



**SIS** | SCIENCE  
IN SPORT

# MARATHON GUIDE



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# INTRODUCTION TO RUNNING

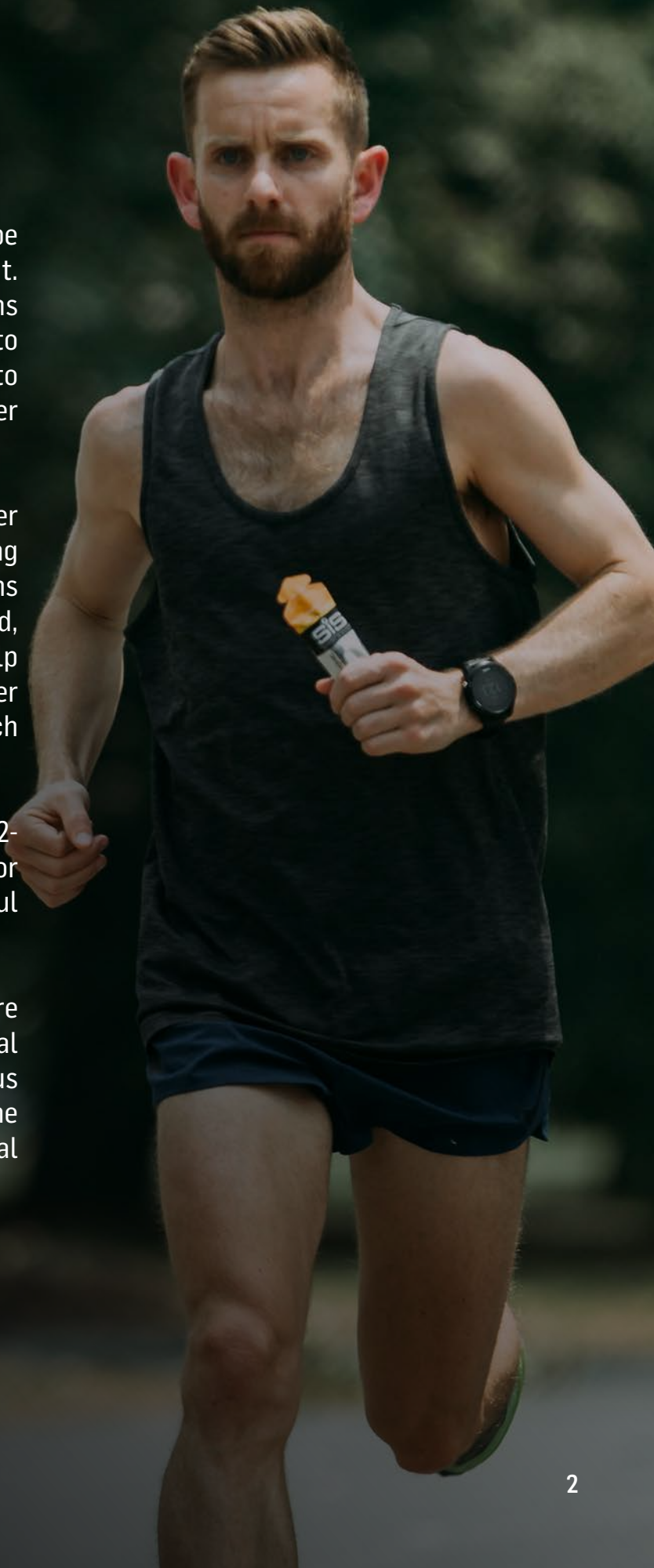
## GETTING STARTED

First & foremost, running should be something you do because you enjoy it. Many people run for different reasons - to improve their mental health, to challenge themselves or simply to just be more active & lead a healthier lifestyle.

More people are running now than ever before, event participation is increasing year on year, and it is showing no signs of slowing down. With that in mind, more people are also looking to get help to achieve their running goals; by either joining a running club, getting a coach or following a training plan.

