

LUCOZADE SPORT SCIENCE:

THE IMPORTANCE OF BREAKFAST FOR ATHLETES

KEY POINTS

- Breakfast is the most important meal of the day; make time to consume the recommended quantity of carbohydrate.
- Breakfast can be looked upon as 'breaking the fast', during which time the body has its depleted energy stores replaced and fuelled sufficiently for the physical activity ahead.
- If physical activity is undertaken early in the morning, breakfast post-exercise acts as a great recovery meal, replacing the lower energy stores and stimulating muscle protein synthesis.

INTRODUCTION

Breakfast is often regarded by many as an optional meal; if time permits, one can indulge, but if time is limited, it does not impact our sporting performance. However this is untrue and neglecting food intake at this vital time has severe implications on an athlete's potential performance.

When we go to bed at night we begin an overnight fast, during which time no food or drink is consumed, and our body continues to utilize energy to maintain the function of our vital organs. This energy usage is considered part of our resting metabolic rate (lung, heart, brain function etc), which throughout a 24 hour period usually consists of two-thirds of our total daily energy expenditure. Therefore, whilst asleep the body uses our energy stores and gradually depletes them. Furthermore, our hydration status is affected during the overnight fast as fluid is lost through sweat and respired air. This can be seen by the colour of highly concentrated urine when passed soon after waking. Dark yellow urine is an indicator of being dehydrated and this must be rectified before beginning exercise.

Breakfast can be looked upon as 'breaking the fast', during which time the body has its depleted energy stores replaced and fuelled sufficiently for the physical activity ahead. Dependent upon what time food was consumed the night before, the overnight fast can be as long as 10-12 hours.

This document will outline current guidelines regarding carbohydrate and fluid consumption before discussing the practical application of breakfast, dependant on the timing in which exercise is undertaken.

CURRENT GUIDELINES REGARDING BREAKFAST

Carbohydrate Ingestion

One of the most important aspects of the 'athletic' diet is to provide the muscle with substrates to fuel the training programme. Carbohydrate is the fuel of choice for the brain, exercising muscle and central nervous system and is known to improve endurance performance. Carbohydrate is stored in the muscles as glycogen.

It is recommended that you should consume a high carbohydrate meal in the 3-4 hours before exercise as it has been shown to improve performance by increasing the amount of stored carbohydrate available to the exercising muscles.

- Consume 1-4g/kgBM of carbohydrate (approximately 70-280g for a 70kg individual) 3-4hr before exercise. Suitable foods include cereals, bread, rice and fruit.

Fluid Consumption

An additional aim for any individual is to begin exercise in a hydrated state. When we wake up this should be the only time we are dehydrated. From this point on fluid should be consumed to maintain an optimal fluid balance. Ideally, only the first urination of the day should be yellow and concentrated, as the following urine outputs should be a pale straw colour, (a good indicator of being hydrated). Currently, the ACSM guidelines for exercise and fluid replacement suggest;

- ▶ Slow consumption of 5-7 millilitres of fluid per kilogram of body mass (ml/kgBM) at least 4 h before exercise.
- ▶ If the individual does not produce urine, or the urine is dark or highly concentrated then more fluid should be consumed about 2 hr before the event (e.g. 3-5 ml/kgBM).
- ▶ As far as possible ensure the palatability of the fluid is high to promote consumption.
- ▶ Consume fluids with sodium and/or small amounts of salted snacks or sodium containing foods to stimulate thirst and retain the consumed fluid.

PRACTICAL APPLICATION OF EATING BREAKFAST

The Early Morning Athlete

For many athletes, exercise is undertaken in the immediate periods after waking up. The practicality of waking up 3-4 hours before a morning run is not feasible and therefore the athlete is unable to begin exercise with maximum carbohydrate stores.

However, research has proven that even smaller snacks before exercise can benefit exercise performance and ultimately enhance the training adaptations.

It is vitally important that athletes take responsibility for themselves and their energy demands. By waking up 30 minutes before starting exercise it provides an opportunity to consume carbohydrate and fluid, both necessary in delaying fatigue and improving endurance performance. Potential foods which are easily tolerated before exercise include a slice of toast, banana or an energy bar. Consuming an isotonic sports drink before exercise will also have a beneficial effect on performance as this will not only provide rapidly absorbed carbohydrate but also improve the hydration status of an athlete.

It is important for the early morning exerciser that carbohydrate and fluid consumption the night before is sufficient. This will increase the quantity of stored muscle glycogen. It is important for any athlete beginning exercise without consuming an appropriate pre-exercise meal that they must maintain carbohydrate intake throughout exercise. This will prevent muscle glycogen stores from being significantly depleted and delay fatigue.

When the exercise session is completed the athlete must make it a priority to consume breakfast in the immediate period afterwards (0-90 minutes). Muscles have an increased ability to replace depleted glycogen stores within the first couple of hours post exercise and this should be coupled with appropriate fluid and protein intake. A breakfast post exercise should comprise of the following;

- ▶ Carbohydrate = 1.0-1.2 g/kgBM/h at frequent intervals.
- ▶ Protein = 10-20g.
- ▶ Fluid = 1.5 litres (L) for each kg of body mass lost as sweat.

The Midday / Afternoon or Evening Athlete

By delaying exercise until the latter periods of the day enables an athlete to consume the recommended quantity of carbohydrate and fluid before exercise. If running at midday, breakfast and a pre-exercise snack is an ideal strategy to maintain maximum muscle glycogen stores. The key message for any athlete exercising later in the day is to maintain their energy intake throughout the day and ensure they begin in a state of hydration.

Suggestions for breakfast include combining wholesome cereals, low-fat milk, fruit and fruit juice. This provides sufficient carbohydrate and fluid, while also supplying key vitamins and antioxidants, vital for muscular recovery and prevention of illness.

RECOMMENDED READING

- Sawka, M.N., Burke, L.M., Eichner, E.R., Maughan, R.J., Montain, S.J. and Stachenfield, N.S. (2007). American College of Sports Medicine position stand: Exercise and Fluid Replacement. *Medicine and Science in Sports and Exercise*, **39**, 377-390.
- Coyle, E.F. (2004). Fluid and fuel intake during exercise. *Journal of Sports Sciences*, **22**, 39-55.
- Hargreaves, M., Hawley, J.A. and Jeukendrup, A. (2004). Pre-exercise carbohydrate and fat ingestion: effects on metabolism and performance. *Journal of Sports Sciences*, **22**, 31-38.