

## BASICS OF NUTRITION PHYSIOLOGY

### Vocabulary Quiz: Body Parts

1. When this is full, you need to find a toilet:
  - a) the heart
  - b) the bladder
  - c) the pancreas
  
2. The back of the neck:
  - a) the nostrils
  - b) the nape
  - c) the calf
  
3. They stop dust getting into your eyes
  - a) the hips
  - b) the eyelashes
  - c) the nostrils
  
4. You move this when you eat:
  - a) the ankle
  - b) the jaw
  - c) the calf
  
5. The back of the lower part of your leg:
  - a) the calf
  - b) the knee
  - c) the elbow
  
6. This organ breaks down toxins which enter the body, including alcohol:
  - a) the lungs
  - b) the liver
  - c) the heart
  
7. The top part of your leg:
  - a) the calf
  - b) the thigh
  - c) the knee
  
8. The organ which cleans your blood:
  - a) the kidneys
  - b) the lungs
  - c) the uterus

## Text

### Vocabulary

- endurance - the act, quality, or power of resisting hardship or stress
- malnutrition - poor nutrition because of an insufficient or poorly balanced diet or faulty digestion or utilization of foods.
- vigorous - marked by or done with force and energy
- expenditures – amounts used

All physical activity requires energy, and that energy is provided by the food we eat.

All foods are composed of three nutritional building blocks - carbohydrates, fats, and protein - plus water and fiber (indigestible and without any food value). Carbohydrates contain 4.1 calories per gram and are the primary energy source for most cyclists as well as athletes involved in short, maximum performance events. Fats are more important as an energy source for slower, endurance events. Protein, is used in maintaining and repairing cells, and is rarely an energy source for physical activity except in certain unique situations (such as malnutrition).

Some foods contain more energy per ounce (or gram) than others. Not only does the fiber content (a filler with little or no Caloric value) of foods vary, the energy contained in equal weights of the pure basic building blocks - carbohydrate, fat, and protein - is not equivalent. In the nutritional literature, the energy content of any food is, by convention, expressed in Calories (note the capital "C") as opposed to the use of calories (small "c") or kilojoules (kj) in the scientific literature. The energy of one nutritional Calorie is equal to a kilocalorie (1000 calories - lower case "c") or 4.18 kilojoules.

Carbohydrates and protein each contain a little more than 4 Calories of energy per gram while a gram of fat has more than double the energy value at 9 Calories per gram.

Carbohydrate calories supply the majority of the energy for muscles during vigorous activity. Fats are important for less strenuous, endurance type activities. Proteins are, in general, not an energy source for muscle activity.

Carbohydrate is provided to the muscle cell from 1) food you are eating or 2) stored carbohydrate in the form of glycogen in muscle and liver cells. Thus, using carbohydrate supplements for events expected to last more than 2 hours is a smart strategy to maximize your performance. It is best to begin these carbohydrates at the start of the event as they are much less effective when one is trying to catch up after the bonk has occurred.

Fats provide over 50% of the Calories expended during moderate exercise (less than 50% VO<sub>2</sub> max.) even when adequate carbohydrates (glycogen) are available. As the level of exercise increases towards 100% VO<sub>2</sub> max., the proportion of the total energy expenditures covered by fat metabolism decreases. And in maximum performance events, where metabolism becomes anaerobic (greater than 100% VO<sub>2</sub> max.), fat metabolism ceases and only carbohydrates are useful to the muscle cell as an energy source.

Protein the third building block of food, is a maintenance material used to repair muscle (and other) cell injuries - including the microtrauma that occurs with exercise.

<http://www.cptips.com/nutrtn.htm>

**Tasks:**

Name the three building blocks of food and their functions.

Which building block

- is used to repair muscle
- is helpful during moderate exercise
- supplies energy during vigorous activity

**Video:** <http://www.youtube.com/watch?v=TjVyd7XhqNw&feature=related>

Watch the interview with a surfing champion, Kelly Slater and answer the following question.

Which are the key products for the nutrition of a sportsman? What is the most important issue for any athlete?

What phenomenon is called an “epidemic” in the USA? What are the factors which contribute to it?