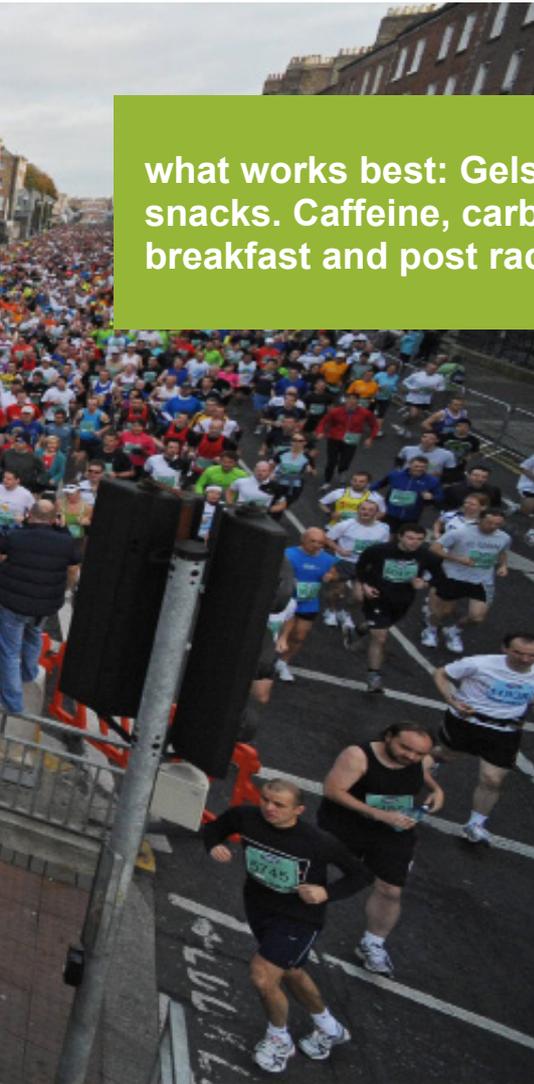


**MARATHON 2010**

# ULTIMATE RACE DAY NUTRITION GUIDE

Our mission is to search out the best science and the latest nutrition innovations to help you race faster and run easier. Take the worry out of your race day preparation and follow this guide for the ultimate in marathon nutrition advice.

what works best: Gels vs drinks vs bars or snacks. Caffeine, carbo-loading, race day breakfast and post race recovery.



**FELIX - 4:22**

*"Really chuffed. First full marathon. I ran the 2nd half as fast as the first"*

to put extra effort into maintaining a constant pace. By mile 16, 17, 18... you will find it progressively harder to maintain your best pace. Before the finish you might be unfortunate enough to "hit the wall". This is where your carbohydrate reserves have dropped to such a low level that your muscles are forced to rely primarily on fat as fuel.

With carbo-loading before your event and by topping up your carbohydrate reserves while running, you can significantly increase the amount of carbohydrate your muscles have available for a Marathon. This means that you will finish your run faster and stronger, suffer less & enjoy it more.

## >> topping up your carbohydrate reserves as you run:

Your body has a relatively small fuel tank in which to store carbohydrate. This tank cannot hold enough carbohydrate to fuel your best marathon effort without your help. As soon as you start running, your fuel tank begins to empty and using gels or drink you can add more carbohydrate to top it up.

It is important to note that your muscles can use carbohydrate much faster than you can provide it. So no matter how much carbohydrate you consume during your run, at some point your fuel tank will still empty. But this can be at the 17 mile mark or at the finish, the choice is yours!

## >> carbohydrate is the fuel for a Marathon

Research has shown that during a 2:45 to 3:45 marathon\*, 71% of a runner's energy comes from carbohydrate with only 29% coming from fat.

Not only is carbohydrate the most important fuel for a marathon runner, it is important to realise that your body has a limited supply of it. During a marathon you will deplete your body's store of carbohydrate, which will result in various levels of fatigue.