The training plan in this guide is a 12-week plan designed to get you ready for your marathon, along with some useful hints & tips to help you along the way!

It is important to note that if you are injured, have any pre-existing medical conditions or experience any serious pain or discomfort whilst following the plan you seek advice from a medical professional.



# DESCRIPTION OF SESSIONS

## WARM UP

The warm-up is an essential part of any session and shouldn't be something you skip. It is especially important before you are doing any form of speed work or interval training. Ideally your warm-up should be a short easy paced jog, followed by drills and dynamic stretching, this will help to gradually increase your heart rate, which helps blood flow and get your muscles ready for some faster running.

## COOL DOWN

The cool down is just as important as your warm-up, as it will help to gradually decrease your heart rate and get your body to a more relaxed state after a session. Again, this just needs to be a short easy paced jog, and you can also include some static stretches.

## EASY RUNS

This pace should feel really comfortable, you should be able to hold a full conversation and not be short of breath, but slightly more effort than your warm-up pace. Ideally you should not be looking at your watch or worrying about pace

on these runs. The pace of these runs will vary day by day, and week by week. It will depend on what you did the day before, how well you slept, the weather and so many other factors! Just think of these runs as a way to build distance, your effort should be saved for your sessions and race day.

## HILL SESSIONS

This is another session where it is just best to ignore your watch & work solely on effort levels. Ideally you should aim to work at around 80% of your maximum effort, or if you are using the RPE scale, an 8 out of 10. Hill sessions are always hard work and a great session to really push yourself, it's one where you will feel the benefit when it comes to race day.

## INTERVAL SESSIONS

These sessions can vary in many ways - intensity, structure & duration. Depending on the session I will sometimes set guide paces for what you should be aiming for, but other times similar to hill sessions, it is best to work on your own personal effort levels. Ideally you should aim to work at around 80% of your maximum

# DESCRIPTION OF SESSIONS

effort, or if you are using the RPE scale, an 8 out of 10. These sessions are again a really great session to push yourself, and it will definitely pay off on race day.

## TEMPO RUNS

This run is what I would describe as 'comfortably hard', it can also be referred to as a 'Threshold Run'. It should feel harder than your easy pace, but a pace you feel like you could sustain for an hour during a race, so still a moderate effort, but not a flat-out sprint. You should still be able to say the odd sentence, but not hold a full conversation.

## STRIDES

Strides are short bursts of running, approx. 20-30 seconds at around 90-95% effort, with walking recoveries between each one. Strides help to improve running form, increase stride length and leg turnover and benefit running economy.

## STRENGTH & CONDITIONING

Strength & Conditioning can sometimes be something that is overlooked when training for a marathon, but there are so many benefits. I really believe it is something that every runner, no matter what level, should include in their weekly training schedule. Regular Strength & Conditioning can help to lower the risk of injury, increase bone density and improve your overall power, speed & strength which will only benefit you on race day!

## STRETCHING

Regular stretching is a great way to help you recover in between your sessions. Stretching can help to reduce your risk of injury, improve your flexibility and range of motion and can help to ease post exercise aches & pains. Adding a Yoga or Pilates class to your weekly schedule can be a great way to ensure you stretch regularly.



# INTRODUCTION TO NUTRITION

## AIMS & OBJECTIVES

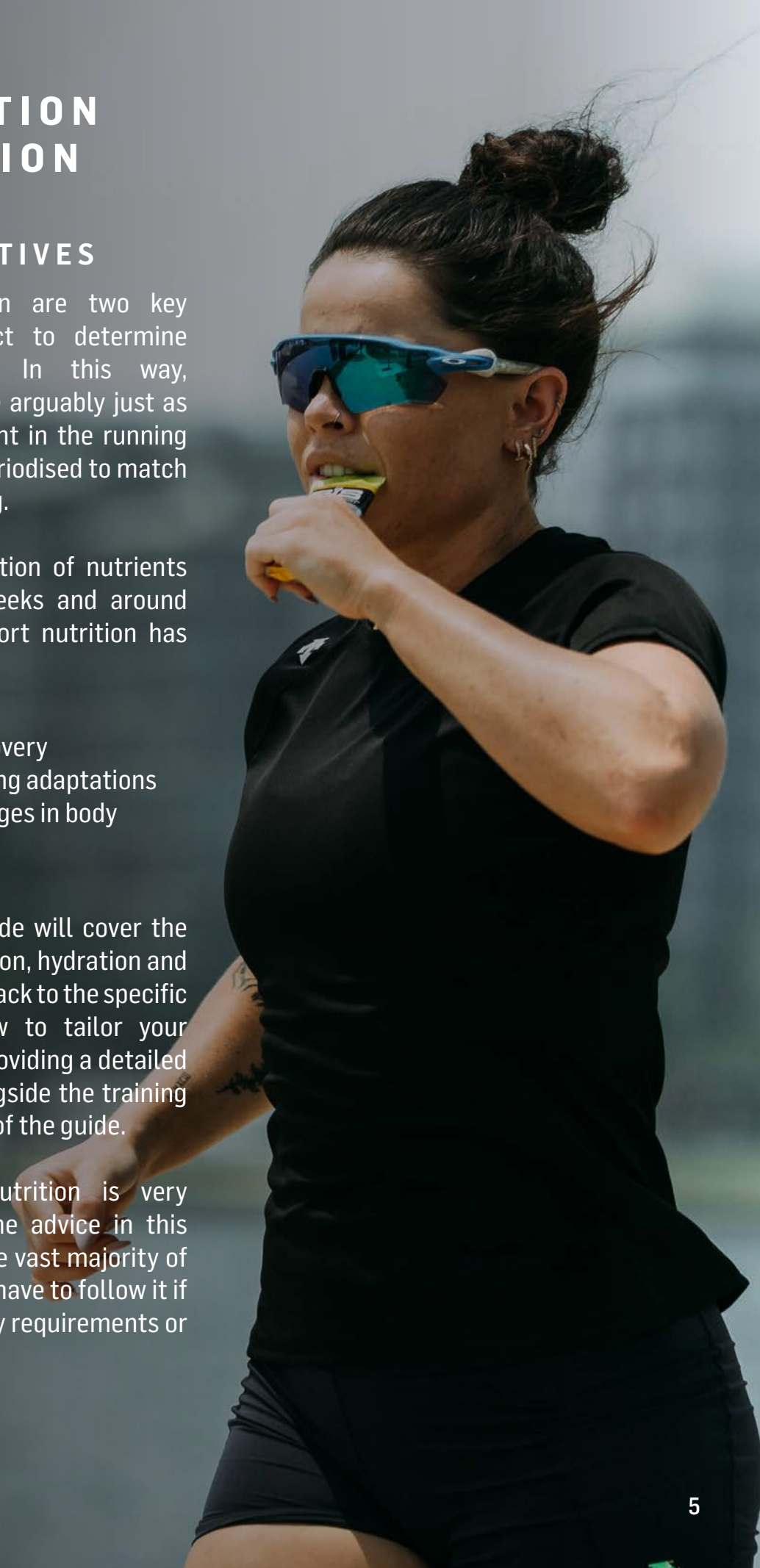
Training and nutrition are two key variables that interact to determine overall performance. In this way, nutrition strategies are arguably just as important as time spent in the running shoes and should be periodised to match the demands of training.

Through the manipulation of nutrients across the training weeks and around individual sessions, sport nutrition has roles to play in:

1. Fuelling and recovery
2. Promoting training adaptations
3. Facilitating changes in body composition

This section of the guide will cover the fundamentals of nutrition, hydration and supplements. Linking back to the specific run sessions and how to tailor your intake around these, providing a detailed nutrition strategy alongside the training programme at the end of the guide.

