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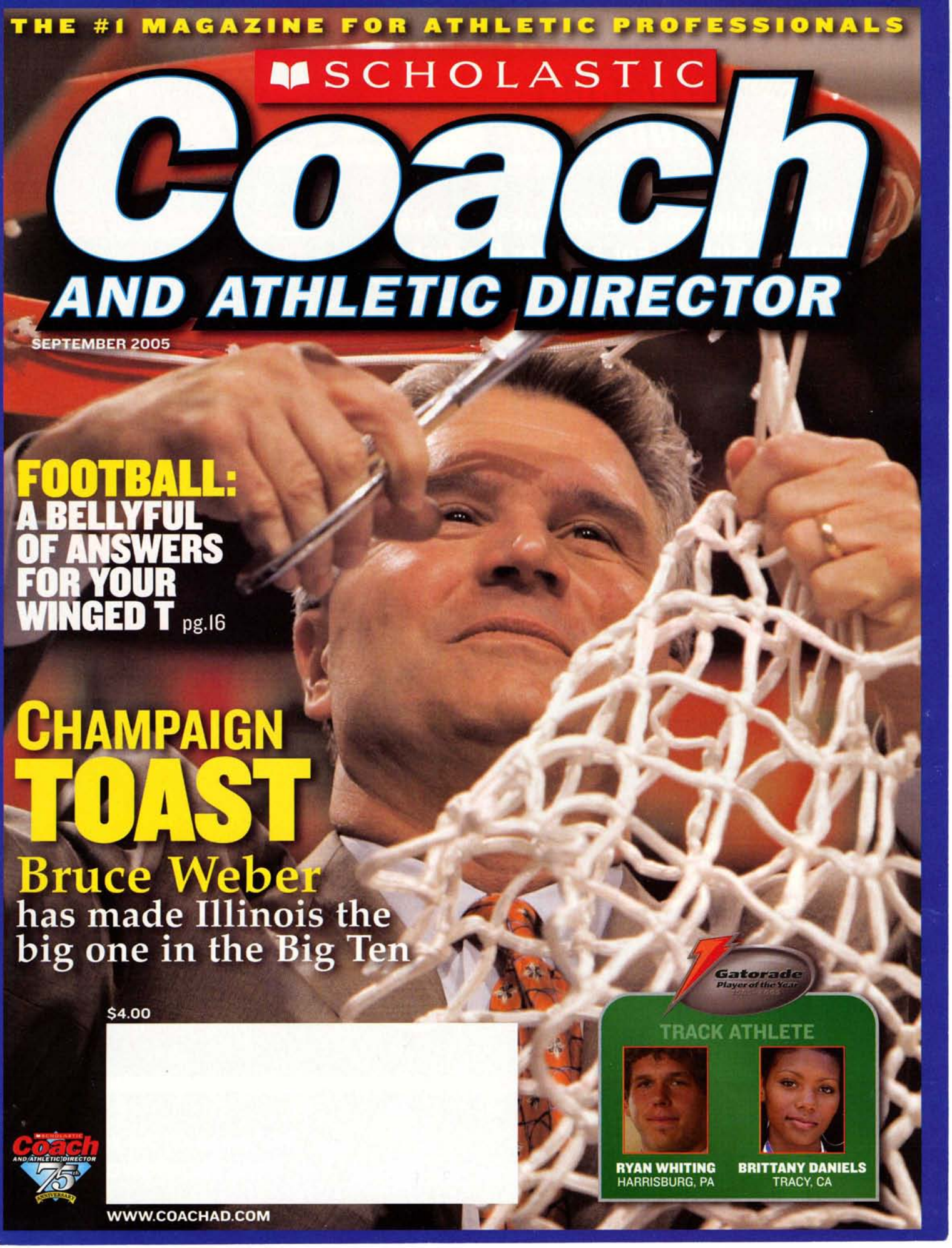

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No Corn on These "Carbs"

The Energy Lift in Sports

By Matt Brzycki, Coordinator of Recreational Fitness and Wellness, Princeton University

Although the widespread panic over the consumption of carbohydrates has faded considerably, the aftershocks continue to echo throughout the athletic community. Do these fears have any merit or scientific basis?

WHAT ARE CARBOHYDRATES?

Carbohydrates, or "carbs," are one of the three macronutrients that provide calories, the others being protein and fat. The carbs can be classified as either "simple" (sugars such as table sugar and honey) or "complex" (starches such as bread).

Foods high in carbohydrates include potatoes, cereals, pancakes, waffles, breads, bagels, spaghetti, macaroni, rice, grains, fruits, and vegetables.

IMPORTANCE OF CARBOHYDRATES

The primary function of carbohydrates is to furnish energy, especially during intense activity. This is true regardless of whether an athlete is participating in a sport, engaging in conditioning activities, or lifting weights.

The body breaks down carbohydrates into glucose (or "blood sugar"), which can be used as an immediate form of energy during a physical activity or stored for future use as glycogen in the liver and muscles.

