA, Riddell MC. [Insulin pump therapy is associated with less post-exercise hyperglycemia than multiple daily injections: an observational study of physically active type 1 diabetes patients.](#) Diabetes Technol Ther. 2013 Jan;15(1):84-8. doi: 10.1089/dia.2012.0168. Epub 2012 Dec 6.

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