



Nutritional Practices in Trained Cyclists Prior to and During an Ultra-Endurance Cyclo sportive



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Introduction: Cyclo sportive events often take riders >5 hours to complete. These events therefore require considerable training and appropriate nutritional strategies prior to and during the event if optimal performance is to be achieved. Very few studies have been conducted on competitions of similar durations^[1,2]. Recently, the recommendations for carbohydrate (CHO) ingestion during exercise bouts >4 hours have been increased to 90 g.hr⁻¹^[3], but it is unclear if athletes habitually ingest such amounts in competition. The aim of the study was to determine the dietary habits and ingestion strategies of trained cyclists prior to and during a single day ultra-endurance cycling event.



Figure 1. Ultra-endurance event route profile. (S) = Feed stations.

Method: Eight trained male cyclists (age 40.3±6.6 yr, weight, 79.6±7.2 kg, >10 yrs experience) completed a 241 km undulating route (Fig. 1) with 3225 m of vertical ascent at a mean ambient temperature of 17.5 (range 12.2 – 22.2) °C. Prior to the event, participants completed a 3-day diet diary and recorded their pre-event meal. Food and fluid consumed during the event was recorded at official food stations (103, 196 and 241 km). Macronutrient and total caloric intake prior to and during the event was performed by a Registered Dietician using dietary analysis software (Nutritics, Dublin, Ireland). Perceptions of fullness, thirst, muscle aches and effort were also measured prior to the start, at each station and at the end of the event using modified CR10 scales. One sample t-tests were used to compare CHO ingestion rates to recommended amounts and repeated measures ANOVA was employed to determine changes in perceptual responses during the event.

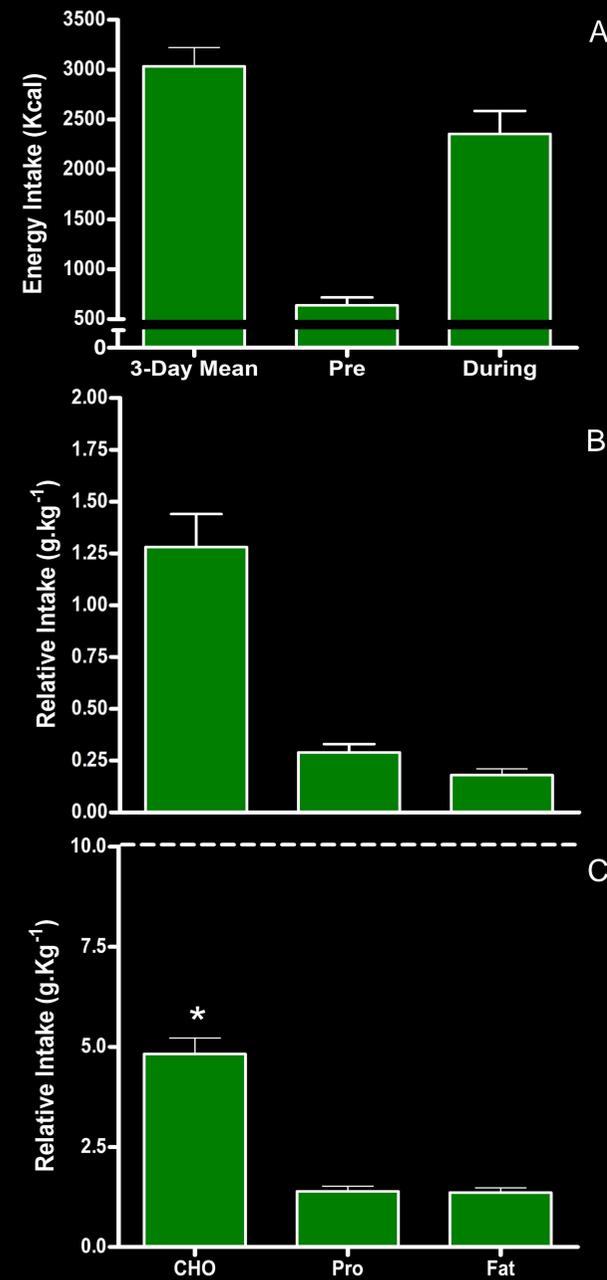


Figure 2. Energy intake (A), and macronutrient ingestion for the pre-event meal (B) and the mean intake for the three days prior to the event (C). Intermittent line denotes recommended CHO intake. (*) Denotes a significant difference between intake and recommended (p<0.05).

