



BTNacademy

MODULE 5

FOOD LABELS AND PORTION CONTROL

5. MODULE 5: FOOD LABELS AND PORTION CONTROL

5.1. Module aims

- To fully explain the pitfalls of intuitive eating and the importance of proper portion control in the management of calorie balance
- To give some introductory methods of portion control, and show means of increasing or decreasing the calorie content/volume of your meal
- To give clear guidelines on how to read a food label and explain why this is key to managing your own nutrition
- To place the above in context of healthy eating

5.2. Key principles from modules 1-4

Over the last four modules we have covered all you need to know about nutrition for health and weight maintenance. You know how many calories you need to reach and remain at a healthy weight, you know how much protein, carbohydrate and dietary fat to include, you have an understanding of the importance of micronutrients and a practical means by which you can ensure you consume enough. You know what hydration is and how to maintain it, and you appreciate how much fibre you should really eat and why.

To recap, here's what we have covered in modules 1-4:

- Your primary consideration when looking at nutrition for improvements in health is to achieve and stay at a healthy weight. This is done by manipulating calorie balance first and foremost
- To calculate your ideal energy balance, first estimate your resting metabolic rate (RMR) then apply a multiplier which takes your activity levels into consideration (TDEE). After this, if weight alteration is your goal, add or reduce calories by an amount in line with the rate at which you want to lose or gain weight. Remember that the faster things change, the harder it is to maintain, so ensure the magnitude of difference which you attempt to create is in line with your ability to make it happen (for example, the faster you lose weight, the hungrier and more lethargic you are likely to be)
- Then consider your protein needs which will be based on your current or goal bodyweight
- After that, decide on your fat and carbohydrate intakes which should be based around preference and your activity levels
- Next, make sure that you are consuming a wide range of diverse foods to ensure an adequate micronutrient and fibre intake. If this is not possible for you for any number of reasons, consider looking more closely at your micronutrient and fibre intakes using a relevant tracking method to spot any shortcomings and use dietary or supplemental intervention to compensate

- Get into the habit of drinking when you are thirsty rather than ignoring it, and don't be afraid to lightly salt food if your diet is likely to be low in sodium

Now, while this is all you really need to know in terms of the technicalities of nutrition, we haven't really begun to cover how exactly you use this information to make a real change to your diet or that of someone you are in contact with. Just like it's not enough to know that squats are a good exercise to develop your lower body, you need to know how to do them, it's not enough to know how much food you need to eat – you need to know how to implement that into your life.

So far, we have talked in terms of numbers, percentages and microscopic molecules, and for good reason. We want you to understand nutrition from a micro level (what is a protein) all the way up to a macro level (how much chicken should I eat with lunch?), and from this point onwards in this manual we will be looking far more at the latter and all of its nuances. You know why you should eat certain nutrients and so we don't need to go back over these points to justify our position – now we need to show you how to make sure you get enough food, and how to achieve the calorie and macronutrient balances that you need to reach the goals.

5.3. Introduction to food labels and portion control

The how is the biggest question there is around nutritional application. Most people already know what a healthy diet is, roughly speaking, and yet the global incidence of obesity grows each year. Perhaps just eating healthily isn't enough? While eating a balanced and stereotypically healthy diet is likely to achieve at least some of the summarised points listed above, it is still the case that calorie balance must be achieved, and for many people that may not be possible while simply eating intuitively and following a general soundbite nutritional approach like 'only eat natural foods', 'don't eat things you can't pronounce' or 'if it runs, swims, flies or grows you can eat it'.

So, with that common theme in nutrition firmly in our thoughts, let's discuss intuitive eating.

5.4. The problems with intuitive eating

To define our terms here, intuitive eating is meant as the practice of eating 'good food' when hungry and stopping when full. This is the ideal, and for some people it works exceptionally well, though there are some significant issues which may arise.

In fact, most people who espouse intuitive eating as an answer aren't actually intuitive eating as we have just described. Successful intuitive eaters are almost invariably (there are, of course, outliers) those who have a great understanding of the nutrient contents of foods, as well as that person's requirements, and although they may not analyse or track those foods in the manner we will discuss in the next module, they are a long way from simply eating healthily when hungry, and stopping when full.

The reason for that is that intuitive eating is not something we have ever evolved to do.

Evolution is responsible not only for the way we look and the size of our brains, it's responsible for the inner workings of those brains and the drivers to behaviour which we all experience. There is an evolutionary reason that most of us are at least a little afraid of large spiders – our

ancestors who weren't all died. There's an evolutionary reason that on some level **your** children are more important than a stranger's children whom you've never met – your children represent an investment in time and resources designed to propagate your genes and the children of others, while having an intrinsic value due to their humanity, do not hold the **same level** of importance.

While of course your upbringing, environment and experiences mould your psyche to a large degree, the fundamental behaviours which we all possess are preserved from millions of years of evolution, since long before there were trees on the earth, and their age should tell you of their historical importance as well as giving you a clue to just how powerful these drivers are. While you can learn not to be afraid of snakes, you will automatically move out of the way if one tries to strike at you.

This is critical information because these evolved behaviours govern a huge amount of our interactions with food, but something somewhat obvious needs to be said here – the environment we currently live in could scarcely be further removed from the one in which we, and therefore our behaviours around food, evolved.

You may remember from module 1 that we mentioned an evolved propensity for us to gain weight, and you may recall that we stated our physiological 'fight back' against weight gain was far weaker than our fight against weight loss. The same is true from a psychological perspective, too. Put in a very basic way, your brain rewards you with a large burst of the neurotransmitter dopamine (the happy chemical) every time you eat something calorie dense, meaning something rich in protein, fat or carbohydrate.

