

Eating for Energy

By Bonnie Tolton, B.P.E., B.Ed., CAT© (Guest Writer)

Sport nutrition can be quite baffling at times, especially with so many different food products and marketing gimmicks around. Many athletes look to such products as protein powders, vitamins, and various other supplements in an effort to boost their energy stores. Most people however, do not really understand nutrition well enough to make educated decisions as to what to eat and when.

The body primarily obtains its energy from three sources; Carbohydrates, Fats and Protein. For each gram of fat consumed you gain 9 calories. For each gram of protein and carbohydrate consumed you obtain four calories. The body will primarily burn carbohydrates first, fats second and the protein last when energy is needed. There are two types of Carbohydrates found in food: simple sugars (e.g. glucose – table sugar), and complex Carbohydrates known as starches (e.g. Potatoes). The body absorbs carbohydrates into the blood stream in the form of a simple sugar known as glucose. Therefore, the body must break down the complex carbohydrates into glucose over a period of time.

Once glucose is in the blood stream it is either used immediately or stored in the body with the help of insulin. Your body wants to maintain a certain level of blood glucose at all time, thus if you have low blood sugar, your insulin level will decrease, allowing you to use your energy stores. If your blood glucose level is high, insulin will become high to help you store unnecessary glucose in your muscles and liver. Excess glucose is primarily stored in the body as glycogen (two glucose molecules put together). If all the glycogen stores are full, it will then be converted into fat. Glycogen stores in your body allow you to be active over long periods of activity such as playing hockey.

High carbohydrate foods include such items as Potatoes, Rice, Pasta, Cereals, and Bread. These foods are high in complex carbohydrates. Other high carbohydrate foods, include cake, cookies, chocolate bars, but are high in simple sugars. Because a chocolate bar is more quickly absorbed into the blood stream due to its high glucose content, many people believe this is an excellent snack while competing. The first part of their thinking is correct; it is the second part that needs help. If you remember the concept about your body maintaining a certain level glucose in your blood stream, you will follow this next concept well. If you have a large rush of glucose into the blood stream (like when you eat a chocolate bar), your blood sugar will sky rocket. This causes an increase of insulin found in the blood. The insulin causes your body to start storing energy rather than allowing you to use it. Some people describe this occurrence as an energy crash. For a few minutes, your available energy is high, but then you will experience a feeling of lethargy. When eating small amounts of complex

carbohydrates such as a $\frac{1}{4}$ of a bagel, the glucose will only become absorbed as it is broken down from complex carbohydrates. Only small amounts of sugar are available to enter your blood stream over an extended time period, which then helps to keep your insulin level in check.

Now the question that should come to mind is, "How do we use this knowledge to our advantage?" Many athletes have heard of Carbo-loading, yet truly do not understand the concept. When you compete at a strenuous level over a long period of time, you will deplete your glycogen stores. Depending on how much energy you expend, it may take up to 48 hours for the stores to be replenished. Many coaches know this concept and do their part by scheduling the heaviest day of practice 2 or 3 days prior to competition. This allows their athletes to restock their energy. The athletes must then do their part by eating healthy balanced meals that are high in carbohydrate. For example, instead of having a glass of milk with bacon and eggs for breakfast, you should eat pancakes, cereal and orange juice.

Pre-game meals should also follow the same lines as carbo-loading. The only difference is that while Carbo loading, you should eat balanced meals that also contain proteins and fats. Proteins and fats should be kept to a minimum in a pre-game meal for they will slow the time that the food is in the stomach. Carbohydrates only take 3 hours to be digested in the stomach, where protein and fat can take up to 5 hours. Eating a big piece of steak before a game may leave you feeling bloated and heavy. Some suggestions for pre-game meals include veggie subs, stir-fries, rice, pasta and tomato sauce, pancakes, and hash browns. The food you choose should be familiar to you to decrease such occurrences as heartburn and upset stomach. Finally your pre-game meal should contain plenty of fluids. Since most pre-game meals are consumed 3 hours before a game, this will give your body plenty of time to rehydrate and then empty your bladder if you have consumed too much.

Some athletes prefer to eat their pre-game meal 5-6 hours ahead of competition and then snack prior to and during the game. This strategy will also work if you choose your snacks wisely. As discussed previously, a chocolate bar is not a smart choice. Complex Carbohydrates eaten in small amounts is your better option. Bagels, granola bars, and commercial energy bars (low in simple sugars) are examples of good snacks. If using commercial energy bars, or even sport shakes, look on the labeling to find out the type of carbohydrate it contains.

Fruits and Fruit juices are also a good choice of fuel for they contain the sugar fructose. Fructose does not require insulin to be absorbed into the body. This means that fructose will not trigger and increase in insulin but yet will still be absorbed faster than complex carbohydrates. Fruits will also help you maintain your salt balance, especially when losing so much in the form of sweat. Bananas are an excellent source of potassium as well as carbohydrate. One caution with fruit though, is that some people do not do well when only snacking on fruit. They

are good in small doses, but don't plan on eating 2 large oranges in one game. Mix things up a bit. Try bringing a bagel and a banana to the rink with you.

Taking the time to eat properly, as well as preparing snacks to bring to the rink requires thoughts and initiative. However, it is the athlete who has that little bit of energy left at the end of the game who becomes the team's hero. Eating smart may just help you become one.