Water is NOT Enough beyond 90 minutes of continuous exercise.

McConnell, G., R.J. Snow, J. Proietto and M. Hargreaves. (1999). Muscle metabolism during prolonged exercise in humans: influence of carbohydrate availability. Journal of Applied Physiology 87(3):1083-1086.

The purpose of this study was to determine how carbohydrate availability during prolonged fatiguing exercise affects endurance capacity. Eight well-trained men (age 22±1 yrs) completed two cycling sessions to fatigue at 70% of VO2peak. On one occasion they received 250 mL of an 8% carbohydrate-electrolyte drink immediately before the onset of the exercise and every 15 minutes thereafter. On the other occasion they received an artificially sweetened and flavored placebo instead.

Results

- Exercise time to fatigue was 30% longer for the 8% trial (199 minutes versus 152 minutes).
- Plasma glucose levels were higher for the 8% trial than for the placebo trial.
- At the 90-minute mark, glucose levels for the placebo trial began to fall below pre-exercise levels.
- At the 90-minute mark, glucose levels for the 8% trial leveled off, but remained higher than pre-exercise levels.

Implications

- Compared to water, a drink that provides carbohydrate can increase work capacity during moderate-intensity exercise (ex. practices) lasting longer than 90 minutes.