Like many topics, nutrition is very individual. Although the advice in this section will apply to the vast majority of people, do not feel you have to follow it if you have certain dietary requirements or preferences.



# NUTRIENTS, HYDRATION, SUPPLEMENTS

## CARBOHYDRATE

As one of the three dietary macronutrients, carbohydrate comprises of sugars, starches and fibre. They act as the primary energy source in the body and provide a source of stored energy in the form of liver and muscle glycogen.

When it comes to exercise, carbohydrate yields more energy per litre of oxygen consumed and is a more efficient fuel than fat, providing energy quickly to be used by the working muscles. As a result, carbohydrate can be thought of as the preferred fuel for performance.

In this way, interval sessions, pick-up runs and weekend long runs should all be undertaken with high carbohydrate availability. Whereas, easy or recovery runs can be fuelled using our own body fat stores. This periodised approach to carbohydrate intake, known as fuel for the work required, promotes performance in the hard sessions and training adaptations or desired changes in body composition in the easy runs.

## PROTEIN

Proteins function in a number of different ways within the body, contractile proteins are responsible for making our muscles produce force, structural proteins provide structure to our muscles and the enzymatic proteins help provide the action molecules that can break down carbohydrate and fat to produce energy.

Protein is a central nutrient for the endurance athlete and daily protein intake should not be compromised. As it relates to run performance, protein supports both training adaptations and muscle repair. The stress of endurance exercise creates a metabolic signal to instruct our muscles to make new proteins involved in aerobic metabolism e.g. mitochondrial enzymes. Exercise also causes our muscle fibres to actually break down (referred to as protein degradation), a process that can of course be detrimental to training adaptation.

In the presence of adequate protein feeding, the combined effects of exercise and protein ingestion results in the formation of new proteins (referred to as protein synthesis). It is these repeated changes, in response to every single training session, that forms the basis of how our muscles adapt and recondition to the demands of training.

## FAT

Fats play a role in both health and performance. A small amount of fat is essential in a balanced intake, providing essential fatty acids and aiding in the absorption of fat-soluble vitamins. Fat is also metabolised during exercise to contribute towards overall energy production. However, this is a relatively slow and inefficient process compared to carbohydrate, meaning that fat contribution to high-intensity running or racing is minimal.

## HYDRATION

During exercise your body heats up. To keep body temperature at an optimal level, water is drawn from blood plasma and secreted from pores in the skin, as sweat. While this mechanism aids thermoregulation, excess fluid and electrolyte loss can have a negative impact on exercise performance.

As fluid losses increase and the water content of blood decreases, the body reduces the peripheral blood flow to the skin surface to preserve the blood supply to the muscles and vital organs. This reduces the body's capability to dissipate heat, and with a drop in blood volume, heart rate increases to meet the demands to sustain the same level of exercise. This ultimately leads to feelings of fatigue and premature exhaustion.

## SUPPLEMENTS

Although there isn't a universal definition for supplements or a comprehensive list as such, individuals may use nutritional supplements for performance or health reasons. These include those providing energy and macronutrients (i.e. carbohydrate gels, recovery shakes, protein bars), micronutrients (i.e. multivitamins, fish oils, vitamin D3) or single compounds (i.e. caffeine, beta alanine, tart cherry).

## MICRONUTRIENTS

While the three aforementioned macronutrients will contribute the majority of daily intake, micronutrients are required in comparatively small amounts. The term micronutrient describes a range of vitamins and minerals essential in the diet, as our body cannot produce these. Further, any deficiencies are likely to have negative consequences.

Micronutrients support day-to-day health, physiological functions, growth, maintenance and exercise associated wellness. Through eating a balanced diet rich in fruits and vegetables, including a range of colours throughout the day and not excluding food groups, individuals can meet their recommended daily allowance for micronutrient intake.