Highly conditioned muscles can stockpile more glycogen than poorly conditioned muscles. If the glycogen stores are depleted, an athlete will feel overwhelmingly exhausted. For this reason, a greater supply of glycogen stores can give the athlete a significant physiological advantage.

Foods can be described by the effect they have on blood glucose. Those that produce a considerable increase in blood glucose are high-glycemic foods. Those that produce a negligible increase in blood glucose are low-glycemic foods.

Because carbohydrates play such an essential role as a source of energy, it's important for athletes to consume adequate amounts of it. And nowhere is the intake more critical than before and after physical activities.

PRE-ACTIVITY FOODS/FUELS

Before an activity, any foods that athletes consume should satisfy their hunger and ready their bodies with fuel. It's best to consume foods that are high in carbohydrates and will keep their blood glucose within a desirable range.

High-glycemic foods shouldn't be consumed before an activity. Fact: In response to a high level of blood glucose, the body increases its level of blood insulin. As a result of this hormonal balancing, the blood glucose is sharply reduced.

This leads to hypoglycemia (or "low blood sugar"), which decreases the availability of blood glucose as a fuel and causes the athlete to feel severely fatigued. Although this condition is usually temporary, it remains an important consideration.

Don't simply assume that a sugary food raises blood glucose more than a starchy food. Indeed, honey raises blood glucose less than a bagel and, given these two options, would be a better choice prior to an activity.

Examples of pre-activity foods/fuels that have a low-glycemic effect include milk, apple juice, orange juice, tomato juice, cherries, grapefruit, grapes, pears, plums, yogurt, macaroni, plain pizza, spaghetti, beans, nuts, and oatmeal.

POST-ACTIVITY FOODS/FUELS

After an activity, especially an intense one, proper nutrition will accelerate recovery and better prepare the athletes for their next physical challenge. The idea is to replenish the depleted glycogen stores and to expedite the recovery process as soon as possible after training or competing.

Following an activity, it's best to consume foods that are high in carbohydrates that will restore the muscle glycogen in the quickest fashion.

Examples of post-activity foods/fuels that have a high-glycemic effect include sports drinks, bananas, watermelons, raisins, rice cakes, cereals, pretzels, white rice, baked potatoes, white or rye bread, bagels, pancakes, and waffles.

According to Nancy Clark, M. S. R. D., the internationally known sports nutritionist and author, athletes should consume 0.5 grams of carbohydrates per pound of their bodyweight (g/lb) within two hours of completing an intense activity. This should be repeated again within the next two hours.

For instance, a 150-pound wrestler needs to consume about 75 grams of carbohydrates – or 300 calories of carbohydrates – within two hours after an intense activity and another 75 grams of carbohydrates during the next two hours.

ADDRESSING THE CONTROVERSY

Given the seemingly obvious importance of carbohydrates, why have they been cast as "villains"? Much of the reason is based upon the myths fed to coaches and athletes.

Myth: The best pre-game meal is steak and eggs.

Reality: One of the worst pre-game meals is steak and eggs. This is because foods that are high in fat and protein, such as steak and eggs, are digested slowly.

Understand that no foods consumed before a competition will lead directly to a great performance.

Certain foods should be avoided, however, such as greasy, highly seasoned and flatulent (gas-forming), along with any specific foods that the athlete may find distressful to his or her digestive system.

Needless to say, the athlete shouldn't experiment with new foods before the big game. The pre-game meal should be almost bland, yet appetizing enough to appeal to the athlete.

Myth: All carbohydrates are bad.

Reality: Some carbohydrates are bad. The banana is a rich source. . . but so is a soda. Carbohydrates that are more nutritious include fruits, vegetables, and whole grains; they're full of vitamins and fiber. Carbohydrates that are less nutritious include processed foods such as cakes, cookies, and muffins along with soft drinks and candy; they're full of "empty" calories.

Myth: Carbohydrates will make your athletes fat.

Reality: Eating too much and exercising too little will make your athletes fat. Weight management boils down to the number of calories that are consumed and the number of calories that are expended.

If more calories are consumed than expended, it will produce an increase in weight. If the increase in weight is magnified, at least some of it will be in the form of fat rather than muscle.

This holds true whether the excess calories come from carbohydrates, protein or fat. Any carbohydrates that exceed the athlete's daily needs will be stored in the body as fat. Protein in excess of daily needs also will be stored as fat (or excreted). And, of course, any fat in excess of daily needs will be stored as fat.

Myth: Eating a high-glycemic food, such as a baked potato, will increase appetite.

Reality: There's no conclusive evidence whatsoever that eating a high-glycemic food increases appetite or, for that matter, makes someone gain weight. When was the last time that you saw someone sit down at a table and eat a plateful of baked potatoes?

In other words, the individual ate nothing but baked potatoes. Probably never, right?

When someone sits down for a meal, a variety of foods are on the plate. Besides a baked potato, it's likely that other vegetables will be on the plate accompanied by some type of meat, poultry or fish.

There may also be a salad with the meal and something to drink such as a glass of milk. These foods would balance out, or dilute, any glycemic effect from the baked potato. So, even if high-glycemic foods make someone hungrier, the rest of the meal will usually contain a variety of foods that will soften the effect.

