

# **Student activity sheets**

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# Unit 1: Getting the right balance

## 1A. The History of Food

About 6000 years ago God created the world. It took just six 24-hour days. As Genesis chapter 1 tells us, God created a different aspect each day. On day three He created plants. On day four He created the Sun to give light and warmth for the plants to grow. The plants were watered by a large moist canopy which gave dew. The temperature was perfect for plant growth. There were no droughts and no temperature extremes.

On day six God created two human beings who would be friends with God, who would walk and talk with Him in the Garden. He told them that they must eat plants and seeds only. There was no killing and therefore no meat, since the creation was perfect.

List some of the foods you think Adam and Eve would have eaten. They did have fire and heat, so it is possible that they cooked some of their foods.

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But it wasn't long before someone disobeyed God, and God's creation was no longer perfect. Read about this in Genesis chapter 3. No longer perfect, the plants would now not always have ideal growing conditions. The first animal was killed to provide clothing for Adam and Eve. Soon sin and killing abounded and God decided to make a new start. He decided to send a Great Flood. He chose a man named Noah to be His servant. Noah followed God's instructions and built a boat called an ark so that his family could be saved from the flood. When the boat was finished God sent two of each kind of animal to Noah. God also sent seven of some animals - like sheep, goats and cattle - because these were going to be the food supply for Noah and his family when they came off the ark; for a while there would be no plants as they would have been destroyed by the flood.

It was at this time that God gave permission to eat meat, but not just any meat. God gave special instructions about the kind of meat to eat. God chose animals that were safe to eat. He did not choose animals that ate other animals, as cats, dogs, vultures and shellfish do for example. Animals that eat dead meat may carry diseases and are more inclined to carry parasites in their flesh. Read about this in Leviticus 11: 1-23.

Which animals from Leviticus 11 had split hooves and chewed their cud?

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What does it mean to “chew the cud”?

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Which animals do we eat today that have split hooves and chew their cud?

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Name some animals that are scavengers.

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What could be wrong with eating scavengers?

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Do shellfish have fins and scales? Why is eating shellfish sometimes risky?

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Which birds did God tell us not to eat?

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Why do you think it is better to eat a chicken rather than an eagle or vulture?

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As time went on people became more proficient at farming crops and animals. They did not use pesticides or fertilizers. They rotated their crops so as not to exhaust the soil of its nutrients. They would allow sections of land to lay fallow for a period of time, giving the soil a chance to recuperate after the previous crop. Plant crops were very nutritious because the soils were full of nutrients. Animal foods were also nutritious because they ate the nutritious plants. The food chain was free of chemicals and pesticides.

The Industrial Revolution in Europe saw the introduction of machines. Grains that were once harvested and ground by hand could now be processed many times faster by machinery. Thousands of chemicals were introduced into the environment just after World War 2. These gradually found their way into our food chain in the form of artificial fertilizers and pesticides.

While artificial fertilizers provide enough nutrients to make the plants grow well, they do not provide as many nutrients as the old fashioned methods of composting and manuring. Other chemicals added to food are preservatives, flavour enhancers and colourings.

Manufacturing companies today also add extra fats, sugar and salt to processed foods to make them tastier. Processed breakfast cereals contain over a hundred times the level of salt compared to rolled oats. Some are very high in sugar. This includes snack bars like muesli bars that pretend to be healthy. The sugar is labeled as “glucose” which sounds healthy, but it’s really just sugar. All these added ingredients can contribute to obesity, heart attacks, stroke, diabetes, cancer, and in younger people, ADHD (attention deficit hyperactivity disorder).

What is added to processed food to make the food last longer or to make more sales?

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Make a list of foods you know that have these additives.

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On a separate sheet of paper draw a timeline to show the history of food from Garden of Eden to present day. Use diagrams and brief statements to describe the state of food at various points in time: e.g. Garden of Eden, Noah’s flood, Post-flood, farming with crop rotation, Industrial Revolution, World War 2, Post War to present day. Use books or the internet to find out dates for some of these events.

## 1B. Good fats bad fats

People in early Bible times were fishermen, hunters and gatherers. The food was not polluted. The animals were healthy and did not have to be given antibiotics as animals do today to ward off diseases. The plants were not sprayed. People in those days ate a wide variety of health foods. There were no processed foods as we know them today.

People lived much longer and had boosted brain power. Their brain power was boosted by the consumption of omega 3 and omega 6 fatty acids. Omega 3 is found in fish, and omega 6 is found in seeds, avocados, olives and nuts. (Peanuts are not included in this list because peanuts are not really a nut. They are a legume). These oils provide the best fats and they encourage brain cell activity. Omega 3 is especially important and is essential; however it is the one that most people lack. We need to keep omega 3 and omega 6 in balance because too much omega 6 blocks omega 3. We need omega 3 for protection of our heart and brain. An overbalance of omega 6 can take away that protection and can also cause obesity.

How do we get energy? It is made in our cells. Our cells are like little engines that make the body function. Every cell needs omega 3 and omega 6 to function properly. Omega 3 and 6 are good fats. Saturated fats from animals are called lard, and are not a good fat. It is saturated and slows us down. Butter and cheese, also from animals, can be beneficial in small amounts because they help us absorb the fat soluble vitamins A, D, E and K. Coconut oil, which is a plant saturated fat, is a good fat. It helps us burn all the fats we consume and provides protection for our cells. Transfats are the worst fats. These are the overheated vegetable oil found in processed fried foods, pastries and margarine. They do not provide good fuel for the brain. They can contribute to diseases like heart disease and cancer.

1. Which food contains omega 3 oil?

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2. Which foods contain omega 6 oil?

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3. Omega 3 and omega 6 are good oils. Why?

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4. Where does lard come from? What does it do to our cells?

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5. Name a good source of saturated fat.

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6. List some sources of transfats.

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7. Why should we avoid transfats?

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8. Tick the good fat sources from the following list:

- Coconut oil
- Butter used sparingly
- Corn oil
- Canola oil
- Olive oil
- Almonds
- Cashews
- Avocadoes
- Sesame seeds
- Sunflower seeds
- Peanuts
- Fish
- Margarine

**A note about fish:**

While fish is a good source of Omega 3, much fish today is contaminated with heavy metals like mercury. These pollutants come from factory waste that finds its way into the ocean. One of the safest sources of fish at present is wild Alaskan salmon because it is caught in unpolluted waters. You can find this in tins in the supermarket. Other big fish like tuna, shark and swordfish are not so safe to eat because they are at the top of the food chain and accumulate significant levels of mercury. Little fish like sardines are low on the food chain so they are less contaminated.

