



## Nutrition

The main source of energy during training is derived from carbohydrate, therefore, it is not surprising that high carbohydrate meals and drinks are essential to provide energy and facilitate recovery. The timing of meals and snacks, however, is important.

**30 Minute Rule:** The muscles are most susceptible to restoration of carbohydrate stores within the first 30 minutes after exercise. Thereafter, the process becomes progressively more difficult. The swimmer should eat 50 to 100 grams of carbohydrate\*, whilst keeping fat ingestion low, as soon as training finishes, and definitely within the first 30 minutes after training. The following are examples of appropriate snack foods and their approximate carbohydrate content:

An apple, banana or orange:	15-20g	Muller rice:	20g
Nutrigrain Elevenses bar:	25-30g	Fruit Shake or Smoothie:	25-30g per glass
1 thick Jam or Honey sandwich (no or minimal butter):	50g		
Malt Loaf (Soreen):	18g per eighth of a loaf		
Fig Rolls:	13g per biscuit		

Other excellent snacks: Rice cakes, dried fruit

\* After high intensity training it may be appropriate ingest protein mixed with high carbohydrate. This may be achieved using known brand formulated drinks.

### **Morning Training:**

Have a snack item (examples above) with fruit juice 30 minutes before training with breakfast after training.

### **Guidelines for event meals:**

***Before a race:*** High Carbohydrate/Low Fat meal 2-4 hours before the race. Suitable types of food include: breakfast cereals, porridge, bread, rolls, toast, fruit juice, fruit, rice cakes, plain crackers, boiled rice, potatoes, boiled pasta, dried fruit, oatmeal biscuits, plain wholemeal biscuits, muffins and [carbohydrate drinks](#). These are all examples of [complex carbohydrates](#) as these release energy slowly. Avoid [simple carbohydrates](#) (the sugars) as these release energy quickly but trigger the release of insulin, which can have a negative impact on performance.

A small snack (examples above) may be eaten about 30 minutes prior to the race.

***If the interval between races is less than 30 minutes:*** The swimmer should drink fluids/juices or a sport drink.

***If the interval between races is up to 1 hour:*** The swimmer should have a snack from the above list, with plenty of fluid, up to 30 minutes before the next race.

***If the race interval is 1 to 2 hours:*** The swimmer should have a small high carbohydrate/low fat meal.

***If the rest period between races is longer:*** then the swimmer should have a substantial meal no later than 2 hours before the next race (see before a race).

**Important:** As water is stored with carbohydrate it is essential that substantial amounts of fluid is drunk with meals and snacks.