EAT WELL!

# Swimmers Need Nutrition Too

To keep strong muscles, it's important to consume healthy foods throughout the day; eating protein-rich foods will bring just that.

By Dan Young

## SWIMMING

Whether you swim for enjoyment or you are training for competition, you should be aware that your body is pulling the energy it needs from one or a combination of any of the three energy systems within the body to meet the demands required of it. The types of macronutrients, the ratios and the timing all affect your performance levels dramatically.

## THE THREE ENERGY SYSTEMS

Remember, the three energy sources that your body relies on are the Immediate, Glycolytic and Oxidative. Explosive and short term energy relies on the immediate. This energy source does not require oxygen and pulls its energy from ATP (Adenosine Triphosphate) and CP (Creatine Phosphate). CP is created naturally in the body and is stored in your muscle fibers along with ATP. CP is broken down by enzymes into ATP; when ATP is then broken down, energy is created. It is logical to understand that our muscles can only hold so much of these compounds, so this energy system is short lived. Some types of swimming that may rely on this energy system are generally events that are 100–200 yards. This includes the backstroke, breaststroke, butterfly and freestyle.

Glycolytic — as the name infers, is the use of glycogen. Glycogen is stored glucose and like CP and ATP, it is stored in our muscles but also in our liver along with water. In fact, for every gram of glycogen, you store 2.7 grams of water. Even the most trained among us can only store 500 grams of glycogen — about 2,000 calories, enough for 45–60 minutes of work. Again, this energy system does not require oxygen and is what may be required for about 800–1,500 yards of freestyle swimming or anything up to about 20 minutes.

For long term energy, swimming that extends over 45 minutes, the muscles require the oxidative energy system. Oxygen is used to oxidize fat, along with protein and glucose. Glucose must be present in order to oxidize fat. The best source of glucose is from glycogen. Swimming events that would require this energy system are long distance events (triathlons), synchronized swimming and water polo.

## THE RATIOS

The macronutrients should be consumed in the following ratios. Generally speaking, most middle distance swimmers who use the glycolytic system should target macronutrient ratios of 55% carbohydrate, 30% protein and 15% fat. If you are primarily using your oxidative energy system, then tweak the carbs to 60%, the protein to 20% and the fat to 20%. Conversely, if you are involved in mostly power swimming, tweak the protein to 25% and fat to 20%, leave the carbs alone at 55%.

## SIMPLE RULES

- Complex carbohydrates are your best source for energy because they most efficiently refill glycogen stores in the muscles and the liver. They should be consumed throughout the day in several meals and within 45 minutes of your workout. Simple carbs should be consumed preferably in a liquid form to maximize glycogen response.
- Consume protein throughout the day to bring in much needed nutrients to repair muscle damage.

**Eat well and remember, you are what your food eats!**

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