

Athletes need to not only fuel their activities but also supply their body's with the nutrients for growth and development. This means both getting the right amount and the right kind of calories.

Carbohydrates

While your body does burn a percentage of fat and protein for energy, carbohydrates, stored as *glycogen* in muscles, are the primary energy source for activity. The harder and longer you exercise, the more glycogen your body requires. Once your stores of glycogen are gone, your energy levels will drop and you will feel like you are running on empty.



Carbohydrates can be either **simple** or **complex**:

- ✓ **Simple Carbohydrates** – Short-chain molecules that are quickly broken down into glucose (simple sugar) in a matter of minutes. Many simple carbohydrates are refined sugars that are nutrient void and dump a large amount of glucose into the bloodstream all at once. This causes the body to experience a physical high, then a crash. What can not be immediately used by the body is then stored in fat cells.
- ✓ **Complex Carbohydrates** – Long-chained molecules that are broken down more slowly or “time-released”. Complex carbohydrates are usually packed with fibre, vitamins and minerals.

Recommendations:

50-60% of your diet should be complex carbohydrates and the simple carbohydrates that you do eat should come from fruit or dairy. It is recommended you get at least 500 to 600 grams of carbohydrate per day to keep your muscle glycogen stores high.

Simple Carbohydrates	Complex Carbohydrates
Fruits & Juices	Vegetables
Dairy	Breads
Honey	Cereals
Molasses	Legumes
Sugar	Grains

Calculate your personal carbohydrate requirement

$$8 \times \text{body weight(kgs)} = \text{grams carbs/day}$$

For a 60 kg person this is about 480 grams per day or about 2,000 carbohydrate calories and for a 90 kg person 720 grams or 2,900 carbohydrate calories.

Fat

Fat has become one of the biggest problems in our diets. Most North Americans consume **three to five times** the amount of fat required and **97%** of the fat we consume is converted to body fat! All this excess fat contributes to heart disease, cancer and obesity.



Fat, however, is an essential nutrient that we require to be healthy and there are many nutrients such as Vitamin A and D that require body fat to be absorbed. Fat also fuels bodily organs and functions providing the body with twice as much energy as protein and carbohydrates (9 kcal/gram versus 4 kcal/gram for protein/carbs).

Recommendations:

The kind of fat that should be most avoided is *saturated fat*; this “bad” fat is found in meat and dairy. *Unsaturated fats* come from plants and fish and are considered the “good” fat. Less than 30% of your total daily calories should come from unsaturated fat. Alcohol, at 7 kcal/gram, should be treated as a fat and drunk in moderation.

Saturated Fats (Bad)	Unsaturated Fats (Good)
Meat Poultry Skin Dairy Baked Goods	Fish Nuts Seeds Vegetable Oils

Protein

Protein supplies the body with amino acids; the basic building material for your entire body (muscle, internal organs, blood, skin, hair and nails)! If the body is not supplied with adequate protein through diet, it will actually breakdown muscle tissue to supply the demand.



Recommendations

Protein sources are rated on a *Biological Value* (BV) scale that measures the proportion of protein that is absorbed by the body. The higher the value, the higher the percentage of protein that is used by the body. Vegetable sources of protein are incomplete and generally do not, by themselves, contain all the amino acids needed by the body. Combining vegetable sources, say whole grains with nuts or rice with beans, does provide all the essential amino acids.

Animal Sources (BV)	Vegetable Sources (BV)
Whey (100) Eggs (94) Poultry (79) Fish (70) Beef (69) Dairy (60)	Rice (57) Peas & Lentils (55) Nuts & Seeds (55) Beans & Soy (47) Whole Grains (44)

Combining vegetable sources, say whole grains with nuts or rice with beans, does provide all the essential amino acids.

Calculate your personal protein requirement

$$1.5 \times \text{body weight(kgs)} = \text{grams carbs/day}$$

For a 60 kg person this is about 90 grams per day or about 360 carbohydrate calories and for a 90 kg person 135 grams or 540 carbohydrate calories.

Water

75% of North Americans are **chronically dehydrated** leading to fatigue and reduced physical strength and mental concentration. The body loses up to 2.5 litres of water every day through normal body functioning! Physical activity, stress, alcohol and caffeinated drinks further increase that loss. If you are thirsty, you are already dehydrated!

Calculate your personal water requirement

$$1\text{oz (30ml)} \times \text{body weight(kgs)} = \text{water/day}$$

For a 60 kg person this is about 60oz (1.8L) per day and for a 90 kg person, 90 oz (2.7L) per day

General Nutrition Advice

- ✓ Eat a variety of foods
- ✓ Plan to eat 5 smaller meals rather than 3 large meals
- ✓ Decrease caffeine and alcohol consumption
- ✓ Energy bars and sports drinks may be helpful if exercise lasts longer than 1 hour