



# A Balanced diet : carbohydrates & proteins

AUSTRALIA's 5 STARS BRAND



The key to a healthy diet is balance! Our bodies need a balanced mix of macro and micronutrients including carbohydrates, proteins, fats, vitamins, and minerals.

Today, we are going to focus on the importance of carbohydrates and protein in particular for a balanced diet.

**In this short course you will learn about**

- 1. Carbohydrates**
- 2. Proteins**

# Chapters

1. Carbohydrates

2. Proteins

# Chapter 1

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# Carbohydrates



# Chapter One: Carbohydrates

## **First, let's talk about carbohydrates**

Carbohydrates can be found in both healthy and unhealthy food and often have a bad reputation with some in the health industry. Carbohydrates are very important, however, to maintain a healthy diet.

The reason they get a bad rep is that carbohydrates provide the body with sugars, or glucose, which the body then uses as energy. When we chew food rich in carbohydrates it stimulates the salivary glands of the mouth to produce salivary amylase. This salivary amylase then converts, or hydrolyzes, the starch in the food into maltose. This is why we taste sweetness when eating steamed buns, for example.

Other foods rich in starch that create this sweet taste effect are corn, rice, and potatoes to name a few.

# Chapter One: Carbohydrates

## **Carbohydrates classifications: monosaccharides, oligosaccharides, polysaccharides, etc.**

Monosaccharides are the most basic form of carbohydrates and are the base sugars like glucose, fructose, and dextrose. Glucose is a monosaccharide that many of us will be familiar with as they are spoken about a lot.

When participating in a sports meeting, for example, we will often see athletes consume energy drinks high in glucose to replenish glycogen stores before the start of the event. This is beneficial to athletes because the process of glucose metabolism in our body will produce a large amount of adenine nucleoside triphosphate, which provides energy for muscle contraction. This additional supplementation of glucose gives the athlete's body an energy boost that helps it function better during the more strenuous sporting activity.

The metabolism of this glucose in the body is divided into two streams, aerobic oxidation, and anaerobic oxidation.

# Chapter One: Carbohydrates

Sometimes muscles will feel sore after intense exercise. This is predominantly because when the body is exercising it will break down a large amount of glucose to provide sufficient energy for the activity. Insufficient oxygen in the body during this period of exercise will cause part of the glucose to undergo anaerobic oxidation and produce lactic acid. The buildup of this lactic acid in the body is what causes soreness.



# Chapter One: Carbohydrates

## **Carbohydrates in the human body**

The human body's environment is constantly trying to remain in equilibrium, or a state of homeostasis, and carbohydrates are essential in helping maintain this balance, otherwise, the body will look elsewhere for these sugars.

For example, when we are hungry or sick, the blood sugar concentration in our bodies decreases. At these times, other substances in the human body, such as fat and amino acids, undergo a series of biochemical reactions to be converted into sugar.

After we eat, our blood sugar concentration will increase. At this time, the sugar in the blood needs to be converted into glycogen, and amino acids and fats will be stored.



# Chapter One: Carbohydrates

Many sources of complex carbohydrates that are high in fibre, like vegetables, legumes, and unrefined wholegrain food that have lost nothing in their processing, for example, are particularly good for you.

This is because high-fibre carbohydrates are digested more slowly.

Dietary Fibre is formed from the cell walls of plants and occurs in two forms, insoluble and soluble, both of which are needed for good health. The fibre in wheat, for example, is mainly insoluble whereas in other cereals a higher proportion of the fibre is soluble. In fruit and vegetables, the proportion of soluble to insoluble fibre is about equal.

Dietary fibre is important for slowing the release of sugars into the bloodstream.