Carbohydrate depletion is not like an on/off switch, instead it creeps up as the miles pass. By the mid point of a Marathon your body starts to conserve its diminishing carbohydrate reserve. You will notice this as growing fatigue - you have less energy in your legs and you have

## >> sceptical?

In order to find the best Marathon nutrition strategy, researchers from the University of Glasgow tested 100 subjects at the Dublin Marathon. The test subjects ranged from novice runners, to individuals having completed more than 90 marathons. The following advice is based on what the researchers found. Click below to see a series of short videos and hear what the participants had to say about their experiences [test interviews](#)

## >> TO HAVE YOUR BEST MARATHON YOU NEED TO:

- >> 1 *Top up your carbohydrate reserves while you run using a drink, gel or high carbohydrate snack.*
- >> 2 *Start the marathon with as full a carbohydrate fuel tank as you can. This is achieved using carbo-loading.*



**MATT - 4 hours**

*"In training I crashed at about 17 miles, but I sprinted the last mile today!"*

\* Run at best effort

There is a limit to the amount of carbohydrate your body can **absorb** each hour. Absorb means to digest and get into your blood stream where it is carried to your working muscles. This is not the same as the amount of carbohydrate you can **consume / swallow**. You can swallow a lot of carbohydrate, but you can only absorb a relatively small amount - around 60g per hour (or 75g if you add a small amount of caffeine). If you consume more than this amount, then any excess will simply sit in your stomach waiting to be digested and potentially give rise to stomach problems - so be warned!



**SASHA - 3:04**  
*"Took Gels every 20 mins throughout race, tasted nice and not too thick"*

## >>it's simple maths:

It's simple maths. If you take one gel at the 17 mile mark when you start to feel really fatigued, this will provide you with 22g of carbohydrate. If you run a 4-hour marathon and start taking carbohydrate at the half way mark, you will be able to absorb a maximum of 2 hours x 60g =120g. If you consume carbohydrate from the very start of your run, you can stock up with an additional 4 hours x 60g =240g. The choice is yours!

## >> how much difference will 240g of carbohydrate make?

A runner weighing 75kg will start the marathon (fresh) with around 400g of carbohydrate stored in their fuel tank. This can increase to 600g with Carbo-loading. Consuming an additional 240g of carbohydrate **during** a marathon can provide more than enough additional fuel to take you from the 17 mile mark to the finish feeling strong and happy.

Waiting until you fatigue before popping an odd gel is a classic mistake that many runners make. You must start to consume carbohydrate from the very start of your run to get maximum benefit. The more carbohydrate you are able to consume up to a maximum of 60g per hour, the stronger and faster you will finish.

We appreciate that consuming carbohydrate early in the race is a hassle for most runners, especially when you feel full of energy and there is a lot going on. You need to remember, however, that in the early stages of the race you are fuelling yourself ready for the last half. You can consume up to 3 gels per hour (65g carbs) from the very start of your run up to 15 minutes before the finish. In the last 15 minutes, additional gel will not give you any benefit.

If you chose to consume less gel, then you will simply have less carbohydrate available in the latter stages of the run. 3 gels are better than 2, while 2 gels are better than 1. It's simple maths.

## >> caffeine is it for me?

Caffeine is the stimulant found in tea, coffee and soft drinks like coke. Consuming caffeine at the right levels during a Marathon, has several benefits. It increases the maximum amount of carbohydrate you can absorb per hour (up from



**RICHARD - 4:04**  
*"First Marathon - expected to finish in 4:30 but came in 4:04 quite chuffed"*

60g to 75g). Caffeine also delays the onset of fatigue and it enables higher work rates to be maintained with a reduced perception of effort - with caffeine, it just feels easier to keep going at your target pace.

However, it's important to consume exactly the right amount of caffeine for your bodyweight in order to get the most benefit. This has been worked out for you in the following guidelines.

Research shows that caffeine doesn't cause dehydration during exercise when taken in moderation. If you are sensitive to caffeine in that you get the shakes or other symptoms when drinking tea, coffee etc. then just replace caffeine gels with non-caffeine variants.



