

**NUTRITION TIPS, FROM USA SWIMMING, AND COACH WATSON**

One of the building blocks of quality training is good nutrition. Every swimmer and parent needs to be aware of the following two points:

**1. Food does NOT make a swimmer swim fast.**

That's right. Food does not make him swim fast. What *does* make him swim fast? Training. Training makes him swim fast.

**2. QUALITY training makes him swim fast.**

A vital part of quality training is good nutrition!

Believe it or not, your swimmer doesn't get fast during practice. In practice she might see her times improving, but her *adaptation* to training (i.e. getting faster) actually occurs while her body is at rest. Workout is the **stimulus** that causes this to happen.

Workouts are hard! They're supposed to be. They're designed to tell the body, "This is hard work for me...you better do something to enable me to do it again later." And the body actually responds by becoming more efficient – aerobically and anaerobically. During its time off, the body WILL adapt, but only if given the **proper fuels**.

**Nutrition Quiz for Swimmers**

Your swimmer may be working hard in practice, but is he supplementing his training with proper nutrition? Test your nutrition I.Q. by deciding whether the following statements are true or false.

1. Fruit is an excellent source of carbohydrate. True / False
2. Generally speaking, the more colorful and varied your fruit and vegetable platter, the healthier it is. True / False
3. It's best to wait about an hour after a tough practice to fuel your body with carbohydrates and protein. True / False
4. It's important to stay hydrated because it can directly affect athletic performance. True / False
5. If you become very dehydrated, your body may require two to four hours to replace fluid loss. True / False
6. Skipping breakfast will keep your energy levels stable throughout the day. True / False
7. The primary fuel source for swimmers is protein. True / False
8. Eating early and often throughout the day helps you avoid the blood sugar highs and lows (high energy, then sleepiness). True / False

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### **What should my child eat before practice? At meets?**

The best pre-practice, or pre-meet meal should contain primarily carbohydrates. Carbohydrate-rich foods like pasta, breads and cereal are easily digested and absorbed. Rule of thumb: 0.5 - 2.0 grams of carbohydrate per pound of body weight one to four hours prior to exercise.

### **Meals that provide 100 grams of carbohydrates**

- 1 bagel with peanut butter and 2/3 cup of raisins
- 1 cup of low-fat yogurt, 1 banana and 1 cup of orange juice
- 1 turkey sandwich with 1 cup of applesauce
- 2 cups of spaghetti with meat sauce and 1 piece of garlic bread
- 8 oz. of skim milk, 1 apple, 1 orange, 2 slices of bread and 3 pancakes
- 1 serving of GatorLode and 1 bagel

### **Fluid Replacement Tips**

- Keep a fluid bottle by the side of the pool when working out and drink between repeats and sets.
- Choose sports drinks like Gatorade that taste good, stimulate fluid absorption in the body maintain proper fluid balance in the body, and provide energy to working muscles.
- Avoid carbonated drinks, which can cause stomach bloating and may reduce fluid intake.
- Avoid caffeine-filled beverages. They are diuretics and contribute to fluid loss.
- Check the color of your urine. Dark-colored urine may indicate you are dehydrated and need to drink fluids.

### **Quick Tips**

### **What should my child eat before practice? At meets? What are some hydration tips?**

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Analyzing Your Diet

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Diet analysis is comprised of two parts, *needs* and *intake*. Optimal nutrition is a matter of balance (nutrients-in versus nutrients-out). In other words, a swimmer's intake of nutrients must match his/her output of nutrients during rest and exercise. In terms of *energy* (aka calories), if the needs are greater than the intake, the net result is weight *loss*. Conversely, if the needs are less than the intake, the net result is weight *gain*.

There are three variables that contribute to a person's total nutrient and energy needs:

**Resting Energy Expenditure (REE)** – REE is the energy required for cellular and tissue processes that maintain physiological functions at rest, plus small amounts of energy related to previous muscular activity. It is the energy the body needs to maintain itself in the sedentary state, and this need tends to decrease with age. REE remains relatively constant for a given age and gender. In other words, the REE for most 120-lb 16-year-old males is about the same. Typically, REE accounts for about 60% of a swimmer's daily expenditure. For swimmers, about 40% of it is used to support REE.

**Thermic Effect of Food (TEF)** – TEF is the energy required by the body to digest, absorb, transport, store and metabolize food. Eating actually increases a person's metabolic rate temporarily, which translates into an elevation in energy expenditure. This effect is higher for protein and carbohydrate meals, versus fat meals. In fact, fat has little effect in elevating the metabolic rate at all. Typically, TEF accounts for about 10% of a person's daily expenditure. Similarly, about 10% of a person's daily caloric needs are to support TEF.

**Thermic Effect of Exercise (TEE)** – TEE is the increase in a person's metabolism due to moderate and strenuous physical activity. The exact amount of energy this accounts for depends on the physiological "cost" of the activity. Determining this directly involves monitoring a person's oxygen consumption (VO<sub>2</sub>) during exercise and translating that into calories burned. There are many reference charts available that indicate how many calories are required or spent to perform a given activity for a given period of time. Typically, TEE accounts for about 30% of a person's daily expenditure. For swimmers, about 60% of it is used to support TEE.

Since lean tissue is the site for most metabolic (energy conversion) processes, the more lean tissue a person has, the higher is their level of metabolic activity. For this reason, Resting Energy Expenditure and the Thermic Effect of Food are typically higher in males than in females, and higher in athletes than in non-athletes. Resting Energy Expenditure also tends to be higher in individuals who consistently meet their metabolic demands with an adequate intake of calories. Severe restriction of calories (<80% of calculated needs) for prolonged periods of time can lead to a decrease in the metabolic rate, usually because it results in a loss of muscle mass. It should be noted that although stimulants, such as caffeine and nicotine will also increase Resting Energy Expenditure slightly, these products are not recommended for various health reasons. Changes in temperature can affect Resting Energy Expenditure as well, but the most powerful environmental influence is EXERCISE.

Adding the Thermic Effect of Exercise to the Resting Energy Expenditure and Thermic Effect of Food constitutes calculating an individual's total energy needs for the day.

**Total Energy Needs = REE + TEF + TEE**

PAGE 4: What changes with the competitive season is the relative contribution of each of the three variables to the total requirement. For example, during the **in**-season, Resting Energy Expenditure may account for about 50% (half) or a little less of the total energy expenditure, or total energy needs. During the **off**-season, Resting Energy Expenditure may account for 60-70%. This is because Resting Energy Expenditure does not change much, while *active energy expenditure* (i.e. the Thermic Effect of Exercise) is lower during the off-season due to a reduction in training volume. