

# The Fueling Station

September 2009



## SMOOTHIES PACK A PUNCH

A great way to get your lean protein, healthy fat and fruit serving for the day or before and after a training session! Simply place a cup of skim milk, a handful of berries, a spoonful of extra virgin olive oil and some ice in a blender and voila!

## Performance Webinars

For a wide variety of educational webinars, visit Performance Webinars at [www.performancewebinars.com](http://www.performancewebinars.com).

There are both live and archived webinars that can be purchased. Continuing education credits for USA Triathlon and Cycling Certified coaches are offered for each webinar.

### Upcoming September webinars:

Friday, September 4

#### Performance Testing and Analysis

Presented by Krista Austin from 12:30-1:30pm MDT.

#### Altitude Training Benefits

Presented by Krista Austin from 1:45-2:45pm MDT.

Monday, September 21

#### Omega-3 Fats and Inflammation

Presented by Bob Seebohar from 12:00-1:00pm MDT.

Remember, you don't have to attend the webinars live. You can purchase them and view at your convenience!

To read more about these webinars and register, visit [www.performancewebinars.com](http://www.performancewebinars.com)

## BOB'S CORNER

Welcome to the first issue of the Fuel4mance newsletter, **The Fueling Station**. This monthly educational newsletter will provide some great information regarding health, nutrition, training and performance.

There will be contributions from many health professionals representing different specialty fields and professions.

This month highlights developing a nutrient timing system for improved performance written by Krista Austin, a performance nutritionist and exercise physiologist.

I hope you enjoy the newsletter and I welcome any suggestions or comments you have.

Feel free to pass this onto friends, training partners and family members so they can also enjoy the benefits of **The Fueling Station**.

Coach Bob

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# Nutrient Timing

Krista Austin, PhD, CSCS

Timing nutrient ingestion is a concept that has become increasingly popular in the world of sports performance. The primary goal between training sessions is to recover, and as a result nutrition becomes a key component that will allow the body to adapt to the imposed training demand.

The timing, type and volume of carbohydrate, protein and fat consumed throughout the day is critical to restoring overall muscle function and body homeostasis. Based on several decades of scientific research, we now know that centering an athlete's food and fluid consumption around pre-, during and post exercise can significantly enhance the recovery and adaptation process.

A training adaptation that most athletes seek to optimize is the ratio of muscle and fat mass in the body. This is due to the positive relationship body composition has with producing peak results. In order to develop a nutrient timing system that can assist in optimizing body composition, athletes and coaches need to consider three key components: 1) the level of energy needed to sustain training, 2) the function of their food and its role in performance and 3) the goals of their training cycle.

Ensuring that athletes have the "fuel to do it" has been highlighted as a key factor to training and competition success; however athletes are also frequently concerned about their body weight and composition. Studies assessing the patterns of food intake by athletes have shown that the type of food consumed and timing of meals is the key to weight management and maintaining a high level of muscle mass and a lower level of body fat while still obtaining the desired results in body weight.

Body weight and composition is a result of the balance between food intake and energy expenditure. More importantly for an athlete is the concept of energy flux which is the rate at which the body is turning over energy. This is the rate at which energy is consumed in relation to the rate at which it is expended, whether through daily living or exercise. Athletes desire a high energy flux

which has been shown to help improve body composition through increasing muscle mass gains and decreasing body fat. In order to achieve this, it is important for an athlete to develop a nutrient timing system that steadily provides energy to the body in order to minimize any high or low levels of energy balance being sensed by the body. In response to exercise, this promotes the body maintaining and improving the levels of muscle while simultaneously decreasing fat stores.

Understanding the function that food plays in the recovery and training adaptation process is another important aspect of developing a timing system for nutrient ingestion. Food should serve a function in the body whether it is to rapidly recover the muscles from training or to keep glucose (carbohydrate) levels in the blood stable between meals. Meals or snacks can have a fast, moderate or slow response to entering the body dependent on the ratio and type of carbohydrate, proteins and fat that is provided in the food item.

When a slower response is desired, food items that have a higher level of fiber (in relation to sugar content and total carbohydrate), healthy fats and protein should be consumed to slow the rate at which they are entering the blood. Conversely, as fat and fiber content decrease, food is able to enter the body at a much more rapid rate than if they were present; this is especially true when the sugar content of food is high. Identifying the time points where foods that quickly enter the blood and those that require a slow and steady release of energy is a key component to optimizing a nutrient timing system.

The development of a nutrient timing system that accounts for energy flux and the functionality of an athlete's food requires an understanding of periodization. The concept of periodization is used to define the structuring of an athlete's training program.

Periodization defined is the "intentional planning of training volume and intensity for optimized performance."

# Nutrient Timing (continued)

For some athletes, periodization will encompass a 3 month period and for others this will be a year long process. This is known as the mesocycle. Based on an athlete's primary performance goal, a mesocycle will have macro and micro-cycles that reflect the progressive process of training that will be taken to achieve this goal.

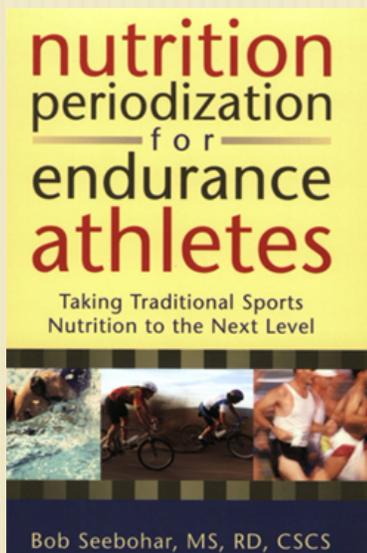
A macro cycle is typically 3 to 4 weeks long and defines a block of training. A micro cycle is usually anywhere from 3-10 days long, and reflects with greater definition the manipulation of intensity and volume of training for the macrocycle. As the training volume and intensity change throughout the days and weeks of these cycles, so should the volume and ratio of carbohydrate, protein and fat in the athlete's nutrition plan.

An athlete's nutrition plan should reflect the primary performance goal that is outlined for the mesocycle, by defining macrocycles of nutrition that will help achieve the goal. On a day to day basis, nutrition will focus on the goals of the current microcycle by manipulating the volume and types of food consumed to match the training demand.

In order to begin using a nutrient timing system, an athlete should begin by answering the following questions:

- What is the primary goal of training?
- Based on the current macrocycle, what is the key function that nutrition should serve (ie-reduce body weight, improve fat use during training, etc).
- Based on the current microcycle, what days of the training cycle does the athlete perform the most work?
- What are the time points within the day where the majority of energy is expended?
- How much energy is being expended throughout the day? How does this vary day to day?
- In order to optimize training and recovery should the athlete take in food during training and consume food before and immediately after training?
- Is the athlete eating something at least every 3 hours?
- What types of food should the athlete be consuming and how quickly do they need the fuel?

Krista Austin, PhD, CSCS, is a performance nutritionist and exercise physiologist. Contact her at [krista@performcoachsd.com](mailto:krista@performcoachsd.com) and visit her website at [www.performanceandnutritioncoaching.com](http://www.performanceandnutritioncoaching.com).



## EAT TO TRAIN, DON'T TRAIN TO EAT.

Nutrition Periodization for Endurance Athletes, written by Bob Seebhar, provides athletes of all ages and abilities the information needed to implement a nutrient timing system by matching nutrition with their physical training cycles.

The information in this book benefits the recreationally active person to the elite, Olympic level athlete.

For more information and to order your copy, visit [www.fuel4mance.com](http://www.fuel4mance.com) or [www.bullpub.com](http://www.bullpub.com).