However, large volumes of endurance training, excluding individual nutrients or complete food groups, periods of energy restriction, allergies and dietary preferences can all result in micronutrient deficiencies. In these situations, supplementing with vitamins and minerals may be advised.



# NUTRITION FOR PERFORMANCE

## TRAINING

The duration, intensity and goals of each training run will impact daily and session nutrition requirements. Carbohydrate can often change day-to-day, depending on the workload of that day, whereas daily protein intake should never be compromised.

This periodised approach to carbohydrate intake would see high carbohydrate availability for key sessions, where performance is the main goal. While easy runs can be considered train-low sessions, to promote endurance type adaptations in the muscle.

## EASY RUN

The duration and intensity of this run lends itself to a train-low approach, deliberately restricting carbohydrate feeding either before the session or in the recovery period following the session. This can be achieved by running first thing in the morning, before eating breakfast, or training in the evening and withholding carbohydrate until the next day, effectively sleeping low.

## INTERVAL, HILL OR PROGRESSION RUN

These key sessions in the training week are designed to be tough, requiring increased levels of effort and quality running. High-carbohydrate availability around the session is key, providing the fuel to perform. Additionally, the duration and intensity of some of these sessions may call for carbohydrate fuelling while running.

## LONG RUN

It is important to have a nutrition plan going into your chosen event and testing this out on long run day is essential. This allows the body to adapt to the challenges of carbohydrate loading and taking on carbohydrate while running, training the gut to tolerate this. Everything from the day(s) leading into an event, pre-event breakfast, in-race fuelling and post-race recovery should be practiced. How this comes together into a race-day plan is in the following section and this plan should be mirrored for each long run in training.

## MARATHON DAY

Carbohydrate stored in the body, in the form of liver and muscle glycogen, is metabolised quickly for energy production and is the preferred fuel for high-intensity running. However, our body has limited capacity to store glycogen. To maintain performance throughout the marathon, it is important to maximise carbohydrate availability through pre-race and in-race nutrition strategies.

## PRE-RACE

Carbohydrate intake can be increased in the 24-48 hours before race-day, often referred to as carbohydrate-loading. Aim for 8-10 g of carbohydrate per kilo body mass per day, from simple carb sources, such as: pasta, bread, rice, cereals, potatoes, energy bars and sports drinks. Minimising fat, fibre and protein on these days. This manipulation of nutrients can increase energy stores without excessive full or bloated feelings and shouldn't be seen as a simply eat everything strategy.

Breakfast then acts as a key meal on the day of your marathon. Travel, race-day stress and logistics can cause other distractions on marathon day, so knowing what you're going to eat and being comfortable with this is going to get you to the start line in the best shape. Your breakfast should reflect this and include normal breakfast food: cereals, toast, bagels, jam, fruit juice. Breakfast should provide 2-3 grams of carbohydrate per kilo body mass (i.e. 140-210 grams for a 70 kg runner) and be 1-3 hours before the start to allow for full digestion, minimising chances of gastrointestinal distress while running.





**Hydration:** Aim for 5-10 ml of fluid per kilo body mass (~350-700ml for a 70kg runner) throughout the morning of your marathon, monitoring urine volume and colour to ensure you are hydrated before the start but not excessively. This fluid can be split between fruit juice and water with breakfast and Hydro as you travel to the event.

## IN - RACE

**Energy:** Aim to take in 60-90 g of carbohydrate per hour of running. Fuelling should start in the first hour – if you wait until you are tired or hungry to start eating this is often too late. Alongside fluid intake, an hour of energy could be 3x GO Isotonic Energy Gels. Use GO Energy + Caffeine Gels towards the last hour of the race.

**Hydration:** Personal fluid requirements will vary, aim not to lose greater than 2-3% body mass as a result of sweat loss. This usually means consuming 500 ml of fluid per hour depending on sweat rate, temperature and humidity – drinking additional fluids as needed. Taking little and often from each water station is advisable versus waiting until you are thirsty and having large volumes of fluid.

