

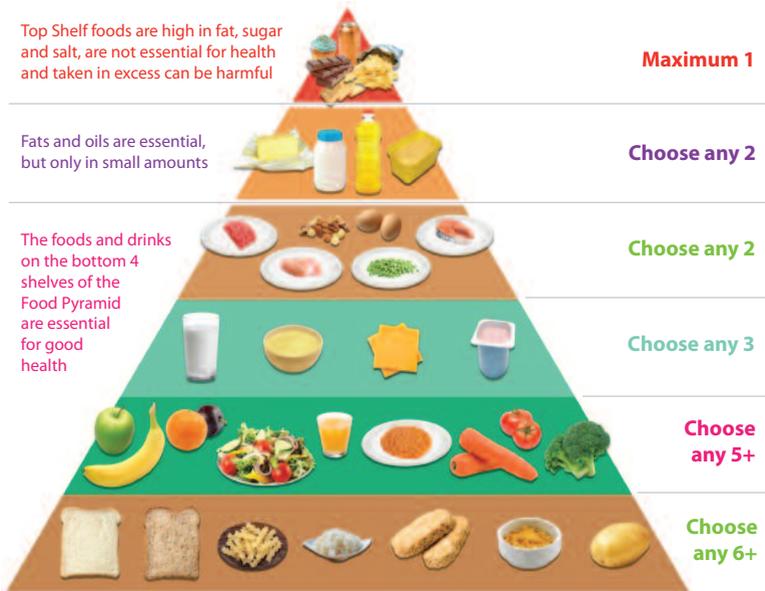
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# Nutrition & Hydration for Cyclists

## Healthy Eating Guidelines

The most important thing for all cyclists is to have a healthy and balanced diet. Following the Food Pyramid as a guide will help you get the right balance of nutritious foods. Studies show that most people take in too many calories from foods and drinks that are high in fat, sugar and salt, and low in essential nutrients such as vitamins, minerals & fibre. These are listed on the top shelf of the Food Pyramid and limiting our intake of these is essential for healthy eating and promoting optimal health. Foods high in fat, sugar and salt should be limited as they promote obesity, which can lead to heart disease, type 2 diabetes and some cancers. In addition most people do not eat enough high fibre carbohydrates, fruit and vegetables and calcium rich dairy products, the recommendation for these are listed on the first 3 shelves of the pyramid.

## Food Pyramid



## TABLE 1: ENERGY REQUIREMENTS

We burn a certain amount of calories every day depending on our age, our gender and our activity level.

AGE GROUP	SEDENTARY	MODERATE ACTIVITY	ACTIVE
<b>WOMEN</b>			
19-30 years	2000	2100	2400
31-50 years	1800	2000	2200
51+	1600	1800	2100
<b>MEN</b>			
19-30 years	2400	2700	3000
31-50 years	2200	2500	2900
51+	2000	2300	2600

These are general guidelines only. They are not applicable to pregnant or nursing women, or those with special dietary or nutritional needs. Sedentary means sitting most of the day, moderate means on your feet some of the time, active means walking and on your feet most of the day. Athletes may have higher requirements.

*Adapted from European Food Safety Authority Journal 2013, 11(1):3005*

## TABLE 2: ENERGY EXPENDITURE IN CYCLING

BODY WEIGHT	20KM/HOUR	25KM/HOUR	30KM/HOUR
	CALORIES BURNED		
50 kg	400	500	650
55 kg	440	550	715
60 kg	480	600	780
65 kg	520	650	845
70 kg	560	700	910
75 kg	600	750	975
80 kg	640	800	1040
85 kg	680	850	1105

*Adapted from Exercise Physiology, McArdle, W., Katch, F., & Katch, V. (2001)*

## WEIGHT MANAGEMENT

To maintain weight we need to balance our energy intake with our energy expenditure. To lose weight we need a slight negative energy balance. If we have a negative energy balance of 500 calories per day we will lose approximately 0.5kg or 1lb per week.

To keep an eye on your weight, it is a good idea once a month to weigh yourself and to measure your waist every few weeks.

