Nutrition Guide
For the Female Footballer

In the modern world of football, performing at your best requires commitment at all levels. It is no longer enough to rely on natural talent, hard training, superior equipment or a will to win. Under such conditions, sound nutritional practices can make the difference between winning and losing. Whether the stakes are fame and millions of pounds, or the satisfaction of achieving a sporting goal, there are clear rewards for eating well. Throughout this booklet, the crucial influence that nutrition can have on football training and competition has been highlighted. A well balanced diet that is sufficient in energy, high in carbohydrate and adequate in its fluid content will ensure that the footballer can support consistent and intensive training, ultimately optimising performance in training and matches.

Hope Powell CBE
National Women's Coach

Food for the Female Footballer

A footballer could have the best skills in the world, however without the correct nutritional support the player will not be able to sustain a hard training programme over a long period of time and improvement will therefore be limited. Good nutritional practices are also necessary to ensure optimum performance in competition, and changes in the diet can lead to substantial improvements in performance. The difference between winning and losing is small and, where other things are equal, attention to diet can be the difference between the team at the top of the league and the others. A good diet will make sure that you compete to the best of your ability throughout the whole match because:

- Energy stores will be high enough to last the whole match
- Concentration will be better
- There will be less chance of getting injured

How tired you are depends not only on your fitness level but also on what foods and fluid you have consumed. Scientific studies have shown that players who eat a good diet, in relation to quantity (number of calories) and quality (composition of the key nutrients, carbohydrate, fat and protein), run longer, sprint more, keep their concentration longer, are more successful with passing/crossing accuracy, and are less likely to get injured.

"Looking after your diet and lifestyle is a massive part of being an elite player." Rachel Unitt

This booklet will provide some guidelines to help you, the player, make sure that you can take full advantage of your skills throughout a match and avoid running out of fuel and getting tired.

How you perform during a match and training will depend on what you eat/drink BEFORE, DURING and AFTER each game/session. By eating and drinking the right foods and fluids your performance and, collectively the team's performance, will IMPROVE.

Nutrients and Foods

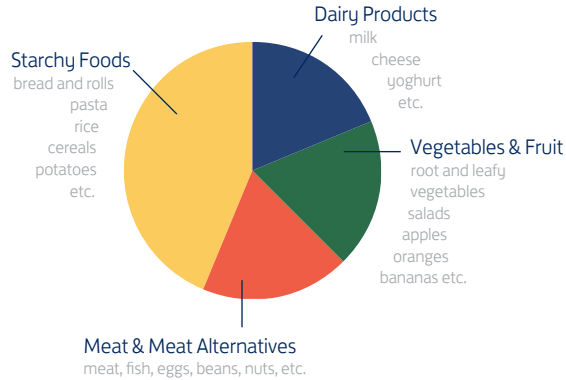
It is important that the components of nutrition are known, mainly: carbohydrates, fats, proteins, vitamins, minerals, fibre and water. The food and drink that we consume contain a variety of these nutrients, and it is essential that the right balance be achieved on a daily basis in order to optimise performance. The table below summarises the essential nutrients and some of their food source.

Table 1: Sources of nutrients.

Nutrient	Sources
Carbohydrate Foods high in carbohydrate are commonly divided into two types: 1. Simple carbohydrates, which tend to be found in highly refined foods. 2. Complex carbohydrates, which tend to exist in their natural unrefined state.	**Simple (sugars):** Confectionery, cakes, jams, soft drinks. **Complex (starches):** Rice, bread, pasta, potatoes, cereals, fruit.
Fats Fats can be split into two types: 1. Saturated fatty acids, which are mainly found in animal fats and are usually solid at room temperature. They raise levels in cholesterol in the blood. 2. Unsaturated fatty acids, which mainly come from vegetable or fish sources and are liquid or soft at room temperature. They help to lower cholesterol in the blood and reduce the risk of heart disease later in life.	Butter, margarine, lard, oils, oily fish (mackerel, pilchards, salmon), pasties, cheese, whole milk, nuts, fresh food.
Protein	Milk, cheese, meat, yoghurt, poultry, fish, eggs, nuts, pulses.
Vitamins and minerals	Fruit, vegetables, nuts, fish, meat, eggs, dairy products, cereals.
Fibre (non-digestible carbohydrates)	Seeds, peas, beans, vegetables, fruits, wholegrain cereals.
Water	Foods, drink, formulated sports drinks.

No one food contains all the nutrients you need, therefore, it is important that a wide variety of foods are consumed. Figure 1 shows a number of foods from the major food groups, and indicates what proportion should be consumed on a daily basis.

Figure 1: The major food groups and the proportional daily requirements.



Practical Issues for the Footballer

Why do different foods provide different amounts of energy?

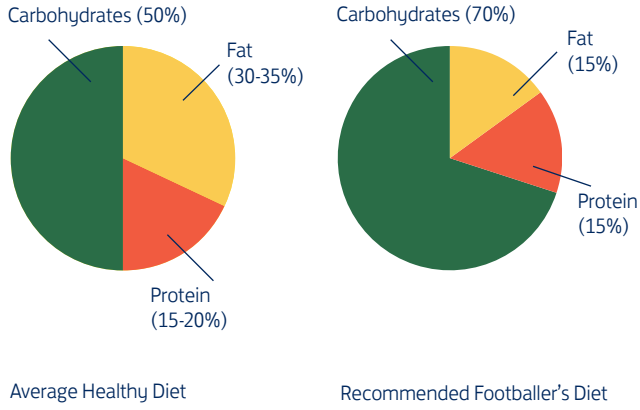
Foods are made of different amounts of carbohydrates, fats and proteins. Each of these nutrients provides a certain quantity of energy when it is broken down in the body. For example, 1g of carbohydrate or protein releases about 4kcal of energy, while 1g of fat releases 9kcal of energy. Although fat provides the body with more than twice as much energy as carbohydrate or protein, it is not necessarily the best form of energy for exercise. All foods contain a mixture of nutrients and the energy value of a particular food depends on the amount of carbohydrate, fat and protein it contains. Carbohydrates, fats and protein are all capable of providing energy for exercise, they can all be transported to and broken down in, muscle cells. Proteins do not make a substantial contribution to providing the body with energy. The production of energy during exercise comes mainly from broken down carbohydrates and fats. As the exercise becomes more intense, carbohydrates are the main energy provider and this is the main fuel you need during your football training and matches. Therefore you should aim to have a high amount of carbohydrate in your daily diet.

