torQ®
PERFORMANCE
NUTRITION

THE **ULTIMATE** FOOTBALL NUTRITION GUIDE

INTRODUCTION

From data collected both on and off the pitch, we can now accurately determine the nutritional needs to support match-day performance and recovery.

Here, we offer all of the information you need to correctly determine your nutritional strategy, making you the strongest, most fatigue-resistant player on the pitch!

ENERGY SYSTEM CONTRIBUTION

As football is considered an “intermittent” sport, both the aerobic and anaerobic energy systems are stressed during gameplay, Below, we explore the function of each energy system and understand how it impacts on your nutritional requirements.

AEROBIC ENERGY SYSTEM (WITH OXYGEN)

The aerobic energy system provides most of the energy required to complete a full 90-minute match. By breaking down some fats, but mostly carbohydrate in the presence of oxygen, this method of energy production is highly efficient. However, this energy system has a maximum capacity which is determined by the aerobic fitness of each individual player.

We will learn more about the maximum aerobic capacity or VO2max later on.

For football, the maximum aerobic capacity for each player would be associated with a running speed and would occur at a slightly different speed for each player depending on their fitness.

ANAEROBIC ENERGY SYSTEM (WITHOUT OXYGEN)

As the player runs above this maximum aerobic capacity pace, the anaerobic energy system provides the additional energy to meet the demands of the elevated intensity.

This energy system is mostly activated when a player is required to rapidly change position on the pitch, intercept a tackle or make an attacking move towards the opposition goal. Essentially any movement that requires a rapid injection of pace i.e. sprinting.

Depending on the duration of the sprint effort, anaerobic exercise is fuelled either by a molecule called Phosphocreatine (PCr) (for efforts lasting 1-6 seconds) or carbohydrate (glucose) for longer sprint efforts (more than 6 seconds).

The anaerobic energy system produces a lot of energy quickly, but as a result, and in the case of PCr, the fuel source is rapidly depleted. Literally within seconds!

In the case of anaerobic carbohydrate breakdown, this process produces other substances, which if left to accumulate in muscle cells would lead to the rapid onset of fatigue. The more this energy system is worked, the more time is needed for recovery from high intensity efforts, to help clear these fatigue-inducing substances.

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ENERGY SYSTEMS & THE BLEEP TEST

To give the information above more context, we should consider the completion of an aerobic exercise fitness test known as the "Bleep Test". An extremely simple test, which requires a player to run continuously until voluntary exhaustion between 2 markers placed 20 metres apart. The time between each bleep reduces with each stage and this defines the increase in exercise intensity. This test was designed to predict a player's VO2max, the maximal amount of oxygen that the athlete can utilise during aerobic exercise.

Once the player fails to reach the last marker before the bleep, the stage is noted, and the player's VO2max is established. The test will also allow us to calculate the pace at which the player was running at the point of exhaustion. This pace will be defined as their maximum aerobic pace or VO2max pace.

Contrary to popular belief, the energy systems discussed above do not turn on and off like a light switch. Instead, they are always active and only the proportion of contribution of each energy system changes with exercise intensity. If you are sitting down reading this, the anaerobic energy system will still be providing a very small percentage of the total energy requirement needed to simply survive.

Whilst the "Bleep Test" is a marker of a football player's maximum aerobic capacity, it must be noted that the anaerobic energy system will also support some of the total energy contribution albeit a much smaller contribution than the aerobic energy system – because all energy systems are always active!

WHY IS THIS?

Of course, the speed that a football player achieves in a bleep test is unlikely to be their absolute maximum run pace. A football player will typically be able to run much faster than the pace achieved at their maximum aerobic pace, but for much shorter periods of time.

Maximum Aerobic Run Pace // 15mph
Maximum Sprint Pace // 23 mph

The rate of energy production from the anaerobic energy system is simply much faster than that of the aerobic energy system, providing more energy in a shorter period of time to allow for a higher exercise intensity.

WHY CAN'T A PLAYER SPRINT FOR A FULL 90 MINUTES?

The reason why these high intensities, above the maximum aerobic pace, cannot be sustained is because when the anaerobic energy system is in "full swing" and energy is being produced at high rates, the fuel source is being rapidly depleted. Other substances, such as blood lactate, hydrogen ions (H+) and inorganic phosphate (Pi) molecules are also being produced, leading to the rapid development of fatigue if exercise intensity is not reduced. Don't worry about the names of these substances, but just be aware that they are linked closely with the onset of fatigue.

IMPLICATIONS OF POOR FUELLING ON MATCH DAY PERFORMANCE

As a player or coach reading this, you will know that the ability to repeatedly sprint for the ball, intercept tackles or make an attacking move towards the opposition goal is critical to the outcome of the game.
It's the difference between winning and losing. If both the aerobic and anaerobic energy systems rely on fuels like carbohydrate to function and this fuel source isn't available, your ability to perform the necessary demands of a football game are significantly compromised.

