

[J Sports Sci.](#) 2007 Aug 27;:1-6 [Epub ahead of print]

Post-exercise ingestion of a unique, high molecular weight glucose polymer solution improves performance during a subsequent bout of cycling exercise.

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The aim of the present study was to determine the effect of post-exercise ingestion of a unique, high molecular weight glucose polymer solution, known to augment gastric emptying and post-exercise muscle glycogen re-synthesis, on performance during a subsequent bout of intense exercise. On three randomized visits, eight healthy men cycled to exhaustion at 73.0% ($s = 1.3$) maximal oxygen uptake (90 min, $s = 15$). Immediately after this, participants consumed a one-litre solution containing sugar-free flavoured water (control), 100 g of a low molecular weight glucose polymer or 100 g of a very high molecular weight glucose polymer, and rested on a bed for 2 h. After recovery, a 15-min time-trial was performed on a cycle ergometer, during which work output was determined. Post-exercise ingestion of the very high molecular weight glucose polymer solution resulted in faster and greater increases in blood glucose ($P < 0.001$) and serum insulin ($P < 0.01$) concentrations than the low molecular weight glucose polymer solution, and greater work output during the 15-min time-trial (164.1 kJ, $s = 21.1$) than both the sugar-free flavoured water (137.5 kJ, $s = 24.2$; $P < 0.05$) and the low molecular weight glucose polymer (149.4 kJ, $s = 21.8$; $P < 0.05$) solutions. These findings could be of practical importance for athletes wishing to optimize performance by facilitating rapid re-synthesis of the muscle glycogen store during recovery following prolonged sub-maximal exercise.