Answers to no. 8

Coconut oil, butter used sparingly, olive oil – cold pressed, almonds, cashews, avocadoes, sunflower seeds, fish

## 1C. Protein for strength

The first humans did not eat meat and yet they were very healthy. God told Adam and Eve to eat only plants. Animal foods and certain plant foods provide our bodies with protein. Protein from food gets broken down by our bodies into **amino acids**. The body then uses amino acids to build muscles. Without protein we would be very weak! Another function of amino acids is the construction of the brain's neurotransmitters. These are chemical messengers that send signals to the brain, which then tells us what to do. Without enough protein the brain does not receive the right signals. We should therefore include some protein at every meal to keep our brains working well. However if we take in too much protein in the form of red meat, some of the important amino acids can be blocked.

Here are some sources of protein:

**Animal sources:**

Meat, fish, eggs, milk, yoghurt

**Plant sources:**

Legumes – (which include lentils and dried peas and beans), nuts and seeds

List some foods that Adam and Eve would have eaten for protein.

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Meat today is not as good for us as meat eaten years ago. Animals on the run get exercise and do not build up saturated fat in their bodies. Animals that do not get exercise give poorer quality meat – less nutrients and more fat. Some sheep and cattle are given grain to fatten them up. Sheep and cattle were made to eat fresh grass. Grain-fed meat is low in omega 3 oils and other nutrients. These animals are prone to disease and as a result may be treated with antibiotics.

Too much meat can be hard for our bodies to process and can make those little engines in our cells overwork. When our cells are not healthy, we are not healthy. We may catch colds often and generally feel tired. To find out your daily protein needs, take 100 away from your height in cm.

Height (cm) – 100 = daily protein requirement in grams

If you are 170 cm tall, you need 70 grams per day. But you need more if you are doing strenuous exercise. Make sure that you include some plant proteins and eggs in the daily protein requirement. This will be better for your health than just eating meat for protein.

Which meats are the best meats? Choose lean meats – less fat. Choose meats that you cook for yourself and not already cooked. Processed meats like salami, frankfurters, ham and bacon contain food additives called nitrates - (food numbers 249, 250, 251, and 252). These chemicals may have a bad effect on our health. Another additive to avoid is MSG (monosodium glutamate). This is a flavour enhancer found in some take-away foods, including

some Chinese food and some processed supermarket foods like savoury snacks. Always read labels to make sure the food you buy does not contain MSG. If you buy Chinese food, ask whether MSG is used before you buy. Not all Chinese restaurants use it.

Milk is commonly thought to be a good source of calcium and protein. (Calcium is a mineral needed for bone strength). When milk is pasteurized, the enzymes are destroyed, so it is no longer easy to digest. There may be a lot of calcium in milk but our bodies can't absorb much of it, so it is best to look at getting calcium in other forms, like green leafy vegetables.

Milk may be a problem when it comes to weight gain. The homogenizing of milk disperses the fat content into tiny globules throughout the milk making the fat easy for our bodies to absorb. If you do not want to put on weight then low-fat milk is better. There are some good alternatives to cow's milk available in the supermarket. Goat milk or calcium-enriched rice milk are good options. Cow's milk is associated with food intolerances and allergies. If you have problems with runny noses, asthma and eczema, then cow's milk is the number-one food to cut out of the diet.

Natural yoghurt on the other hand is a beneficial food because it is a good source of protein and aids digestion. It has beneficial bacteria, acidophilus and bifidus. These help break down the normally indigestible part of milk. Most flavoured yoghurts contain thickeners and are not naturally thickened by the action of the beneficial bacteria; they are therefore very low in the beneficial bacteria and not much better for us than ordinary milk. They also contain sugar which is not good for our immune system. If you find natural yoghurt too sour you can always sweeten it yourself with a little honey.

Cheese is another source of protein. The better cheeses are the softer, more digestible cheeses: like cottage, ricotta, brie, camembert and feta. These are cultured and are closer to yoghurt.

Lentils, chick peas, red kidney beans, yellow split peas are all legumes. They are a much forgotten source of protein in Western society. If we look at traditional cultures around the world we see that legumes are a staple. Indian, Mexican and Middle Eastern cultures eat legumes every day. These are a very healthy option and definitely worth trying. The traditional flavours of curry, chilli, or tomato and garlic, (if you don't like things too spicy), make these dishes delicious. Try some of the recipes from the *Recipe Section*.

**Choose some healthy proteins to include at each meal:**

Breakfast: \_\_\_\_\_

Lunch: \_\_\_\_\_

Dinner: \_\_\_\_\_

Why is it important to get enough protein?

\_\_\_\_\_



What happens when we get too much protein?

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Which is the best kind of meat to eat?

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What is your recommended daily intake of protein? \_\_\_\_\_

What are some of the problems associated with regular homogenized cow's milk?

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What are some good alternatives?

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What are some benefits of natural yoghurt?

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Name and describe a traditional dish from India, Mexico or the Middle East that uses legumes for one of the principle ingredients.

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## Food analysis chart

Food	Amount	Weight (g)	Protein (g)	Carbs (g)	Fat (g)
Cheese, camembert	2.5 cm cube	17	3	0	4
Cottage cheese	Half cup	114	13	4	4
Yoghurt, plain whole milk	1 cup	245	9	11	8
Eggs, boiled	1	50	6	1	5
Butter	1 tblsp.	14	0	0	11
Olive oil	1 tblsp.	14	0	0	14
Avocado	Half cup	75	1.5	5.5	11.5
Banana	1 large	152	2	36	1
Grapes	1 cup	160	1	28	1
Kiwi fruit	1	76	1	11	0
Orange	1	151	1	17	0
Apple	1 large	212	0	32	1
Strawberries	1 cup	157	4	44	1
Bread, wholegrain	1 slice	26	3	12	1
Pasta-spaghetti	1 cup (cooked)	140	7	40	1
Beef steak (lean)	1 portion	85	24	0	17
Lamb	1 portion	85	21	0	18
Chicken (breast w/o skin)	1 portion	85	7	1	0
Almonds	Half cup	71	15	14	36
Broccoli	Half cup	36	2	4	0
Carrots	Half cup	64	0.5	6.5	0
Tomato	1	62	1	3	0
Pumpkin	Half cup	122	1	6	0
Potato	1	143	4	27	9
Chick peas	1 cup (cooked)	240	12	54	1
Fish-salmon	1 piece (grilled)	85	22	0	4

### Recommended Daily Allowance of protein for teenagers:

Males 15-18 years old – 59 g.

