

# Energy - Part I

The 16-game marathon was nearly over, fourteen games down and two to go. Bowlers were dropping like flies. 28 started and now 21 remain. All 28 claimed to be good players. Now seven of them have found out talent alone isn't enough. Many look tired. Several are commenting on fatigue. Fatigue, I think to myself. I know that animal fairly well.

The initial pattern is completely gone. Everyone, even the left side, is playing inside 20-25 and further. Many of us are walking around the return. Others are starting in front of it. Everyone is trying to throw hard to avoid early hook. I can throw hard naturally, thanks to my shoulder and lower body strength. Ah, what an asset. Those unfit or with mediocre functional fitness are hitting the wall and permitting fatigue to diminish their performance. Tempers are flaring, focus is lost among many, and easy single pins are still standing. Careless mistakes, but I know why. It's fatigue, tiredness, and the lack of energy, winning those battles--Not this bowler.

It's all over. I finished third, not bad for a par-skilled sport scientist doing a little qualitative research. My energy stores held up. I carb loaded two days prior and ate dried fruit and grapes with lots of water throughout the event. I'm worn out and my hand is a little tender, but I'm not beaten down on the path as many of those self-proclaimed top amateurs who participated. My energy stores delivered me.

Think of your body as an engine, and food as its source of fuel. As the engine runs daily, fuel is expended. The engine requires a continual stream of fuel and certain fuels can provide a higher energy value. The more active your engine, the more fuel expended, the more refueling required. If your engine runs low and then out of gas it declines in efficiency and eventually stops running. The same is true for the human body, although it is a bit more complicated than your car. Just as a car operates better with a regular oil change and premium gas, the human body functions more efficiently when fueled by the proper energy source.

As the analogy portrayed, your body requires a specific type, amount, and frequency of fuel. Peak athletic performance is contingent upon an ample supply of energy. With energy you can assure that you will be maintaining a well-oiled and charged V-8 engine. Reduced energy will cause your peak performance to decline, fatigue and dehydration the two prime candidates. Without any energy, injury, illness, and many reduced bodily functions will hinder your performance.

As competitive bowlers, you are more active than the average individual. You expend additional energy practicing, training, and competing. Those of you exemplary bowler-athletes who train to functionally condition yourselves expend even more energy than the average competitive bowler. (PICTURE A & B). To be at peak performance capacity, you will want to store additional energy in order to have it available.

## What Kind Of Energy Do You Need?

So what kind of fuel does your engine require? The fueling needs of your body are really quite simple. It needs carbohydrates, fats, protein, and plenty of water. Those are the only four types of fuel it needs, nothing more and nothing less, although it does require other nutrients such as vitamins and minerals, which end up assisting all the wonderful chemical and cellular reactions occurring every second inside our bodies. They are found in the foods and beverages we consume.

Think back to the previous analogy. If the body is an engine and food is the fuel, carbohydrates, fats, protein, and water are the rich mixture of gasoline, then vitamins and minerals are the spark plugs that keep the motor running. Take away any one, and disaster is imminent. Have them in place at all times, and your performance potential is maximized. It's that simple.

As athletes, you must realize that foods and beverages do more than just satisfy hunger. In reality, all athletes are faced with two important tasks: 1) Eat enough food to obtain an appropriate number of calories to fuel your normal daily activity, and 2) Eat enough food to obtain the extra energy requirements of training and competition.

A bowler-athlete who rolls only three games weekly shouldn't be overly concerned with detailed sport nutrition and caloric intake (unless you are attempting to lose or gain weight for health or other reasons). However, those of us who regularly practice, compete, and physically train should pay close attention to our body's energy requirements. When bowling many games over longer periods, especially in a competitive environment, caloric intake can become a critical factor to performance. You don't want to "run out of gas" at the end of a long tournament, or when needing to strike out in the tenth frame to win a match.