## RECOVERY

Marathon running depletes muscle glycogen stores, causes muscle damage and results in fluid loss. Your recovery nutrition should therefore focus on both carbohydrate and protein intake to replenish muscle glycogen and repair muscle damage. Fluid and electrolytes should be provided to aid rehydration. REGO Rapid Recovery Plus can be used within 30 minutes of finishing a race to meet these needs and kick-start the recovery process.





# TRAINING PLANS

## NUTRITION

Session	Example Session	Pre-Run Nutrition	In-Run Nutrition	Post-Run Recovery
<b>Easy Run</b> Withhold CHO either before or after the session. If training first thing in the morning, before breakfast, caffeine can lower the perception of effort. If training in the evening, restrict CHO in the post-run recovery option and evening meal. Next having carbs with breakfast, the following morning	8 km easy run	500 ml Hydro	n/a	1x REGO Rapid Recovery Plus
<b>Interval Session</b> Ensure high CHO availability for the session. Caffeine pre-run can lower the perception of effort, meaning you can maintain high performance output through the intervals. Include both CHO and protein in the recovery window, to replenish muscle glycogen and repair muscle damage.	WU - 3.2 km easy  3 x 1.6 km @ approx. 30 seconds quicker than goal MP. 3 min recovery between efforts  CD - 3.2km easy	1x GO Energy + Caffeine gel 15-30 minutes before the session	1x Hydro tablet in 500 ml of water to sip as required	1x REGO Rapid Recovery Plus
<b>Progression Run</b> Ensure high CHO availability for the session, through pre-run and in-run nutrition choices. Include both CHO and protein in the recovery window, to replenish muscle glycogen and repair muscle damage.	8 km progression run  Start easy and gradually increase pace each mile until at goal MP	1 x GO Energy Bar or banana 60-90 minutes before the session	1x GO Isotonic Energy Gel after the first 30-45 minutes, to fuel the latter stages of the run when fatigue is likely to be highest	1x REGO Rapid Recovery Plus
<b>Long Run</b> CHO will be the preferred fuel for performance on marathon day. Ensure high CHO availability for the long run, through pre-run and in-run nutrition choices  Hydration will be very individual, depending on sweat rate and conditions. Aim to start running in a hydrated state. A good guide to follow is 500 ml of fluid per hour, with additional fluids as needed	28.9 km run	High CHO breakfast 1-3 hours pre-session	60-90 grams of carbohydrate per hour. 3 x GO Isotonic Energy Gels per hour OR 250 ml Beta Fuel + 1 x GO Isotonic Energy Gel per hour	1x REGO Rapid Recovery Plus
		Key	CHO = carbohydrate	

## TRAINING

This 12-week plan is aimed for those of you that are currently able to run at least 16km comfortably and are aiming to complete a marathon.

The plan will be based on 4 runs a week, plus 1 Cross Training day (ideally this should be a Strength & Conditioning session).

The majority of the runs are based on time rather than distance and working on effort levels rather than pace.

The long runs will be based on kilometres.