Also keep in mind that the glycemic effect is unrelated to portion size. Eating a small amount of a high-glycemic food actually has a less significant impact upon blood glucose than eating a large amount of it.

Myth: Low-carb options lead to weight loss.

Reality: While this can be true, it's important to understand why. A number of restaurants, particularly those that sell "fast food," have devised a simple and ridiculous way to capitalize on the carbohydrate

conundruMyth: They've eliminated the bread or bun of a sandwich and offer this as a "low-carb option" or "low-carb alternative."

Consider a typical hamburger with cheese and toppings (such as a pickle, mayonnaise, and so on). The low-carb version, the same thing without the bun, has about 250 less calories than the typical hamburger. This is an important consideration for an athlete who's trying to lose weight. But when the bun is eliminated, the percentage of calories from fat skyrockets to as much as 75% of the food.

A better choice would be to keep the bun, hold the mayo, and – pardon the pun – cut the cheese. This version also has about 250 less calories than a typical hamburger and roughly half the fat. This produces the same result as the low-carb option, a deficit of about 250 calories, but it's a much healthier choice.

The real key to losing weight is calories. Any weight loss that's produced by low-carbohydrate diets is due to a decrease in the amount of calories, not a decrease in the amount of carbohydrates. Athletes can lose weight with any diet as long as the calories they consume are less than the calories they need.

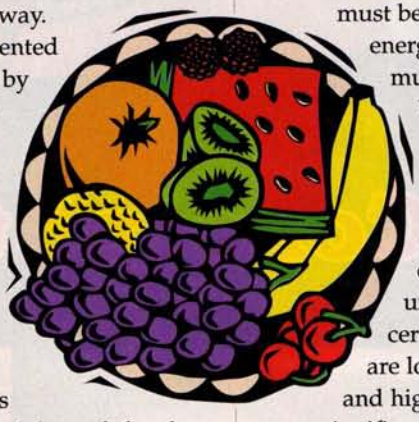
An athlete could lose weight by only eating potato chips, provided that the number of calories from the potato chips is less than the number of calories needed to maintain bodyweight. This, of course, isn't the healthiest thing to do, but the reality is that an athlete could lose weight this way.

Myth: When selecting foods, it's important to consider "net carbs."

Reality: In response to the carbohydrate paranoia, many manufacturers have been using the term "net carbs" (as well as "effective carbs" or "impact carbs") on the packaging of their food products, though not on the nutrition labels. The food industry calculates "net carbs" by taking the total grams of carbohydrates per serving and then subtracting the grams of fiber and sugar alcohols, which are neither sugar nor alcohol, but sweeteners.

Food manufacturers claim that because fiber isn't digested and sugar alcohols have a negligible effect on blood glucose, they do not count. It's true that fiber passes through the digestive system largely intact and sugar alcohols have a minimal impact on blood glucose. But here's where the math gets fuzzy: Sugar alcohols have calories and, thus, "do count."

Understand that "net carbs" is an unscientific term that's calculated in a subjective way. Clearly, it was invented and implemented by the food industry to capitalize on the low-carbohydrate frenzy.



At the present time, "net carbs" and other popular terms that are used on product packaging, such as "low-carb" – haven't been defined or even recognized by the Food and Drug Administration, which, by the way, is why they don't appear on the nutrition label.

RISKS OF LOW-CARB DIETS

If the amount of carbohydrates that are consumed is decreased, then, the amount of protein and fat that are consumed must be increased. This will restrict the intake of foods that contain highly valuable nutrients, such as fruits, vegetables, and whole-grain products – which may lead to vitamin and mineral deficiencies.

Since fewer carbohydrates are available as a source of energy, an athlete will also fatigue more quickly during physical activities. There's no doubt that athletes who eliminate or trim carbohydrates from their diets will have less stamina and endurance when training and competing.

It's important for athletes to consume carbohydrates to fuel their active lifestyles. Remember, the main function of carbohydrates is to supply energy, especially during intense activity.

The other two macronutrients – fat and protein – have major limitations as energy sources. Fat is an inefficient source of energy, so it's preferred during low-intensity efforts when there's no need to be efficient.

Protein is actually a last resort since it's located in the muscles and if an athlete is in a situation where it must be relied upon as an energy source, then the muscle tissue is literally being cannibalized.

But most importantly, the long-term safety and effectiveness of low-carbohydrate diets are unknown. One thing is certain, though: Diets that are low in carbohydrates and high in protein and fat pose significant health risks. It's important to note that consuming too much protein and fat is associated with a greater risk of heart disease. Excreting an excessive amount of protein stresses the liver and kidneys. There are additional concerns as well. Does it really make sense that in order to lose fat an athlete should eat more of it?

THE BOTTOM LINE:

The importance of consuming adequate carbohydrates is unmistakable. How much is enough? At least 65% of an athlete's daily calories should be from carbohydrates.

Clearly, carbohydrates are miscast villains. ■