Effect of intermittent high-intensity exercise on gastric emptying in man

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Published: Med. Sci. Sports Exerc., Vol. 33, No. 8, pp. 1270-1278

Purpose: The effect on gastric emptying of brief intermittent high-intensity sprints and a moderate-intensity steady-state cycle exercise was studied. Methods: Eight healthy male subjects were each studied at rest (R), during steady-state exercise at a constant power output corresponding to 66% of their VO\textsubscript{2}\text{max} (C66), during intermittent high-intensity exercise at a power output averaging 66% of their VO\textsubscript{2}\text{max} (I66), and during intermittent high-intensity exercise at a power output averaging 75% of their VO\textsubscript{2}\text{max} (I75). Gastric emptying was measured using the double-sampling gastric aspiration technique. Subjects ingested 600 mL of a 6% carbohydrate-electrolyte solution immediately before exercise or seated rest. Results: The volume of test solution in the stomach was less at all time points on trial I66 than on trial I75 (P = 0.023). The rate of gastric emptying, expressed as the median (range) time (minutes) taken to empty half the test meal volume (t\textsubscript{1/2}), was not different on trials R (20(7-30)) and C66 (21 (7-49)), and was faster than on trial I75 (62 (27-100); P = 0.003 and P = 0.005, respectively). Median t\textsubscript{1/2} was faster on trial R than on trial I66 (30 (15-74) min; P = 0.019), but no difference was detected between C66 and I66 or between I66 and I75. however, over the initial 30 min period after ingestion, the median (range) volume of test drink delivered to the duodenum was faster (P < 0.01) on trials R (387 (296-541) mL) and C66 (389 (165-584) mL) than on trials I66 (331 (191-494) mL) or I75 (249 (79-335) mL). Conclusion: The data demonstrate that gastric emptying of liquids is slowed during brief intermittent high-intensity exercise compared with rest or steady-state moderate exercise.