Waist measurement should be:

- less than 80cm or 32 inches in women
- less than 94cm or 37 inches in men

For weight loss advice see the safefood website:  
[www.weigh2live.eu](http://www.weigh2live.eu)



### NOTE:

The easiest way to do this is to decrease calorie intake by 250 calories and increase energy expenditure by 250 calories. By Cycling for approx. 30 mins every day and cutting out a bad habit, such as a daily bar of chocolate, we would lose weight painlessly without dieting or hunger.

## CARBOHYDRATES

Carbohydrates are essential for energy and to maintain our blood glucose within a healthy range. Carbohydrate rich foods are on the first shelf of the food pyramid and it is recommended that most women need 6 servings per day and most men need 8 servings daily.

Cyclists may need more depending on their activity level. It is better to choose high fibre wholegrain options, for example choose brown or basmati rice instead of white rice, choose wholemeal pasta instead of white pasta, and choose wholegrain bread instead of white bread. You should also choose wholegrain or oat based cereals, such as porridge.



### One serving is:

- 1 slice of brown sliced bread or wholegrain soda bread
- 2-3 crackers or crispbreads
- 4 dessertspoons flake type high fibre breakfast cereal, without sugar, honey or chocolate coating
- 3 dessertspoons dry porridge oats
- 2 breakfast cereal wheat or oat biscuits
- 3 dessertspoons muesli, without sugar or honey coating
- 1 medium or 2 small potatoes
- 2 dessertspoons of mashed potatoes
- 3 dessertspoons or 1/2 cup boiled pasta, rice, noodles (25g/1 oz uncooked)
- 1 cup of Yam and Plantain

Note - The actual portion that you eat may be bigger or smaller than the servings listed in the Food Pyramid. For example, a sandwich with 2 slices of bread counts as 2 servings. Other portions that count as 2 servings are 1 pitta pocket, 1 tortilla wrap, 1 small bagel, 1 small scone and one small French bread roll.

### Carbohydrates & Cycling

Glycogen is the body's first energy reserve and is stored in our liver and muscles. When the body needs energy, for example when we exercise, it breaks down the stored glycogen and converts it to glucose which is used for energy. After exercise we need to replenish our stores and eat 1-2 servings of carbohydrate rich foods after training. It is recommended that cyclists eat a carbohydrate rich snack or meal 1-2 hours before training. If we are exercising at a moderate intensity for more than 1 hour we need to take a carbohydrate drink or snack, such as a banana, with us on the bike. This prevents low blood sugar while training, cyclists call this the dreaded BONK or the KNOCK! It's best to eat slow release carbohydrates for sustained energy. Avoid high sugar snacks and choose starchy wholegrain based snacks instead.

#### *Try the following snacks or meals before and after riding:*

- 1 banana + yoghurt
- 1 cereal bar + yoghurt
- 1 baked potato with beans
- 1 small bowl pasta + chicken
- ½ tin of creamed rice with dried fruit
- Medium bowl of porridge with honey

*Cyclists need extra servings of carbohydrate depending on the duration and intensity of the ride.*

Cycling 30 - 60 mins per day – 1-2 extra servings

Cycling 30 - 60 mins per day – 2-3 extra servings

Cycling 60 - 90 mins per day – 3-4 extra servings

Cycling 90 - 120 mins per day – 4-5 extra servings

## BE CAREFUL ABOUT SUGARS

Many processed foods like ready meals, cakes and confectionery contain added sugars and can also be high in calories. Sugary foods and drinks very often provide very few other nutrients. Cutting down sugary foods will help you maintain a healthy weight and can also help prevent tooth decay.

Sports/isotonic drinks are also high in sugar and energy. These are not needed for exercise lasting less than 60mins. In fact, having these extra calories can be counterproductive when trying to achieve or maintain a healthy weight. See the hydration guidelines below.

Sugary foods and drinks are included on the top shelf of the Food Pyramid and need to be limited to 1 serving or less per day. Remember - sugars can be called a variety names in the list of ingredients on the food packaging, so check the food labels for sucrose, glucose, maltose, high fructose corn syrup (HFCS), syrups and honey.



### *EU food regulations on food labelling state that –*

- A product is considered to have a high sugar content contains more than 15g of total sugars per 100g
- A product is considered to have low sugar content contains less than 5g of total sugars per 100g

## PROTEIN REQUIREMENTS

Most of our protein comes from the 4th shelf on the food pyramid. It is recommended we consume 2 servings per day.

### One serving is:

- 50-75g/2-3oz cooked lean beef, pork, lamb, lean mince, chicken (100g/4oz of raw meat or poultry and is about the size of a pack of cards)
- 100g/4oz cooked oily fish (salmon, mackerel, sardines) or white fish (cod, haddock, plaice)
- 2 eggs - limit to 7 eggs a week
- 100g/4oz soya or tofu
- 125g/5oz hummus
- 6 dessertspoons of peas, beans (includes baked beans) or lentils
- 40g/1.5oz unsalted nuts or peanut butter or seeds

Note - The actual portion that you eat may be bigger or smaller than the servings listed in the Food Pyramid. For example, 1 egg would count as ½ a serving, and 150g/6oz of meat would count as 2 servings.

### When choosing protein rich foods:

- Choose lean meat, always trim any visible fat from meat and remove skin from poultry.
- Limit processed meats such as bacon or ham, because these are usually high in fat and salt.
- Iron rich foods such as red meat are important for cyclists especially women.
- Try to have white fish, such as haddock, plaice, cod and pollock, at least twice a week and eat oily fish, such as mackarel, salmon, tuna and sardines, at least once a week. Sardines are also an excellent source of calcium.
- Pregnant and breastfeeding women should limit their consumption of tuna to no more than one serving a week due to the high mercury content - 2 x 140g (5oz) drained weight or 1 fresh tuna steak a week.
- Other good sources of protein are beans and peas when eaten with wholegrain breads, rice or pasta. They are also low in fat.
- If you are a vegetarian and get your protein regularly from cheese, always choose lower fat cheeses, such as low fat cheddar, edam and gouda.

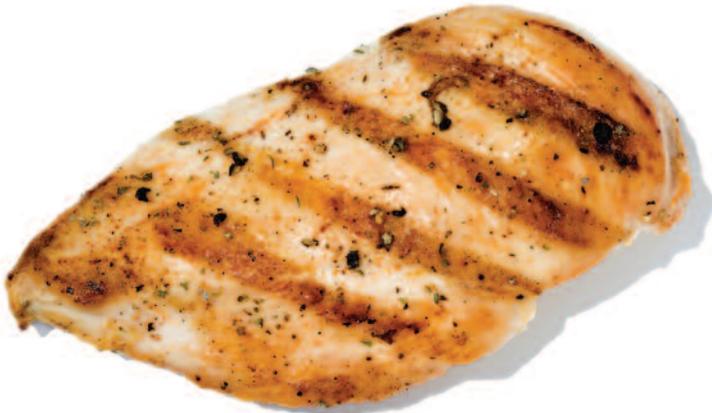
## Protein & Cycling

We need protein to help build and repair our body. Every cell in our body is being constantly replaced. This is called protein turnover, approx 1- 2% of our muscle cells are replaced every single day. This is very important for cyclists because when we train we induce a mechanical stress in the muscle cell which is then remodelled to become stronger and more efficient as we recover and adapt. This is how we get fitter, faster and stronger.

Some cyclists need slightly more protein than sedentary people to meet this need. It is best to include your two daily servings of protein over 2-3 meals daily rather than eating it all at one meal. If you are cycling for 60mins or more daily it is important to eat some protein with a carbohydrate snack to maximise your recovery. This should contain approx 2-3 servings of carbohydrate and ½ - 1 serving of protein (Advanced Nutrition & Human Metabolism, Gropper, S., Smith, J., & Groff, J.).

