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# FOOTBALL NUTRITION GUIDE



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Ensuring you have a well-planned nutrition strategy is key for top football performance. Science in Sport have over 25 years of experience in fuelling individual athletes and teams to reach their maximum potential. While supplying well over 40 English and Scottish League clubs, Science in Sport partner with over 10 professional clubs including the likes of Manchester United, Aston Villa F.C. and Norwich City F.C.

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Whilst it is crucial that the daily diet contains adequate carbohydrate availability so as to effectively prepare and recover from repeated training sessions and games, consuming additional carbohydrate during exercise (in the form of drinks / gels / bars) also improves intermittent exercise capacity and the ability to perform technical skills such as passing and shooting <sup>(1)</sup>.

Generally, your weekly training session probably won't last over 90 minutes, with intensity matching 50-75% of what you do in a match. However, it is important to increase carbohydrate intake on these training days to meet the demands of exercise. This is known as periodisation and is a key strategy used by elite players to maximise performance and adaptations to training by using their "fuel" efficiently. An elite football players diet consists of 50-55% carbohydrate as this is the primary source of energy for football performance. Traditional carbohydrate intake guidelines for players were a one size fits all approach with high intakes (8g per kg body mass), however it is now recognised that carbohydrate intake (in terms of timing, quantity and type) should vary according to training and game schedule <sup>(2)</sup>.



# TRAINING

## ENERGY INTAKE

Time	Nutrition
9:00am (breakfast)	250ml fresh orange Juice; small bowl of granola with Greek yoghurt; 1 shake (strawberries; blueberries; kale; yoghurt)
1:00pm (Lunch)	1 chicken breast; 2 cups of pasta; tomato sauce; mixed vegetables
4:00pm (Snack)	Mixed nuts and plain low fat yoghurt; <b>Sis Energy Bar</b>
During Training	60 minutes <b>GO Electrolyte</b> , 60 minutes <b>Hydro</b>
7:00pm (immediately post training)	500ml <b>REGO Rapid Recovery</b>
8:00pm (Dinner)	1 salmon fillet; steamed green beans and carrots; 2 cups of brown rice
10:00pm (Snack)	Overnight Protein



During prolonged or intense sessions that are over 60 minutes (like in pre- season) you should take on extra carbohydrate in the form of carbohydrate- electrolyte drinks like **GO Electrolyte**. Here, energy is needed to prevent depletion of glycogen levels, with added electrolytes needed for high sweat rates. Shorter sessions (<60 mins) or less intense sessions will require less energy so additional carbohydrate may not be required, so maintaining hydration levels are the focus - **Hydro** can be used during the session to replace lost electrolytes.

For many, performing in training will dictate their place in the team on a weekend. Fuelling well on that day, whether you have 1 or even 4 training days per week will help you train and adapt to the stressful demands of football. On the left is an example menu for a footballer player with a late- afternoon training session.

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A scientific consensus on the optimal daily protein requirements for football players has not yet been reached. Nevertheless, based on the current daily recommendations for endurance (1.2-1.4g per kg of body mass) and strength (1.2-1.4g per kg of body mass) based athletes, it is probably sufficient to advise the latter given that football players perform both aerobic and resistance training during a typical week. As such, a 75kg player would need between 135-150g per day. Additionally, players may need to exceed this intake during heavy training periods that are designed to reduce body fat but preserve muscle mass, when recovering from injury or during pre season.

Perhaps more important than total daily protein intake, however, is the pattern of ingestion of protein intake throughout the day, (see **MATCH DAY** for more detail on timings). For training days, it is also advised that protein is consumed within 60 minutes before and after sessions. Research suggests 20g is sufficient in both cases<sup>(3)</sup>. Furthermore, because of its high leucine content and rapid digestion, whey protein is the most effective type of protein at these times- **WHEY20** or **Advanced Isolate+** both are practical and appropriate sources.



# TRAINING

## PROTEIN NEEDS FOR TRAINING

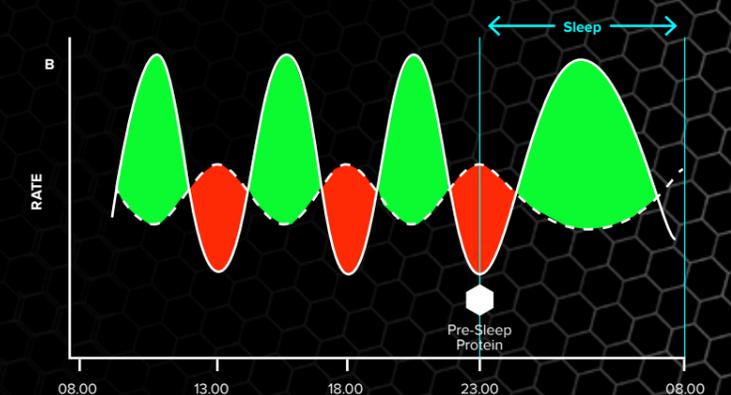
**Generic Training Days** (note that these snacks generally emphasise high protein and moderate CHO and fat)

- Fresh Fruit & Greek Yogurt
- Sushi
- Porridge & Protein Shake
- Tuna Salad with Basmati Rice
- Oat-based Cereal Bar & Glass of Milk
- Mixed Nuts & Seeds
- Biltong/Jerky & Oatcakes
- Olives Parma Ham, Feta Cheese & Ryvita
- Omelettes
- Chicken/Lamb Skewers
- Avocado Prawns and Couscous
- Quinoa & Salmon
- **WHEY20**



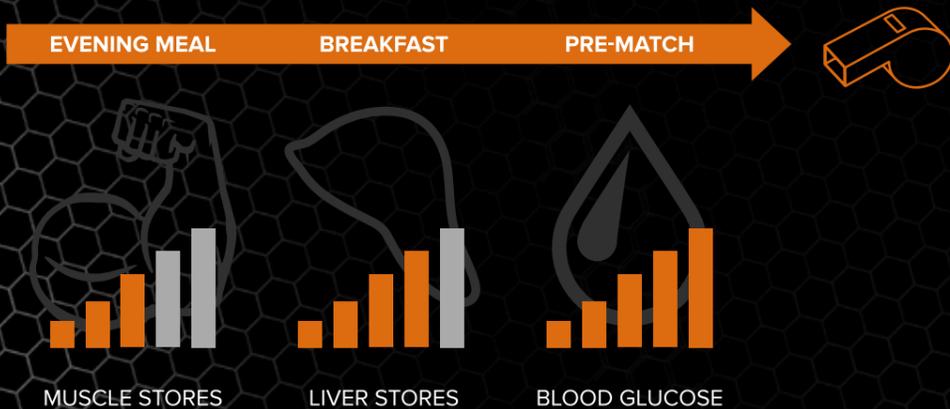
Liquid forms of protein have also been shown to induce a more rapid rise in blood amino acids than solid foods and as such, may not only be a convenient form of provision but also a superior strategy in the post-exercise period. To keep up with the regular protein intake throughout the day, see across for a selection of snack options.

Given that sleep is effectively a period of prolonged fasting (e.g. 6-10 hours) that can induce protein breakdown, there is also a requirement to ingest a suitable quantity and type of protein prior to bed. Recent research demonstrates that ingestion of 40g of casein protein prior to sleep improves overnight protein balance compared to sleeping in a fasted state <sup>(4)</sup>. In practice, ingestion of around 30-40g of a casein based protein (as a slowly digested protein) is best- Overnight mixed with milk meets these requirements. The need for protein at this time is particularly important for those players who wish to gain muscle mass and also for those who wish to maintain muscle mass when attempting to lose body fat. See the below protein timing graph and help maintain a positive protein balance <sup>(5)</sup>.



■ Muscle Protein Growth ■ Loss of Muscle Protein

Preparation is the key to match day, and this starts the day before your match. Often referred to as **Match Day -1**, the primary aim is to maximise both muscle and liver glycogen. This is a form of carbohydrate loading and high stores can be achieved with as little as 24-36 hours of a carbohydrate rich diet, coupled with a low intensity training session. High Glycemic Index (HGI) carbohydrates have been shown to be more effective at maximising glycogen stores than Low Glycemic Index (LGI) carbohydrates <sup>(6)</sup> so players should aim to achieve their goals through increased portion sizes and frequency of HGI foods and drinks. See examples across for a 75kg player to achieve over 8g per kg body mass.