The reason for this is quite simple. Dopamine is released in your brain to reinforce behaviour, so everything that you do which has a good chance of increasing your ability to reproduce it, is encouraged on some level. To reproduce you have to survive, and in order to survive we have historically needed to eat as much as we can, when we can, because we didn't know when the next bit of food was going to come around; in fact, it's very likely that for the majority of your ancestry the norm was famine rather than plenty. We didn't evolve to just eat anything and everything, though. There were a few things which we really needed to focus on:

- **Sugars:** We needed carbohydrates for energy. Though many popular diets espouse the idea that hunter-gatherer diets are extremely low in sugar, this will have varied by location, and current hunter gatherers such as the Hadza get a significant portion of their daily calories from honey
- **Fats:** We needed fats for energy
- **Protein:** As noted in module 2, protein insufficiency can kill
- **Salt:** After module 4 you don't need to be told the importance of salt

A combination of the above makes for something really enticing too, leaving us with what is referred to as a hyper-palatable food. A combination of fat, sugar and salt provides an irresistible and incredibly enjoyable eating experience that is genuinely hard to say no to or

to stop eating when you really should. People will say that fats are easy to overeat or that sugar is, but nobody is drinking oil (fat only) or eating sugar from a bag. Add those two together and you get the basis of the confectionary industry and when you throw salt and protein into the mix you get cheeseburgers with ketchup, pizza and all the other wonderful junk food we love, the availability of which has had a huge effect on the obesity epidemic.

What you will notice here is that micronutrient density doesn't affect the reward centres in the brain all that much. This is probably because historically (meaning not only before our ancestors separated from the other apes, but long before that) an animal which consumed sufficient calories and protein to live will have, by default, consumed enough fibre and micronutrients to survive – even thrive. It's almost impossible to eat a steady diet of wild fruits, tubers, grasses, honey, game and eggs while living largely outside yet still find yourself deficient in anything. So where does that leave us?

Humans have an evolved tendency to prefer highly caloric and salty foods, while finding low calorie, highly fibrous foods rich in micronutrients somewhat bland. Even when we do eat and enjoy vegetables we eat carrots with fatty dips, we add cheese and dressings to salads and we wrap asparagus in ham. Plain, steamed broccoli just doesn't have the same appeal as a pulled pork sandwich, and you can thank evolution for that because it's not self-evident that this **has** to be the case. After all, wouldn't life be so much easier if your taste buds told you broccoli tasted like a chocolate cake, but chocolate cake tasted like broccoli?

Unfortunately, that's not the case and the same wiring which would have encouraged you to eat as much as you can when food was available so you don't die in the next 10 days, is the same wiring which tells you that yes, you do have room for dessert, long after you have consumed your actual energy requirements. Not only that, but food processing has allowed us to pack more energy into every bite and so we are now able to get far more energy into our stomach before physical fullness stops us eating.

Next, we need to consider marketing and the 'health halo'. People will routinely estimate foods considered healthy or good for fat loss to have fewer calories than they contain and the opposite is true of foods which are branded unhealthy or good for weight gain. This means that those eating mindfully will subconsciously overeat on certain healthy foods – many are shocked to hear that a medium avocado can have over 250 calories and that 3 eggs and a small amount of smoked salmon on a wholegrain bagel can rack up over 800 calories, for example.

Additionally, foods are very rarely sold in a single serving format and people will routinely underestimate the amount of portions which are contained within a packet, meaning that each person (or the same person at different sittings) is consuming way more food than they had originally planned. When people are asked to serve themselves what they consider to be 'a serving', they will generally serve up a far larger amount of food than they require (this is often more pronounced for foods where there is a larger amount of total servings available). You'll likely eat more lasagne if there are 12 portions in the tray than if there are 4, and of course those who are served larger portions will eat more (even if they don't clear their plate) but after eating will report the same level of fullness. This means that the idea of "I'll only eat

what I need” is incorrect **even** if you do leave food on your plate. Your ability to stop eating when full is nowhere near good enough to be a reliable measure of when you should stop eating.

As a final nail in the coffin for intuitive eating, we need to consider the differences between the brain of lean people and the obese. It's shown in neuroimaging studies that the areas of the brain associated with anticipation of reward (consider these to be cravings) are activated to a higher degree in those who are obese, meaning that obese people genuinely do have more intense cravings than those of us who are generally considered to have 'better willpower'. This isn't really a fair analysis because we aren't facing the same drivers, and it's even worse – those same individuals have fewer dopamine receptors in the reward centre of the brain which means that they need **more** hyper-palatable food to satisfy their craving than the rest of us. If you are or have been overweight or obese, your appetite regulatory system is not going to be as powerful as someone who has never been. Therefore, to expect yourself or someone you know in this situation to be able to simply stop at 1 cookie, is somewhat misguided.

To summarise:

- You are more likely to err towards more calorie dense foods
- Your brain rewards you for eating calorie dense foods more than calorie sparse, nutrient dense foods
- You can easily overeat on calorie dense foods without becoming full, especially if they are hyper-palatable
- Most people underestimate the calorie content of 'healthy' foods
- You will serve yourself more than you need (or too little to overcompensate for this)
- When served too much, you will eat too much without feeling more full
- Obese people have a harder time with this than those of a healthy weight

So much for intuitive eating...

What we typically find is that those who can eat intuitively are those who have tracked their food intake for a long time, and/or are those who eat roughly similar foods day-to-day. So, long as they know more or less what's in what they are eating and what it is they need to eat, and providing they keep their portion sizes of easily estimable foods (it's easier to guess the calorie content of a chicken breast with some cheese and a potato than it is to guess a bowl of chilli because you can see everything individually), they can manage. Someone who has tracked and measured food for a long time will eat a small, 30g serving of cereal – most people will not.

Now of course there are those for whom this does not apply. Some people don't overeat and do have a very 'in tune' hunger/fullness sensitivity. Yet others have the wasteful metabolism we spoke about in module 1 which makes one heat up and move around a lot after overeating, but this is not the majority.

To manage your food intake, unless you are incredibly lucky, you need two things:

- A good understanding of what is in your food. Not just the nutritional science, but the actual nutrient and energy content of the sandwich in your hand.
- A means of determining how much of that food you need to eat to meet the needs you have for the constituent nutrients

Being able to do these two things is what allows some people to seemingly eat whatever they want and not gain weight and it's what will allow you, in time, to never struggle to maintain your weight again (though your application may change over time, as we will discuss later).

There are two ways to accomplish the latter which will be covered in the next module for the most part, but as for the former, we shall turn to that now. Just how exactly are you supposed to know what is in the foods you have in your hand, so you can make an educated decision around how much of it is a good idea to eat?

