

## **Continuous or flash glucose monitoring: can it be used to guide fuelling strategies during exercise in athletes?**

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### **Abstract**

Continuous or flash glucose monitoring devices have typically been used in support of patients with diabetes to manage glucose fluctuations throughout the day, during the night, and in response to feeding. This session will explore the development of these devices from early flash glucose monitoring systems to current continuous glucose monitoring devices, and the move from use in patients with diabetes to use in endurance athletes without metabolic disease. The presentation will primarily focus on considerations for practitioners and researchers considering using these glucose monitoring devices in athletes/exercisers. Considerations will cover foundation knowledge on factors such as blood vs. interstitial fluid measurement, time delays in interstitial fluid vs. blood responses, and consideration of fluid shifts at onset of exercise. These factors all impact upon interpretation of glucose sensor readings that the devices provide. Most modern devices are worn on the back of the upper arm rather than the abdominal region, mostly for comfort, ease of insertion, and taking readings. Considerations around placement of the sensor, and the period after placement that is required before recordings are made, will be examined. Data from recent studies will be presented to demonstrate glucose responses during exercise in non-diabetic ultra-endurance athletes and in patients with type 1 diabetes to highlight some of the impacts of exercise and time of day on observed glucose responses. When interpreting glucose observations, consideration must be given to alterations induced by psychological stress, as well as physiological demands, feeding strategies, and exercise intensity and duration. Whether these devices can guide in-training or in-race fuelling strategies will be summarised based on these considerations, and conclusions about implementation will be provided.