

Performance Nutrition for Endurance Athletes

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Performance Nutrition for Endurance Athletes

Presented by the Sport Dietitians at



- Do you have goals such as improving body composition?
- Do you want to reduce body fat and improve lean muscle mass?
- Do you have health concerns such as poor lipid profile, pre-diabetes, metabolic syndrome or risk for cardiovascular disease?
- Have you been a yo-yo dieter, failing to find a program that was sustainable?
- Has your nutrition been a limiting factor in your ability to improve your athletic training and performance?
- Do you regularly experience GI distress during training or competition?
- Are you confused about how to fuel your workouts for optimum performance and athletic gains?

If you answered yes to any of the above questions, then it is time to try a different approach to your nutrition. Welcome to your new nutrition protocol, which consists of implementing the concepts of Metabolic Efficiency Training and Nutrition Periodization. In this book, we will briefly explore these concepts and introduce you to some basics so that you can get started right away.

What is Metabolic Efficiency Training?

Think of Metabolic Efficiency Training (MET) as a way to teach your body to use its abundant fat stores more efficiently while preserving its very limited carbohydrate stores until when they are really needed.

On average, an athlete has in the range of 50,000 to 100,000 calories in the form of stored fat to use as an energy source. Contrast this with calories from stored carbohydrate, which range from approximately 1,200 to 2,000 calories, depending on gender and muscle mass. Why not yield long-lasting energy from your abundant fat stores rather than quickly exhausting your limited carbohydrate stores? Do you want to have to constantly refuel the body in order to continue the physical activity of choice?

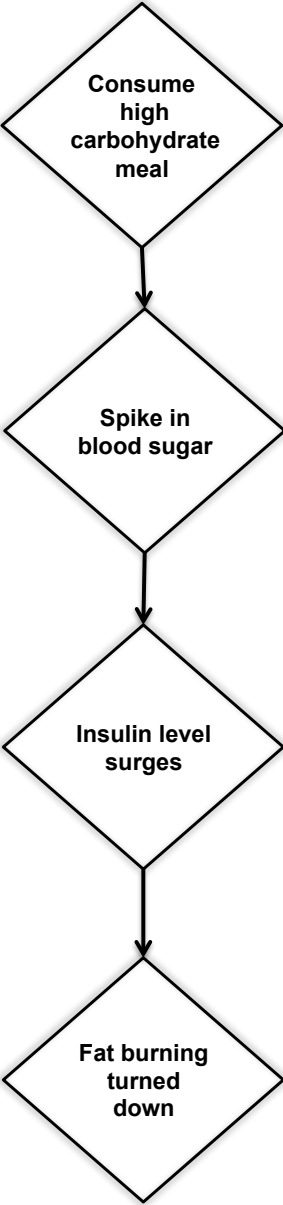
Simply put, MET allows your body to improve the rate at which it burns fat. It will also give you the ability to burn fat at higher intensities of exercise. It was once believed that the only way to improve fat burning was to build the “aerobic engine” through a properly structured aerobic training program, focusing on low intensity training (zone 1 - 2). We now know that there is another way to increase fat burning through the dietary methods of metabolic efficiency training.

How do you implement Metabolic Efficiency Training?

Aerobic training certainly plays an important role in developing your body’s ability to better burn fat. Yet, the effect of aerobic training is small (roughly 25%) in comparison to the effect of manipulating your daily nutrition patterns (roughly 75%). Before explaining more details about the nutrition implementation, it helps to understand the underlying goal of MET: putting together foods in proper combinations with each meal and snack that work to stabilize your blood sugar level.

Why do we care about blood sugar levels? The reasons are numerous, but one main reason for athletes is that with an uncontrolled blood sugar level, your body will be limited in its ability to make itself into a better fat burner. This can affect your performance in a negative way.

How does the food you eat affect blood sugar? The majority of athletes consume meals that are high in carbohydrates and low in quality proteins and fats. As the body is exposed to a chronically higher carbohydrate pattern, the body remains in a state of “carbohydrate dependence”. In a single meal, the sequence of events can be illustrated by the diagram below:



When you feed with a high carbohydrate meal (bowl of cereal with fruit, bagel and peanut butter, yogurt with granola), your blood sugar level rises quickly as the body works to digest the food and convert carbohydrate to glucose (i.e., sugar, the usable energy form). With this rise in blood sugar, there is a release of the hormone insulin from the pancreas. One of the jobs of insulin is to move glucose into the cells so that our bodies can use this energy source. This is a very natural process for the body and is simple biochemistry. However, what most people do not realize is that during this time of elevated blood sugar and insulin, the oxidation (or “burning”) of fat is decreased and the process of storing fat is increased. Hence, our goal is to control daily carbohydrate intake so that we can mediate the blood sugar and insulin response, leading to better fat burning. Additionally, as the body adapts to more controlled carbohydrate patterns, changes are occurring at a cellular level that will improve the way your body uses fats as a fuel source during exercise.