Carbohydrate and Energy

Carbohydrate and fluid intake should be the main consideration for football players, since glycogen (stored carbohydrate in the muscles) depletion and dehydration are 2 major causes of fatigue during football training and matches. It is recommended that players should get as much as 60 – 70% of their daily energy requirements in the form of carbohydrate, which is more than is recommended in the average healthy diet as shown in Figure 2 below.

To ensure that a footballer's diet is high in carbohydrate and is also balanced a mixture of carbohydrate rich foods and drinks should be consumed. This variety will help the player to consume adequate quantities of other nutrients such as protein, vitamins, minerals and fibre found in foods such as breads, rice, pasta, breakfast cereals, potatoes and fruits.

Figure 2: The proportion of major food groups in various diets.



Practical Issues for the Footballer

Carbohydrate Intake

It is extremely difficult to achieve the recommended intake of carbohydrate from only 3 meals a day. It is valuable to choose nutrient-rich carbohydrate foods and to add other foods to recovery meals and snacks to provide a good source of protein and other nutrients. Therefore, snacking should play a crucial role in a footballer's nutrition programme. An important part of a player's diet is when to eat the right foods and snacking should take place immediately after training and competition. This is when the energy stores in the muscles that have just been working are best refuelled. General recommendations regarding the amount of carbohydrate to consume are:

Immediate recovery after exercise (0-4 hours):
1.0-1.2g/kg body-weight per hour consumed at frequent intervals.

Daily recovery:
moderate duration/low-intensity training: 5-7g/kg body-weight per day.

Daily recovery:
moderate to heavy endurance training: 7-12g/kg body-weight per day.

Daily recovery:
extreme exercise programme (>4-6 hours/day):≥10-12g/kg bodyweight per day.

Table 2 (p22-23) highlights good sources of carbohydrate foods, try to include a variety of food sources so that you achieve a good range of nutrients in your diet.

Protein Intake

The importance of protein to athletes has long been recognised. Protein makes up part of the structure of every cell and tissue in the body, including muscle tissue, internal organs, tendons, skin, hair and nails. Additional protein is needed to compensate for the increased breakdown of protein during intense training and for the repair and recovery of muscle tissue after training. The general recommended intake of protein is 1.4-1.8 g/kg body weight per day (for a 50kg player this would be 1.4 x 50 = 70g protein). In phases of heavy training, you should aim to achieve the higher value recommended. Table 3 (p24) highlights the protein content of some common foods. Following every training session you should aim to consume a food/drink containing protein to aid the repair and recovery of muscle tissue.

Fluid

Drinking plenty of fluid is another key consideration for ensuring players perform at their best in training and matches. The water that is lost from the body through sweating needs to be replaced to delay the onset of fatigue and to also speed up the recovery process. During training and competition players should monitor their state of hydration. If you feel thirsty it means that you are already dehydrated, which will have a negative effect on your performance. This will mean you will recover slower, your physical and technical performance will decrease, concentration will be lower and you may experience more muscle soreness. The following checks will help players:

- Weight – 1kg of weight lost over a training session is equivalent to 1 litre of fluid lost.

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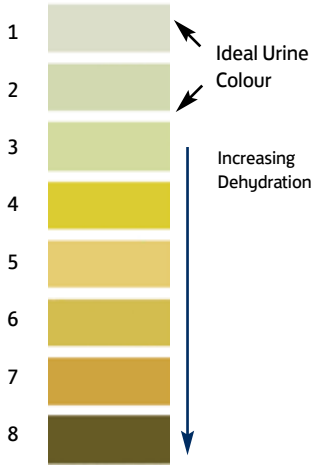
- The 'pee' test – Small volumes of dark coloured, smelly urine indicate the need to drink. Regular visits to the toilet producing copious quantities of relatively clear coloured urine indicate that you are hydrated. Figure 3 is a guideline for monitoring your urine colour in relation to hydration status.

- Thirst – Thirst is an unreliable indicator of the need to drink. By the time you are thirsty you are already partly dehydrated. If you finish a training session and you are thirsty you have not taken enough fluid on board during the session. Whenever you become thirsty start to drink immediately. Preferably, drink before you are thirsty.

The best fluid to drink is a diluted carbohydrate/electrolyte solution. Generally, commercial sports drinks are designed to try to meet these recommendations (for example Gatorade, Isostar and Lucozade Sport). The recommendation is to drink before, during and after training as well as drinking as frequently as possible during a match. Practice drinking little and often. Stomach upset is usually associated with drinking too much too quickly and is often noted in individuals who are already dehydrated.

Figure 3: Hydration Status Chart



Women's football is the top female team participation sport in England with over 150,000 affiliated players in regular competition. Research has shown that more than 1.1 million girls participate in some form of football each year. Generally guidelines which are given to male players are also followed by female players, although some of the recommendations are similar, due to the physiological differences between males and females, female players should ensure sufficient intake of some key nutrients. The main considerations for female players relate to the following:

Energy Intake (Number of calories consumed)

Your body uses energy continuously, whether you are resting, training, working or sleeping. The number of calories which you need to consume on a daily basis, somewhere between 1500-3500kcals per day, is determined by your metabolic rate (the number of calories which you burn when you are going about your day-to-day activities), body mass, growth needs and training load (depending on volume, intensity and type of activity). There has been much interest recently in the eating patterns of female athletes. Generally, female athletes tend to report a lower energy intake than male athletes involved in the same sporting activities, even when differences in body mass and lean body mass are taken into account. Regularly consuming a diet which is too low in calories will lead to losses in body mass, lower metabolic rate, muscle loss, decreased performance in training and matches, a higher risk of injury, menstrual cycle disturbances, and a lower than required intake of some of the key nutrients outlined below. You should ensure that you consume enough calories by consuming 3 main meals, as well as 3-4 snacks each day, of high carbohydrate foods. If your body mass decreases, or you feel lethargic or are under-performing in training/matches then you may not be consuming enough energy, or the right types of food.

Practical Issues for the Footballer

Dietary Fat Intake

The post-adolescent female naturally carries a higher level of body fat than a male, and as fat cannot be used for higher intensity training, you should limit the amount of fat in your diet. However, you do need some fat in your diet for energy at lower training intensities, for absorbing and using vitamins, and for protection and insulation of vital organs. Simple ways to reduce fat intake include: choose leaner varieties of meat and trim off any visible fat, swap full-fat milk for semi-skimmed or skimmed milk, limit fast foods (burgers, pizzas, pasties, chicken nuggets, hot dogs, chips), limit ready made meals (many of these are very high in saturated fat),limit high-fat snack food (chocolate, biscuits, cookies, crisps, doughnuts, croissants, cream cakes), consume lower-fat desserts (yoghurt, fruit crumble, banana custard, rice pudding), keep pastry and pies to a minimum, consume fresh fruit, dried fruit, rice cakes or fruit bars instead of biscuits, and eat jacket potatoes or home-made oven potato wedges in place of chips.

Iron is essential for the formation of Haemoglobin (Hb) in red blood cells. It is also needed for keeping the immune system working well, producing energy and preventing anaemia. Iron is found in the body in two main forms, Haemoglobin as the oxygen carrying component of your blood and ferritin as your body's iron store. The higher your Hb the better and the more oxygen you can deliver to your muscles during training and matches. Players with higher Hb levels will have to work at a lower intensity, and will have faster recovery, than players with lower levels due to the higher amount of oxygen they are able to deliver. This can be increased through diet and training. Good sources of iron are: lean red meat (mince, steak), liver, breakfast cereals (Special K, cornflakes, cheerios), dried fruit, beans, lentils, nuts and broccoli. The absorption of iron can be increased by consuming at the same time as vitamin C. Good sources of vitamin C are: fresh orange juice, oranges, strawberries, kiwi fruit, peppers, broccoli and new potatoes.

Conversely, if you consume caffeine at the same time as iron this slows down your rate of iron absorption, for example drinking a cup of tea/coffee while consuming a bowl of Special K, try to delay any caffeine intake until you have consumed your iron quality foods.

Calcium is vital for building strong bones and teeth, and also helps with blood clotting, nerve and muscle function. Interest in the calcium status of female athletes has increased with recent studies reporting low bone density and an increased risk of stress fractures. This occurs through a combination of inadequate calcium intake, genetic predisposition, smoking, as well as disturbances to regular menstrual function. Calcium is a particularly important mineral for growing, active children. Along with phosphorus and magnesium it makes up the dense inner part of bones. Good sources of calcium are: milk, yoghurts, cheese, milk shakes, cottage cheese, eggs, sardines, dark green leafy vegetables, beans, lentils, figs and sesame seeds.

Vitamin B6 helps the body to use carbohydrate, protein and fat properly, especially during exercise. It is also essential for red blood cell manufacture and for keeping the immune system working well. Good sources of vitamin B6 are: liver, fish, beans, lentils, bananas, breakfast cereals and eggs.

Vitamin B12 is essential for growth and red blood cell manufacture. Since it is involved in the development of red blood cells, the implication is that vitamin B12 can improve the body's oxygen carrying capacity and therefore its aerobic performance. Good sources of vitamin B12 are: milk, cheese, yoghurts, milkshakes, breakfast cereals, fish and meat.

Folic Acid is involved in red blood cell production (these cells transport oxygen in the blood to the muscles during training and matches) and for protein manufacture (protein plays a vital part in the structure and function of all muscles). Good sources of Folic Acid are: liver, green vegetables and pulses.

Practical Issues for the Footballer

Antioxidants are enzymes and nutrients in the blood which deactivate harmful chemicals in the body known as free radicals. Free radicals are formed daily through normal body processes, they are unstable compounds which can attack, infiltrate and injure vital cell structures. Although regular exercise has many beneficial effects, it also produces free radicals, therefore the more you train, the more important it is to monitor your intake of the Antioxidants to aid recovery. The best source of antioxidants is the natural one: food! Good sources of antioxidants are: vitamin C (citrus fruits, broccoli, sprouts, peppers and strawberries), vitamin E (vegetable oils, almonds, sesame seeds, peanut butter, avocado, egg yolk), selenium (wholegrains, vegetables, meat), copper (wholegrains, nuts liver), manganese (wheatgerm, breads, cereals, nuts), zinc (bread, wholegrain, pasta, nuts, eggs) and carotenoids (carrots, red peppers, spinach, mango, tomatoes, melon, apricots). To achieve a good intake of antioxidants try to do the following: eat at least 5 portions of fresh fruit and vegetables each day, include nuts and seeds in your diet, eat more fresh fruit for snacks, and add a side salad to your meals.

Good Meal Choices

Good Meal Choices

Breakfast is possibly the most important meal of the day, as overnight your body's reserve of carbohydrate is used by your brain, and so breakfast helps to refill this store. If you do not eat breakfast you will be more lethargic and your concentration will be lower. Make sure you have a good breakfast every day, eat the right foods (indicated below) and eat as much as you need.