For the pace specific sessions, please see the pace guide at the bottom of the plan. This will be dependent on your personal time goal.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
<b>Week 1</b>	9 km easy run	Rest day OR Active Recovery	Intervals WU - 3 km Easy 10 x 1.5 km Minute on/1 Minute off Aim for the 1 minute efforts to be approx 15 seconds quicker than your 5k pace, walk/light jog during the 1 minute off. CD - 3 km Easy	Strength & Conditioning	Rest Day	3 km Easy Run 5k Hard Effort (ideal to do at Parkrun) 3 km Easy	16 km Easy Run
<b>Week 2</b>	9 km easy run	Rest day OR Active Recovery	Intervals WU - 3 km Easy 3 x 1.5 km @ approx 30 seconds quicker than goal MP 3 Min Recovery between efforts CD - 3 km Easy	Strength & Conditioning	Rest Day	8 km Progression Run Start easy and gradually increase pace each until at Goal MP	19 km Easy Run
<b>Week 3</b>	9 km easy run	Rest day OR Active Recovery	Hill Training WU - 3 km Easy 10 x 30 second hill effort Jog/Walk recovery back down CD - 3 km Easy	Strength & Conditioning	Rest Day	8 km Easy Run + 4 x 30 Second Strides	13 km Easy Run + 5 km @ MP
<b>Week 4</b>	9 km easy run	Rest day OR Active Recovery	Intervals WU - 3 km Easy 1,2,3,4,5 Min Efforts @ 5k PB pace 2 Min recovery between efforts CD - 3 km Easy	Strength & Conditioning	Rest Day	3 km Easy Run 5k Hard Effort (ideal to do at Parkrun) 3 km Easy	19 km Easy Run

# TRAINING

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
<b>Week 5</b>	9 km easy run	Rest day OR Active Recovery	Hill Training WU - 3 km Easy 12 x 30 second hill effort Jog/Walk recovery back down CD - 3 km Easy	Strength & Conditioning	Rest Day	8 km Progression Run Start easy and gradually increase pace each mile until at Goal MP	24 km Easy Run
<b>Week 6</b>	9 km easy run	Rest day OR Active Recovery	Intervals WU - 3 km Easy 3 x 1.5 km @ approx 30 seconds quicker than goal MP 3 Min Recovery between efforts CD - 3 km Easy	Strength & Conditioning	Rest Day	8 km Easy Run + 4 x 30 Second Strides	9 km Easy, 9 km MP, 9 km Easy
<b>Week 7</b>	9 km easy run	Rest day OR Active Recovery	Intervals WU - 3 km Easy 12 x 1 Minute on/1 Minute off Aim for the 1 minute efforts to be approx 15 seconds quicker than your 5k pace, walk/light jog during the 1 minute off. CD - 3 km Easy	Strength & Conditioning	Rest Day	8 km Progression Run Start easy and gradually increase pace each mile until at Goal MP	29 km Easy Run
<b>Week 8</b>	9 km easy run	Rest day OR Active Recovery	Intervals WU - 3 km Easy 8 x 400m 90 second recovery CD - 3 km Easy	Strength & Conditioning	Rest Day	8 km Easy Run + 4 x 30 Second Strides	9 km Easy, 9 km MP, 9 km Easy, 9 km MP
<b>Week 9</b>	9 km easy run	Rest day OR Active Recovery	Intervals WU - 3 km Easy 4 x 1.5 km @ approx 30 seconds quicker than goal MP 3 Min Recovery between efforts CD - 3 km Easy	Strength & Conditioning	Rest Day	9 km Progression Run Start easy and gradually increase pace each mile until at Goal MP	32 km Easy Run
<b>Week 10</b>	9 km easy run	Rest day OR Active Recovery	Intervals WU - 3 km Easy 12 x 1 Minute on/1 Minute off Aim for the 1 minute efforts to be approx 15 seconds quicker than your 5k pace, walk/light jog during the 1 minute off. CD - 3 km Easy	Strength & Conditioning	Rest Day	8 km Easy Run + 4 x 30 Second Strides	19 km Easy Run + 5 km @ MP



## TRAINING

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
<b>Week 11</b>	9 km easy run	Rest day OR Active Recovery	Intervals WU - 3 km Easy 3 x 1.5 km @ approx 30 seconds quicker than goal MP 3 Min Recovery between efforts CD - 3 km Easy	Strength & Conditioning	Rest Day	3 km Easy Run 5k Hard Effort (ideal to do at Parkrun) 3 km Easy	16 km Easy Run
<b>Week 12</b>	8 km easy run	Rest day	3 km Easy 10 x 200m efforts/200m recovery (These should be at around 70% effort level) 3 km Easy	Rest Day	Rest Day	3 km Easy Run + 4 x 30 Second Strides	RACE DAY

## KEY NOTES

- Easy runs are based on feel - should be minimal effort.
- HM Pace - Half Marathon Pace.
- Long Runs are the perfect time to practice race day fuelling, again the majority of these are at easy effort.
- Interval sessions ideally to be completed on the track or road.