### *Examples of recovery snacks after cycling for 1 hour or more:*

- 2 slices of wholegrain bread + 1 tablespoon of hummus.
- 1 medium baked potato + 1 tablespoon of low fat grated cheese
- 1 banana + 2 figs + 1 pot of low fat yoghurt
- 3 multigrain rye crispbread + 1 tablespoon of hummus + 2 figs



## FAT REQUIREMENTS

We need fat in our diets to provide energy and to supply us with essential fatty acids that our body cannot make; fats also provide a source of the fat soluble vitamins A, D, E. All fats contain the same amount of calories but different types of fats have different health effects on the body.

**'Bad' fats** are associated with an increased risk of cardiovascular disease. These fats are saturated fats, trans fatty acids and hydrogenated fats. They include the white visible fat on meats, processed meats such as sausages, meat pies/ready meals, hard cheeses, butter, lard, margarine, confectionary, biscuits, cakes, chocolate, pastries etc.

**'Good' fats** are associated with a decreased risk of inflammation and chronic diseases, such as cardiovascular disease. Monounsaturated and polyunsaturated fats provide us with the essential fatty acids omega 3 and 6, which are found in oily fish, oils (olive, rapeseed, sunflower etc.), seeds, nuts, spreads high in monounsaturates and polyunsaturates, avocados etc.

It is recommended that we limit our fat intake to 2 servings per day.

### One serving is:

- Low fat and reduced-fat spread - 1 heaped teaspoon or the size of 1 mini-pack. This is enough for 2 slices of bread.
- If having full fat spreads or margarine, you should use less of these, so 1 heaped teaspoon spread very thinly to cover 3 slices of bread.

In addition to the 2 servings above, you are also allowed 1 teaspoon of oil daily - choose oils that are high in monounsaturated and polyunsaturated fats, as listed above. If you are very active and having up to 12 servings from the Bread, Cereals, Potatoes, Pasta and Rice shelf – you can have 1-2 extra servings from this shelf.

### To reduce fat in your diet

- Look for alternatives to cakes, biscuits and savoury snacks, which are often high in fat - try fresh fruit, dried fruit and cereal-based products
- Trim any visible fat off meat and poultry
- Buy lean cuts of meat and reduced-fat minces, such as steak mince
- Poach, steam, grill or bake food rather than frying
- Swap whole milk for semi-skimmed or skimmed
- Opt for low-fat dairy products
- If you use lard, butter or hard margarine, switch to vegetable oil and low-fat spreads, which are high in monounsaturated and polyunsaturated fats and low in saturated fats.

Check out the food labels and be aware of how much fat is in a product per 100g. Be aware that the serving size may be more or less than this.

***EU food regulations on food labelling state that:***

- A product that is considered high in fat if it contains more than 20g of fat per 100g
- A product that is considered low in fat if it contains less than 3g/100g
- A product that is considered high in saturated fat if it contains 5g of saturated fat per 100g
- A product that is considered low in saturated fat if it contains 1.5g of saturated fat or less per 100g

For more information on food labelling see [www.fsai.ie](http://www.fsai.ie)

If you are trying to cut down on fat, you should limit your consumption of foods and drinks that have more than 3g/100g of total fat and more than 1.5g/100g of saturated fat.

Foods that are high in fat and saturated fat are mostly on the top shelf of the food pyramid. These foods should be eaten only occasionally. There are, therefore, no recommended number of servings for these foods as they can promote obesity, cardiovascular disease and other chronic diseases such as Type 2 diabetes. Do not be tempted to skip on other healthy foods so that you can eat more of these foods.

***The following are examples of high fat foods that contain about 100 calories – so check the label when choosing high fat foods.***

- About 4 squares of chocolate (half a bar)
- 1 small or fun sized chocolate coated bar
- 1 bag of lower fat crisps
- 1 small cup cake (without icing) or one plain mini muffin
- 2 plain biscuits or 1 chocolate biscuit
- 1 scoop of vanilla ice-cream.



## FLUID REQUIREMENTS

It is recommended that adults consume 8-10 cups or glasses of fluid every day. 1 cup is about 200ml. Water is the best fluid to consume but tea, coffee and other beverages also contribute to your fluid intake.

### Fluid Requirements & Cycling

Maintaining adequate hydration is absolutely essential for performance. It is well documented that dehydration negatively affects both physical and mental performance. It is important to start each training session or competition well hydrated, make sure to drink the appropriate fluids during training/racing and restore hydration levels as soon as possible afterwards in order to replace the water and salts lost in sweating.

Never allow yourself to get dehydrated, if you are thirsty while training, you are already dehydrated. It is important to start each training session well hydrated you can do this by consuming plenty of fluid in the 2-3 hours beforehand. Practise drinking on the bike and aim to drink at least 150ml every 15-20 mins. It has been shown that drinking small volumes frequently is more effective at preventing dehydration than drinking large volumes infrequently. Make sure you have a drink ready to consume when you finish your training, don't leave this to chance.

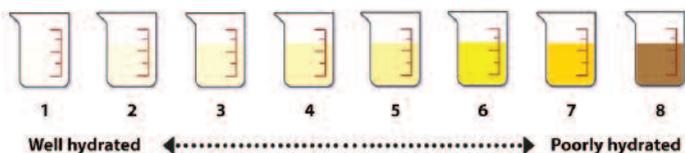
**We need approx 8-10 glasses of water per day and then we also need to replace the water & salt lost through our training.**

### Monitoring Hydration Status

It may be useful to monitor your hydration status more closely when increasing your cycling as increases in exercise will lead to greater fluid loss.

*There are a few simple yet effective ways of assessing hydration status:*

- Check body weight before and after training, a 1kg loss in body weight during training equates to a 1.5 litre fluid loss.
- Monitoring changes in urinating habits - urine colour, frequency and volume.



Note - if you are taking a vitamin or mineral supplement daily, your urine may appear yellow or orange, and this may be misleading. In this case it may be more appropriate to use body weight to track your hydration status. However you can meet all your vitamin and mineral requirements by eating a healthy, balanced diet as outlined by the food pyramid.

Hyponatremia, also called water intoxication, is generally the result of drinking excessive amounts of water which dilutes the concentration of sodium in the blood. Once a rare occurrence at sporting events, it is becoming more prevalent as participation increases and more novice exercisers are entering endurance events. Prolonged and excessive sweating combined with drinking too much fluid increases the risk that an athlete will alter the delicate balance of blood-sodium concentration. Sodium is lost in sweat so it is very important for those exercising at high intensities for long periods of time or in very hot weather to replace any sodium losses. Some athletes are 'salty' sweaters and they are more at risk. If you notice white salt deposits on your skin or clothing after training you are a 'salty' sweater and you will need to be very diligent with your hydration strategy.

*The choice of drink depends on intensity, duration of exercise and your training goals.*



Losing as little as 2% of your body weight by dehydration can adversely affect performance and losing 5% can result in some very serious health implications. Dehydration reduces your blood volume, which leads to a rise in body temperature, and can lead to cramping and heat exhaustion.

## CALCIUM & VITAMIN D

Calcium is essential for maintaining our bone mass which supports the structures of our body. The body is also constantly using calcium which plays a vital role in the functioning of our heart, blood, muscles and nerves. Calcium cannot be made by the body. The calcium we need is obtained through the food we eat. Dairy products such as milk, cheese and yoghurt are excellent sources of calcium. A diet with insufficient calcium, in combination with other risk factors can lead to osteoporosis, commonly known as brittle bone disease.

Calcium Rich foods are found on the 3rd shelf of the food pyramid. We need 3 servings per day. Foods on this shelf, especially full-fat cheese, can be high in saturated fat - so choose lower fat cheese regularly. Try to choose milk and yogurt more often than cheese. If you do not eat dairy products, choose calcium and vitamin D enriched soya products.

