

# Jeremy Cohen 3MT Transcript | University of Guelph 3MT Campus Final 2020

**Student:** Jeremy Cohen, MSc Candidate, Department of Human Health & Nutritional Sciences, College of Biological Sciences

**Advisor:** Dr. Jamie Burr

**Title:** Take a seat, your workout is about to begin

**Transcript:** What if I told you that there was an easier way to workout? One where you could simply take a seat on the couch, recline, relax and enjoy all the benefits of exercise! Well my research in the Human Performance and Health Research Lab aims to make this a possibility. You see, throughout a typical day our blood sugar, or glucose levels, goes through many highs and lows and this is linked to eating. Eat food, increase blood sugars – makes sense, right?

Now, for people living with type 2 diabetes, their life revolves around managing these peaks in blood sugar. Type 2 diabetes is a chronic health condition growing in prevalence, impacting as many as 10x more people than COVID-19 and being a leading complication in cardiovascular diseases, luckily however, type 2 diabetes is preventable and not contagious! At the centre of prevention and management is blood sugar control. When there is too much sugar in the blood, it wreaks havoc on our arteries. Healthy arteries are naturally very good at expanding and relaxing to meet our needs, but when blood sugar levels get too high, not so good, this hinders cardiovascular health, the leading cause of death for type 2 diabetics. To avoid this, we rely on the hormone insulin to tell the body to absorb the excess blood sugar, but this signal is lost in type 2 diabetes. Without that message, sugar accumulates in the bloodstream. Thankfully however, we are not solely dependent on insulin for this job. In fact, simply contracting our muscles, or exercising, is just as effective at telling our body to absorb the excess blood sugar. And even better, this system remains fully intact in type 2 diabetes. But, meaningful exercise can sometimes be a challenge for type 2 diabetics. So how can we still harness the blood sugar control benefits of exercise to help them?

Well, I might have the answer! We are currently developing a protocol employing blood flow restriction and electric muscle stimulation, like Dr. Ho's infomercial, aimed to lower blood sugar, all without moving a muscle! In my research I will focus on blood flow restriction, to limit blood flow to the legs through the inflation of a pressure cuff like the ones you see in the diagram. Extrapolation of the benefits of blood flow restriction have yet to be explored in this context, as such we propose its use as a novel therapeutic in blood sugar management. Combined with the use of electric muscle stimulation, we believe that this could synergistically improve sugar uptake into the muscle, reducing blood sugar levels and rescuing cardiovascular health.

Scientists currently believe blood flow restriction's mechanism works by creating an environment inside the muscle resembling that of heavy exercise, stimulating more sugar use – especially when coupled with muscular contractions, an already known driver to improve sugar uptake. Ultimately, the combination and use of these two modalities presents an accessible, non-invasive, passive exercise modality that can be applied to type 2 diabetics, helping to manage blood sugar levels and preventing cardiovascular complications to improve life.

**[End of transcript]**