# MATCH DAY

Food & drink schedule	Time	Description	Approx. CHO content (g)
Breakfast	08:00	Large bowl of HGI cereal (50g) and 200ml semi skimmed milk	50
		2 slices of white toast with jam	45
		Large glass of orange juice (400ml)	40
Morning Snack	10:30-11:00	1 banana	20
		<b>500ml GO Electrolyte</b>	36
		<b>GO Energy Bar Mini (Chocolate Fudge)</b>	26
Lunch	13:00-13:30	Ham salad (lettuce, tomato) on white baguette	100
		Creamed rice pudding	35
		<b>500ml GO Electrolyte</b>	36
Afternoon Snack	15:00	<b>REGO Recovery (50g)</b>	22
		<b>GO Energy Bar Mini (Chocolate Fudge)</b>	26
Dinner	17:30-18:00	Large portion of pasta (200g)	60
		Tomato based sauce (125g)	15
		<b>500ml GO Electrolyte</b>	36
Evening Snack	21:00	Average portion of apple crumble with custard	55
		<b>Overnight Protein</b> with 200ml semi skimmed milk	15
<b>Total</b>			<b>617</b>



# FOCUS ON HYDRATION

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During games there are limited opportunities to rehydrate. This means that going into a game in a hydrated state is critical to maximise performance and this starts the day before the game. Increasing electrolyte levels to enable a positive fluid balance can minimise the negative effects associated with the losses through performance.

Water typically accounts for around 60% of your total body mass, and plays numerous roles such as the transport of nutrients and helping to regulate body temperature. Water requirements vary from person to person depending on a variety of factors, and therefore fluid intake guides are highly individual. During a match you can produce up to 2L of sweat per hour and lose vital electrolytes. If fluid and electrolyte losses are not replaced, dehydration can occur which is a major cause of fatigue. Once dehydrated, our body temperature rises; our heart rate increases; we deplete carbohydrate stores quicker and we perceive the exercise to be more intense<sup>(7)</sup>.

A simple indicator of your hydration status is to check the colour and volume of your urine. If it is pale and plentiful then you are probably well hydrated (aim for lemonade colour); if it is dark (think apple juice colour) and low in volume or you haven't been to the toilet then chances are you are slightly dehydrated. Note if you're consuming large amounts of B vitamins or certain foods (eg beetroot) they can affect the colour of your urine.

Ask yourself these 3 questions:

1. Am I thirsty?
2. Is my urine dark in colour?
3. Is my body weight noticeably lower than yesterday?

Answering "yes" to any of these may mean you should think about hydrating. Hydration status fluctuates throughout the day so it's not an issue if you are slightly dehydrated, so long as you notice and act upon it. The key is little and often with your fluid intake.

#### Urine Chart

The colour and volume of your urine is one of the most accurate signs of your hydration level. Make sure that the colour matches 1-3. Any darker and you will need to drink more.



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# FUELLING FOR THE WIN

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## Morning Kick Off (Pre-Match)

If you have a morning kick-off, breakfast will be your “pre-match meal”. As you lose some of our carbohydrate stores when you sleep, it is important to consume a carbohydrate-based breakfast 2-3 hours before. Consume a predominantly carbohydrate based breakfast with 1-3g of easily digestible carbohydrate per kg of your body mass <sup>(8)</sup>:

### Breakfast

- 1 large bowl of porridge with milk
- 1 slice of wholemeal toast with jam
- 250ml of fresh orange juice



Afternoon Kick Off (Pre-Match):

	Breakfast (5-6 hours prior)	Pre-Match (2-3 hours prior)	15 Minutes Before...
<b>Energy</b>	<p>Consists of 1-3g of carbohydrate per KG of body mass <sup>(8)</sup>.</p> <p>This can include snacks to top up carbohydrate stores e.g <b>GO Energy bars</b>.</p>	<p>Consist of 1-3g of carbohydrate per KG of body mass <sup>(8)</sup>.</p> <p>Consuming drinks like <b>GO Energy</b> and <b>GO Electrolyte</b> can top up energy stores that are lost throughout the day.</p>	<p>This is your last opportunity to take on carbohydrate, so ensure that it is rapidly digesting. <b>GO Energy + Caffeine Gels</b> can provide an extra mental edge to increase concentration and alertness throughout the match <sup>(9)</sup>.</p>
<b>Hydration</b>	<p>Start taking on fluid early in the morning when you wake up. Arriving at the game in a hydrated state is crucial. Aim to take in 400ml-1000ml of fluid before the morning kick off <sup>(8)</sup>. Use <b>SiS Hydro</b> tabs to absorb and retain the fluid, helping to maintain hydration.</p>	<p>Maintaining hydration throughout pre-match is key. Consuming Hydro is ideal to help absorb and retain fluid, along with appropriate carbohydrate intake during the “pre match” meal.</p>	<p>Sip around 250ml of <b>GO Electrolyte</b> throughout the 15-20 minutes before you head out onto the pitch. This is your last chance to take on fluid before half time.</p>
<b>Example:</b>	<ul style="list-style-type: none"> <li>• 1 large bowl of porridge with milk</li> <li>• 1 slice of wholemeal toast with jam</li> <li>• 250ml of fresh orange juice</li> <li>• 400 - 1000ml <b>Hydro</b></li> </ul>	<ul style="list-style-type: none"> <li>• 1 Salmon Fillet</li> <li>• 2 Cups of Pasta with tomato sauce</li> <li>• GO Energy bar</li> <li>• 500ml <b>GO Energy</b></li> </ul>	<ul style="list-style-type: none"> <li>• 1 <b>GO Energy Gel + Caffeine</b></li> <li>• 250ml <b>GO Electrolyte</b></li> </ul>