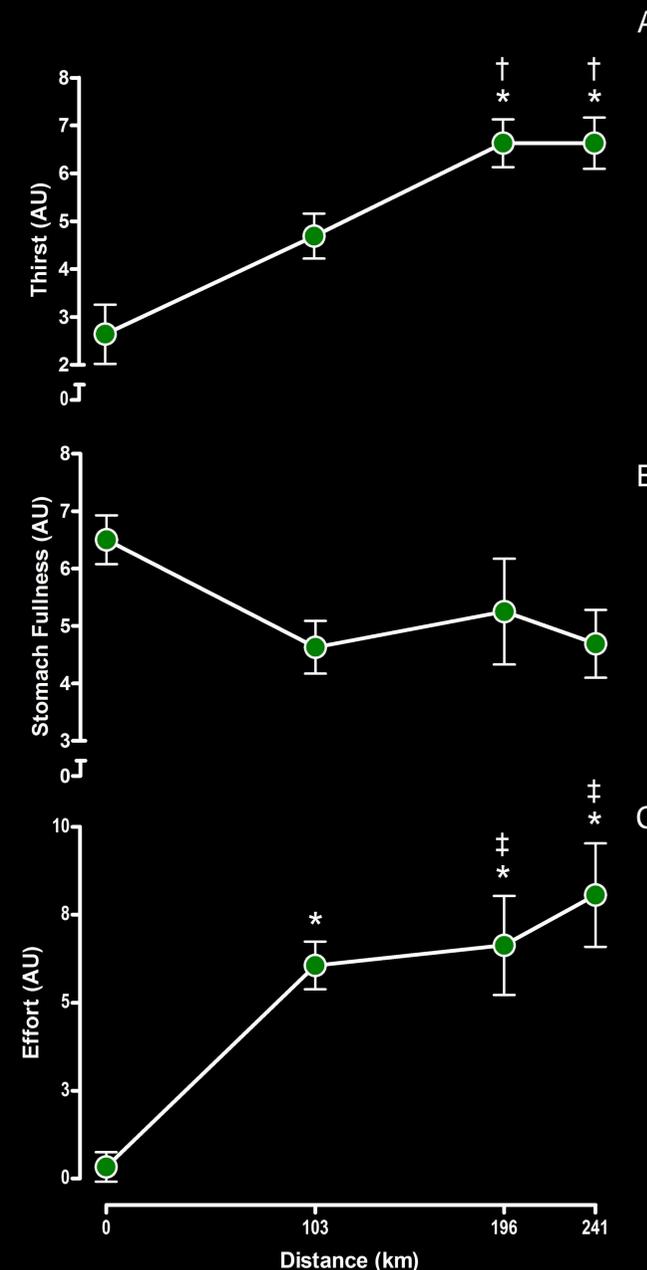


Figure 3. Perceptions of thirst (A), stomach fullness (B) and effort (C) throughout the event. (*) Denotes a significant difference from 0 km, (†) a significant difference from 103 km, and (‡) a significant difference from the previous station (p<0.05).

Results: Mean caloric content of the pre-event diets for the 3-days was 3032.6 ± 537.4 kcal with 3907.0 ± 910.9 kcal ingested on the day prior to the event. In the three days prior to the event, riders achieved CHO ingestion rates of just 5.8 g.kg⁻¹, (Fig 2C) which was significantly lower than the recommended intake (t = 8.47, p < 0.001, ES = 0.95). The pre-event meals contained 638.1 ± 222.9 kcal and during the event riders consumed 2356.7 ± 654.0 kcal (Fig. 2A). Rates of CHO ingestion during the event of 40.9 ± 12.2 g.hr⁻¹ were significantly lower than the recommended 90 g.hr⁻¹ (t = 11.36, p < 0.001, ES = 0.97). Riders performed for 10:27:50 ± 1:17:20 hours during which they all used a “drink to thirst” fluid ingestion strategy and consumed just 2.53 ± 0.74 litres of fluid. This led to significant increases (f = 14.71, p < 0.001, ES= 0.68) in thirst perception (Fig. 3A). Perceived effort (Fig. 3C) and muscle aches were significantly elevated during the event (f = 67.10, p < 0.001, ES = 0.91; and f = 50.54, p < 0.001, ES = 0.88, respectively). Interestingly, stomach fullness (Fig. 3B) was unchanged (f = 2.08, p = 0.133, ES = 0.23).

Conclusion: The cyclists ingested insufficient CHO in the days leading up to and during the ultra-endurance event. This suggests that even very experienced riders did not meet the current recommended guidelines. Typically they did not consume enough food and drank to thirst, which limited the GI discomfort, but also energy intake. This may have prevented them from achieving an optimal nutritional strategy, with likely negative performance implications.

References

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