

## **The physiological importance of flowmotion**

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The oscillation of blood flow into or within tissues - flowmotion - plays an important role in matching blood flow to metabolic demand. Flowmotion is influenced by five different factors; two centrally acting high frequency inputs (cardiac and respiratory) and three local low frequency inputs (neurogenic, myogenic and endothelial). During the development and progression of disease states such as insulin resistance and type 2 diabetes (T2D) flowmotion is pathologically altered and thereby blood distribution in important metabolic tissues. Attenuation of flow into and within skeletal muscle results in decreased glucose uptake from the blood which contributes to elevated blood glucose. Previous alterations in flowmotion observed in insulin resistant states are highly varied due different techniques used and stages of disease assessed. Further investigation is required to determine which components of flowmotion become dysfunctional during disease progression and thereby better inform future treatment for the disease. As such, we used Laser Doppler Flowmetry and tissues oxygenation measures to assess skin flowmotion in clinically diagnosed T2D and healthy controls, at rest and in response to an oral glucose challenge. A number of differences in flowmotion components at rest and during the oral glucose challenge were seen in T2D, alongside other markers of cardiovascular dysfunction. While this assessment of skin flowmotion with Laser Doppler Flowmetry allows great insight into the vascular dysfunction occurring in T2D, whether this is paralleled by changes in flowmotion seen in skeletal muscle *per se* is important to follow-up.