Session Title. Carbohydrate feeding during exercise - science and practice: past, present and future.

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Already in the early 1900s it was suggested that carbohydrate intake during exercise could enhance exercise performance. In the 1970 and 1980s this was further investigated, and the main findings were that different types of carbohydrate could have these effects and only small amounts were required to see an effect (studies reported effects with as little as 16-22 g/h). In the 1990s studies employed stable isotope tracer techniques to study both mechanisms as well as clues that would help practical applications. One remarkable finding in these studies was that exogenous carbohydrate oxidation never exceeded 1g/min. Because it was assumed that supplying larger amounts of carbohydrate should improve performance more, studies started to investigate the reasons for the limitations in exogenous carbohydrate oxidation. Through elimination it was concluded that intestinal absorption was the most likely limiting factor. In the 2000s studies shifted to finding ways to get around these limitations in absorption and we found that multiple transportable carbohydrates could be a way around the limitations. Studies showed oxidation rates up to 1.75g/min when 2.4 g/min was ingested. Subsequent studies compared differences between male and female athletes, cyclists, and runners, trained and untrained individuals as well as different combinations of carbohydrates, different amounts, drinks versus gels versus solids and so on. Many practical questions were addressed, and new guidelines could be formulated. In this talk Asker Jeukendrup and Gareth Wallis will take you on their research journey that has resulted in the guidelines we have for athletes to date. An entire industry has now adapted their products to incorporate these research findings, but there are also numerous false claims that are worth mentioning. Claims of benefits of slow carbohydrates for example, or “special types of carbohydrate”, special ratios or more is always better. We will also outline the areas of current and future research including the potential role for pectin/alginates, the potential for additions to the drinks that improve absorption or tolerance, and the work that has expanded from endurance sports into other modalities.