

NUTRITIONX ENERGEL+

A Scientifically formulated carbohydrate-electrolyte gel

The three major nutrition factors associated with fatigue in most sporting events are (a) muscle glycogen depletion, (c) hypoglycaemia (low blood sugar level), and (c) dehydration. As a consequence, athletes have been encouraged to start sporting events with their muscle and liver glycogen stores as full as possible, and also to be as hydrated as possible – indeed the ACSM guidelines have encouraged this for many years (ACSM, 2009). Furthermore, ensuring blood glucose levels are maintained during the latter stages of performance/training and attempting to keep euhydrated are challenges facing athletes. The consequences of these established scientific facts has been the development and use of a multiplicity of sports drinks, which in many cases have been shown to be efficacious.

In recent years the ingestion of carbohydrate in the form of a gel has become more prevalent (Haveman & Goedecke, 2008). As a result it is possible to manipulate carbohydrate and fluid intake independently – the carbohydrate arising from the gel, and the fluid from additional water ingestion. There is evidence that taking a gel results in greater amounts of carbohydrate consumption compared with a carbohydrate solution (Pfeiffer et al., 2010), and that a carbohydrate gel can improve performance (Campbell et al., 2008; Earnest et al., 2004; Patterson & Gray, 2007; Phillips et al., 2012). Such improvements in performance may be due to maintenance of blood glucose levels and/or hydration (MacLaren & Morton, 2013). What is also interesting is that despite a greater amount of carbohydrate being available via a gel, there is no increase in gut discomfort for most individuals, although there may be personal variations (Pfeiffer et al., 2009; Phillips et al., 2012). The addition of electrolytes (sodium in particular) helps to drive both fluids and carbohydrate uptake across the small intestine during exercise and at rest (Shi & Passe, 2010).

The formulation of Energel+ has been made in order to contribute carbohydrate availability before, during, and after training or matches and to promote hydration through increased electrolyte intake as long as additional fluid is also imbibed. Key electrolytes such as sodium, potassium, and magnesium are contained in Energel+ to ensure that important components of blood (and muscle) electrolytes are made available – especially since high losses of salt have been observed in athletes with regard to exercise-related muscle cramps. So, Energel+ provides carbohydrate for immediate energy as well as electrolytes to enhance glucose and water uptake across the gut, and furthermore aids hydration. The quantities of the electrolytes have been determined to be optimal for athletes in a variety of sporting situations.

References:

American College of Sports Medicine (2009). Joint Position Statement on *Nutrition & Athletic Performance*.

Campbell, C et al (2008). Carbohydrate-supplement form and exercise performance. *International Journal of Sports Nutrition and Exercise Metabolism* **18**: 178-190.

Earnest, CP et al., (2004). Low vs high glycaemic index carbohydrate gel ingestion during simulated 64-km cycle time trial performance. *Journal of Strength and Conditioning Research* **18**: 466-472.

MacLaren, D & Morton, J. (2013). Nutrition in *Science and Soccer* edited by A. Mark Williams – chapter 1.

Patterson, SD & Gray, SC (2007). Carbohydrate-gel supplementation and endurance performance during intermittent high-intensity shuttle running. *International Journal of Sport Nutrition & Exercise Metabolism* **17**: 445-455.

Pfeiffer, B et al. (2010). Carbohydrate oxidation from carbohydrate gel compared to a drink during exercise. *Medicine & Science in Sport & Exercise*. **42**: 2038-2045.

Pfeiffer, B et al. (2009). The effect of carbohydrate gels on gastrointestinal tolerance during a 16-km run. *International Journal of Sport Nutrition & Exercise Metabolism* **19**: 485-503.

Phillips, SM et al. (2012). Carbohydrate gel ingestion improves the intermittent endurance capacity, but not sprint performance, of adolescent team games players during a simulated team game protocol. *European Journal of Applied Physiology* **112**: 1133-1141.

Shi, X., & Passe, DH (2010). Water and solute absorption from carbohydrate-electrolyte solutions in the human proximal small intestine: a review and statistical analysis. *International Journal of Sport Nutrition & Exercise Metabolism* **20**: 427-442.