"I always eat breakfast as it gives me more energy for training. My favourite is bagel and jam, with a bowl of fruit." Alex Scott

Excellent
- Toast and jam
- Baked beans
- Cereal and semi/skimmed milk
- Fruit
- Fruit juice

Good
- Lean grilled ham or bacon
- Toasted muffins
- Bagels
- Boiled, poached, scrambled eggs
- Yoghurt
- Crumpets

Unhealthy
- Sausages
- Streaky, fried bacon
- Fried eggs, bread
- Hash browns

Good Meal Choices

Lunch is important to top up your energy stores throughout the day. If you have just trained, it will help you to replace the energy you have just used, or if you are training later it will give you energy to train at a higher intensity later on. You should aim to eat a lunch which is low in fat and contains a good source of carbohydrates. You may need to prepare lunch at home and take with you if you do not have the facilities where you work, train, study.

"As I am a PE teacher and constantly busy at school, I always prepare lunch and snacks and take these in with me to eat during my breaks. I often train during the day and want to make sure that I refuel with the right foods to benefit my performance." Lindsay Johnson

Excellent

Baked Potatoes with tuna (no mayonnaise), baked beans, cottage cheese or spaghetti
Turkey/tuna/chicken/ham sandwich
Pasta and tomato based sauce
Salad (no mayonnaise, limited dressing)
Fruit
Yoghurt
Fruit juice
Rice cakes/snack-a-jacks
Rice Pudding

Good

Egg sandwich
Jaffa cakes
Low fat crisps
Pancakes
Toasted muffins
Cereal bars
Fromage frais

Unhealthy

Sausage roll/pastries
Streaky bacon
Chip buttie
Burger and chips
Fried chicken
Pizza
Fried eggs
Crisps
Chocolate
Mayonnaise

Dinner for many players is the main meal of the day and so you must make sure that you get the right types of food for this meal. Try to make sure you the control the following:

Keep your fat intake low:

- Oven chips (especially thick cut chips) are better than fried chips, as they are lower in fat and are a good source of carbohydrate.
- You should limit your intake of burgers, pies and sausages.
- You should limit your fast food intake as most of these options are high in fat.
- Many ready made meals are high in fat, so you should only have these occasionally.

Try to increase the amount of carbohydrate you eat. Eat more pasta, rice, potatoes and vegetables.

When eating meat, for example chicken, pork or lamb, cut off the excess fat.

"As I train quite late with my club, I don't like to eat a heavy meal when I get home often as late as 11pm, so I eat cereal, and toast and jam, as this will give me some carbohydrate to start replacing what I have used during training." Casey Stoney

Excellent

Chicken fillet, no skin, boiled or oven cooked
Fish, grilled not in batter
Baked, boiled or mashed potatoes
Boiled rice
Pasta, spaghetti
Bread roll
Salad (no mayonnaise, limited dressing)
Vegetables
Fruit
Fruit juice
Water
Jelly
Meringue nests

Good

Boiled ham
Grilled pork or lamb
Grilled lean steak
Pasta bake
Lasagne (low fat cheese and lean mince beef)
Spaghetti bolognaise (lean mince beef)
Sweet and sour chicken
Fromage frais

Unhealthy

Cheese burgers
Pizza
Sausages
Fried bacon
Fried rice
Chinese takeaway
Fast food
Mince pies
Cream cakes
Biscuits

Good Meal Choices

Snacks are an important top-up of a player's diet, and you should attempt to 'graze' on snacks throughout the day so that you have a constant supply of energy available. There are plenty of snacks which are easily available which are not good for you (for example crisps, chocolate, some ready made sandwiches which are often very high in fat), however it is important that you choose snacks which will help your performance. Try to do the following:

- Eat snacks which are low in fat and high in carbohydrates.
- Eat a lot of fruit.
- Avoid buying crisps or chocolate bars, be prepared and take snacks with you to work, training or college.

"My favourite snack is salt and vinegar snack-a-jacks."
Rachel Yankey

Excellent
Fruit, bananas
Cereal and semi skimmed milk
Pasta
Beans on toast
Sandwiches
Milk shakes
Toast and jam
Dried fruit
Fruit smoothie
Iced buns
Sweetened popcorn

Good
Yoghurt
Nuts
Noodles
Snack-a-jacks
Low fat rice pudding
Bagels, muffins
Crumpets, scones
Cereal bars
Jelly sweets
Fromage frais
Rice Krispie Squares
Jelly

Unhealthy
Crisps
Chocolate
Pasties
Cakes
Burgers
Fast food
Doughnuts
Cream cakes

Fluid. Along with poor nutrition, dehydration is on of the main causes of fatigue during your training and matches. As much as 2-3 litres of water can be lost during a match.

Even small levels of dehydration will make performance worse.

You should aim to consume 3-6 litres of fluid each day, depending on body size, age, activity level and individual differences.

"Every morning when we are away on England camps, we have to provide a urine sample to check our levels of hydration, as this is really important for performance in training and matches."
Fara Williams

Try to practice the following to maintain your hydration levels:

- Water is the purest form of fluid in the body. Drinking water can help to flush out the toxins in the body and speed up recovery from training and matches.
- Fruit and cordial drinks after exercise increases fluid intake, speeding up the rate of re-hydration.
- Scientific studies have proven that sports drinks such as Gatorade, Lucozade Sport, Isostar, have more energy in them than water allowing you to run for longer and recover more quickly.
- Avoid drinking fizzy drinks before, during or straight after training and matches, as this can cause stomach problems and decrease performance.
- Drink tea and coffee in moderation as when drank in excess these can cause you to become more dehydrated.
- Invest in a water bottle and carry this with you so you can keep hydrated throughout the day, and especially during training and matches.
- Always start exercise well hydrated, drink at least 500ml fluid 2 hours before exercise and keep sipping right up until you start.
- During exercise, start drinking early (where possible) and at regular intervals, aim for 125-250ml every 15-20 minutes.
- After exercise, replace 150% of your sweat losses, as you will pee some out.

