LECTURE 2

Introduction to Nutrition

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- **Macronutrients and Micronutrients**
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Nutritional Guidelines

In your role as a personal trainer, you will be expected to offer advice and guidance on nutritional principles.

This lecture gives you a basic introduction before you onto the full Nutrition section later in the programme.

The success of a programme and the results the client gets are heavily linked to the food they consume so if you can offer basic guidance, it is beneficial. This lecture will also show you how to stay within the scope of the qualification as it is easy to offer advice that we are not qualified to offer.

Today there are so many options for people as it relates to nutrition, and so many types of diets to follow that it makes it difficult to offer sound advice to clients relating to their nutritional intake.

What is known however, is that the link between nutrition and a host of ailments including coronary heart disease, stroke, cancer, obesity, diabetes, asthma and hypertension, is very real. We will be offering a great service if we can highlight some areas of improvements that might make our clients more likely to avoid such issues.

What we should NOT offer is any form of diagnosis related to issues clients are facing with their health, and any **prescriptive** dietary protocol outside of general advice. You will be asked specific questions relating to specific diets and you need to remain professional in your role.

One thing to bear in mind is that you must observe the professional boundaries that are aligned to being a fitness professional.

At this level, only very general advice can be given otherwise you are exceeding your level of qualification. Anything more specific needs to be referred to a registered dietician or a nutritional therapist.

In the UK we utilise the Eatwell Plate as a visual representation of the government's nutritional guidelines.
These guidelines are based around basic pieces of general advice…

It is very important that you view the guidelines and how they fit your clients, but understand that this model is designed to suit a very large population, meaning it needs to be very general in nature. We will break this down below before moving on to discuss the various nutrient groups…

Offering Nutritional Guidance and Advice to Clients

The guidelines can be a little rudimentary in the detail they offer but they do provide a visual outline to people in terms of the main recommendations.

Look at this plate, starting at the top left and working round anticlockwise.

Bread, rice, potato & pasta – base your meals on starchy carbs which are a key fuel source and are relied on heavily during exercise.

Meat, fish, eggs & beans – protein is a key building block for muscle growth and can also increase satiety so it is an important part of a balanced diet.

Sugar – something that should be enjoyed in moderation. Snacks that are high in sugar (and fats) are often extremely palatable which makes them easy to over- consume.

Milk & dairy foods – these are mostly high in fat. Fats are important in the production of hormones and so they should also be incorporated.

Fruits & vegetables – the recommended daily amount is five portions a day. Fruits and vegetables contain the majority of the micronutrients you will consume and are crucial for the proper function of the body.

Water

Let's now discuss water. Water constitutes around 60% of the human body and holds tremendous value to us for all the roles it plays. We can only survive for a few days without water which highlights just how important it is to stay hydrated...

Water is vital for

- Metabolic functions and processes.
- Temperature regulation through sweating.
- Processing and distribution of nutrients throughout the body.
- Elimination of waste from the body.
- Blood volume maintenance.
- Fluid and electrolyte balance.
- Vital organ function such as the liver.

Advising people to increase their water intake is a great place to start when offering guidance on nutrition, assuming they aren't already drinking enough. Mental clarity and alertness will likely be enhanced offering a greater sense of wellness.

As mentioned, water is vital for our survival with the effects of dehydration being very severe. Symptoms such as increased core temperature, increased heart rate, decreased cardiac output, decreased performance and decreased blood pressure are the result of dehydration. The symptoms will obviously get progressively worse the more dehydrated you are.

What are our daily needs?

The minimum requirement for fluid intake is to replace lost fluid. For this, the standard recommendation is that most people need around 6-8 glasses per day, equivalent to 1.5-2 litres per day. There are many factors that will affect this however, including age, body mass, gender, environmental temperatures, activity and respiratory rate.

Macronutrients and Micronutrients

So, let's have a look at the various nutrient groups that make up our diets. A good understanding of the macro and micronutrients and what they each do for us is important as you can then offer better guidance to your clients…

Macronutrients

Protein

Protein is primarily known for its role in growth and repair of tissue in the fitness world. Through the digestive process, protein is broken down into amino acids which can be used in various combinations to perform a number of tasks in the body. There are 20 amino acids with some holding the distinction **essential**. This simply means that they are an important addition to our diets as the body cannot synthesise them. If a food source contains all the essential **amino acids**, it is said to be a **complete** protein. All animal sources are complete proteins whereas there are only a few examples of non-animal complete proteins. However, with those few exceptions, most plant sources are **incomplete** (ie they don't contain all the essential amino acids)

You can of course find excellent sources of both animal-based and plant-based sources of protein. Animal sources include meat, fish, poultry and eggs whereas nuts, seeds, quinoa and beans are all excellent sources of plant-based protein. Protein contains 4 calories per gram.

Carbohydrates

Carbs can be characterised as sugars or starches, with the latter carrying more fibre which is slower to digest and gives longer-lasting energy.