Females 15-18 years old – 44 g.

**Make a list of protein foods that would give you your Recommended Daily Allowance.**

Remember the formula – height minus 100.

## 1D. The Carbs

Carbohydrates are the starchy and sweet foods that provide fuel for energy. Here are some examples of foods that are high in carbohydrates:

Vegetables, fruits, pasta, bread, flour or anything made from flour, rice, sugar or anything made from sugar.

When we exercise, our cells (little engines really), burn fuel to make more energy. The main fuel is the carbohydrate food group (carbs for short). Carbs provide the energy that fuels muscle contractions. Once absorbed, carbs breakdown into smaller sugars and are used as **energy** for our brains and muscles. Any glucose not needed right away gets stored in the muscles and the liver. When these stores are filled up, any extra gets stored as fat.

It is important therefore not to get the carbs out of balance by having too much. We need to have a balance of protein, carbs and vegetables at every meal. Too many carbs, especially if we are not doing enough exercise to burn them up, will mean that the extra carbs get stored as fat. On the other hand we need to get enough carbs in the diet or we will feel tired.

How do we get the right balance?

1. Follow the Healthy Food Pie as a guide to the **quantity** you need per day.
2. Choose good **quality** carbs to give you an even balance of energy throughout the day (no highs and lows), and to avoid putting on weight.

What are good quality carbs?

Some carbs are refined. This means that they are usually white and processed. These are not good quality carbs. They will certainly give you that burst in energy that you are looking for when you are tired. They charge quickly into your bloodstream and get to work immediately. They give you high blood sugar. But very quickly they get burned up, and your body system is suddenly left with no energy at all. This is low blood sugar. Refined carbohydrates take you on a rollercoaster ride of highs and lows in energy throughout the day. They also store very well as fat. Examples of refined carbohydrates are foods made from white flour, white potato and cane sugar – foods such as white bread, cakes, pasta, chips and sweets.

Complex carbohydrates on the other hand are good carbs. These are the unrefined foods like brown rice, rolled oats and whole grains. Sweet potatoes are full of goodness, and less starchy than white potatoes. Legumes, (lentils, dried peas and beans), are also a good combined source of complex carbohydrates and protein. Complex carbs take longer to break down and therefore give you sustained energy throughout the day. They do not readily go to the fat stores, but pass easily through the digestive system because of the adequate fibre they contain.

Juicy fruits are simple carbohydrates that break down quickly. They are high in vitamin and mineral content and good for a quick energy boost.

What is the function of carbohydrates?

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List some refined carbohydrates.

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What are some of the disadvantages of refined carbohydrates?

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List some complex carbohydrates.

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What are some of the advantages of complex carbohydrates?

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List some complex carbohydrates that could be eaten at the following meals:

Breakfast: \_\_\_\_\_

Lunch: \_\_\_\_\_

Dinner: \_\_\_\_\_

What happens when there is a carbohydrate overload without sufficient exercise?

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## 1E. Vegetables and Fruit

Vegetables and fruits are God's medicine, but good tasting medicine. In *The Lion, the Witch and the Wardrobe*, Aslan gave Lucy a little bottle of medicine that she used many times for the healing of others. We can think of fruits and vegetables as that bottle of medicine. They contain essential vitamins and minerals. In their raw form, plant chemicals present in fruit and vegetables will protect us from damage in our cells. These plant chemicals are called antioxidants. So it is good to include a good percentage of raw vegetables in our daily food intake.

Our bodies are constantly at war. Cell damage can occur when there are not enough vitamins and minerals to combat the negative effects of pollutants coming from the environment, from the waste products within our body system and from bacteria and viruses. Cell damage can occur gradually and can lead to diseases like cancer and heart disease later in life. Living plants contain antioxidants and enzymes that help us fight the viruses and diseases we come into contact with from day to day, and help us build a healthy immune system.

Fruits and vegetables are colour coded. Different colours represent different nutrients. For example the green leafy vegetables are rich in magnesium, a mineral essential for healthy bones and muscle function. Red and orange vegetables are high in antioxidants. Eating a range of colours in fruits and vegetables is therefore important. Remember that legumes come into the vegetable category. They are dried peas and beans.

Another importance of fruits and vegetables is that they contain fibre. We need fibre for a healthy digestive system. The food transit time, from when we eat our food until the time it passes out, should be approximately 24 hours. Fibre helps the food to pass through the digestive system at a healthy rate and protects us from bowel cancer.

Fruits are an excellent source of vitamins, minerals and antioxidants, but we shouldn't eat as much fruit as we do vegetables. If we ate fruit all day we may get an overbalance of carbohydrate. Although the sugar in fruit is a healthy type of sugar, unlike cane sugar, it is still a carbohydrate. Fresh fruit is an excellent food to eat at breakfast because it helps the body eliminate waste as faeces, and the morning is the time when the body is programmed to do this. Fruit can also be eaten as a between-meal snack. It does not digest very well following a heavy meal.

1. Look at the Healthy Food Pie and estimate the percentage of coloured vegetable intake to maintain optimal health. (Don't include white potatoes in this section).

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2. Estimate the daily percentage of fruit intake. \_\_\_\_\_

3. Choose fruits or vegetables that you would like to include at the following meals:

Breakfast: \_\_\_\_\_

Lunch: \_\_\_\_\_

Dinner: \_\_\_\_\_

4. Find the dictionary meaning of antioxidants.

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5. What are the benefits of fruits and vegetables?

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6. When is the best time to eat fruit?

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7. Why are raw vegetables important?

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8. Why are green leafy vegetables important?

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9. Use *The Food analysis Chart* to design a meal planner for a day. Include the right balance of protein, carbohydrates, good fats, fruits and vegetables.

## Unit 2: Digestion, diets and addictions

### 2A. Weight-loss diets

Many people want to lose weight. People are keen to try the latest diet because it sounds great and promises rapid transformation of your body into that of a movie star. While it is not important to look like a movie star, it is important that being overweight does not have a negative impact on your health. Being overweight can expose people to risk of lifestyle diseases such as diabetes and heart disease.

With most people, following a diet does not last for long. They soon revert to their old eating patterns. The only way to lose weight through food intake is to decide upon a lifestyle change, and stick to it. Healthy food, with a predominance of fresh vegetables, is the best way to get results. Here are some popular diets:

#### 1. Low-carb diets

These diets restrict carbohydrate consumption. Foods like bread, pasta, cereals, fruit and potatoes are replaced with a greater proportion of high protein food like meat. Weight can be lost when the body burns fat for its energy sources because there is not much carbohydrate to be used for fuel. Some people lose weight on this diet, but may suffer health problems if they stay on the diet too long. Problems arising may be high cholesterol, high blood pressure and eventually heart disease.

#### 2. Low-fat diets

The very low-fat diets turn out to be very high carbohydrate diets. This diet consists of mainly grains, fruits and vegetables. Processed foods sold as “low-fat” are higher in carbs. For example, low-fat biscuits contain more sugar. Manufacturers add extra sugar to make up for the tastiness of the fat. A person cannot go without fat for very long. The dieter will very soon want some foods higher in fat or protein, so will lapse into eating junk food. A very low-fat diet is not healthy because we need our omega 3 and 6 fatty acids, found in fish and plants, for good health. Another very beneficial fat is coconut oil. Coconut oil can actually help you burn fat better, so can actually help you lose weight.

#### 3. Calorie restricting diets

People may choose to use a calorie table, calculating their calories for the day. If a person has eaten low calories all day, eating salads for example, they may treat themselves at the end of the day by eating a piece of cheese cake. They can eat whatever they want as long as their daily calorie intake is under a certain number. (The average person requires 2000 calories per day. A low-calorie diet may restrict you to something like 1500.

#### 4. The Pre-measured diet

There are companies that supply your food in pre-measured servings. This takes the decision-making out of the eating. It may be easy to follow but is expensive, and doesn't help the person learn how to prepare their own healthy food. Another type of pre-measured diet is the meal-replacement diet, where meals are replaced by a milk-shake type drink that supposed to contain all the nutrients you need but less carbs.

#### 5. The Sensible-eating diet

This is not so much a diet but a lifestyle. It majors on fresh plant foods, as close to their natural form as possible. It eliminates refined carbohydrates, junk food and sugar. It includes lean meat and salmon, fresh vegetables, fruits, legumes and some nuts. It is colourful and delicious. Daily exercise must be included to burn calories.

#### 6. Diet Pills

These pills can be bought from the pharmacy. Most of these have no value. Many contain mixtures of so-called slimming ingredients. Some contain fat-blocking ingredients, which absorb only very small amounts of fat. They have the negative effect of preventing you from absorbing the fat-soluble vitamins A, D, E & K. Others are appetite suppressants made from fibrous gel which makes you feel full. However some of these have been shown to cause internal blockages in some people.

### Dangers of dieting

Crash diets do not usually help with weight loss. A crash diet is when someone makes a sudden decision to do all they can to lose weight quickly. They may skip meals and neglect the intake of important nutrients. They constantly think about food or lack of it, and tell themselves, "I'm on a diet!" A crash diet usually does not last for long, and the person suddenly finds themselves eating excessive amounts of junk food.

People who worry too much about looking overweight may develop eating disorders such as the following:

**Anorexia nervosa** - An eating disorder involving a psychological loss or denial of appetite and self-starvation, related in part to a distorted body image and to various social pressures commonly associated with puberty.

**Bulimia nervosa** - An eating disorder in which large quantities of food are eaten at one time (binge eating) and then purged from the body by vomiting, or misuse of laxatives, diuretics, or enemas. The word 'nervosa' refers to disgust with one's body weight.

If you are overweight, it is right to make a decision to lose weight to improve your level of fitness and health. However this must be a sensible decision, with the aim of losing weight





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4. What advice would you give to a person who is constantly worrying about being overweight?

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## 2B. Comfort foods and food addictions

So often we use food to comfort ourselves in response to emotions. We may feel down because of troubles with relationships, or worried by exams looming up, or maybe we just don't feel good about ourselves. Many people in these situations turn to food to distract them from their negative thoughts. They comfort themselves by eating their favourite foods. But unfortunately, many favorites are loaded with calories, fat and sugar. These foods are also eaten at the wrong times. They are eaten when the person is not necessarily hungry. People just eat to feel good. Eating in between meals, especially high calorie foods, can contribute to poor digestion and being overweight. Our digestive system needs time in between meals to rest, or food stays in the digestive tract for longer leading to toxicity. Here are some common comfort foods:

Pizza, ice-cream, chips or crisps, bread, pasta, sweets, chocolate, cookies, soft drinks

These types of foods can be addictive. Sometimes you start on one of the above and you just can't stop.

### **Addictive foods:**

Eating cane sugar and processed grains like white flour will cause a rapid rise in blood sugar. This makes us feel-good temporarily and we quickly become addicted to these foods and can't give them up. Being on a continual 'high' with sugar and white carbs stresses the body and depresses the immune system. It also depletes the body of essential vitamins and minerals. Not to mention dental decay! Another addictive food is salt. Manufacturers know that these foods are addictive and add sugar and salt to most processed foods.

The surprising thing is, if you take a complete break from these foods you find you don't crave them. Two things to aim for:

- Only eat when you are hungry
- Eat good healthy meals and don't eat in between. (If you *really* need to eat something for energy in between meals, try a piece of fruit or vegetables sticks)

### **Activities**

1. Make a list of your own comfort foods.
2. Why do people eat comfort foods?
3. What suggestions can you make to help someone who is feeling depressed and cannot stop eating comfort foods?
4. Write out these Bible verses: Matthew 11:28 and 1 Peter 5:7. How can these verses help someone who is feeling down?

### **Questionnaire: Are you a food addict?**

1. Which sort of food experience do you enjoy the most?
  - a) a big box of chocolates
  - b) a meal at a restaurant
  - c) a delicious home-cooked meal
  
2. What is your favourite type of food?
  - a) Chocolate, sweets, bread, cake, biscuits, desserts.
  - b) Casseroles, roasts, grills, puddings
  - c) Foods with a large vegetable content e.g. Italian, Chinese, Lebanese
  
3. If someone gave you a luxury cake from the cake shop, how would you be most likely to eat it?
  - a) Non-stop, very quickly, straight from the box at the first opportunity.
  - b) Save it for later and then have a big slice or two.
  - c) Eat a small slice later and savour every mouthful.
  
4. Do you ever eat while walking along the street or around the school?
  - a) Often
  - b) Sometimes
  - c) Never
  
5. When you buy a 'treat' food, in what way will you be most likely to eat it?
  - a) Alone – I want it all for myself.
  - b) As an occasional 'reward'.
  - c) Share it with friends.

### **Results:**

If you answered mostly a) you are probably a food addict.

If you answered mostly b) you are not a food addict. You love food and possibly eat too much of the wrong foods sometimes.

If you answered mostly c) you are probably in control of what you eat.

## 2C. Habits for good digestion

1. Chew your food well.
2. Eat slowly and be relaxed while you are eating.
3. Don't walk around while eating.
4. Don't eat between meals. (Younger children may need to eat a bit more often to keep up their energy)
5. Don't eat a large meal in the evenings. This is the time when you are not doing exercise to burn it off. It causes weight gain and food doesn't digest as well when you are asleep.
6. Don't drink with meals. This dilutes the digestive juices that are trying to do their job of breaking food down.
7. Drink plenty of water between meals.
8. If you are starving when you come home from school, don't eat too much. Ask Mum to prepare an early dinner instead.
9. Don't over-eat.
10. Eat plenty of fibre, (found in whole grains, fruit and coloured vegetables).

### Why do we need good digestion?

Good digestion helps us to have:

1. Good bowel habits
2. Good absorption of nutrients. (This means that the nutrients get to the cells to do their work).
3. A good colony of beneficial bacteria in the gut, which help fight the bad bugs.
4. A stronger immune system.

How can you personally improve your digestion?

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## 2D. Caffeine

One of the negative effects of caffeine is that small amounts of caffeine taken daily, for example a cup of coffee a day can create physical dependence on caffeine. If you fail to drink your daily dose of caffeine, you can end up with headaches, excessive sleepiness, a feeling like you can't function or flu like symptoms. Withdrawal from caffeine can take anywhere from a few days to a few weeks depending upon how much caffeine you customarily consume.

When caffeine intake is above 300 milligrams a day, about three cups of coffee or three to four sodas, the caffeine may at first make you feel energized. Yet one of the negative effects of caffeine is its ability to disrupt sleep cycles, causing less deep sleep, particularly when you have caffeinated beverages within a few hours of bedtime. So while you may be using coffee or other caffeine-laced beverages to "get you started" in the morning, you likely need this extra boost because you are getting inadequate sleep.

In 2006, studies on night shift workers found that those who consume caffeine at night are most prone to this effect. Since night shift work already disrupts normal sleeping patterns, caffeine intake may create more serious issues. Those who drink caffeinated beverages and work night shift, have a far greater likelihood of getting insufficient deep sleep during the day. This can result in a continued cycle of exhaustion and caffeine boosts, a greater dependence on caffeine, and more caffeine consumed, which only exacerbates the problem.

Certain people are also particularly caffeine sensitive and more likely to experience negative effects of caffeine. For example, some people will feel "buzzed" or hyped-up from one cup of coffee. Lower body weight tends to translate to higher likelihood of experiencing the negative effects of caffeine.

<http://www.wisegeek.com/what-are-the-negative-effects-of-caffeine.htm>

1. In line two of this article, find two words that mean "addiction".

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2. Caffeine is found in coffee, cola drinks, chocolate and regular tea to some extent (not herbal). Which of these do you think people in our society are most addicted to?

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3. What are some of the negative effects of caffeine?

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4. List some healthy alternatives to cola drinks.

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5. "Diet" soft drinks have the added disadvantage of containing aspartame (951) as a sweetener. Look up 950 on your food additive decoder. How is this rated?

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6. Sudden withdrawal from caffeine may cause headaches, tiredness and shakiness. What recommendations would you make to a person who is a heavy caffeine consumer and wants to quit.

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7. What usually follows the energy "high" that caffeine gives?

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8. Suggest a way to maintain a good energy level without the use of caffeine.

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## Unit 3: Toxins

### 3A. Food additives

Use your *Food Additive Decoder* sheet to assess the healthfulness of processed foods. Collect food wrappers, boxes and packets. Look at the ingredients list and see whether it contains numbers. These are food additive numbers. Now look up your decoder and see which category the additives fall into:

1. Green – safe
2. Blue – no adverse affects known
3. May cause health problems
4. Known to cause health problems in some people

Modern foods contain food additives such as food colours, preservatives and flavour enhancers. Many of the food colours are strongly linked to ADHD, allergies and even cancer. Here are some examples:

*102 – Acid yellow or coal tar.* 80% of hyperactive children are allergic to it. It is believed to cause allergic reactions in 15% of the general population. Known effects are asthma, hyperactivity, hay fever, blurred vision, breathing problems, skin irritation, wakefulness in young children.

*110 – sunset yellow* – toxic waste from petro-chemical industry. A known carcinogen.

*129 – Allura Red colouring* - a coal tar dye. It may cause allergic skin conditions. It increases the heart's rate and is implicated in behavioral problems. It should be avoided by persons suffering from asthma. Listed problems associated with Allura Red are tumours and lymphoma. When given to mice, they developed cancer of the lymph glands.

*123 - Amaramth (Red food colouring)* – All women of childbearing age, especially those in the first 3 months of pregnancy should avoid this colour. It may provoke eczema, is harmful to asthmatics and causes hyperactivity. It has caused birth defects and fetal deaths in some test animals. Implanted in mice bladders it produced cancer. As of October 1999 the ANZFA has allowed this chemical to be used either in large amounts and/or in more foods.

*282 – Calcium Propionate* - a preservative commonly found in bread. May cause asthma, migraine, fatigue, aggression and learning disorders

*621 – Mono Sodium Glutamate (MSG)* – a flavour enhancer. May be found in packet soup, flavoured noodles, soy sauce, chicken, beef, pork or smoke flavours. Potential effects: heart palpitations, nausea, depression, headache, migraine, asthma.

And what's really in those artificial flavours? Here are some examples of flavourings you could find in ice-cream:



- “Cherry” – aldehyde C17 – an aniline dye used in plastic and rubber.
- “Vanilla” – piperonal – a chemical used to kill lice.
- “Pineapple” - ethyl acetate – cleans leather, and its vapours are known to cause chronic lung, liver and heart damage.
- “Nut” – butylaldehyde – used in rubber cement.
- “Banana” – amyl acetate – a paint solvent.
- “Strawberry” – benzyl acetate – a nitrate solvent.