## ACTIVE RECOVERY IDEAS

Whilst rest days are crucial for any training plan, active recovery can also help to speed up the recovery process & also gives you the chance to include other methods of training in your plan, which can help to keep you motivated throughout the 12 weeks. It is important though that these sessions are low impact & working at a low effort. Here are some ideas you can do as part of your active recovery:

- 30 Minute Swim
- 30 Minute Easy Cycle
- Yoga
- Pilates

Goal Time	Mins per KM
4 Hours 15 Minutes	6:04
4 Hours	5:41
3 Hours 45 Minutes	5:20

## FEATURED PRODUCTS

<p><b>GO Isotonic Energy Gel</b></p> <ul style="list-style-type: none"> <li>• 22 grams of carbohydrate in an isotonic gel</li> <li>• Convenient format to fuel run performance</li> <li>• Used during longer runs, practicing race-day nutrition strategies and on race-day to fuel the marathon</li> </ul>	
<p><b>GO Energy + Caffeine Gel</b></p> <ul style="list-style-type: none"> <li>• 22 grams of carbohydrate and either 75 or 150 mg caffeine</li> <li>• Carbohydrate provides energy for performance and caffeine acts as a central stimulant</li> <li>• Used before an interval session</li> </ul>	
<p><b>Hydro Tablets</b></p> <ul style="list-style-type: none"> <li>• Virtually calorie free effervescent tablet with key electrolytes</li> <li>• 360 mg sodium to promote hydration</li> <li>• Meets day-to-day and in-session hydration needs</li> </ul>	
<p><b>Beta Fuel</b></p> <ul style="list-style-type: none"> <li>• High carbohydrate sports drink</li> <li>• Providing 80 grams of carbohydrate in 500 ml water, while maintaining an isotonic profile</li> <li>• Used to fuel long runs and on marathon day</li> </ul>	
<p><b>GO Energy Bar</b></p> <ul style="list-style-type: none"> <li>• 26 grams of carbohydrate in a convenient 40-gram bar</li> <li>• Natural base of oats, fruit juice concentrates and dried fruits</li> <li>• Used 1-2 hours before a pick-up or tempo run to ensure high carbohydrate availability for the session</li> </ul>	
<p><b>REGO Rapid Recovery Plus</b></p> <ul style="list-style-type: none"> <li>• Complete recovery product with carbohydrate, protein, electrolytes, vitamins and minerals</li> <li>• Used after long runs, high-intensity sessions and racing</li> </ul>	



## AUTHORS

The training advice and 12 Week plan has been created by Jordan Foster; Science in Sport Ambassador, Endurance Athlete & Head Coach of PMGCoaching.

Jordan is a decorated marathon & ultra-marathon runner, with her greatest achievements being a PB of 2.58.37 at the Swiss City Marathon in 2018 and winning her first multi-stage 250km ultra-marathon in the Wadi Rum desert in 2019.

Jordan is also the head coach and owner of PMGCoaching, providing online running training for all levels of athletes, whether they are looking to run their first 5k or get a marathon PB!

You can find out more about Jordan & PMGCoaching on Instagram @projectmarathongirl & @pmgcoaching or head to [www.projectmarathongirl.com](http://www.projectmarathongirl.com).

The nutrition section and supplementary nutrition plan in the guide has been created by Ben Samuels.

Ben is the Performance Nutritionist at Science in Sport, with a background in sports science and an MSc in Sport and Exercise Nutrition. He works with elite athletes in cycling, athletics and team sports.



Ben Samuels



Jordan Foster