Now that you understand the underlying goal of MET, let us introduce what you need to do to begin your own MET journey. There are several strategies to implement MET, but one of the most basic methods is listed below:

Step One

Take an inventory of the foods you enjoy eating and categorize them. Use the following categories:

1. Proteins and Fats
2. Vegetables and Fruits
3. Whole Grains and Starches
4. Misses (sweets, alcohol, refined/processed carbohydrates, sports nutrition products)

Step Two

Focus on eating foods in categories #1 and #2. Minimize or avoid (depending on your motivation and readiness) foods in categories #3 and #4. Here is an example of a meal overhaul:

- pre-MET: chicken burrito with rice, beans, cheese with a side of tortilla chips and salsa; a soda to drink
- ➔ post-MET: chicken burrito “bowl” (no tortilla) with cheese, avocado, salsa, and added grilled vegetables; sparkling water to drink

Think of these three elements when assembling a meal: Protein + Fat + Fiber (from vegetables and fruits primarily). By minimizing foods from categories #3 and #4, you inherently lower your carbohydrate intake to a more moderate level. Note: you are not on a “low carbohydrate diet” because you will be eating foods such as vegetables, fruits, beans, nuts/seeds, dairy, avocados; all of which contain carbohydrates.

Step Three

It doesn't matter so much when you implement MET during your training year. However, since this is a behavior change, it is recommended that you allow at least 3 - 6 weeks to adapt to your new eating patterns. Because of this, we do not recommend you begin this new nutrition behavior close to a competition or as you begin a higher intensity training block.

To learn more about other strategies to implement MET, or to get personalized guidance on implementation, particularly if you are a power or team sport athlete rather than an endurance athlete, we recommend a consultation with the Fuel4mance Sport Dietitian staff.

Step Four

Avoid taking simple sugars during training sessions that are under 2 - 3 hours in duration. Your body has enough stored carbohydrate to supply energy for this long at moderate intensities so there is no need to overfeed calories when your body doesn't need them. Drink water and consume non-caloric forms of electrolyte, as the environmental conditions warrant it. Calories are more needed when the duration of training exceeds 2 - 3 hours.

Step Five

Self-monitor, assess, and make changes to your daily nutrition plan as necessary. Start to take note of how your food combinations make you feel. Take into account your hunger and fullness levels, energy levels, and even things like mood and concentration. With a more controlled carbohydrate nutrition plan, you should find that your energy levels become more steady and your meals keep you satisfied for at least three to four hours. If you find you are getting hungry within 1 - 2 hours after a meal, it is likely you missed some element of the "Protein + Fat + Fiber" combination. Check the amounts of those components individually and together as a whole. Adjust the meal the next time and observe the difference. This is a process and is different for each individual. Some find that they need external support or accountability, which is another area where the Fuel4mance Sport Dietitian staff can assist you.

Implementation of MET can be simple and very sustainable because there is no calorie counting or need to follow a strict meal plan. You get to eat the foods you like, but you give attention to your macronutrients (i.e, protein, fats, carbohydrates) in how you put the foods together for meals and snacks. As you undertake your MET journey, planning and preparation are also essential for success. Make sure you have a good support system in place to help you thrive. This means you ensure your environment and your friends and family do not sabotage your goals.

How do you know if you are Metabolically Efficient?

The sure way to know your level of metabolic efficiency is to have a Metabolic Efficiency Assessment done. This involves an overnight fast then exercising on a treadmill or bike at varying intensities while connected to a metabolic cart. The cart, usually found at performance centers, measures your respiratory exchange ratio (RER: the ratio between the volume of carbon dioxide you produce and the volume of oxygen you consume). This simple metabolic efficiency assessment provides additional information such as calorie expenditure and percentage of fat and carbohydrate being used at each intensity level. The data not only show the impact of your daily nutrition patterns upon your body's ability to use fat as a fuel source, but also is useful for planning training and racing nutrition strategies. Bob Seebohar, founder of Fuel4mance, created this assessment and the Sport Dietitians at Fuel4mance are the foremost experts at metabolic efficiency testing and interpretation. Contact them for more information.

What are the rewards of Metabolic Efficiency Training?

The rewards and benefits of MET are many. Results vary, but can include:

- reduced body fat
- improved body composition
- steady energy levels
- less frequent eating
- controlled appetite, decreased sugar cravings
- decreased dependence on supplemental carbohydrate during exercise
- absence of gastrointestinal distress during exercise
- enhanced exercise performance
- better sleep patterns
- hormonal balance
- decreased risk for chronic disease
- improved mood