Vitamin D is essential for the optimum absorption of calcium. The Irish diet is low in vitamin D. Ireland's longitude and latitude means we live further from the equator and get less sunlight particularly between the months of October to March, limiting the skins ability to make vitamin D from sunlight. With growing concern about the dangers of sun exposure and skin cancer, most people wear sun protection factor when outdoors which blocks the UVB rays needed to make vitamin D. To make vitamin D during the summer months, people with fair skin need 15 minutes of sunlight exposure to the face and hands. It takes dark skin longer to make vitamin D than fair skin (10-50 times longer). Babies skin should not be exposed to the sun. Good food sources of vitamin D are listed below. It is recommended that adults take 5-15ug per day, depending on your age – consult with your pharmacist or doctor about taking a supplement if you think you are not meeting your needs. Some foods are supplemented with vitamin D; keep an eye on the food labels.

### One serving is:

- 1 large glass (200ml) low fat or low fat fortified milk
- 1 large glass (200ml) calcium enriched Soya milk
- 1 small carton yogurt (125ml)
- 1 yogurt drink (200ml)
- 1 small carton fromage frais
- 25g/1oz (matchbox size piece) of low fat cheddar or semi-soft cheese
- 50g/2oz low fat soft cheese
- 2 processed cheese triangles
- 75g/3oz cottage cheese
- 1 portion of milk pudding made with a large glass low fat milk



### Vitamin D Content in Common Foods

Dietary Source	Quantity	Vitamin D ug
Egg	1 egg	0.9ug
Salmon	200g	16ug
Mackerel	200g	18ug
Tinned Sardines in tomato sauce	5 sardines 125g	5.7ug
Fortified milk	200ml	2ug
Cornflakes	30g	1.3ug
Bran Flakes	50g	2.1ug
Yoghurt	1 pot (125g)	0.9ug
Fortified Soya milk	200ml	1.5ug
Fortified Almond milk	200ml	1.5ug



### Calcium Content in Common Foods

Dietary Source	Quantity	Calcium mg
Fortified milk	200ml	332
Full fat milk	200ml	230
Low fat milk	200ml	240
Skimmed milk	200ml	240
Yoghurt	125g Pot	188
Fortified Soya milk	200g	240
Fortified Almond milk	200g	240
Tinned Sardines in brine	100g	460
Tinned Red Salmon	1 small can 105g	93
Reduced fat Cheddar Cheese	28g/1oz	235
Broccoli	85g	34
Spinach	50g	80
Brown bread	1 slice	19
Rice Krispies	30g	135

## IRON

The red colour in our blood comes from the Iron containing protein called haemoglobin which carries oxygen around the body. Lack of iron in the diet causes a reduction in haemoglobin production leading to anaemia. Symptoms of anaemia include tiredness, headaches, inability to concentrate and can cause shortness of breath. The best way to prevent anaemia is to include red meat in the diet 2-3 times per week. The recommended daily intake of Iron is 14mg for women & 10mg for Men.

*There are two different type of iron in food:*

**Haem iron foods** contain iron in the form that is easily absorbed by the body (e.g. red meat including beef, lamb and pork).

**Non-haem iron** found in breads, fruits, breakfast cereals, green leafy vegetables, legumes (e.g. baked beans, nuts, dried fruits, seeds and eggs).

Vitamin C aids in the absorption of non-haem iron. It is important to include a source of vitamin C when consuming foods that contain non haem iron.



## Common Sources of Iron

Dietary Source	Quantity	Iron mg	
Beef	150g	2.1	HAEM IRON SOURCES
Chicken Breast	120g	0.5	
Lamb Steak	100g	2.2	
Liver	100g	7.7	
Pork	100g	1.1	
Salmon	100g	0.6	
Tuna	100g	0.7	
Boiled Egg	1	1.1	NONHAEM IRON SOURCES
Red Kidney Beans	1 large can drained	4.8	
Chick Peas	1 large can drained	3.5	
Baked Beans	1 large can	5.9	
Broccoli	2 spears	1.5	
Rocket	80g	1.2	
Hummus	2 tablespoons	1.6	
Brown bread	2 slices	2.4	
Tofu	100g	3.5	
Lentils	150g	3.6	
Dried fruit	45g	1	
Mixed nuts	25g	0.5	