**BRENDAN**  
*"First marathon, expected cramp & fatigue but never happened - Felt full of energy."*



**PHILIP - 2:52**

*"20 marathons, 6 minutes faster than expected - really impressed"*

**CHARLES - 3:04**

*"Ran 33 marathons, 11 minutes faster than expected - 7 gels"*

**PAUL - 3:11**

*"Ran 25 marathons, 17 this year. 5 minutes faster - no stomach upset at all"*

## >> drinks, gels, bars, banana, jelly babies - what works best?

The research study by Glasgow University showed that the only practical way to consume the amount of carbohydrate you need during the marathon was to use energy gels. Solid food including bananas and sports bars, which contain fat and/or fibre slow the absorption of carbohydrate and they are also much harder to consume (eat) while running.

## >> advantage of drinks over gels:

3 gels per hour will provide you with the maximum amount of carbohydrate your body can absorb. This is the same amount of carbohydrate found in 1 litre of sports drink. Unless race day temperatures are very high, it is not feasible to drink that amount of fluid, so gels are your best option for topping up your Carbohydrates while you run.

1) In most instances you cannot consume enough sports drink to provide your body with the optimum amount of carbohydrate.

2) Being self sufficient and carrying your own gel means that you can try in training what you race with.

3) You will have a nutrition strategy to optimise your performance instead of just grabbing the odd slurp of drink when you can.

4) You can take gels when it suits you during the run and not get caught up in the rush at the feeding stations. You will only need to collect water from the feed station.





**RALPH - 3:20**

*"3 previous marathons, 5 minutes faster than PB, used 10 gels"*

**VICARDI - 3:55**

*"20 minute faster, used 10 gels, best gels he has used"*

**MARK - 3:53**

*"Ran much better, good, really good, made a lot of difference - 11 gels used"*

**>> what are gels and how do I use them?**

Energy gels are concentrated carbohydrate in a sachet; you simply tear off the top and swallow while you run. High5 EnergyGels are light and easy on the stomach. Click here for a short video showing you how to use gels [Gel Belt Video](#)

High5 produce two different types of gel, **IsoGel** which can be taken without water and **EnergyGel** which needs a couple of mouthfuls of water either taken with the gel or a few minutes before or after. High5 EnergyGel is available in a range of real fruit flavours, Citrus, Orange, Summer Fruits, Raspberry, Apple and Banana. Both EnergyGel and IsoGel are available with and without caffeine.

**>> isotonic / IsoGel Vs normal gels**

High5 IsoGel is exactly the same as EnergyGel, but it has more water added at the manufacturing stage. **Advantage:** IsoGel is easier to consume, with a consistency somewhere between a sports drink and a traditional gel. **Disadvantage:** IsoGel is almost twice as heavy as EnergyGel for the same carbohydrate content, so it's obviously more bulky and heavier to carry.

**>> are gels provided on course at Dublin?**

High5 Gels are available free on course at mile 15 and 18. There are two gels per competitor (in total) and these will provide some help in the later stages of your run. You should note, however, that 2 gels are a long way short of the optimum amount of carbohydrate you need for a PB or to finish the marathon strong and feeling great.

Water is provided every 3 miles and an Energy Sport drink at mile 9, 13 and 18.

**>> do I need to try my gel strategy in training**

We would highly recommend trying gel in training before your race, however, runners in the Glasgow research study used High5 gels for the first time on race day with no stomach problems. To enable you try gels in training, we have put together a special offer of a High5 **Race Day and Recovery Pack**. Free gels are included in this pack, so that you can try them in training.

**>> special offer race day and recovery packs**

**Special Offer:** The special offer pack contains enough gels for either the Maximum Energy Maximum Speed or Get You Home Strong strategies, plus breakfast sachet bar and recovery drinks together with extra gels for training. You can also add a discounted gel belt. [Click Here](#)

**>> run the first and second half of the Marathon at the same speed - why?**

The main reason to pace yourself during a marathon is to make the most of your limited carbohydrate stores. How does it work? When you run, your muscles burn a combination of fat and carbohydrate as fuel. The faster you run, the higher the proportion of carbohydrate you burn and the less fat. So although you could fly through the first half of your marathon at speed, your depleted carbohydrate stores would mean that the second half would be much slower. Sports Scientists calculate that overall you will finish faster by running at constant pace throughout

Of course if you get your feeding strategy right you can run a little harder from the start, safe in the knowledge that you have enough carbohydrate to finish strong.