YOUR TAKEAWAY MESSAGE...

CARBOHYDRATE IS KING!

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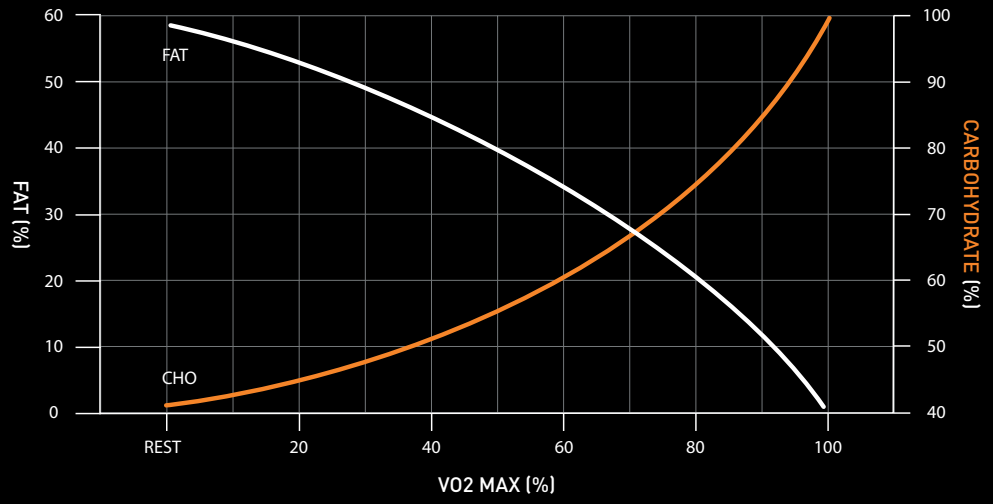
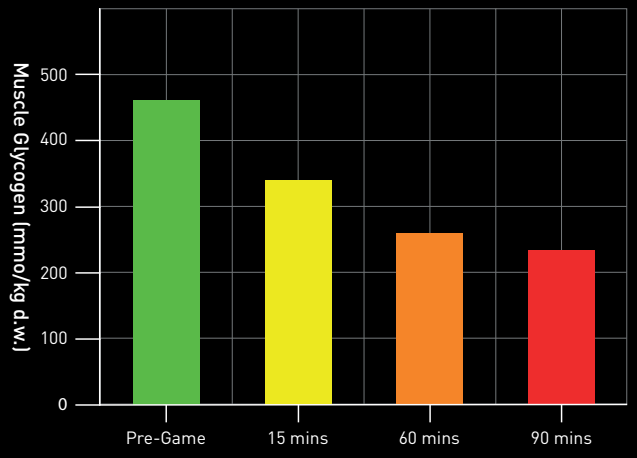
HOW DOES INTENSITY AFFECT FUEL USE?

Research has suggested that the average heart rate of a football player during a game is around 85% of maximum and can peak as high as 98% of maximum. This corresponds to an average (periods during a match may be higher and lower) oxygen uptake of approximately 70% of maximum.



The graph showcases that at approximately 70% of VO2max and above, carbohydrate becomes the predominant fuel source. Beyond this, every rapid injection of pace that allows a player to run above their VO2max pace will be entirely fuelled by carbohydrate.



The graph above showcases how our fuel tank of glycogen (carbohydrate stored in the muscles and liver) is significantly depleted during a simulated football game over various time points (15, 60 & 90 minutes). Explaining why performance in the 2nd half is typically worse than in the 1st half.

Whilst in this instance glycogen was not entirely depleted, you can see that players started the simulated game with a full fuel tank. This is the first rule of maximizing football performance.

START YOUR MATCH WITH FULL MUSCLE GLYCOGEN TANKS TO PREVENT YOU FROM RUNNING OUT!

THE NUTRITION PLAN

24 HOURS BEFORE THE GAME

To fill up the muscular fuel tank with glycogen, you should be looking to consume around 8 grams per kg of bodyweight the day before the game. For an 80kg player, this equates to 640g of carbohydrate.

The body can store around 500g of carbohydrate. 400g stored in the muscle and 100g stored in the liver.

You'll notice that the target intake equates to more than the storage capacity. The reason for this is to take into consideration the carbohydrate that will be used daily to simply fuel the major organs, and maintain blood glucose concentrations. Remember, all energy systems are always active and so some of the fuel we are working hard to store is being used.

Some great meal options to assist with the carbohydrate loading process include:

- **Pancakes topped with Banana, Blueberries, Honey, or Maple Syrup**
- **Jacket Potato with Baked Beans**
- **Grilled Salmon / Tofu on Whole Grain Rice**
- **Sweet & Sour Chicken Noodles**
- **Mediterranean Cous Cous Salad**
- **Tofu Risotto**
- **Rice Pudding With jam**
- **Banana, Blended Oat and Honey Smoothie**

THE NUTRITION PLAN

2-4 HOURS BEFORE THE MATCH

This is your last major fuelling and hydration opportunity so it certainly shouldn't be neglected. These final few hours present time to "top up" muscle and liver glycogen whilst also allowing you to maximise hydration.

CARBOHYDRATE RECOMMENDATIONS

Pre match carbohydrate recommendations suggest consuming 1 – 1.5g of carbohydrate per kg of body weight around 4 hours before. For a 80kg player, this equates to 80 – 120g of carbohydrate.

PROTEIN RECOMMENDATIONS

Protein recommendations should target 20 – 25g.

FAT & FIBRE

Whilst high quality fats and fibre are essential to health, if ingested too closely before the start of a game, the slow digestion of these nutrients could lead to the onset of gastric upset during a game.

HYDRATION

You should aim to consume 500ml of TORQ Hydration Drink rich in electrolytes around 4 hours before. At 2 hours pre, you should check urine colour and if urine is still dark, you should aim to consume another 250-500ml of TORQ Hydration Drink.

Throughout this period, you can graze on foods such as the TORQ Flapjack to support late-stage glycogen loading.

THE NUTRITION PLAN

IMMEDIATELY PRIOR TO & DURING THE GAME

During a game, you should aim to fuel with approximately 60g of carbohydrate to prevent glycogen depletion and a subsequent reduction in performance. The first TORQ Gel - containing 30g of carbohydrate - should be ingested in the final few minutes before you enter the pitch for kick off.

Where possible during the first half, you should also focus on fluid & electrolytes intake. Preventing a 2-3% reduction in hydration (expressed as 2-3% loss of body weight) should reduce the impact of dehydration, which includes: reduced cardiac output, weakened ability to manage heat stress and compromised decision making. All of which are factors critical to a consistent performance.

HALF TIME

The second TORQ Gel should be consumed immediately as you exit the pitch at the start of half time. As caffeine has been shown to repeatedly enhance exercise performance when fatigued whilst also boosting mental capacity and skill acquisition, you may wish to choose a TORQ Caffeinated gel here.

As caffeine takes around 30 minutes to become present in the bloodstream, the positive effects of the caffeine should be felt right at the point in which fatigue would have become a major, limiting factor to performance.

As you temporarily recover during half time, you should utilise this opportunity to hydrate, aiming to consume between 250ml - 750ml dependant on environmental conditions, exercise intensity and sweat losses experienced in the first half of game play.

THE NUTRITION PLAN

POST MATCH RECOVERY

In the immediate minutes and early hours post game, the muscles' glycogen storage sensitivity is increased, so we should aim to maximise this window of opportunity. Protein is also essential in the immediate post exercise window.

Exercise stimulates protein production, but the action itself breaks down protein in the form of damaged muscle tissues. To ensure the amount of new protein production is greater than that being broken down, a TORQ Recovery Drink consumed immediately post-match will maximise muscle storage, optimise recovery and protect you from illness by supporting immunity through well timed re-feeding.

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SHOP HERE FOR:


TORQ Hydration


TORQ Gel


TORQ Recovery


TORQ Flapjack

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PRE-MATCH

TORQ HYDRATION DRINK	**2 Hours Before** Begin Hydrating, aim for clear urine colour
TORQ EXPLORE FLAPJACK	**1 Hour Before** Snack on 1x TORQ Explore Flapjack
TORQ HYDRATION DRINK	**15 Mins Before** Hydrate based upon exercise intensity & environmental conditions. 😐 **= 0 - 250ml** 🥵 **= 250 - 500ml**
TORQ ENERGY GEL OR TORQ ENERGY JELLIES	Consume 1x TORQ Energy Gel Or 1x Packet TORQ Energy Jellies

HALF TIME

TORQ HYDRATION DRINK	Hydrate based upon exercise intensity & environmental conditions. 😐 **= 250 - 500ml** 🥵 **= 500 - 750ml**
TORQ ENERGY GEL OR TORQ ENERGY JELLIES	Consume 1x TORQ Energy Gel Or 1x Packet TORQ Energy Jellies

POST MATCH

TORQ RECOVERY DRINK	Consume within 15 mins
TORQ HYDRATION DRINK	Further supplement post exercise hydration depending on conditions 😐 **= NO NEED TO REHYDRATE** 🥵 **= CONTINUE REHYDRATION**