5.5. Food labelling

The best place to look is a food label. Almost all foods in the UK must have labelling of some form or another, with back of the packet nutritional information being mandatory, and the following being optional labels which most, but not all, companies will use:

- Front of pack information, possibly in a traffic light system
- Nutrition labelling for non-pre-packed foods such as loose fruit or vegetables, or fresh produce/meat at a supermarket counter
- Calorie labelling for alcoholic drinks

There are also notable exceptions with the following companies not needing to use nutritional labels:

- Foods produced by small companies who predominantly sell direct to consumer (defined as those with fewer than 10 employees and a turnover of less than £1.4 million)
- A local retail establishment meaning one who exclusively supplies to their own county and the larger one of any neighbouring counties

Unlike in the past, current legislation around food labelling is very strict and companies can incur enormous fines if they are found to be giving false or misleading information on their packets as this constitutes mis-selling and fraud.

Some examples of information that must be given are:

- Many food names are protected, meaning that, for example, anything referred to as chocolate must have a specific amount of cocoa solids (otherwise it must be 'chocolate flavoured')
- In order for a sausage to be named as such, there is a minimum meat inclusion which therefore limits fillers

- If expensive products are padded out with cheaper ones (such as diluting olive oil with cheaper vegetable oils) then this must be clearly stated and the product is not able to be labelled as being the expensive ingredient
- Meats containing water or fillers must be labelled as such and misstating the amount of, for example, meat in a burger is also an offence
- Ingredients are listed in order of inclusion. A juice that lists apples, grapes, kiwi and blueberries, will therefore contain more of the cheaper fruits. This can help you to make a more informed decision

According to The Food Labelling Regulations 1996, foods must be marked or labelled with certain requirements such as:

- The name of the food
- A list of ingredients (including food allergens)
- The amount of an ingredient which is named or associated with the food
- An appropriate durability indication (e.g. 'best before' or 'use by')
- Any special storage conditions or instructions for use
- The name and address of the manufacturer, packer or retailer
- The place of origin (where failure to do so might mislead, for example stating a chocolate is from Peru when it isn't, or a coffee is from Kenya when it isn't)

As you can see, the label is a trustworthy source of information and so it's your best practical means of ascertaining what you are eating, and what's in it.

5.5.1. How to read a label

In the UK, there are three different areas of the food label to which you need to pay attention to the traffic light information on the front as well as the print information there, and the text/table on the back. Let's discuss each in order.

5.5.2. UK traffic light labelling

The first place to look on a food label in the UK is the front of the packet where you will see the traffic light information. The idea behind this is quite simple – it allows you an 'at a glance' understanding of the food in your hands and can help you understand some of what you need to know, namely whether a food is low, medium or high in a given nutrient which the UK Food Standards Agency deems important. Each label will tell you the sugar, fat, saturated fat and salt per serving of food and give it a colour rating. You should notice that a red light is given to something which denotes more than $\frac{1}{3}$ of your recommended intake per portion, or 40% of your salt intake per portion.

Note: Salt is calculated by multiplying the total sodium content by 2.5 according to UK law.

For each nutrient, the calculation is done as follows, per 100g unless indicated:

Fig. 55

	Green (low)	Amber (medium)	Red (high)
Fat	Less than 3g	Between 3 and 17.5g	More than 17.5g per 100g or 21g per portion
Saturated fat	Less than 1.5g	Between 1.5 and 5g	More than 5g per 100g or 6g per portion
Sugars	Less than 5g	Between 5g and 22g, and added sugars less than 12.5g	More than 22.5g per 100g, more than 27g or 12.5g added sugars per portion
Salt	Less than 0.3g	Between 0.3 and 1.5g	More than 1.5g per 100g or 1.8g per portion

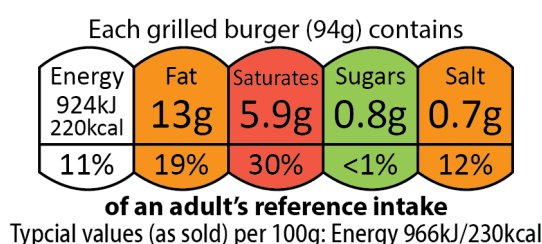
For drinks the rules are slightly different. These values are per 100ml:

Fig. 56

	Green (low)	Amber (medium)	Red (high)
Fat	Less than 1.5g	Between 1.5g and 8.75g	More than 8.75g per 100ml or 10.5g per portion
Saturated fat	Less than 0.75g	Between 0.75g and 2.5g	More than 2.5g per 100ml or 3g per portion
Sugars	Less than 2.5g	Between 2.5g and 11.25g and added sugars less than 6.3g	More than 11.25g per 100ml or 13.5g per portion, or more than 6.3g added sugars per 100ml
Salt	Less than 0.3g	Between 0.3g and 0.75g	More than 0.75g per 100ml or 0.9g per portion

This is an excellent starting place. You can immediately see roughly what a portion of any food contains what is in it. Historically information was mostly expressed as 'per 100g' but if you are planning to eat half of a 350g packet, it's not practical to be able to do the maths in your head while stood in the supermarket. Let's look at an example packet:

Fig. 57



Already it's likely that you can see the value in looking at the information in this way. From a 10 second glance, you can see the caloric value (which is generally presented as a percentage of the recommended calories for the average female) and the amount of each of the four nutrients contained within the food. You can also see what a suggested portion is. The reason that these figures are then put in a traffic light code is because:

- Doing so allows you to very quickly identify whether something is 'high' in something
- It places the numerical values in context. Most people have not done this course and thus will not know how much saturated fat is a good idea to eat, rendering 5.9g a meaningless number. This gives that number meaning

So that's the positives, but what about the negatives? No system is perfect and this is no exception to that rule.

Firstly, it doesn't give you any protein or carbohydrate information, meaning that it's incomplete. This of course doesn't really matter being that the rest of the information is available on the rest of the label, but it does mean that this information alone isn't enough to make a decision from. Then we need to consider just what 'high' and 'low' mean out of context. Take a sirloin steak for example, 100g will contain around 5.1g of saturated fat which leads it to have a red traffic light, but foods don't only contain one kind of fat; there is also around 5.4g of monounsaturated fat in sirloin steak which is shown to be beneficial to health. Not to mention what we saw in module 2 regarding the complexity of saturated fat and the health impacts which it can have, and of course that needs to be placed in the wider context of a full diet.