Excellent
Water
Fruit juice
Sports drinks
Semi/skimmed milk
Fruit smoothies

Good Meal Choices

Good
Whole milk
Cordials
Milk shakes
Milk-based smoothies

Unhealthy
Fizzy drinks
Alcohol

Pre-Training/Match Feeding

The main aims of pre-event feeding are to top up your body's carbohydrate stores in the muscles and liver, and to ensure that you are well hydrated. Players get tired towards the end of a match or training session and this is a signal that energy stores are low. So, to have as much energy available as possible, players need to prepare well beforehand.

"It is essential that football players pay attention to what they eat and drink. If you eat and drink the wrong things at the wrong times you are not giving yourself the best chance to perform on the pitch." Faye White

The main meal should be eaten 3-4 hours before training or a match, however breakfast may be eaten within 2 hours of training. You should aim to consume the foods outlined below.

Excellent
Grilled chicken/white fish
Spaghetti
Rice
Vegetables
Potatoes (baked or boiled)
Baked beans
Toast and jam
Sandwiches
Bread/bread rolls
Rice pudding
Iced buns
Fruit
Low fat yoghurts
Fresh orange juice

Unhealthy
Pasties
Sausage rolls
Fried foods
Burgers
Cheese
Bacon
Fast food takeaways

Snacks can also be eaten 1-2 hours before your match (see snacks section for examples). Players must also fill up on the right fluids before, during and after a match or training session, as highlighted previously.

Post-Training/Match Feeding

It is vital that you fill up lost energy stores as soon as possible after a match or training. Players should try to have a main meal 1-2 hours after the match/training, but must try to eat a high carbohydrate snack, as listed below immediately upon finishing. The inclusion of high amounts of fat in the post-match meal will slow down the rate at which players re-fill energy stores.

"As soon as I finish training and matches I drink a milkshake, as this contains carbohydrate for energy, and protein which helps to repair any muscle damage I may have suffered, speeding up recovery for my next session." Amanda Barr

Excellent
Jam sandwich
Fruit
Milkshakes
Sports drinks
Banana or toasted muffin and jam
Toast and jam

Good
Sandwich (lean meat)
Cereal
Yoghurt
Meringue
Crumpets/scones/bagels
Cereal bars
Dried fruit
Snack-a-jacks
Rice Krispie Squares

Unhealthy
Bacon buttie
Sausage sandwich
Chips
Fried foods
Crisps
Alcohol
Tea/coffee

Table 2: Food portions containing 50g of carbohydrates.

Food portions containing approx. 50 grams (200kcals) of carbohydrates			
	Approx. weight		Handy measures
Breakfast Cereals			
Porridge (made with water and milk)	500g	20oz	2 large bowls
Weetabix	75g	3oz	3-4
Shredded Wheat	75g	3oz	3
Shreddies	75g	3oz	1 large bowl
Branflakes	75g	3oz	1 large bowl
Cornflakes	50g	2oz	1 large bowl
Muesli (unsweetened)	75g	3oz	1 medium bowl
Cereal & Grains			
Pasta – white or wholewheat (cooked)	225g	9oz	8 tablespoons
Rice (cooked)	175g	7oz	4 tablespoons
Tinned spaghetti in tomato sauce	400g	16oz	1 large can
Noodles (uncooked)	75g	3oz	1 layer
Tinned ravioli	500g	20oz	1 large can
Pulses			
Baked beans	325g	13oz	7 tablespoons
Sweetcorn	300g	12oz	10 tablespoons
Red kidney beans	300g	12oz	10 tablespoons
Chickpeas	275g	11oz	10 tablespoons
Potatoes			
Boiled	300g	12oz	5 egg sized
Jacket	175g	7oz	1 medium (skin)
Mashed	325g	13oz	5 scoops
Chipped	175g	7oz	shop portion
Roast	200g	8oz	4 small
Crisps	100g	4oz	4 packets
Low fat crisps	75g	3oz	3 packets
Bakery Products			
White bread	100g	4oz	3-4 slices
Wholemeal bread	125g	5oz	3-4 slices
Rolls	100g	4oz	2 soft/crusty
Pitta bread	100g	4oz	1 large
Naan bread	100g	4oz	2 mini naan
Crumpets	125g	5oz	3
Currant buns/teacakes	100g	4oz	1-2
Fruit scones	100g	4oz	2
Malt loaf	100g	4oz	2-3 slices
Welsh cakes	75g	3oz	3
Bagels	75g	3oz	1
Jam tarts	75g	3oz	3 individual
Swiss roll	100g	4oz	3 slices