## MARATHON NUTRITION STRATEGY

**HIGH5**  
ADVANCED SPORTS NUTRITION

### >> carbo-loading

Carbo-loading in the days leading up to your run can increase your body's store of carbohydrate by 30% or more. Carbo-loading is simply a way to ensure that your carbohydrate tank is as full as possible on race day. You can achieve this by reducing your mileage 5 days or so before your race. As you are not running as much, you are not burning off your carbohydrate. The carbohydrate you eat in your normal diet then fills your fuel tank to the very top. Two days before your marathon, you should increase your carbohydrate intake to 10 grams per kg of body weight. For a 70Kg runner that would be 700 grams each day.

Studies have shown that most runners often don't reach the required intake, as carbohydrate rich foods are normally bulky. To avoid the bulk you can drink 500ml of High5 EnergySource every 2 hours and eat one High5 EnergyBar. Over 8 hours this provides 360g of carbohydrate, your normal diet should provide the rest.



**MATT - 3:29** - "1st marathon, 15 minutes faster than expected - definitely be using them again"

### >> race day breakfast

Breakfast should be light and high in carbohydrate. Try and stick to what you normally eat – cereals, toast, porridge etc. It might be obvious, but steer clear of high fat / protein foods like a egg and bacon! Drink 500ml of

High5 EnergySource with breakfast. This will provide additional carbohydrate and help ensure that you won't start the marathon dehydrated.

Take a High5 EnergyBar with you to eat on the way to your race. It can sometimes be a couple of hours getting to and waiting for the start of your run. Just nibble on the bar.



*"Russell and Matt, brothers, finish 3:28. 5 gels and 9 gels. Ran 20 minutes faster than expected"*

### >> nutrition strategy 1 (get you home feeling strong)

Many runners are reluctant to carry large numbers of gels with them. For most runners, things start to unravel at the 16 to 18 mile mark. One strategy is to consume just enough additional carbohydrate to help fuel the last 6-8 miles of the marathon and get you home feeling strong. To do this would suggest 8 gels in total.

**Advantages** - This approach means fewer gels to carry. It's also a little easier on the stomach.

**Disadvantages** - You will still see a drop in performance over the last few miles, but nothing like what you might expect. For those aiming for their best possible time, you should consider the **Maximum Energy / Speed - Strategy 2** detailed later.

### >> before the marathon start:

10-15 minutes before the start of the marathon take two High5 EnergyGel

Plus sachets (plus sachets contain caffeine, while standard EnergyGel sachets do not) and drink 200ml to 300ml of water. This begins the carbohydrate feeding and hydration process. 2 of your 8 gels are now used.

### >> during the marathon:

Once the marathon starts, spend the first 60 minutes settling into your run and getting clear of other runners. The gels taken before the start will mean that you do not need to take gels during this time. After 60 minutes of running, start taking the 4 remaining gels you are carrying. Take 2 **EnergyGel Plus** sachets every hour. Take one gel every 30 minutes (the timing doesn't have to be exact), rather than all at one time. You can if you wish substitute one High5 EnergyGel Plus for one IsoGel Plus, as they both contain the same amount of carbohydrate and caffeine. Finally, collect your 2 free gels at the 15 and 18 mile mark and use these in the same way, 30 minutes apart.

Following NUTRITION STRATEGY 1 you will need to carry 4 gels with you during the marathon and pick up your 2 free gels on-course at mile 15 and 18. You can carry your gels in a bum bag or High5 make a Gel Belt especially to carry gel. Click here: [Gel Belt Video](#)

Even in cool conditions you will need to drink to keep yourself hydrated. As part of your fluid intake, you should drink a couple of mouthfuls of water "with" each High5 EnergyGel. You don't need to drink water at exactly the same time as taking gel. However, many runners prefer to take a few mouthfuls of water directly after each gel to "wash it down." Water stations are at every 3 miles. It's not possible to give exact advice on your fluid needs during your marathon, as this will vary depending upon how warm the weather is on race day and how much you sweat.



