Pre-Workout Nourishment Substance for Sports Competition

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Introduction

carbohydrate is needed to fuel almost every type of activity and the amount of glycogen stored in the muscles and liver has a direct effect on the exercise performance of high our story to gen concentration will allow to train at optimal intensity and achieve a bisher uniting effect. A low- muscle glycogen concentration, on the other hand, will lead to early fatigue, reduced training intensity and sub- optimal performance. Hence, glycogen is the most important and the most valuable fuel for any type of exercise.

Relationship between muscle glycogen and performance the importance of carbohydrates in relation to the exercise performance was fir demonstrated in 1939. Louise M. Burke, 2011 found that a high carbohydrate diet significantly increased endurance. However, scientists discovered that the capacity for endurance exercise is related to pre-exercise glycogen stores and that a high carbohydrate diet increases glycogen stores.

In a pioneering study, three groups of athletes were given a low-carbohydrate diet, a high carbohydrate diet or moderate carbohydrate diet (Asker E. Jeukendrup, 2011). The athletes were instructed to cycle to exhaustion on a stationary bicycle at 100% of VO2 max. Those on high carbohydrate diet managed to cycle for 170 minutes, considerably longer than those on the moderate- carbohydrate diet (115 minutes) or the low-carbohydrate diet (60 minutes).

Importance of Glycemic Index for Athletes

It is useful for the athletes to know the glycemic index of various foods. Most foods lie somewhere between 20 and 100 and are classified as high GI (60-100), medium Gl (40- 59) and low GI (less than 40).

This makes it easier to select the appropriate food before, during and after exercise. For example, consuming a low Gl meal 1-2 hours before exercise can help performance by providing slow release energy, thereby delaying fatigue we here plasma glucose levels were significantly higher ($P<0.05$). A high Gl food or drink consumed immediately after exercise helps restore muscle glycogen faster (Louise M. Burke, 2011)

Pre- Exercise GI foods

Low GI meals produce a sustained source of carbohydrates throughout exercise and recovery. They produce high blood sugar and fatty acid levels during the later stages of exercise, which is clearly advantageous for endurance sports. Main consideration is the timing of pre- exercise meal. High Gl foods are more risky to the performance, particularly if the athlete is sensitive to blood sugar fluctuations. If the timing goes wrong, then the athlete may begin his training with mild hypoglycaemia. The safest strategy may be to stick with low Gl pre- exercise and then top with high GI carbohydrate during exercise, if the training will go on for more than 60 minutes (Henriette Pilegaard, 2002)

Carbohydrate Loading

Carbohydrate loading is a technique originally described in the 1960s to increase the muscles glycogen stores above normal levels. With more glycogen available, a person can exercise longer before the fatigue sets in. this is potentially advantageous in endurance events fasting longer than 90 minutes or for events that involve several matches overd short period

Carbohydrate Loading (Original Techniques)

Normal training	Exhaustive prolonged exercise	Trapper training	Trapper training	Trapper training	Trapper training	Trapper training	
Day1	Day2	Day3	Day4	Day5	Day6	Day7	Competition
Normal diet diet	Low-carb diet	Low-carb diet	High-carb diet	High-carb diet	High-carb diet		

Carbohydrate Loading (Original Techniques)

Endurance Training	Trapper training	Trapper training	Trapper training	Trapper training	Trapper training	Trapper training	
Day1	Day2	Day3	Day4	Day5	Day6	Day7	Competition
Normal diet	Moderate carb diet	Moderate carb diet	Moderate carb diet	High-carb diet	High-carb diet	High-carb diet	

Short Duration Events Lasting Less than 4 Minutes

Short duration all-out events lasting less than 4 minutes, are fuelled by ATP, PC and muscle glycogen. Reduce training over the pre competition week and rest during the three days prior to the competition. Aim to consume 7- 8g carbohydrate/ kg body weight/ day (DeMarco HM, 1999)

Endurance Events Lasting More than 90 minutes

If an athlete is competing in an endurance event lasting longer than 90 minutes, he may benefit from carbohydrate loading. He must consume a moderate carbohydrate diet (5. 7g/ kg body weight/ day) for the first three days, followed by a carbohydrate intake (8-10g/ kg body weight/ day) for the final three days. The last training session should be completed

one week before the competition ((Michael Ormsbee, 2014)

Endurance Events Lasting Less than 90 Minutes

If the event lasts less than 90 minutes then muscle glycogen can be depleted. In such cases, muscle glycogen can be filled by tapering the training during final week and increasing the carbohydrate intake to about 7-8g/kg body weight/ day during the 3 days prior to the competition. It must be approximately 60-70% of the total calorie intake (Mark Hargreaves, 2004)

Weekly Events

If the competition is weekly or more frequent, increase the carbohydrate intake during the final two days to 8-10g/ kg bogy weight/ day. For all events, the calorie intake must be about the same as the usual during the ore competition week, but the proportions of carbohydrate, fat and protein will change. Larger amounts of carbohydrate- rich foods, carbohydrate drinks and smaller amounts of fats and proteins must be consumed. Increase the carbohydrate intake during the final two days to 8-10g/ kg bogy weight/ day (David L Costill, 1992)

Diet When the Athlete is Nnervous before the Competition

Most athletes get pre- competition nerves and this can reduce their appetite and result in problems such as nausea, diarrhoea and stomach cramps. If they find it difficult to eat solid food during this time, liquid foods, semi-liquid foods and bland foods can be consumed. To reduce problems, avoid high fibre foods. Caffeine can cause anxiety and problems such diarrhoea when combine with ‘nerves”. In essence, avoid anything that is unfamiliar and new The golden rule is to stick with the tried and tested foods (Michael Ormsbee, 2014)

Foods to Eat or Drink Just Before the Competition

If the competition is on an endurance event, pre- competition snack approximately hour before the event can be taken. This provides a sustained supply of energy, maintain blood sugar levels during the event, particularly during the later stages, and delay fatigue, Aim to consume 1g carbohydrate/ kg body weight. Most athletes find that low GI foods avoid any risk of hypoglycaemia at the start of the competition. Good hydration is needed before the competition. Further 125-250ml fluid about 15-30 minutes before the event can be consumed (Edward F Coyle, 2004)

Hydration Before the Exercise

It is clear that beginning a training session or competition in a dehydrated state, is an added disadvantage and the performance may suffer. The American College of Sports Medicine (ACSM) (1996) recommends drinking about 500-600ml fluid about 2 hours before the exercise to promote hydration and allow enough time for the excretion of excess water and an additional 125-250ml immediately before exercise. According to the study done by Simon Piet van Rosendal et al, 2010, glycerol consumption retained an extra 600ml of fluid and improved performance in a time trial by 2.4%. During 1 hour exercise, an average person would lose around 1 litre fluid and even more in hot conditions. During more strenuous exercise, the expected loss can be as much as 2 litres an hour (Susan M. Shirreffs, 2011)

Conclusion

To optimize endurance exercise, carbohydrates and fluids play an important role, both pre and during exercise. Starting with high muscle glycogen concentrations and being euhydrated is important, which can be achieved by high carbohydrate consumption and adequate drinking. Higher carbohydrate intakes may result in better performance.

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