### **Artificial Sweeteners**

Aspartame, also known as ‘Nutrasweet’, or food additive no. 951, contains Aspartic acid and Methanol. Aspartic acid can cause brain damage, and Methanol breaks down to formaldehyde, which spreads throughout the vital organs. Aspartame can trigger or mimic many diseases, including A.D.D., epilepsy, fibromyalgia, lupus and M.S. Aspartame is the sweetener in diet drinks, such as Diet Coke, and is the sweetener in most ‘sugar-free’ sweets and chewing gum.

### **Preservatives**

Some preservatives are labeled as ‘antioxidants’. Most of us are aware of the wonderful health benefits of antioxidants. However there are good antioxidants and bad antioxidants.

Antioxidants like grape seed and Vitamin E are free-radical scavengers, protecting us from cancer. However, certain preservatives in foods, labeled as antioxidants, can be detrimental to our health.

Examples of bad anti-oxidants are:

BHA (*butylated hydroxyanisole*) – 320

This additive may be found in dried milk powder and powdered mashed potato. It may cause dermatitis, asthma skin blisters, weakness, fatigue and cancer. Derived from Coal Tar Dye, it is reported to be the most widely used additive in the U.S. It is listed as a carcinogen and suspected of being a neurotoxin. It raises cholesterol levels in the blood and can cause hyperactivity.

BHT (*butylated hydroxytoluene*) – 321 – similar effects to BHA.

Sulfites – 220, 221 and 222 – these are a group of sulfur-based chemicals, also widely used as antioxidants in foods. As many as 1 in 100 people, according to the FDA (Food & Drug Administration in USA) are extremely sensitive to sulfites and may have difficulty in breathing, develop hives, diarrhea, abdominal pain, cramps and dizziness, wheezing and vomiting. Sulfites are commonly used in cooked chips and preserved meats.<sup>25</sup>

*According to “The Australian and New Zealand Food Additive Decoder” all of the aforementioned additives have been classified as potentially dangerous, meaning that they may cause hyperactivity, anti-social behaviour, short attention span, lack of muscle co-ordination, skin disorders, asthma and allergies in some people.*

### **Other problems with food additives:**

Food preservatives may also have an antimicrobial effect. This means that they stop the action of the good bacteria in our digestive tract. These helpful bacteria break down food and fight the bad bacteria. Without these helpful bacteria in the gut, our immunity is lower.

Foods that contain high levels of food additives usually contain lower levels of nutrients. Foods with multiple food additives in the one product will have a multiplied effect. They react with each other to give an overall negative effect.

Food additives to avoid:

102, 107, 110, 120, 122, 123, 124, 127, 129, 132, 133, 142, 151, 153, 155, 160b, 168, 173, 250, 252, 282, 320, 321, 420, 421, 621 (MSG) 622, 624, 627, 631, 951 (aspartame)

You may be saying, "I eat sweets every day containing RED food additives and I suffer no harmful effects." Not everyone who consumes food additives is affected. Our bodies do their best to eliminate toxins through the excretory system. But sometimes the body can't get rid of them all. How would you know if a food additive was having an ill-effect? You may feel tired, have asthma, get colds easily, and have poor digestion. Would you know that it was toxins in your system causing that? Of course not. You would think of other causes before you would think of food additives.

There are many people who have cleaned up their diet by eliminating foods that are potentially a problem, and switched to a natural plant-food diet. By doing this many people are healed of their problems and experience vitality. We can think of the body as having a bucket inside. That bucket holds the toxins that we consume. We have no ill-effect because the toxins are going into the bucket and not into the rest of the body. This goes on for years. But one day the bucket gets so full that it overflows. Where does the toxic waste go? Now it goes into our body and we see the results in allergies, fatigue and illness. When we are young we are resilient. But youth does not last forever.

References:

1. Taubert, P.M. *Your Health and Food Additives*, Aust 2000
2. Reekie, Lillian, *Hidden Dangers*, Aust 2002.
3. Dingle, Dr. P., *My Dog Eats Better Than Your Kids*, Aust 2008
4. *The Australian and New Zealand Food Additive Decoder*, 2000
5. Statham, B., *The Chemical Maze*, Aust, 2006

**Activities:**

1. Find a product that contains at least 2 additives in the RED category. List the problems associated with these.

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2. What is the main preservative to avoid when buying bread?

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3. Why is it important to buy ice-cream with natural colourings/flavourings?

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4. What happens when food additives upset the balance of friendly bacteria in the gut?

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5. List some diet drinks containing aspartame.

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6. What are some problems with aspartame?

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7. What would you say to a person who thinks they can consume food additives in the RED category regularly because they suffer no harmful effects? (Write on the back of sheet)

### 3B. Environmental toxins

After World War 2, thousands of new chemicals were released into the environment. They had uses far beyond warfare. Pesticides, plastics, fertilizers and preservatives found their way into the products we use every day – not just food but products we put on our skin. The skin was once thought to be the perfect barrier to keep out all substances. But as time went on it was discovered that the skin was a carrier, not a barrier. Medication patches were developed, such as the patches used to help smokers kick their addiction. How do these work? The patches are impregnated with the medication known to produce the desired effect. When placed on the skin, the substance is absorbed through the skin and into the blood stream.

Although this new discovery has been made, no one has done anything to stop toxic chemicals going into products that we put on our skin. It would cost the manufacturers too much money to produce non-toxic products. So toxins in skin-products have remained. However some products are safer than others. We can do our best to minimize the effects of toxins by buying products from a health shop rather than the supermarket, or just cutting down on the amount of products we use on our skin.

Toxins can also enter our bodies by breathing them in, or ingesting them. Over time, exposure to environmental toxins can cause allergies, fatigue and a depressed immune system in some people.

Some common toxins found around the home are fly sprays, garden pesticides, herbicides, household cleaners, paints and glues. Exposure to these environmental toxins adds the toxic waste in the imaginary “bucket” inside us. We can cut down on problem chemicals by using a fly swat instead of fly spray, and by using safer or fewer cleaning products. We can make things clean by just scrubbing harder and by using ordinary substances like vinegar and bi-carb soda. A few drops of eucalyptus oil added to water makes a good disinfectant.

We can minimize the effects of pesticides on fruits and vegetables by washing or peeling fruits and vegetables before eating them.

## Activities

1. Find the dictionary meaning of 'toxin'.

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2. How do environmental toxins get into our bodies?

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3. What effects can environmental toxins have on some people?