**“The faster you run the more carbohydrate you burn as fuel and the less fat, which eats through your limited stores faster”**

If you want to use the on-course energy drink, then for every 350ml you drink you should reduce your gel intake by one sachet.

For fast recovery after the run, including reduced muscle soreness, drink 500ml of EnergySource 4:1 with protein as soon as you finish. Drink another 500ml one hour later and eat a balanced meal as soon as possible. **See Special Offer Pack, which also includes 4:1**

**>> nutrition strategy 2**  
(Max Energy, Max Speed)

For this strategy we focus on taking the maximum amount of carbohydrate your body can absorb per hour, no more, no less.

**Advantages:** This will give you the most energy and fastest finish time. You can run a little faster earlier in the race, safe in the knowledge that you are not going to suffer later because of it. Your run should also be more enjoyable, especially in the latter stages when you are still feeling strong and passing other runners. This strategy was used for the first time on race day by the Glasgow

University test participants with no stomach problems.

**>> before the marathon start:**

10-15 minutes before the start of the marathon everyone should take two High5 EnergyGel Plus sachets (Plus sachets contain caffeine, standard EnergyGel sachets do not) and drink 200ml to 300ml of water. This begins the carbohydrate feeding and hydration process

**>> during the marathon:**

Once the marathon starts, spend the first 40 minutes settling into your run and getting clear of other runners. The 2 gels taken before the start will mean that you do not need to take additional gels during this time. After 40 minutes, start taking your EnergyGel Plus (with caffeine). Take 3 EnergyGel Plus per hour, preferably one gel every 20 minutes (the timing doesn't have to be exact). If you wish you can substitute one High5 EnergyGel Plus for one High5 IsoGel Plus, as they both contain the same amount of carbohydrate and caffeine. Everyone is different and if you



**Peter 'The Marathon Man'**  
*“Completed 318 marathons for charity. Felt on top of the world”*

find taking 3 gels per hour is a little too much, cutting down to 2 gels is still going to give a substantial boost to your carbohydrate reserves and an improved finish time.

**Note:** Do not follow strategy 2 (above) if you expect to run more than 4 1/2 hours OR if you weigh 65 kg and under. You should instead follow strategy 1.

From your expected finish time you can calculate the number of gels you will need to carry. Don't forget you can collect 2 free gels on-course at mile 15 and 18. We make a special lightweight and comfortable gel belt for 12 gels. Click here [Gel Belt Video](#)



## Hold up to 12 gels!

Click here to see the demonstration video on how the High5 Gel Belt works.

Even in cool conditions you will need to drink to keep yourself hydrated. As part of your fluid intake, you should drink a couple of mouthfuls of water "with" each High5 EnergyGel. You don't need to drink water at exactly the same time as taking gel. However, many runners prefer to take a few mouthfuls of water directly after each gel to "wash it down."

Water stations are every 3 miles or so. It's not possible to give exact advice on your fluid needs during your marathon, as this will vary depending how warm the weather is on race day and how much you sweat.

Taking 3 gels per hour will provide you with almost the maximum amount of carbohydrate your body can absorb. Taking additional gel or the on-course drink (containing carbohydrate) will not result in more carbohydrate reaching your muscles. If you want to use the on-course energy drink, then for every 350ml you drink, reduce your gel intake by one sachet.

For fast recovery, including reduced muscle soreness, drink 500ml of EnergySource 4:1 with protein as soon as you finish. Drink another 500ml one hour later and eat a balanced meal as soon as possible.

All products in the guide are available at the High5 stand at the marathon expo.

## >> RECOVER BETTER AS YOUR MILEAGE INCREASES...

A recent **Running Fitness** article states *protein-containing carbohydrate drinks offer several advantages over conventional carbohydrate-only drinks for endurance athletes such as runners.*

*These include:*

- >> Enhanced endurance performance
- >> Better recovery following training
- >> Less muscle damage (and therefore less muscle loss during high-volume training)

## >> RAPID RECOVERY...

4:1 EnergySource contains the optimal Protein/Carbohydrate mix for rapid muscle recovery. [Buy 4:1 On-line here](#)

Click here to read the full [Running Fitness Article on the recovery benefits of carbohydrate protein drinks](#)