

International Sport and Exercise Nutrition Conference 2022

Exogenous Buffers and Performance

S. Andy Sparks PhD

Sport Performance, Exercise and Nutrition Research Group, Department of Sport and Physical Activity, Edge Hill University, Ormskirk, UK

The bicarbonate buffering system is vital for the maintenance of acid-base balance and provides a key mechanism for the challenges that are presented when intense exercise is performed. Exogenous enhancement of the bicarbonate buffering system was first demonstrated in the early 20th Century in clinical settings. However, it was not until the 1960's that these strategies started to be employed more extensively in studies of skeletal muscle. For the next 40 years the effects of exogenous buffers on whole body exercise in humans were explored across a variety of exercise modalities using many ingestion strategies. This work attempted to determine the duration and intensities of exercise which might be most effective for the use of these nutritional ergogenic aids, with sodium bicarbonate emerging as the most frequently used supplement. Research in this area steadily continued until the mid-2010's at which point there was a renewed interest in the use of these supplements, principally driven by improved understanding of individualised nutrient timing prior to exercise. Exogenous buffers are some of the few nutritional supplements that have been consistently shown to be ergogenic in numerous scenarios, but they have been associated with potential gastrointestinal (GI) side effects for some athletes. These symptoms affect athletes to varying degrees of severity. Consequently, a variety of ingestion strategies have recently been developed that dramatically reduce the GI symptoms, even in individuals that experience the most severe side effects using traditional methods. These new strategies appear to prolong alkalosis, with the potential to prolong the period over which an ergogenic effect may be observed. This talk will therefore cover the recent developments in exogenous buffer supplementation, discuss athlete practices and challenge some of the widespread dogma associated with their use.