## Common Sources of Vitamin C

Dietary Source	Quantity	Vitamin C mg
Orange Juice	200ml	60
Orange Juice freshly squeezed	3 oranges	79
Banana & strawberry smoothie	1 small bottle	89
Pineapple	3 rings	15
Orange	1 medium	86
Kiwi	1 average	35
Strawberries	5 medium	100
Rocket	80g	10
Spinach	80g	20
Broccoli steamed	2 florets	78
Red Pepper raw	½ pepper	111
Brussel sprouts steamed	3	78
Curly Kale	75g	83
Cauliflower steamed	3 florets	29
New boiled potatoes with skins	175g	26
Baked old potatoes	175g	24.5
Boiled old potatoes with skins	175g	15.75
Boiled old potatoes peeled	175g	10.5

## FRUIT & VEGETABLES

It is recommended that we consume a minimum of 5 servings of fruit and vegetables per day. Fruit and vegetables are important sources of minerals and vitamins, fibre, antioxidants and phytochemicals. These foods are low in calories and contain no fat with the exception of avocados and olives which both contain good fats essential for good health. Try to eat a variety of coloured fruit and vegetables – green, yellow, orange, red and purple in order to benefit from the variety of minerals, vitamins, antioxidants & phytochemicals provided by each colour group.

*Include a mixture of different vegetable types:*

- Leafy green vegetables include spinach, lettuce and rocket,
- Brassicas include broccoli, sprouts, kale, cabbage and cauliflower
- Root vegetables include parsnip, turnip, carrots and beetroot.

Include a vitamin C rich fruit each day such as an orange or orange juice, strawberries or blackberries. You should count fruit juice and smoothies as only one serving each day.

### **One serving of fruit is:**

- 1 medium apple, orange, banana, pear or similar size fruit
- 2 small fruits - plums, kiwis or similar size fruit
- 10-12 berries, grapes or cherries
- ½ a grapefruit
- 1 heaped dessertspoon of raisins or sultanas
- 4 dessertspoons of cooked fresh fruit, fruit tinned in own juice or frozen fruit

### **One serving of vegetable is:**

- 4 dessertspoons of cooked vegetables – fresh or frozen
- A bowl of salad – lettuce, tomato, cucumber
- A bowl of homemade vegetable soup
- 1 small corn on the cob or 4 heaped dessertspoons of sweetcorn
- A small glass (100ml) of unsweetened fruit juice or a smoothie made only from fruit or vegetables

## *Some Daily Tips for Healthy Eating*

- Be organised and try to prepare all your food from fresh ingredients.
- Prepare your food using healthy cooking methods – use as little oil or fat as possible and avoid frying food, try grilling, baking, roasting, steaming, stewing, stir frying instead. Remember to trim all visible fat from meat and poultry.
- Become familiar with food labels, using the guidelines here and at [www.safefood.eu](http://www.safefood.eu) you can practise reading the labels on the foods you normally buy.
- Eat oily fish at least once per week e.g. sardines, salmon & mackerel are excellent sources.
- Choose healthy fats such as olive oil, sunflower oil, rapeseed oil, spreads high in monounsaturated and polyunsaturated fats, avocados, nuts, seeds as part of your daily diet.
- Swap white bread, pasta & rice for wholegrain varieties.
- Make sure you eat 5+ servings of fruit and vegetables every day – eat the rainbow!
- Eat a healthy breakfast every day. Choose wholegrain cereals more often and include some fresh fruit.
- If you eat a balanced diet you should not need a multi-vitamin and mineral supplement.
- All women of child bearing age who are sexually active should take a folic acid supplement of 400g every day to help prevent neural tube defects (NTDs) in babies (e.g. spina bifida).
- Everyone should make sure they are getting enough Vitamin D. Eating oily fish twice a week will provide half of your weekly Vitamin D needs. Speak to your GP or pharmacist if you are concerned about your Vitamin D intake.

**The information presented in this booklet is intended as a general guide. Therefore, it is recommended that professional advice is sought to ensure that the suggestions will be safe and effective for you.**