The red lights could lead people to go for 'all greens' for the whole day, which would then lead them to **under** consume saturated fat by effectively avoiding it. Labelling some things as red will of course cause people to avoid them completely by associating them with 'bad' or 'stop' and this is rarely a good way to view things.

This states a portion but doesn't really go further than that, meaning that you need to engage critical thinking. A portion is not the same for a 50kg sedentary female who wants to lose weight and a 120kg male athlete, so these guidelines may not always be fully appropriate. This is especially the case when it comes to snack foods where a 220kcal 'portion' may represent 5% of the latter individual's total calorie intake, but perhaps 15% of the former's. With that said, a portion guideline for non-snack foods (cheese and pasta being prime examples) isn't a bad place to start.

Finally, there's the somewhat obvious, yet rarely spoken about issue which is present here. A low-fat ready meal made with processed meat, refined carbohydrates and little micronutrients could easily have a fully green label, while a highly nutritious steak, pack of eggs or indeed a packet of almonds would get reds for fats and possibly saturated fats. A pasta salad void of protein would also qualify as a healthy lunch by getting all greens, but a roast chicken salad with hummus may not. Which do we really think is likely to be more beneficial for overall health and weight maintenance considering all we know?

Sweets would get a red for sugar, but a green for everything else, and so would golden syrup. Clearly this system has a ton of utility but it's completely insufficient to base your entire decision on when looking at foods. We would recommend using this system for those who are not yet ready to look into the science of nutrition and are simply trying to make better choices when starting out with improving their lifestyle. It can be a useful tool for judging snack options, so long as you are mindful of what your personal portion size should be. The reason for this is that a food may have what seems like a small amount of added sugar per portion but because the sugar content is calculated on a per 100g basis you can use this to compare it to other options.

In summary, while it is useful this area of the label, it is insufficient to give you the information you need to make fully informed choices from.

Before we move to the back of the pack, let's look at something else which you'll often see on the front of packaging, certain health-based claims. It's not uncommon to see words like low-fat, light, lighter, high in fibre, low in salt. It may or may not surprise you to know that these have specific and defined meanings in line with what we mentioned before about labelling regulations and the strictness of the labelling laws. So, what else can you find out from the front of the packet?

5.6. The rest of the front of packet labelling

The front of a packet can be another great source of information, though understanding precisely what this information means isn't always as clear-cut. First of all, you'll often see a recommended number of portions, which may also be listed on the back of the pack. These are generally a great guideline to follow for the average person when it comes to snack foods and desserts, and they will match up to the traffic light suggestions above. This can help when buying food to make sure you have enough, and that you don't buy too much. If something is in your house you will eat it, and if two of you are planning on having a dessert one night but there's four portions in the packet, you're probably going to have dessert two nights in a row, or just a really big dessert once – both of which may impact your overall calorie balance negatively.

Beyond that, there are some other things you'll find on labels and a few examples are listed below.

5.6.1. Use by/best before

These are not interchangeable. Using a food after the 'use by' date could be harmful to your health and should therefore be avoided (and of course the use by date assumes that you follow the storage instructions on the label, i.e. refrigeration after opening). Likewise, the use by date takes precedent over other information such as 'use within a week of opening'. Freezing allows you to extend the life of foods with a use by date, but do bear in mind whether a food can be cooked from frozen and if not, defrost and use within 24 hours.

Best before states quality and not safety, so foods eaten after this period will be OK but may not taste as good as they did before, or contain as much micronutritional density due to degradation of the more delicate vitamins. One exception are eggs which are OK to eat after

the best before date but should be cooked until the yolks are hard or fully cooked, in case salmonella bacteria could cause you to get ill.

Note: Sell by dates are also included on some packages but these are for the shop to use and not the consumer.

The rest of what you will see on a label are grouped generally as 'health claims' which are regulated by legislation put in place by the European Commission in 2007. All health claims must be worded correctly and approved by the commission, as well as being supported by current evidence. Food companies are allowed to make claims about a nutrient's inclusion or the relative fat content compared to other foods, and they are allowed to call a food healthy so long as that is then backed by another claim (so a food can be called healthy if it's also lower in added sugars or high in a certain vitamin or mineral). Other terms like 'part of a balanced breakfast' are all but meaningless.

5.6.2. Light/lite

To be able to use these words on the front of a food label, the food must be at least 30% lower in at least one typical value (generally calories or fat) than a standard product of the same variety. The label must tell you exactly what is lower and by how much (so "30% fewer calories than our regular cheese") but it doesn't have to make **all** of the information completely obvious and this isn't a universal good.

A lite food may have 30% less fat, but if it has a lot more added sugar, then the total calorie difference may be minimal. Additionally, some nutrients (fat-soluble vitamins) or some properties such as appetite satiation may be removed due to both an alteration in mouthfeel and an alteration in gut transit time. This is not always the case of course, but it's worth considering. Good examples are fat free yoghurts which could either be great protein sources or small, watery pots of added sugar. As always, know your food, check the back of packet label, and understand the ingredients in order to make an informed decision.

5.6.3. Increased (nutrient)

This is the opposite of the above, so the food must be at least 30% higher in the stated nutrient, and this nutrient must be specified along with the actual increase vs. a comparable product.

5.6.4. Low-fat

This claim goes along with the traffic light system, where the value must have earned the green traffic light.

5.6.5. Fat free

The food must have less than 0.5g fat per 100g. Some foods may claim to be 'only 3% fat' or similar, and of course these would then contain the percentage of fat in grams, per 100g of product (in the example, this would have 3g fat per 100g).

5.6.6. No added salt

This can be found on products with a somewhat high sodium content that is naturally occurring, such as many dairy products. This may also be worded as 'salt content due to naturally occurring sodium'. This doesn't really alter the health impacts of sodium or change anything physiological, but is there rather to inform the consumer that nothing has in fact been added.