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4. How can we minimize the effects of toxic chemicals that enter through the skin?

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5. List some toxic chemicals found in and around the home.

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6. How can you cut down on some of these?

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7. How can we minimize the effects of agricultural pesticides?

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### 3C. Food allergies and intolerances

The Melbourne Age, December 21 2008  
Article by John Elder

## Danger at the Dinner table

Food intolerances and allergies seem to be on the rise. Five percent of all babies and 1 per cent of adults have some kind of food allergy. Seafood allergies often present themselves during the festive season. “Where peanut allergies usually begin in childhood, a potentially lethal allergy to shellfish can develop at any time,” says Professor Jo Douglas, head of the Alfred Hospital’s asthma service.

An allergy is potentially fatal and the offending food is to be avoided at all costs. Even a small portion can have catastrophic results.

In ancient times when mankind wandered the plains, food intolerances meant eating a poisonous berry. During the Depression years kids were told to eat everything that was put on the plate – especially if you were at someone else’s place. Fussy eaters were told: “Eat up. It won’t kill you.”

Those were the last days of human history when most people were able to eat just about anything and not suffer. Now it appears that anything you can put in your mouth is causing someone a problem. At [imupro.com.au](http://imupro.com.au) – a website for a company selling a food-intolerance test through pathology labs – you’ll find 272 foods listed as potential troublemakers.

ImuPro’s managing director, Kevin Grundy, says business has tripled in the past years with 60 to 70 people a month taking the test – which in its most comprehensive form costs \$995. “We’ve only been going since 2006 and the interest being generated is phenomenal,” Grundy says.

At [coeliac.com.au](http://coeliac.com.au), you’ll read that about 15% of the population has some sort of gluten intolerance – gluten being a protein in wheat, rye, barley and oats.

And the Food Intolerance Network, founded by former teacher, Sue Dengate, claims 1000 hits on its website a day, with 1.5 million people having logged on so far for information about food additives and intolerances to naturally occurring food chemicals. Dengate says “Its food additives – which increasingly became part of the national diet in the ‘70s – that are causing many problems.”

Salvatore Oppedisana, head chef at Saganaki Restaurant, Melbourne, believes the increase in food intolerances is partly because “the quality today is not what it used to be. There’s too much processed stuff that housewives pick up at supermarkets...Most people aren’t eating a balanced diet.”

A former hospital head cook, Oppedisano says, “Eating food low in nutrition is like trying to run a car on bad oil. As you get older the body isn’t being sustained by the foods that are available.”

Marc Cohen, professor in complementary medicine at RMIT, says “If the integrity of your gut isn’t in place, allergens can cross into the bloodstream.”

Dietitian Jane Dostine, when asked why food intolerances are now a mainstream issue, says “We had a much simpler diet 20 years ago...our diet has changed dramatically in one generation from something that was basic to one of more exciting flavours. And there are complications that go along with that.”

### **Not so nuts about the pudding?**

People with food allergies need to plan for Christmas socializing, says Professor Jo Douglas. She advises:

- Notify family, friends or restaurants ahead of time about restrictions in your diet.
- Have an anaphylaxis plan – including the carrying of an EpiPen. Over a five-year period, most people with a nut allergy will be exposed to food containing nuts, despite actively avoiding it.
- When confronted by food you’re not sure about, do a touch test by putting a fingertip on the food and then touching the lips.

**Activities:**

1. How do we know that food intolerances are on the rise?

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2. For some people with food allergies, eating even a small amount of that food can be fatal due to anaphylaxis.

**Anaphylaxis**

**Definition**

Anaphylaxis is a rapidly progressing, life-threatening allergic reaction.

**Description**

Anaphylaxis is a type of allergic reaction, in which the immune system responds to otherwise harmless substances from the environment. Unlike other allergic reactions, however, anaphylaxis can kill. Reaction may begin within minutes or even seconds of exposure, and rapidly progress to cause airway constriction, skin and intestinal irritation, and altered heart rhythms. In severe cases, it can result in complete airway obstruction, shock, and death.

Name a food that can cause anaphylaxis. \_\_\_\_\_

3. Food intolerances are different to allergies. They do not cause anaphylaxis, but may cause asthma, eczema and digestive problems. List some common foods that many people have intolerances to.

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4. Give the reasons suggested by experts in this article, for the rise in food intolerances.

a) Sue Dengate

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b) Salvatore Oppedisana

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c) Marc Cohen

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d) Jane Dostine

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5. When Jane Dostine says that there are more exciting flavours around today, what do you think she means?

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6. How people minimize the risk of developing food allergies and intolerances?

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## Unit 4: Fit to serve

### 4A: Fitness

Here are some definitions of fitness.

1. Good health, or physical condition, especially as the result of exercise and proper nutrition.
2. The ability to function efficiently and effectively, to enjoy leisure, to be healthy, to resist disease and to cope with emergency situations.
3. Your health at its very best.

Which definition of fitness do you prefer and why?

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Being fit includes every aspect of your health – not just physical but your emotional and mental well-being. Healthy eating, drinking water, exercise and adequate sleep are essential to being fit.

Being fit gives you:

- energy to be more productive and do things that are important to you.
- a positive outlook to handle the mental and emotional challenges that come our way, and to deal with stress.
- reduced risk of many health problems, including heart disease, cancer and diabetes.
- the opportunity to look and feel at your best.
- physical stamina to protect yourself in an emergency.
- a better chance for a having quality of life and perhaps a longer one too.

The American Dietetic Association

To have energy to be productive and do the things that are important to you. Here are some components of fitness:

- **Strength** - the extent to which muscles can exert force by contracting against resistance (e.g. holding or restraining an object or person)
- **Power** - the ability to exert maximum muscular contraction instantly in an explosive burst of movements. The two components of power are strength and speed. (e.g. jumping or a sprint start)
- **Agility** - the ability to perform a series of explosive power movements in rapid succession in opposing directions (e.g. zig-zag running or cutting movements)
- **Balance** - the ability to control the body's position, either stationary (e.g. a handstand) or while moving (e.g. a gymnastics stunt)
- **Flexibility** - the ability to achieve an extended range of motion without being impeded by excess tissue, i.e. fat or muscle (e.g. executing a leg split)
- **Local Muscle Endurance** - a single muscle's ability to perform sustained work (e.g. rowing or cycling)
- **Cardiovascular Endurance** - the heart's ability to deliver blood to working muscles and their ability to use it (e.g. running long distances)
- **Strength Endurance** - a muscle's ability to perform a maximum contraction time after time (e.g. continuous explosive rebounding through an entire basketball game)
- **Co-ordination**- the ability to integrate the above listed components so that effective movements are achieved.