Food portions containing approx. 50 grams (200kcals) of carbohydrates			
	Approx. weight		Handy measures
Fruits			
Apples	425g	17oz	4 medium
Oranges (peeled)	625g	25oz	4 medium
Pears	525g	21 oz	3 medium
Bananas	225g	9oz	2 large
Dried apricots	150g	6oz	20
Dates (dried)	100g	4oz	7
Figs (dried)	100g	4oz	5
Raisins	75g	3oz	3 tablespoons
Grapes	325g	13oz	60
Peaches in juice	500g	20oz	1 large can
Pineapple in juice	400g	16oz	1 large can
Apricots in juice	400g	16oz	1 large can
Biscuits			
Plain Digestive	75g	3oz	5
Ginger Nuts	75g	3oz	7
Fig Rolls	125g	5oz	4-5
Jaffa Cakes	75g	3oz	6
Oatcakes	75g	3oz	6
Ryvita	75g	3oz	9
Crackers	75g	3oz	10
Rice cakes	75g	3oz	10
Dairy Foods			
Rice pudding (low fat)	325g	13oz	Almost a whole can
Ice cream	225g	9oz	4 scoops
Custard (low fat)	425g	17oz	1 can
Milk – whole, semi or skimmed	1000ml	40fl.oz	2 pints
Confectionery			
Milk or plain chocolate bar	75g	3oz	1 50g bar
Kit Kat	75g	3oz	8 fingers
Milky Way	75g	3oz	1 standard bar
Mars Bar	75g	3oz	1 standard bar
Bounty	100g	4oz	1 standard bar
Snickers	100g	4oz	1 standard bar
Jelly Babies	75g	3oz	1 medium packet
Liquorice Allsorts	75g	3oz	1 medium bag
Fruit Pastilles	75g	3oz	2 tubes
Sugar/Preserves			
Table sugar – white or brown	50g	2oz	12 level teaspoons
Jam	75g	3oz	9 level teaspoons
Honey	75g	3oz	9 level teaspoons
Drinks			
Fruit juice	550ml	22fl.oz	1 pint
Ribena (diluted)	400ml	16fl.oz	2 glasses
Lemonade (not diet)	800ml	32fl.oz	2 cans
Cola (not diet)	500ml	20fl.oz	1 cans
Lucozade (Original)	250ml	10fl.oz	1 glass
Isotonic sports drink	600ml	24fl.oz	2 cans

Table 3: Good sources of protein.

Food	Protein	Energy (kcal)	Portion size
Meat and Fish			
Beef, fillet steak, grilled, lean	31	197	2 slices, 105g
Chicken breast, grilled, meat only	39	191	1 breast, 130g
Turkey, light meat, roasted	47	214	2 slices, 140g
Cod, poached	25	113	1 fillet, 120g
Mackerel, grilled	31	359	1 fillet, 150g
Tuna, canned in brine	24	99	1 small tin (100g)
Grains and Cereals			
Wholemeal bread	6	164	2 slices (76g)
White bread	6	156	2 slices (72g)
Pasta, boiled	7	198	1 bowl (230g)
Brown rice, boiled	5	254	1 bowl (180g)
White rice, boiled	5	248	1 bowl (180g)
Pulses			
Baked beans	10	166	1 small tin (205g)
Red lentils, boiled	9	120	2 tbsp (120g)
Red kidney beans, boiled	10	124	2 tbsp (120g)
Chickpeas, boiled	12	169	2 tbsp (140g)
Dairy Products and Eggs			
Cheese, cheddar	10	165	1 thick slice (40g)
Cottage cheese	15	110	1 small carton (112g)
Skimmed milk	7	66	1 glass (200ml)
Low fat yoghurt, plain	8	84	1 carton (150g)
Low fat yoghurt, fruit	6	135	1 carton (150g)
Fromage frais, fruit	7	131	1 small carton (100g)
Eggs	8	90	1, size 2
Milkshake, with skimmed milk	15.5	325	1 bottle, 500ml
Nuts and seeds			
Peanuts, roasted and salted	12	301	1 handful (50g)
Peanut butter	5	125	On 1 slice bread (20g)
Cashew nuts, roasted and salted	10	306	1 handful (50g)
Walnuts	7	344	1 handful (50g)
Sunflower seeds	6	186	2 tbsp (32g)
Sesame seeds	4	144	2 tbsp (24g)
Quorn Products			
Quorn mince	12	86	4 tbsp (100g)
Quorn chilli	9	163	1 bowl (200g)
Quorn korma	8	280	1 bowl (200g)

Evaluating Your Diet

Write down everything you eat on one day in the table below. Use the section on nutrients, try to determine the category into which each falls and place a tick in the appropriate column. The majority of your ticks should be in the carbohydrate column, with a range of nutrients in the other column. If your diet does not reflect this then you should change the foods and fluids which you consume following the recommendations in this booklet. Do this 2 or 3 different times to evaluate your diet and any changes which you make.

Nutrients		
Time	Food/Fluid Consumed	Carbohydrates

Nutrients		
Time	Food/Fluid Consumed	Carbohydrates

Suggested Meal Plan for Training and Match-day

Typical Training Day

9.30/10am	Corn flakes and semi-skimmed milk Fruit (strawberries, kiwi fruit, oranges) 2 slices of toast and jam Glass of fresh orange juice
11.30am	Banana or toasted muffin and jam Pint of water or cordial
1pm	Jacket potato, prawns and cottage cheese Fruit and low fat fruit yoghurt Pint of water or cordial
3pm	Packet of snack-a-jacks Grapes Pint of water or cordial
5pm	Banana or toasted muffin and jam Pint of water
7-8.30pm	Training
9pm	Pasta, chicken, broccoli and tomato sauce Low fat fruit yoghurt Bread roll Pint of water or cordial

Typical Match-Day (2pm kick-off)

9.30/10am	Pint of water or cordial Glass of fresh orange juice
11am	2 slices of toast and scrambled eggs, tomatoes Cereal and semi-skimmed milk Fruit Fresh orange juice
1pm	Sports drink Jelly sweets/banana
Up to match	Water
Half-time	Water and sports drink
After match	Milk shake Banana/jelly sweets/Rice Krispie Square
5/6pm	Soup and bread roll Chicken, pasta, vegetables in BBQ sauce Bananas and custard Water or cordial
8pm	2 slices of toast and jam Water or cordial

Frequently Asked Questions

Why does my body mass increase the more training I do?