5.6.7. No added sugar/unsweetened

This means that the product must have no sugar added as an ingredient (or derivatives thereof) but it does **not** mean that the food is low in sugar necessarily. Foods with a high natural sugar level such as fruit juice or dried fruit may be unsweetened but still high in sugar, so don't take this to mean anything more than exactly what it says.

5.6.8. A source of fibre/high in fibre

To be a source of fibre a food must have at least 3g of fibre per 100g food or 1.5g fibre per 100kcal, which isn't all that high. Eating two portions of 'a source of fibre' food at each of your three meals will still only total 9g of fibre, less than half of the daily needs of most people. To be high in fibre these values double, so check the back of packet label for absolute values if you are trying to find foods which have a lot of fibre. Generally speaking, the foods with the most fibre: legumes and vegetables, may not have a fibre-based claim at all, so be aware.

5.6.9. Source of protein/high in protein

To be a source of protein a food must provide at least 12% of its energy in the form of protein, so 3g per 100kcal. This rises to 20% for high in protein, meaning 5g per 100 kcal. Again, this is not necessarily a great guide, especially considering that this does not differentiate between high and low quality proteins, and considering the rapidity at which 'protein cereals' and other processed foods are promoting themselves via this loophole despite offering little else in the way of nutritive value.

5.6.10. High polyunsaturated or high monounsaturated fatty acids

The fatty acids in the product must be at least 45% of the stated fatty acid, and that fatty acid must provide at least 20% of the total calories.

You may also see claims regarding saturated fat or sugar levels which fall in line with the traffic light system. The important thing to remember here is that these should be taken to mean exactly what they say and nothing more, so a food which is 'high in protein' and 'low in fat' could be a great option like a chicken breast or some cod, but at the same time it could be a fortified breakfast cereal or high-sugar milkshake. As with all front of pack information these are clues and little else. To really know what you are eating, check the label at the back.

5.7. How to read the back of the packet

The back of a food packet is where you will find the most information and of course that means it's potentially the most confusing place to look. With all of the numbers and small print there, where are you supposed to look for and how should it impact your food choices?

This should all now be a lot easier being that you understand your daily requirements, and the second half of this module along with the entirety of the next one will show you how to apply it, so all we're going to do here is draw your attention to the specific areas of the label that matter the most.

5.7.1. The ingredients list

This will tell you exactly what is in the food and, as already mentioned, it is written in order of inclusion. If something appears higher on the list then you know there is proportionately more of it in the product than the next ingredient. There are a few things to pay attention to here:

- **Added sugars.** Because the nutrition table which we will cover in the next section does not differentiate between added or intrinsic sugars, it is the ingredients list in which you need to look for this information. Naturally occurring sugars in dairy and fruit, for example, aren't something you really need to pay attention to but the added sugars in various other products can increase palatability and caloric density
- If a food has a relatively high amount of sugar in it (either according to the traffic light system or the nutritional table which we'll come to momentarily) you need to look to the ingredients list to find out whether or not the sugar is added. While all sugars are digested in the same manner and are therefore nutritionally equivalent, a food which has an increased caloric load through added sugars is rarely a good option for anyone looking to maintain their weight. These are the foods (along with higher fat foods) which are easy to overeat on and can cause cravings. Look for sugar, cane sugar, syrups, maltose, dextrose or anything else ending in -ose
- **Allergens.** Anything which is a common allergen will be written in bold, and anything which has an allergen within it is emboldened too: i.e. if a food has eggs in it they will be in bold (**eggs**), and if a product contains yoghurt this will be followed by (**milk**)
- Some ingredients may be unfamiliar, but this is not a reason to necessarily be wary of them. If you see something you don't recognise, check it out online before making a rash decision. WebMD is a good place to look, and although it has a poor reputation in some circles, Wikipedia is more than good enough to get a reasonable understanding of what something is. This is important because not recognising something doesn't make it bad. Xanthan gum sounds scary but it's a potentially beneficial fibre, and E300 is vitamin C, so do your research before passing judgement on an unfamiliar ingredient
- You will see below, trans fats are not allowed to be listed on the label so it is to the ingredients that you must look. As you learned in module 2, trans fats are produced by the process of partial hydrogenation and so it's down to you to look within the ingredients list for fully or partially hydrogenated oils (fully hydrogenated oils are still likely to contain trans fats). Fortunately, these are becoming rarer and rarer in foods due to legislation and a broad appreciation of their potential negative health impacts

5.8. Vegan/vegetarian suitability

According to the Food Standards Agency there is no legal definition of vegan or vegetarian in the UK, meaning that some stringent guidelines needed to be put in place which standardises labelling and allows companies to produce products which are honest, allowing people to make informed choices. The below points are protected by law and therefore promoting a product as vegetarian or vegan when it is not, is a breach of various legislative Acts.

For the purpose of labelling, a vegetarian product is one which does not contain anything from an animal which has died, been slaughtered or will die as a result of being eaten (it doesn't, therefore, include things like live bacteria yoghurt).

Vegan products, however, contain no animal products or animal derived products whatsoever, including milk, honey, bee pollen, eggs or waxes used in manufacture.

That is **not** to say, however, that companies are bound to disclose when an intuitively vegan-friendly product in fact contains animal products. Some examples are:

- Lysozyme (an egg-derived enzyme) and egg albumin used in wine production
- Fish gelatin used in alcoholic drinks including cider and wine production
- Fish gelatine used as a carrier for flavours
- Lactitol, which is a sweetener derived from milk (sometimes listed but the source is not specified)

If a food doesn't explicitly say it is vegan friendly and you are suspicious, most manufacturers will explain this via a hotline that you can usually find on their website or packaging.

5.9. The nutritional values

On every food product which is not listed above as an exception, you will find the nutritional information per 100g of product, raw and uncooked. This may also be accompanied by information of either a portion (raw or cooked) or per unit (so per 1 biscuit or 1 slice, for example), but this is done by choice. The nutritional information is the absolute **best** place to look for information on the foods you are buying because it is here that you will be able to see how well a given food fits in to your overall nutritional approach. Each label must contain, in the following order:

- Energy in both kilojoules and kilocalories
- The fat grams
- The saturated fat grams
- The total carbohydrate grams
- The sugar grams
- The protein grams
- The salt content

In addition to this, you may also see monounsaturates, poly-unsaturates, polyols (a lower calorie sweetener), starch, fibre and any of the vitamins and minerals spoken about in module 3, including sodium. If these are listed the vitamins and minerals must be included alongside the absolute amount as well as the % of daily need, and the other nutrients must be given alongside the gram amount.

