Estimating Energy Expenditure

Accurate measurement of energy expenditure can be important for research and applied practice. Quantification of free-living energy expenditure for example, can characterise the physiology and behavour of athletes and inform nutritional requirements. Estimating energy expenditure across different settings, however, remains challenging due to the variability in the validity, precision, cost and practicality of available methods. This presentation will provide an overview of the principles underpinning human energy expenditure, including resting metabolic rate, the thermic effect of food, and physical activity energy expenditure. The strengths and limitations of commonly used measurement techniques, including indirect calorimetry, doubly labelled water, heart-rate monitoring, accelerometry, and wearable technologies, will be critically evaluated. The presentation will conclude with practical recommendations for selecting appropriate techniques according to specific research and applied objectives, highlighting where technological developments are improving capability and where caution remains warranted.

Real-time Glucose Monitoring

The rapid growth in continuous and real-time glucose monitoring technologies has transformed our ability to observe glucose concentrations in everyday life. These devices have become increasingly popular among athletes, coaches, practitioners, and health-conscious individuals, often with expectations that glucose data can be used to optimise health, training adaptation, recovery, and performance. Despite this enthusiasm, important questions remain regarding what these measurements actually represent and how they should be interpreted.

This presentation will examine the physiological determinants of glucose concentrations and discuss the extent to which interstitial glucose measurements reflect underlying glucose metabolism. Evidence relating to nutrition, exercise, recovery, and performance will be critically reviewed, with consideration of both the opportunities and limitations of glucose monitoring in athletic and non-athletic populations. Emerging applications, including personalised nutrition and behaviour change interventions, will be evaluated alongside common misconceptions surrounding glucose “spikes” and glycaemic variability. This session will provide delegates with an evidence-based framework for interpreting glucose-monitoring data and identifying contexts in which these technologies can genuinely inform decision-making.