Diabetes develops when the body’s fat, liver and muscle cells do not respond correctly to insulin. As a result, blood sugar does not get into these cells, and when this happens, high levels of sugar build up in the blood (aka hyperglycemia).

“Although it is largely believed this is only due to increased obesity, we think it is more tightly linked to our sedentary lifestyle,” says Nutrition and Exercise Physiology (NEP) associate professor John Thyfault. “Thus, understanding how physical activity protects against the development of T2D or treats the condition will have a profound impact on the health of millions.”

Thyfault and his colleagues, NEP associate chair Jill Kanaley and assistant professor Heather Leidy, have collaborated on research for several years. “We all have common interests,” says Kanaley, stressing that the trio’s ultimate goal is to decrease obesity through increased activity. “We come at the same problems from different approaches.”

Thyfault, for example, studies how physical activity levels regulate glucose homeostasis and play a role in the protection or susceptibility for the development of type-2 diabetes. “I have a background studying how increased and decreased physical activity modulates glucose metabolism in skeletal muscle, the primary disposal site for glucose,” he says.

Kanaley studies issues related to type-2 diabetes and weight loss with diet and exercise. She looks at the effects of meal frequency and composition on the hormonal responses in obese individuals, and if exercise training will alter this response. “When we collaborate together, we’re looking at glycemic control throughout the day and the hormonal responses that go with that,” she says.

The team works mostly with obese individuals who have type 2 diabetes and examines how changes in meal composition like a higher protein diet impacts blood glucose levels. The “secondmeal effect” is also considered: How does one meal affect another? “We change breakfast, and look at the response at lunch,” Kanaley says. It’s quite literally food for thought.