Each of you acquires the energy needed to train and compete from the foods and calories consumed daily. With society placing a huge emphasis on weight loss and body composition, the "calorie" has received a bad rap of late. A calorie is nothing more than a unit of energy. Every time you move an arm, calories are expended to fuel the action. When rolling a bowling ball, calories are used. The body constantly burns calories for fuel, even while sleeping. The more you train and bowl, the more energy or calories you use. All foods contain calories. Protein, carbohydrates, and fats all have a certain amount of calories. However the type of calorie is the distinct and unique difference between the three. Some types of calories, protein for example, are used to repair musculoskeletal tissue after training or injury. Others like carbohydrates and fats are used as the energy sources to fuel activity. Therefore, the right kind of calorie, and not just the amount, is also an important consideration.

## **Carbohydrates: Your Ideal Energy Source**

One kind of calorie that is highly recognized by sport nutritionists and sport trainers is the carbohydrate. Carbohydrates, or carbs as we more commonly refer to them, provide the high-octane energy needed to compete, train, and recoup. For you, carbs are the energy you need to bowl and strike. Carbs are simply the energy used to fuel bodily movement. That's right. While protein, water, vitamins, and minerals have their own responsibilities, carbs are the driving force behind our every movement.

Carbs can be found in many foods, and are organically arranged into two forms: simple sugars and complex carbs. Simple sugars, the smallest carbohydrate, are nothing more than the sugar found in certain foods. Simple sugars are usually found in sweet fruits, candy, and those addictive snack cakes sold in many bowling centers. Simple sugars are merely the sweet taste in just about every product we crave. Although they are a form of short-term energy source used immediately by the body, they are unable to provide adequate long-term energy.

Opposite of those sweet simple sugars is complex carbohydrates. They are the unsweetened carbs. No real distinct sweet taste to 'em. They are in essence multiple carbohydrates (known as starches), bonded together in a complex manner. More importantly, they are your long-term source of energy. That's right, they are the energy we need to bowl longer and stronger.

You can find complex carbs in starchy foods such as pasta, breads, cereals, grains, vegetables, and some fruits. Processed foods also contain some complex carbs. Most often, processed foods are a mixture of both types, and are frequently deficient in nutritional value and not highly recommended. For example, potato chips contain carbs, but they are loaded with fat, your typical junk food, empty calories, or even a low-nutrient-density food.

According to the American Dietetic Association, at least 60 percent of an athlete's caloric intake should come from foods containing carbs. Other sports scientists believe for optimal performance carbs should account for up to 70 percent of an athlete's total caloric intake. Here and now, I concur with the American Dietetics Association's recommendation and figure 60 percent of all calories ingested by a bowler-athlete should be from carbs.

## **What To Do?**

Bowling can be both tiring and fatiguing, while often leaving you utterly drained. For bowlers, complex carbs have the greatest nutritional and energy value. We've established that. Now how can you use them to your advantage? You have the ability to store a large amount of complex carbs in your body, more than what you think. That's the first thing to remember. But in order to do so, you must train your body to expand its energy stores.

"Do you mean I can't just eat more carbs to store more energy?" No, it doesn't work quite that way. You need to give your body the work order. Your body will not essentially store additional complex carbs as energy unless you have extra storage capacity. You need some additional warehouse space. We are not talking about extra muscle, but trained and efficient storage compartments. Eating extra complex carbs without having the excess storage space available forces your body to store them as fat. We don't want that. In fact, that's why there is such an attack on sugar these days by nutritionists. Excess sugar, for example, is easily stored as fat.

Physical conditioning increases the body's capacity for carbs (glycogen) storage the body of a trained athlete is capable of holding nearly twice as much energy (carbs or glycogen) as that of an untrained individual. And you thought I could write an article without mentioning 'training'. There you have it, by increasing your physical conditioning and enhancing your complex carb intake, you will be able to store more energy for competition. Next month I want to delve deeper into some finer points of carb-loading for competition.