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### In-Play

Due to the nature of the game, it is difficult to take on fluid and energy during the match. However, you can make it easier for yourself by placing a bottle of **GO Electrolyte** on your side of the pitch. If you know you are playing on the wing, place a bottle on your side. Alternatively, during breaks in play (e.g injuries), have fluid ready by the side of the pitch ready for to be thrown at you!

A photograph of three Manchester United players in their red home kit, standing on a football pitch. The player on the left is looking towards the other two. The player in the middle has his hand on the head of the player on the right. The player on the right is looking towards the other two. The kit features the Adidas logo, the Manchester United crest, and the Chevrolet sponsor logo.

# DURING THE MATCH

## IN-PLAY NUTRITION CONSIDERATIONS

## Half Time

After the first half, your carbohydrate stores will already be significantly depleted, and you only have 15 minutes to take on energy and fluids. A common mistake made by footballers during half time is to drink a full can of fizzy energy drink and eat sweets high in sugar. While this may provide energy, this will take time to digest and may cause stomach cramping when you start the second half. It's recommended that you take on 60g of carbohydrate per hour during a match <sup>(8)</sup>. See the guidelines across for examples of what to take and when to take it for optimal performance.

### Substitutes

Being a substitute can be disappointing and de-motivating, especially when you have prepared for the full 90 minutes. Generally, you will prepare to come on in the second half. However, if injury strikes, you may be on earlier. Sip **GO Electrolyte** throughout the first half. Half time is an ideal time to take a **GO Energy + Caffeine Gel** or **GO Caffeine Shot** to prepare you to come on and make a difference.

	Warm- Up	1st Half	Half Time	2nd Half
Energy	After the warm-up, this may be a good chance to take on a <b>GO Energy + Caffeine Gel</b> , which can increase alertness, concentration and carbohydrate stores for the match ahead <sup>(9)</sup> .		Consume 1x <b>GO Isotonic Energy Gel</b> as soon as you can after the half time whistle blows. You could also take on a <b>Caffeine Shot</b> to decrease the perception of fatigue <sup>(9)</sup> for the second half!	If necessary, consume <b>GO Electrolyte</b> during breaks in play.
Hydration	Have 250ml of <b>GO Electrolyte</b> to hand throughout the warm up and aim to finish this before you head in for the final team talk. You can also consume a gel during this time.	If necessary, consume <b>Hydro</b> during breaks in play.	Sip around 250ml of <b>GO Electrolyte</b> throughout half time, providing you with rapidly digesting carbohydrates, along with sufficient fluid and electrolytes to help rehydrated before you head back out.	If necessary, consume <b>Hydro</b> during breaks in play.

# POST MATCH

	<30 minutes	<1 hour	30 minutes before bed
<b>Recovery/Rebuild</b>	500ml <b>REGO Rapid Recovery Plus</b>	Consume a carbohydrate based meal with 50-60% of carbohydrates	<b>Overnight Protein</b>
<b>Hydration</b>	500ml fluid e.g. <b>Immune</b>	500ml fluid e.g. <b>Hydro</b>	N/A

Sore muscles in the hours and days after a game are common at whatever level you play at unfortunately. Although nutrition cannot prevent the pain of knocks or bruises, it can help you adapt to the demands of the game and help you feel better sooner. With an evening game, you will likely finish late and want to get home to rest. Follow these nutrition tips to help accelerate the recovery and rebuild process:

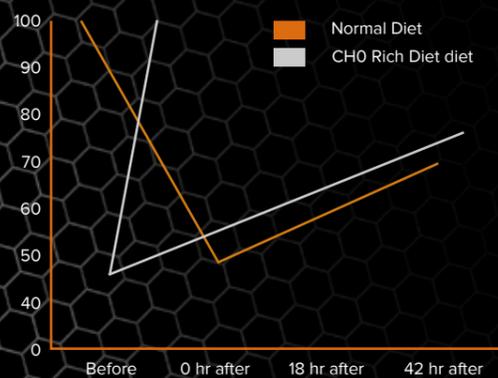
1. Your metabolism stays lifted for around 30 mins – 2 hours post-exercise <sup>(8)</sup>, so consume **REGO Rapid Recovery Plus**.
2. Consume a full meal within 1-2 hours of finishing. This can be earlier if you plan on going to bed as soon as you get home.
3. If your game finished late and you are only going to consume one shake after a game, then **REGO Rapid Recovery Plus** is the ideal option. However, it is beneficial to consume an **Overnight Protein** shake 30 minutes before you go to sleep to ensure you feed your muscles with a constant stream of amino acids needed for muscle rebuild.
4. In the hours post game, aim to take on 150% of the fluid lost through sweating <sup>(9)</sup>. Work this out by weighing yourself pre and post-game, or estimate this by weighing yourself pre and post training session under similar conditions.
5. Finally, make sure you get a good night sleep to allow adaptations to take place.

# RECOVERY

Consuming carbohydrates and protein immediately post-match to coincide with the initial rapid phase of glycogen synthesis has been used as a strategy to maximise rates of muscle glycogen synthesis <sup>(10)</sup>. One area overlooked is what a player can do the day after a game, often referred to as **MATCH DAY +1**, to maximise recovery and training adaptations.

## Carbohydrate

It is crucial to get your energy levels back up to optimum to allow you to train again and reduce DOMS (delayed onset muscle soreness). Consume carbohydrate based foods and drinks throughout the day to promote glycogen re-synthesis. It is recommended that a player takes on 6-10 g of carbohydrate per kg of body mass which may be a similar intake to match day -1. Studies have shown that high carbohydrate diets on match day +1 further enhance glycogen storage compared to low and 'normal' carbohydrate intake <sup>(11)</sup>.



<b>Animal Sources</b>	<ul style="list-style-type: none"> <li>• 1x Chicken/Turkey Fillet</li> <li>• 1x Fish Fillet (e.g. 100g Standard Salmon Fillet)</li> <li>• 1x Small Tin of Tuna in Brine</li> <li>• 3x Medium Eggs</li> <li>• 200g Cottage Cheese (2/3 Small Tubs)</li> <li>• 200g Greek Yoghurt</li> </ul>
<b>Non-Animal Sources</b>	<ul style="list-style-type: none"> <li>• 150g Quorn Mince (75g is a Typical Portion)</li> <li>• 400g Red Kidney Beans (1 Large Tin)</li> <li>• 300g Chick Peas (2/3 Large Tin)</li> <li>• 100g Almonds</li> </ul>
<b>Liquid Sources</b>	<ul style="list-style-type: none"> <li>• Whey Protein/Advanced Isolate</li> <li>• 1x Pint of Milk</li> </ul>

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## Protein

On **MATCH DAY +1** it is recommended that a player consumes 1.7 - 2.0 g of carbohydrate per kg of body mass. As such, a 75kg player would need between 135-150 g per day in this period. Additionally, players may need to exceed this intake during heavy training/ match periods to help preserve muscle mass.

Perhaps more important than total daily protein intake is the pattern of ingestion of protein intake throughout the day. Research suggests 20g of protein consumed every 3-4 hours is superior to larger quantities consumed less frequently. Practical examples of 20-30g of protein sources are shown across. Whey protein supplements are superior to casein and soy based supplements for activating muscle protein synthesis because of its high leucine content and rapid digestion.

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## Kit Bag Checklist

Being prepared with your nutrition beforehand will make sure that you fuel and re-fuel correctly on match day. Consider this checklist when packing your bag the night before and individualise your match day nutrition:

- **Hydro**
- **GO Electrolyte** \*2 servings
- **GO Energy + Caffeine Gel**
- **GO Isotonic Energy gel** \*2
- **REGO Rapid Recovery Plus**
- **Immune**
- **GO Caffeine Shot**
- Water – 2 litres
- **Bottle**
- **Shaker**





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### About this Guide

All nutritional information in this guide has been provided by Science in Sport's Performance Nutritionist Ted Munson.



Ted has worked in elite sport for the past five years, working with athletes in rugby, tennis and most recently with Hull City Football Club and Sacramento Republic FC as a sports scientist. Ted has a degree in BSc and MSc in Sports Science focusing on hydration markers in elite athletes. He is also an FA qualified Physical Performance Coach.

Got any more football nutrition questions? Email [nutrition@scienceinsport.com](mailto:nutrition@scienceinsport.com) and SiS' expert team will answer them.

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