Depending on the type of training you do, as well as the duration and intensity of your training, you will use different forms of energy (carbohydrate and fat predominately, with some contribution from protein). You would generally get a decrease in body fat levels, again dependant on the type of training you are completing, with an increase in the muscle mass of your body. With training you will get structural changes in your muscles as a result of an increase in either the number of muscle fibres (fibre hyperplasia) or the size of existing individual muscle fibres (fiber hypertrophy). This increase in your muscle mass is then reflected in the increases in your body mass you will experience.

What is the Glycemic Index?

The Glycemic Index (GI) of a carbohydrate food is an indication of how slowly or quickly it pushes up blood glucose levels. Glucose has a score of 100 because it enters the bloodstream faster than all other foods, giving a sharp rise in blood glucose. Foods that are more slowly digested and absorbed such as potatoes, pasta, beans and fruit have a GI value of less than 100 and cause a slower and more sustained rise in glucose levels. Table 4 shows the GI of various foods. If you need to get carbohydrates into your bloodstream and muscle cells rapidly, for example immediately after exercise to start glycogen replenishment, you would choose high GI foods.

Table 4: The Glycemic Index and Carbohydrate Content of Foods.

Food	Portion Size	GI	Carbohydrate (g)
Lucozade	500ml bottle	95	80
Rice – white	6 tbsp (60g)	87	56
Jacket potato	1 average (180g)	85	22
Corn flakes	Small bowl (30g)	84	26
Mashed potato	4 tbsp (180g)	70	28
White bread	1 slice (36g)	70	18
Mars bar 1	(65g)	68	43
Squash (diluted)	250ml glass	66	14
Raisins	1 tbsp (30g)	64	21
Crisps	1 packet (30g)	54	16
Baked beans	1 small tin (205g)	48	31
Porridge (made with water)	Small bowl (160g)	42	14
Spaghetti	4 tbsp (220g cooked)	41	49
Apple	1 (100g)	38	12
Lentils	4 tbsp (160g)	26	28

Frequently Asked Questions

What will happen if I don't eat before I train or play a match?

The aim of pre-training/match feeding is to top-up the body's carbohydrate stores, maintain blood sugar levels, keep hunger at bay and keep well hydrated. During the first hour of exercise, most of your carbohydrate energy comes from muscle glycogen, so if you do not eat anything beforehand, then you will have less energy available in your body and you will fatigue quicker. This will mean you will sprint less, have less power, will be less accurate in your decision-making and technical actions, and cover less ground.

You should aim to have your main meal, containing about 2.5g carbohydrate/kg body-weight (125g of carbohydrate for a 50kg player) 3-4 hours before training/match, leaving enough time for your stomach to settle so that you feel comfortable, not too full and not too hungry. Your pre-training/match meal should be based on low GI carbohydrates, low in fat and protein, low/moderate in fibre, not too bulky/filling, not salty or spicy, enjoyable and familiar, easy to digest and should include a drink.

You should then snack up to 1 hour before your training/match.

What happens if I don't eat after training or a match?

If you don't eat at all following training or a match, or eat the wrong kinds of food (high fat options), then you will replace your carbohydrate stores within your body more slowly, than if you consume a high carbohydrate snack/fluid/meal. This means it will take longer to refill your body's carbohydrate stores. You will then start your next training session with less energy in your body, which will have a negative effect on your performance. The higher your carbohydrate intake, the faster you can refuel your glycogen stores.

You should aim to consume at least 1g/kg body weight of carbohydrate (60 g if you weigh 60kg) during the 2 hour post-exercise period.

Are fizzy drinks good for hydration?

Research has shown that carbonated (fizzy) and still sports drinks produce equal hydration in the body. However, carbonated drinks tend to produce a higher incidence of mild heartburn and stomach upset. In practice many athletes find that carbonated drinks make them feel full and 'gassy' which may limit the amount you can drink. You should aim to drink water as the bulk of your daily fluid intake, and you may benefit from a sports drink during training and matches as this also provides energy. You should drink carbonated drinks in moderation, if at all.

Why do I need to drink so much fluid when I am training?

Whenever you exercise you lose fluid, not only through sweating but also as water vapour in the air that you breathe out. When your muscles start exercising, they produce extra heat, this is why exercise makes you feel warmer. Extra heat has to be dissipated to keep your inner body temperature within safe limits. If your temperature rises too high, normal body functions are upset and eventually heat stroke can result. The major method of heat dispersal during exercise is sweating. Water from your body is carried to your skin by the blood capillaries and as it evaporates you lose heat. The amount of sweat that you produce and, therefore, the amount of fluid that you lose depends on the intensity and duration of your exercise, the temperature and humidity of the environment, your body size, fitness level and individual characteristics. An excessive loss of fluid (dehydration) impairs performance and has an adverse effect on health. As blood volume decreases and body temperature rises, it places extra strain on the heart, lungs and circulatory system, which means the heart has to work harder to pump blood round your body. The strain on your body's systems means that exercise becomes much harder, and your performance drops. You can prevent your body from becoming dehydrated by offsetting fluid losses. The best way to do this is to make sure you are well hydrated before you start exercising, and to drink plenty of fluids during and after exercise to replace losses.

Frequently Asked Questions

Are caffeine drinks a good idea?

Coffee, tea, cola and a number of sports drinks contain caffeine, a stimulant that has been shown to improve performance in both endurance and sprint-based activities, football is a mixture of these. It can also improve alertness and lift your mood. A moderate and regular intake does not dehydrate the body but in larger doses or when taken by those who are not regular caffeine-takers, it can have a marked diuretic (dehydrating) effect. You will have to offset this effect by drinking more fluid before and after exercise. The safest advice is to keep off caffeinated drinks before, during and after exercise if you are sensitive to its side effects.

Should I add more salt to my diet?