Of all the nine elements of fitness, cardiac respiratory qualities are the most important to develop as they enhance all the other components of the conditioning equation.

<http://www.brianmac.co.uk/conditon.htm>

List some benefits of being fit.

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What is cardiac-respiratory health and why is it important?

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Which aspects of your fitness could be improved?

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How can being fit help us to serve God better?

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### **Body Mass Index**

Part of being fit is to be a healthy weight for your height. This is called *Body Mass Index*, (BMI). You can find out your BMI by using the following equation.

Take your weight (in kilograms) and divide it by your height (in metres) squared.  
i.e.  $\text{kg} / \text{m}^2$

A value of 25 or greater indicates over-weight and a higher risk of weight-related illnesses. A value of 30 or greater indicates obesity.

If you do have a BMI of over 25, you may like to take steps towards lowering it, to avoid future illness. People carrying too much excess weight are more prone to diabetes, heart disease and cancer in later life. These are called lifestyle diseases.

Being the right weight for your height is important, but the distribution of fat and muscle are also important. Exercising will help you maintain a good fat-muscle ratio.

Weight	Height	BMI

## 4B: Water

Pure water is best for cleansing the system. If you feel like the occasional warm drink, then a cup of herbal tea can be a substitute for traditional tea and coffee. Herbal teas, and Chinese green teas, are beneficial, while regular tea and coffee contain caffeine which undermines the efficiency of the liver and kidneys.

Fizzy drinks deplete the body's calcium stores. When we drink fizzy drinks, calcium is drawn out of bones in order to neutralise the acidity of the high phosphorus level in the fizz. Cola drinks contain caffeine and diet drinks contain the artificial sweetener, aspartame. If you have to choose between the sugar in regular drinks, or the artificial sweetener, aspartame, choose the sugar. Not that sugar is good for you, but just not as damaging as aspartame!

Most of us are aware of the importance of water. You die after just three days without it! However many people are under the misconception, that if they drink tea, coffee and soft drinks, they are getting enough water, because these drinks contain water. These drinks are actually diuretic in their effect. That means they are water-expelling. They take water out of the cells and eliminate it through the kidneys. This happens because the mostly acidic composition of tea and coffee requires the body to give up water in order to eliminate their harmful residues.

Dr. Batmanghelidj did some outstanding work on the therapeutic value of water. He says that for every cup of regular tea or coffee you drink, you need to make up for it by drinking a glass of water. Dr. Batmanghelidj, as a political prisoner in a Tehran prison, cured other prisoners by using water alone. He treated prisoners with water alone, because that was all he had available. Later, after escaping to the U.S., he was able to continue his research. Dr. Batmanghelidj proved that water *does* have therapeutic value, and that dehydration creates the foundation for many diseases.

Water is essential for brain function, bone function, nerve function, and is intricately involved in the body's water-dependent chemical reactions. It is required for cellular energy, digestion, detoxification and for maintaining the right blood pH level. The body uses water to buffer acidity. Lack of it creates all manner of illnesses, including allergies, depression, heartburn and ulcers. Most of the population have become chronically and dangerously dehydrated due to the decision that water is too bland to drink, and needs replacing with tea, coffee and fizzy drinks.

We should drink between meals but not with meals. Drinking with meals interferes with digestion by dilution of the digestive juices. It is also best to start the day with 2 glasses of water, or warm water with a slice of lemon. The body needs plenty of liquid for cleansing and flushing the system. We need to drink at least 6-8 glasses of water per day. .

## Activities

1. Name a fizzy drink containing aspartame. \_\_\_\_\_

2. What effect do fizzy drinks have on the bones?

\_\_\_\_\_

3. How long can you live without water? \_\_\_\_\_

4. Drinking 8 cups of coffee a day will not give your cells enough water. Why not?

\_\_\_\_\_

\_\_\_\_\_

5. What did Dr. Batmanghelidj prove?

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\_\_\_\_\_

6. What are some of the functions of water in our bodies?

\_\_\_\_\_

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\_\_\_\_\_

7. How much water should we drink per day? \_\_\_\_\_

8. When is the best time to drink water?

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## 4C: Sleep

### Teenagers and sleep deprivation

Sleep deprivation in teens is on the rise. The amount of extra activities children are taking part in these days has created many sleepy teenagers, along with the early start of school.

Sleep deprivation in teens is a major area for concern because we know that during those years, a teenager requires more sleep than during the preteen years. But studies show that teens actually get much less sleep than they did during those preteen years.

Symptoms of Sleep Deprivation in Teens, & the Effect of Sleep Deprivation on Teens:

- Feels sleepy during the day time
- Has trouble staying awake in school
- Has trouble getting out of bed in the morning
- Experiences fatigue
- Experiences emotional problems
- Is often irritable
- Has poor impulse control
- Makes poor decisions

What causes sleep deprivation in teens? Lifestyle can play a role, but some of it is biological as well. Recent studies have shown that the body's internal, biologic sleep-timing mechanism is reset during puberty. A teen's body signals them to go to sleep at a later hour and also to sleep later in the morning. They are often not able to fall asleep earlier. But their school schedules continue to force them out of bed at an early hour.

### Activities

1. What advantages can you see for starting school later at secondary level?

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2. What would be some disadvantages?

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3. Which of the above symptoms of sleep deprivation could lead to car accidents?

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Sleep deprivation in teenagers was the focus of a study released by the National Centre on Sleep Disorders Research in the U.S.A. This research found that teenagers who had 4 or more 'mentally stimulating devices' such as mobile phones, televisions and computers in their bedrooms, had a twofold chance of falling asleep in class.

4. Why do you think mobile phones, TVs and computers in bedrooms can cause sleep deprivation?

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5. What else can be a cause of being unable to fall asleep?

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6. The ability to fall asleep at night requires a state of relaxation. How can this be achieved?

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7. While we are awake we are using energy stores, vitamins and minerals. Why do you think sleep deprivation has a negative effect on health?

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8. Teenagers and adults need 9 hours of sleep per night. Estimate your average sleeping time per night.

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8. What do these verses tell us about sleep? Use your own words.

Psalm 127: 2

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Psalm 91: 1-5

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Proverbs 3:24

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