# Chapter One: Carbohydrates

## Consumption Quantities of Carbohydrates

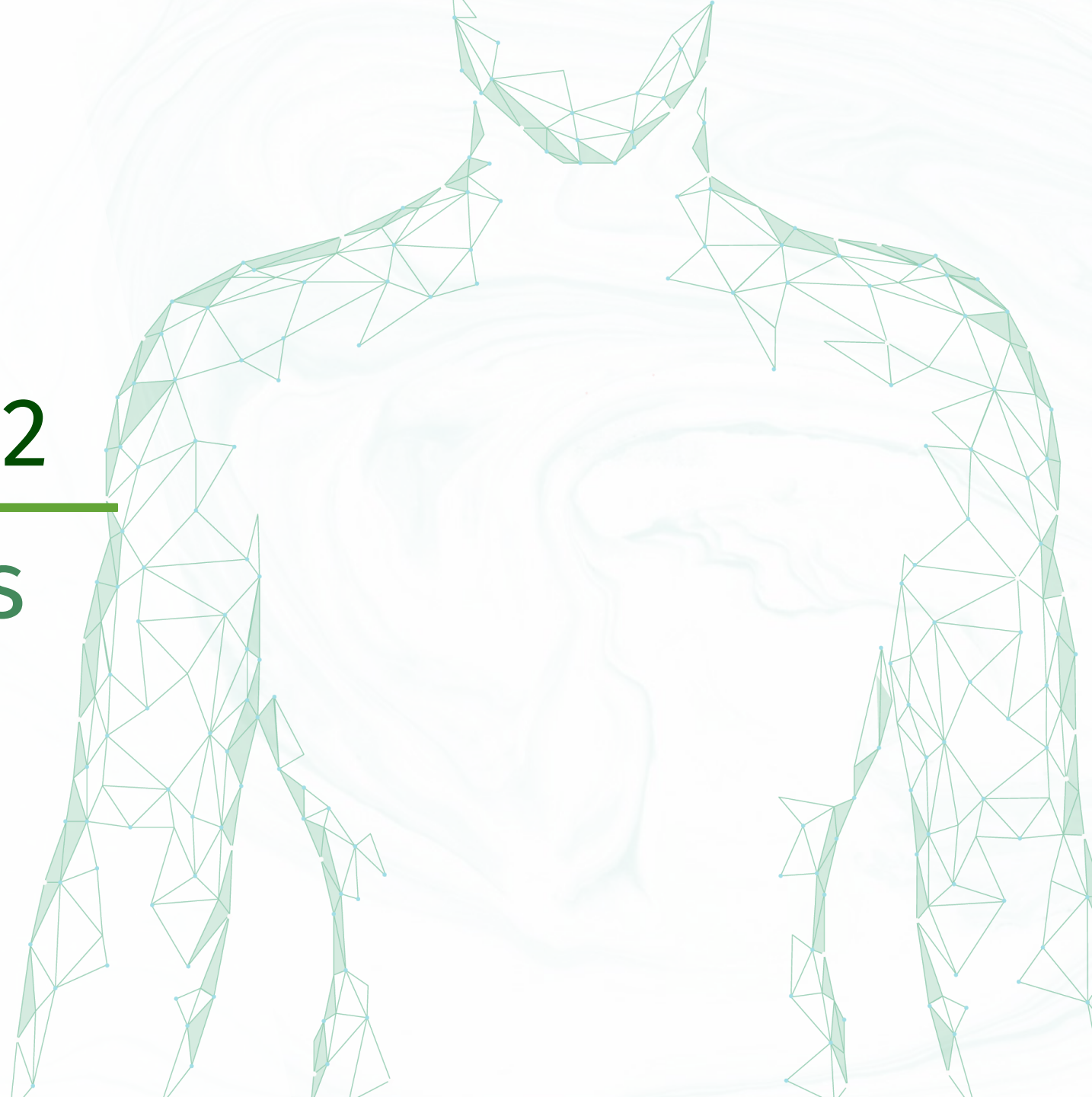
Nutritionists recommend that a maximum of 40-50 percent of calories consumed daily should be taken in the form of unrefined carbohydrates.

**Next, let's take a look at protein**

# Chapter 2

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## Proteins





## Chapter Two: Proteins

Proteins are, quite simply, the building blocks that make up our body and can be found in every cell in the body. Proteins make up the structure of the cells as well as the elements inside, including enzymes and hormones. Protein can be found in a wide range of foods including fruit and veg, but for the highest concentration of protein then you should be looking at beans and legumes, meat, dairy, and eggs.

# Chapter Two: Proteins

## Why do we need protein?

Protein is one of the fundamental materials for life. From the composition of the human body to the metabolism and heredity functions, it is all closely related and accredited to the functioning of protein in the body. Simply put, protein is essential for the growth and repair of the human body.

# Chapter Two: Proteins

## The role of protein in the human body

### 1. Maintaining cell metabolism

The human body is composed of many cells, and these cells are always in the metabolic process of aging, decay, and renewal. For example, the epidermis of young people is renewed every 28 days, while the gastric mucosa is renewed every two or three days. Therefore, if a person's protein intake and absorption are good, then the cells in the body can maintain normal metabolism.



# Chapter Two: Proteins

## **The role of protein in the human body**

### **2. Various enzymes that constitute the necessary catalytic and regulatory functions of the human body**

There are thousands of enzymes in the human body, most of which are composed of proteins. Each of them can only participate in one biochemical reaction. If the corresponding enzymes are sufficient, the reaction will proceed smoothly and quickly, and we will be energetic and strong in resilience and adaptable. On the contrary, if the enzymes are lacking or are operating in an unideal environment the response and pathways become slower or blocked.

# Chapter Two: Proteins

## **The role of protein in the human body**

### **3. Transport of nutrients**

The carrier protein in the protein is essential to maintain the normal life activities of the human body and can carry various substances around the body. For example, hemoglobin transports oxygen; lipoprotein transports fat, and transport proteins on cell membranes assist materials in and out.

All in all, protein has an irreplaceable effect on the human body.

There are 8 kinds of essential amino acids in the human body that we cannot synthesize internally and have to be supplemented or digested from external sources.

Protein-rich foods such as beans and legumes, dairy products, meat, eggs, and fish are broken down into amino acids in the stomach and absorbed by the small intestine. The liver then distinguishes the amino acids needed by the body, and the remaining waste passes through the urine and is excreted from the body.

# Chapter Two: Proteins

## **The role of protein in the human body**

### **4. Consumption Quantities of Protein**

Adults who do not exercise are recommended to eat about 0.75 grams of protein per kilogram of body weight per day. On average, it's 55 grams for men and 45 grams for women—two palm-sized pieces of meat, fish, tofu, nuts, or beans.

Failure to consume enough protein can cause health problems such as muscle loss, hair loss, skin breakouts, and weight loss. However, these side effects are very rare and mainly occur in patients with eating disorders.

When looking to build muscle in general you would eat an increased amount of protein over a long period of time. This is the correct approach.



# Chapter Two: Proteins

## **The role of protein in the human body**

### **4. Consumption Quantities of Protein**

Strength exercise will cause the protein in the muscles to break down. In order to strengthen muscles, it is necessary to rebuild broken proteins. The type of amino acid called leucine plays a particularly important role in triggering the reconstruction of protein synthesis.

Kevin Tipton, a professor of physical education at the University of Stirling makes an important point about the quality of the protein you eat. He said: “Most people consume more protein through food than they need daily, and there is no need to take supplements. While supplements are a convenient way to get protein the reality is the protein your body requires is already included in the food you eat and is much better for you. A protein bar is actually just a candy bar with a little extra protein.”



THE END



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