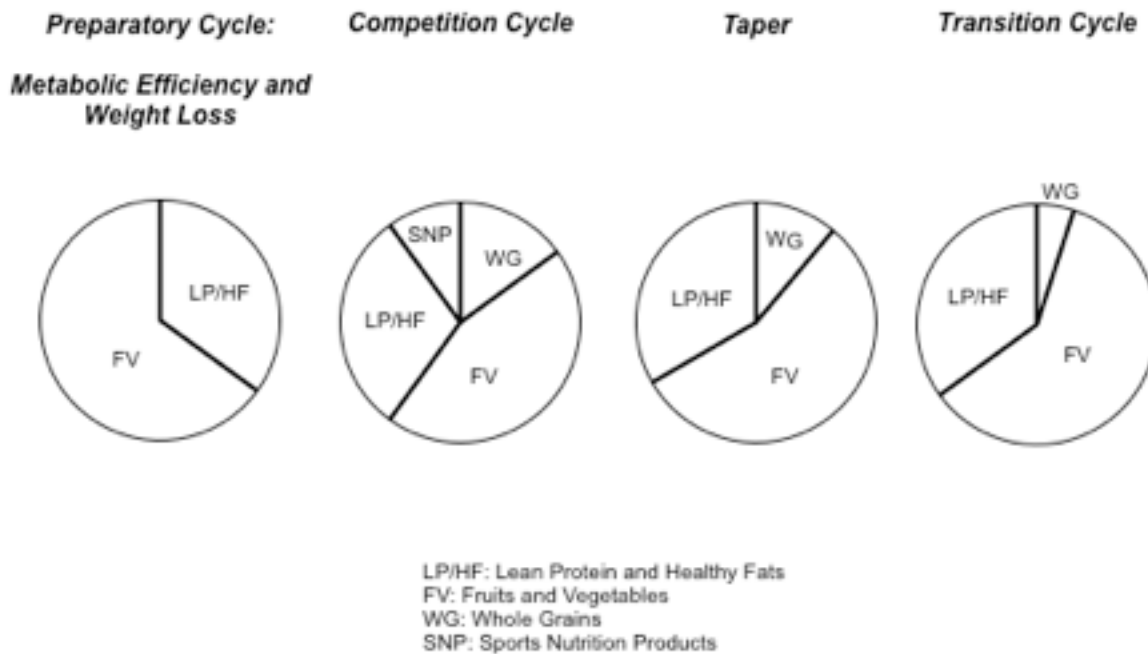
It is recommended to have blood work completed prior to implementing MET so that you can see the changes that occur during your MET journey. You should also consider having a Metabolic Efficiency Assessment done prior to your implementation so that you have objective data for your starting point and you know exactly what daily nutrition changes are needed.

What is Nutrition Periodization?

The next piece of the nutrition protocol is to adapt your nutrition patterns to meet your body's energy needs as it relates to fueling and recovery for exercise and sport performance. Bob Seebohar invented this concept, which is called Nutrition Periodization.

The fact is that your energy needs, or how many calories you should consume, change on a daily basis and vary day to day depending on your lifestyle and training load fluctuations. Formulas that calculate your calorie needs should not be relied on to dictate your daily nutrition needs. The quality and quantity of foods that you eat will change throughout your various training cycles throughout the year.

Metabolic Efficiency Training is a strategy of implementing the nutrition periodization concept. This is demonstrated by examining one of the strategies for nutrition periodization, the Periodization Plates™. These plates are designed to serve as a model to show you how to structure the types and amounts of foods that you eat as you move through various training cycles. Refer to the next page for an example of the plates for a typical endurance athlete.



As you can see, the proportions of foods change depending on the training cycle. The first plate describes the implementation of MET, as was described earlier in this book. As the Competition Cycle approaches, the athlete may introduce additional carbohydrate from whole grains to increase calories when training volume and intensity is higher. Sports nutrition products may also be incorporated to fuel training sessions and provide additional nutrition in the post-training window. The Taper Cycle is when the athlete is getting close to the actual race day and is coming down in their training load (usually as defined as less volume and moderate intensity). This cycle may last from a few days to a few weeks depending on the distance of competition. Regardless, energy needs typically decrease as training duration becomes shorter. Hence, there is little need for using sport nutrition products during this cycle. Protein and fiber-rich foods should be increased in order to improve the satiety response in an effort to not overfeed calories and gain weight prior to competition.

The Periodization Plates™ show the concept of nutrition periodization: change types and amounts of macronutrients to meet the athlete's energy needs. To learn more about these plates and how they can be used for your own training, we recommend reading "Metabolic Efficiency Training: Teaching the Body to Burn More Fat" or "Nutrition Periodization for Athletes" by Bob Seebohar or seeking personal guidance from one of the Fuel4mance board-certified sport dietitians.

Summary

The process of teaching your body to burn fat more efficiently is quite simple once you understand the goals and feel ready to make changes. MET should not be seen as a "diet", but rather as a lifestyle that has potential for improving health and performance. Nutrition periodization should be implemented throughout your training year and when implemented properly, will sustain your metabolic efficiency.

Both MET and nutrition periodization planning is very individual, but you should now have a feel for the basics and can begin your own journey. Consider consulting with the sports nutrition experts at Fuel4mance to fine-tune your nutrition to meet your specific goals and unique needs.

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Educational resources available from www.fuel4mance.com:

- “Metabolic Efficiency Training: Teaching the Body to Burn More Fat”
- “Nutrition Periodization for Athletes”
- “The Athlete’s Food Guide to Metabolic Efficiency”
- “Metabolic Efficiency Recipe Book”
- “Fuel4mance Smoothie Recipe Book”
- “Caffeine Protocol for Athletes”
- “Sodium Loading Protocol for Endurance Athletes”