Excessive sweating during exercise may cause a marked loss of sodium (salt) from your body, but as salt is present in most foods, supplements are usually not necessary. Extra salt is more likely to cause, rather than prevent, cramp. Dehydration is normally the cause of cramp, so you should ensure that you are always adequately hydrated. During training and matches you should aim to consume an isotonic drink which will help you to retain the fluid, thereby maintaining your hydration status.

Are salads a good food choice?

Choosing a salad may not be as sensible and as healthy as you think. Some salads from food retailers contain almost the same number of calories as two burgers. It is important to look out for hidden calories in accompanying products like salad dressing, potato salad, coleslaw, cheese, mayonnaise and salad cream. Generally a salad can provide a perfectly balanced meal if the correct choices are made.

Do I need to take a vitamin supplement?

In theory, you should not need to take a supplement if you are eating a well-balanced diet and eating a wide variety of foods. But, in practice, not many athletes manage to do this. Reliance on fast foods, ready-made meals, processed snacks, peer pressure and time pressure make this very difficult to achieve. Also, if you do not eat the recommended five portions of fruit and vegetables daily, you may not be getting optimal intakes of many vitamins and minerals. A well-formulated multivitamin and mineral supplement can help to ensure that you get enough vitamins and minerals so that your growth, physical and mental development and physical performance will not be impaired. Try to choose brands that have been produced by established manufacturers with a good reputation for quality control and clinical research. Any supplements you do consume should have a well-identified and plausible mechanism of action based on what is known of the energy systems and of the factors that limit performance. They should be free of harmful side-effects and not pose any health risk, and they should be free of any risk of an adverse drug test.

What should I consume during multiple game tournaments?

If you have multiple matches on different days, then you should consume a diet high in carbohydrate and ensure that you eat immediately after each match so that you refill your body's carbohydrate stores more rapidly. You should also ensure that you snack on carbohydrate-rich foods throughout the day to help to restore your body's carbohydrate stores. Depending on the duration and intensity of your match, as well as your position, you could burn 1000-2000kcals during each match. If you compete in several matches during the day, it is important to refuel and rehydrate as fast as possible so that you have a good chance of performing well in your next match. Consume at least 1g carbohydrate/kg body weight during the 2-hour post-match period.

Frequently Asked Questions

If you only have a few hours between matches, you may prefer liquid meals such as sports drinks and glucose drinks. These will help to replace both glycogen and fluid. If you are able to eat solid food, choose carbohydrates with a high GI that you find easy to digest and not too filling. Suitable foods are listed in table 5. Take these with you in your kit bag. Drink at least 500mls fluid immediately after competing and continue drinking at regular intervals to replace fluid losses.

Table 5: Food suitable to eat between matches or immediately after events.

Food items
Sports drink
Bananas
Breakfast cereal
Energy bars
Cereal bars
Sandwiches or rolls filled with honey, jam or bananas
Dried fruit, fig rolls
Rice cakes
Jelly sweets
Smoothie
Yoghurt drink or milk shake

Frequently Asked Questions

When I am travelling to a fixture or eating out what are the best food choices to help my performance?

When you are travelling to compete away from home, organise food and drink in advance and take these with you. You should aim for high carbohydrate, low fat foods/snacks. Do not rely on service stations, fast food restaurants, railway/airport catering outlets as healthy choices are often limited. Make sure you take plenty of drinks, in case of delays. Air-conditioned travel in cars, coaches and planes can quickly make you dehydrated.

Here is a list of suitable snacks for eating while travelling:

Sandwiches filled with chicken, tuna, banana, peanut butter or jam
Rice cakes, oatcakes
Yoghurts
Fresh fruit
Dried fruit
Prepared vegetable crudités, eg carrots, peppers, cucumber, celery
Snack-a-jacks
Ice buns
Rice Krispie Squares
Small bags of nuts

Drinks
Bottles of water
Yoghurt drinks
Smoothies
Sports drinks

Similarly if you are eating out, you can still eat healthily by making the right menu choices, (beware of hidden fats contained in fried foods, creamy sauces, batter coated fish/chicken) as highlighted opposite:

"When all other things are equal, it is the attention to detail in relation to your nutrition and fluid intake which can be the difference between winning and losing. Food is fuel!" Kelly Smith

Table 3: Good sources of protein.

Type of Restaurant	Good Choices	Unhealthy Choices
Pizzeria	Tomato, vegetable, ham, spicy chicken or seafood pizza toppings	Salami, mince, beef, pepperoni, extra cheese toppings
Burger	Plain, grilled burger, flame grilled chicken, fruit	Large burgers, chicken nuggets, fries, doughnuts, apple pies, salad with high fat dressings, milk shakes
Indian	Chicken tikka, tandoori chicken, dahl, channa dahl, rice, naan bread, chappati	Meat curries, meat dansak/korma/madras, samosa, bhajis, puri, paratha
Chinese	Chicken, vegetable or prawn chop suey, stir fried vegetables, seafood or chicken, boiled rice, noodles, sweet and sour sauce	Duck, sweet and sour balls, fried rice/noodles, prawn crackers, egg foo yung
Mexican	Bean burrito, tortillas or tostadas with beans/vegetable chilli, fajitas with chicken/vegetables	Tortilla chips, potato skins, beef chilli, tortillas/burritos with beef, chimichangas, sour cream, onion and garlic dip
Italian	Ciabatta, pasta with tomato/vegetable or seafood sauces (eg napolitan, primavera, spinach), risotto, gnocci, grilled chicken/fish, pasta filled with spinach/ricotta	Pasta with creamy/buttery/meat based sauce (eg carbonara, alfredo, bolognaise), lasagne, cannelloni, garlic bread
Steak House	Grilled steak, salads, jacket potatoes, fruit	Fried/battered fish, garlic mushrooms, garlic bread, scampi, steak with creamy salad dressings/dips, puddings

This book was first edited by Dawn Scott (former Head of Exercise Science (Women's) for the Football Association).

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