Carbohydrates are our primary source of energy to fuel the muscles and the brain. We break carbs down into glycogen, which is stored in the muscles and liver to be used when needed. We use carbs as the primary fuel source for exercise, and our dependence upon it as a fuel, increases with intensity. Glycogen will be utilized by the muscles in intense exercise and following its depletion, the liver will mobilise its stores to assist in maintenance of intensity.

As well as adding bulk to the food we eat, fibre has a key role in digestive health, potentially helping reduce the risk of heart disease and some cancers.

Examples of carbs include bread, pasta, potatoes, rice, fruits and sweets.

Carbohydrates contain 4 calories per gram.

Fats

In terms of dietary fat there are three different ones that you need to be aware of - saturated, unsaturated (of which there are two different types) and trans-fats.

The saturation of a fat, meaning the formation of the carbon and hydrogen molecules, has a bearing on its structure with unsaturated fats typically being liquid at room temperature and saturated fats being solid.

Unsaturated fats can be divided into **polyunsaturated** and **monounsaturated** and are known as the **healthy fats**. In truth it is important to understand that in moderation there should be no issue in including fats in the diet providing they are more naturally-occurring rather than heavily processed.

The fats to minimise in the diet are **trans-fats** which are heavily processed through **hydrogenation** and this is a very damaging process which can have poor health consequences.

In the body, fat has many responsibilities including the transport of Vitamins A, D, E and K, the formation of cell membranes, energy storage and provision, protection of vital organs, as well as the structure of the brain and nervous tissues.

Fat can be found in dairy foods, oils, avocado, nuts, seeds and fish.
Fats contain 9 calories per gram.

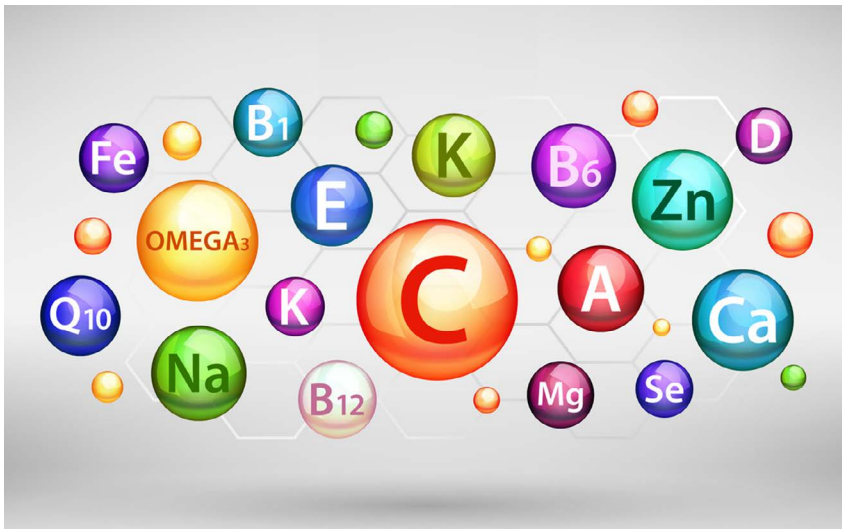
Micronutrients

Eating a balanced diet including lots of fruits and vegetables is a good way to ensure adequate micronutrient content…

Vitamins

Vitamins contain no calories but offer very useful functions in the body. Their roles range from assisting in the release of energy from food to the protection of cell integrity – as well as acting as an antioxidant. They can be described as organic complexes that act as an accessory to nutrition based on their varying role in maintaining our health.

Minerals



Minerals occur naturally in soil and water where they can be absorbed by plants and consumed by animals.
Their roles range from assisting in some of the body's structures, to maintenance of bodily functions through to assistance in regulation of metabolic processes.

Weight Management

Weight management is one of the areas that you will be exposed to on a day-to-day basis in your role as a personal trainer. One of the most common goals and aspirations of exercisers is to lose weight, so it is important that you can grasp the principles of weight management as it relates to the general guidelines. You can tailor your exercise and nutrition prescription for your individual clients but there are some general guidelines that will be useful to know when it comes to weight loss.

Energy Balance

Important to consider when discussing weight management is an understanding of energy balance. This relates to the number of calories consumed against the number of calories expended. We have to achieve a deficit regularly if we are to lose weight and achieve a surplus if we want to gain weight. If you consume roughly the same number of calories as you expend then you will remain consistent in your weight.

A calorie deficit of 500cals per day is the standard recommendation if you want to lose 1lb per week.

If you restrict further than this, you risk slowing down your metabolic processes as well as decreasing your likeliness to adhere to the plan - so be aware that greater restriction is not always best.

You can mix calorie deficit with increased activity to achieve the desired number of calories.

You can employ a mixture of increased activity and a reduction in calorie intake to great effect but be aware that you must consume adequate nutrients to allow the body to recover from the exercise stress, and for it to function on a day-to-day basis. Lowering calories too far, and then compounding this with additional exercise will surely lead to a reduction in performance, overtraining, sickness, and in the body slowing down its metabolic processes to compensate for the lack of intake.

Weight loss should be centred around lifestyle change rather than extreme exercise and dietary restriction. Be aware of this when planning for your weight-loss clients.