Finally, many nutrition tables will quantify all of the nutrients by either giving a percentage of the guideline amount (for a female), or simply listing the guideline amount and letting you work it out yourself.

These will be presented on the label in a table format, similar to this:

Fig. 58

NUTRITON			GDA	
Typical values	per 100g	per pack	adult	per pack
Energy KJ	450	1345		
Energy kcal	105	315	2000	16%
Protein	7.9g	23.7g	45g	53%
Carbohydrate	8.8g	26.4g	230g	11%
of which sugars	1.2g	3.6g	90g	4%
Fat	4.2g	12.6g	70g	18%
of which saturates	2.7g	8.1g	20g	41%
Fibre	1.2g	3.6g	24g	15%
Sodium	0.24g	0.72g	2.4g	30%
Equivalent as salt	0.60g	1.80g	6g	30%
GDA = Guideline daily amount				

5.9.1. Important notes on nutrition table labelling

Vitamins and minerals can only be listed if they are present in a 'significant amount' because most multi-ingredient foods will contain a lot of trace nutrients which aren't highly present enough to matter. This means that it must contain at least 15% of the reference value per 100g/100ml for foods or 7.5% per 100ml for beverages. If a single serving is assumed to be less than 100g/100ml then the food or beverage must contain 15% or 7.5% respectively of the average daily requirement per actual serving. For example, if cheese is to have calcium listed on the label it must contain 15% of your daily calcium requirement per 30g portion, whereas milk can make this claim so long as it has at least 7.5% of your daily need per 100ml.

Companies are not allowed to declare anything else including trans fats or cholesterol, so this will not be on the label. As mentioned in module 2, dietary cholesterol isn't really something to be concerned about, and as you saw above you can locate trans fats in the ingredients list.

In some instances, a product may claim to be high in, for example, Omega 3. If this is the case then the nutrient must be listed somewhere on the label along with the total amount.

5.9.2. How accurate are these?

Intuitively you may have noticed that this labelling is phenomenally useful, but that it may be difficult to get right. After all, it's surely not possible for every chocolate chip brownie to have the exact same amount of chips in, it can't be right that every bag of crisps has the same crisp

count and surely an apple grown in the middle of a field will have absorbed slightly different amounts of nutrients to one grown on the edge of a field where the feed perhaps didn't quite reach so well?

You'd be correct.

Seasonality, degradation of nutrients between picking and packing, differences in soils or plant/animal feed, animal genetics and diet, homogeneity of pre-packed and batch-cooked foods and many, many more elements make it simply not possible for every single packet to contain the exact amount of energy and nutrients as every other, and that is why there are acceptable tolerances in food packaging which vary based on the nutrient concerned. These are listed below:

Fig. 59

Tolerances for foods (includes uncertainty of measurement)		
Vitamins	+50%**	-35%
Minerals	+45%	-35%
Carbohydrate		
Sugars	<10g per 100g:	±2g
Protein	10-40g per 100g:	±20%
Fibre	>40% per 100g:	±8g
Fat	<10g per 100g:	±1.5g
	10-40g per 100g:	±20%
	>40% per 100g:	±8g
Saturates		
Monounsaturates	<4g per 100g:	±0.8g
Polyunsaturates	≥4g per 100g:	±20%
Sodium	<0.5g per 100g:	±0.15g
	≥0.5g per 100g:	±20%
Salt	<1.25g per 100g:	±0.375g
	≥1.25g per 100g:	±20%

Here you see that each nutrient has a range of different error tolerance levels depending largely on the total content of those nutrients. Taking carbohydrate as an example, we see that a product which contains less than 10g per 100g is allowed to be 'out' by 2g up or down, and then this scales with the total inclusion.

This could mean that a product which has 35g protein listed on the label could have up to 42g or as little as 28g, which is quite a difference. This also impacts the energy content of the food, too, as an incorrect inclusion of protein and carbohydrate by the upper end of the tolerance level could represent a significant amount of calories per portion over the course of a day.

This doesn't invalidate food labels or make them useless, but it does tell you that it's not worth being extremely concerned about ensuring you meet your requirements exactly from label information.

Lastly, most labels are rounded as it's unlikely something would contain exactly 10g of fat, though that may be listed. The rules around rounding are here for completeness:

Fig. 60

Nutritional element	Amount	Rounding
Energy		To nearest 1kJ/kcal (no decimals)
Fat, carbohydrate, sugars, protein, fibre, polyols, starch	≥10g per 100g or ml	To nearest 1g (no decimals)
	<10g and >0.5g per 100g or ml	To nearest 0.1g
	No detectable amounts are present or concentration is ≥0.5g per 100g or ml	0g or <0.5g may be declared
Saturates, monounsaturates, polyunsaturates	≥10g per 100g or ml	To nearest 1g (no decimals)
	<10g and >0.1g per 100g or ml	To nearest 0.1g
	No detectable amounts are present or concentration is ≥0.1g per 100g or ml	0g or <0.1g may be declared
Sodium	≥1g per 100g or ml	To nearest 0.1g (no decimals)
	<1g and >0.005g per 100g or ml	To nearest 0.01g
	No detectable amounts are present or concentration is ≤0.005g per 100g or ml	0g or <0.005g may be declared
Salt	≥1g per 100g or ml	To nearest 0.1g (no decimals)
	<1g and >0.0125g per 100g or ml	To nearest 0.01g
	No detectable amounts are present or concentration is ≤0.0125g per 100g or ml	0g or <0.01g may be declared
Vitamins and minerals	Vitamin A, folic acid, chloride, calcium, phosphorus, magnesium, iodine, potassium	3 significant figures
	All other vitamins and minerals	2 significant figures

5.10. How do you decide how much to eat?

Clearly there is an issue with the idea that our food intake is something which we can just instinctively manage by ourselves without conscious thought. We are naturally driven to eat and when we do, to eat more. We are attracted to foods which are the most calorie dense and we are living in a food environment so far removed from the one we evolved in, that we just aren't equipped to deal with it. What we need is a means of methodically and deliberately serving ourselves the correct amount of food for a given situation and goal, reliably. It may be possible for those looking to gain weight to do this simply by using their hunger to drive them but for losing weight or even maintaining it, it's fraught with issues.

