

Type 1 diabetes is an autoimmune disease that destroys the pancreatic beta cells that produce the anabolic hormone insulin. The overall “health” of skeletal muscle is impacted by the insulin deficiency that occurs in this disease, which often strikes during the childhood years. Children and adolescents with this disease can have reduced muscle growth and strength as well as a number of performance-related deficiencies compared to their nondiabetic peers, particularly if insulin treatment is not optimal. Unfortunately, adolescence is a time of poor diabetes control and skeletal muscle and other tissues may suffer grave consequences as the transitions to an adulthood occurs.

In this paper, Serino and colleagues demonstrate that skeletal muscle growth and mass can be favourably improved with aerobic type exercise in an adolescent rodent model of type 1 diabetes, without the need for improvements in blood sugar control or insulin signalling within skeletal muscle. This study gives further support for the beneficial effects of exercise on pediatric type 1 diabetes and points to a discovery that protein synthesis caused by regular exercise is independent from insulin signalling.

Reference: A. S. Serino, **O. A. Adegoke**, S. Zargar, C. S. Gordon, A. A. Szigiato, T. J. Hawke and **M. C. Riddell**. [Voluntary physical activity and leucine correct impairments in muscle protein synthesis in partially pancreatectomised rats](#). Diabetologia. 2011 Dec;54(12):3111-20.

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Proteins secreted from cells often influence the cells around them. Skeletal muscle cells, in particular, are very capable "secretory" cells. The studies reported in the manuscript by Chan et al depict a large scale effort to characterize the protein components secreted by muscle cells.

State of the art methods in proteomics were used to achieve this aim. In addition, a recently developed technology for accurate quantitation of the levels of large numbers of proteins was also utilized. These studies provide new candidate molecules that may influence the growth and properties of muscle cells which may have important implications for treatment of muscle pathology.

Reference: Chan CY, Masui O, Krakovska O, Belozarov VE, Voisin S, Ghanny S, Chen J, Moyez D, Zhu P, Evans KR, **McDermott JC**, Siu KW. [Identification of differentially regulated secretome components during skeletal myogenesis](#). Mol Cell Proteomics. 2011 May;10(5):M110.004804.

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