Historically the advice for weight loss has simply been to 'eat less' which logically makes sense because, as we've discussed at length, eating less **is** what people need to do, but on closer inspection the idea is far from airtight.

The reason for this is that it's almost impossible to eat the same foods in a calorie restricted setting for a long enough period to lose appreciable weight, especially for those who – through genetics or their psychosocial history, find it very difficult to control their consumption of hyper-palatable foods. That's not to say this cannot be done because thermodynamic laws are undeniable and if someone consumes less energy than they expend while consuming all of the macro and micronutrients that they need then they will almost certainly be very close to as healthy as they can be. Of course, they will also reach a healthy weight over time.

The problem comes with putting that into practice.

Because of the hyper-palatability of foods which we mentioned earlier there is always going to be a strong drive to overeat. Sure, you can lose weight and maintain it by eating $\frac{1}{3}$ of a pizza, but that's going to be hard to do, and if you think you'll be able to eat $\frac{1}{2}$ of a bag of crisps instead of the whole share bag for the rest of your days, then you are sorely mistaken.

Going beyond hyper-palatability, we need to consider energy density and the impact which a food has on satiety. Satiety is a term used to describe the satisfaction which you experience by fulfilling a basic need. When you eat after being hungry you are not happy in the same way as you would be if you just found out you won the lottery, or you just beat someone at a game. Rather you are back to a level and 'not in need' anymore.

This pleasant experience, as you know, lasts for a given amount of time and then you get hungry again, and the amount of food you need to reach it along with the amount of time which satiety hangs around both hinge in part on the foods that you eat. Quite simply and following basic fundamentals of which you're probably already aware, it takes longer to get full when eating biscuits than it does when you're eating potatoes, and you stay fuller for a lot longer after eating a large ham and mushroom omelette than you do after a bowl of crunchy cereal. What this short section should tell you is that even within the basic calorie balance and nutrient requirement model, there are still better and worse food choices and better and worse ways by which you can consume those nutrients/calories.

As we will discuss in the next module, 'junk' **can** make up a small part of a diet without impacting your weight or (importantly) your health, but that's something we'll cover when we come to it. For now, we are going to look to the first consideration of choosing how much to eat – choosing what to eat.

5.11. How do you decide what to eat?

There are a number of different dieting approaches which dictate your food choices. You could consume a paleo diet, a low carbohydrate diet, a vegan diet, a high protein diet, a clean eating plan and many more, and while they all have a lot of differences, they all have three things in common:

- They all restrict calories to some degree
- They all emphasise low energy density, non-hyper-palatable and highly satiating foods
- They all promote and emphasis on whole, unprocessed foods
- Note that the first point is generally accomplished by the second and third

It is these three points which should tell you how to choose your foods, alongside what you know about your nutrient needs. It is these points which you should consider before looking at labels because although a label will tell you the nutritional content, it will not tell you how it will impact your food choices for the rest of the day, nor how it will impact how satisfied you will feel after eating.

When choosing the specific foods to go for, the advice we will give shouldn't really come to much of a surprise. Choose the following as the backbone to your diet:

- Unprocessed lean meats, both white and red. A lean meat is one which has little visible marbling (so a sirloin steak has a lot of fat, but it's almost all at the edge which can be removed. Pork loin steaks are the same, but ribeye steaks and lamb chops contain a lot of fat within the meat itself. Lean mince can be considered (anything less than 10% fat by weight).
- Fresh fish and seafood (canned is OK but be aware of mercury in canned tuna)
- Minimally processed vegan alternatives such as tofu or quorn
- Eggs and minimally processed dairy*, as well as dairy alternatives
- Unprocessed sources of dietary fat to compliment the above, preferably in whole food form such as nuts, seeds, avocados and olives but also some high monounsaturated fatty acid oils such as olive oil
- Fresh green non-starchy vegetables
- Fresh brightly coloured non-starchy vegetables
- Fresh starchy vegetables like potatoes (all kinds), parsnips, squash and corn
- Fresh fruits

- Pulses and legumes
 - Minimally processed whole grains and whole grain products
- * Minimally processed dairy includes unsweetened low-fat or fat free yoghurt and semi or fully skimmed milk.

Of course, alongside these some foods such as cooking pastes, sauces, spice blends/ rubs/marinades, moderately used condiments and other necessary cooking ingredients are fine to use so long as you follow the advice to come. For now, be mindful that the manner in which you cook your food will have a profound impact on the calorie and nutrient content of that food. Removing the skin and visible fat from protein sources will reduce both, whereas sautéing in oil, deep frying or cooking with butter will increase both. There is no right or wrong, with neither option being inherently, acutely damaging, but the impact that this can have on your fatty acid intake and calorie balance must be something you consider.

5.12. I know what to eat, but how much?

There are a vast number of different ways to do this, and the key ones will be covered in the next module, where we will explore it in detail. Right now, though, we want to explain the very basics of building a meal, food by food.

Before we do that, to give you a baseline we will look at what we noted in module 2: The UK Government Dietary Recommendations. The Eatwell Guide represents the UK standard nutritional recommendations for a typical sedentary adult, and as noted in module 2 these recommendations offer an achievable and relatively flexible, yet healthy and balanced diet.

If you are communicating with a friend, relative or client that is completely uneducated in terms of nutrition, rather than calculating specific needs and offering recommendations for protein, carbohydrate and fat, we would suggest you calculate an estimated calorie need (for whatever their goal is) and use The Eatwell Guide as a tool to establish a baseline of healthy eating. Of course, if an individual is looking primarily to build muscle mass rather than lose fat/improve general health, you may need to take this into account when discussing protein.

To achieve the numerical recommendations noted in module 2, The Eatwell Guide suggests the following:

At least 5 portions of fruit and vegetables per day, with a portion being either:

- 80g of fresh, frozen or canned fruit/veg
- 150ml of juice/smoothie (only one portion per day)
- 30g dried fruit
- A dessert bowl of salad
- 3 Heaped tbsp of vegetables

This should total around 1/3 of the food you eat daily (food volume, not calories):

- Base meals on potatoes, bread, rice, pasta or other starchy carbohydrates; choosing wholegrain options where possible. This should make up just over a third of the food you eat per day
- Have some dairy or dairy alternatives (such as soya drinks); choosing low fat and low sugar options. They note that smaller portions of full fat versions are also useful
- Eat some beans, pulses, fish, eggs, meat and other proteins (including 2 portions of fish every week, one of which should be oily). Minimising processed meat is a good idea
- Choose unsaturated oils and spreads, and eat in small amounts – though we would caveat this by urging you to avoid hydrogenated options
- Drink 6-8 cups/glasses of fluid a day, minimising sugary drinks and keeping alcohol to no more than 14 units per week

They also note that if you are consuming foods and drinks high in fat, salt or sugar, have these less often and in smaller amounts.

These recommendations are somewhat basic but that is intentional. Simplicity makes it possible for the greatest number of people to succeed with this approach, which is what makes it perfect for starting here when looking to work with someone that needs a large overhaul in what they are doing. Don't be fooled by the simplicity, this represents a significant change from the diet most people actually consume before seeking help from a friend, relative or nutritionist. As a final point here, research indicates that a visual guide for eating well is far more effective than any other communication approach, so we would encourage you to use the visual tool which can be found here at the time of writing: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/528193/Eatwell_guide_colour.pdf

Note: This is updated regularly and so this URL may not be correct as you read this. Search www.gov.uk for the current recommendations if this is the case.

With that all noted, if the person (either you or a friend/relative/client) is ready to start portioning food up more accurately, or if this seems to be a means by which the individual can learn more quickly – you could look to dial things in further with the following.

Of course, the size of the portions within a meal are going to vary depending on the number of meals you are going to eat, and your preferred meal pattern. Do you like to eat 3 square meals per day, 5 small meals per day, 2 large meals per day or 3 meals per day and 2 snacks? Additionally, do you prefer to consume all of your meals with roughly the same makeup, or are you someone who likes a low carbohydrate cooked breakfast and a large pasta dish for dinner? Or a carbohydrate breakfast and a meat and vegetable dinner? Are you happy to have

a smoothie for breakfast and pack the calories in later, or do you need something hearty to get you going?

Because of this, we need to speak in very general terms, which should hopefully apply to everyone, and from there we will be able to explain how to adapt the following to your preferences.

First, decide how many main meals you are going to have in a day. This would ideally be 3-5, though going for 2 meals is fine. If you are going to use 2 meals it gets a little more complicated, and we recommend you check the next module before going ahead.

Next, divide the amount of protein you calculated by the amount of meals you have chosen.

Then add a +/- 5g range to this number. This is your protein per meal goal, and you can use it to determine how much of a given food you need to meet it. By checking labels, you will soon be able to see approximately how much lean meat, dairy, fish or egg you need, or the amount of grains, pulses or legumes if you are going to be using these as your protein source (of course factor in multiple sources if using them).

Note: This does not need to be done for every meal.

Consider this something to do initially to learn how much a 'portion' of chicken, beef, lamb, or another protein source is specifically for you. If this seems way too much food, first assess and make sure you've chosen the protein amount that is genuinely applicable to you based upon your weight and leanness, and then simply work towards it or consider having a high protein snack or shake as an additional meal to make up the difference. Rome wasn't built in a day and you don't have to go from zero to perfect protein intake in one either.

After that, you need to factor in carbohydrates and fats. Using the label, you should be able to determine what a portion of these is, and this will be a good starting place – so go with it.

Note: Legumes are considered a carbohydrate source but due to their protein content you may need to add a half serving of another carbohydrate source to make up the difference. If you're someone who eats a lot of legumes, consider one of the methods from module 6.

Next, fill the rest of the plate with as many colourful vegetables as possible.

Finally, if the protein source contains a very small amount of fat, add a fat source like cheese, nuts/nut butter, avocado, olive oil or similar. Generally speaking, most lean protein will contain a relatively low amount of fat per serving.

As an example, someone needing 160g protein and eating 4 meals would need 35-45g protein per meal, which equates to:

- Around 180-220g of any lean meat or fish
- 350-500g of a high protein yoghurt

- 6-8 eggs

And of course, these could be combined, so a 4 egg omelette with chicken or a salmon and prawn stir fry would be great options.

Then we would just make meals with these by adding 75g of rice or pasta, 2 slices of bread, a wrap or a large potato, and some fats.

Example meals might be:

- 200g chicken breast, large baked potato with butter and vegetables
- 4 eggs, 120g ham and mushrooms cooked in an omelette with 2 slices of toast
- A 125g salmon fillet and 125g prawns cooked in a vegetable stir fry with rice

This really, really simple process will get most people, most of the way towards eating a well-balanced diet, but of course it will periodically need to be adjusted. To adjust it:

- Keep track of your weight and eat like this for 2 weeks or so
- If you gain weight and don't want to, look at your snacks. How many snacks did you have this week? Be honest with yourself and try to half these, to see how that helps. If you didn't snack, and you did stick to this dieting strategy, consider removing the starchy carbohydrates or fats from one meal as much as possible and seeing how that impacts things
- If you lost weight and didn't want to, either increase carbohydrate portions, increase fat portions or add a snack to your daily intake

Each day you'll be consuming slightly different amounts of energy, protein, carbohydrate, fat and fibre, but provided you are keeping your portion sizes relatively in line with need and provided you follow the above steps to adjust things, you can stick to this method of eating for a long time.

Of course, at some point if you have specific goals in mind you may need to personalise this further. At first you can use what you learned in module 2 to narrow down your food portions even more by repeating what we did with protein and calculating per-meal needs for fats and carbohydrates. This, again, should get things moving.

After that, you can look to more advanced dieting methods which we will cover in the next module.

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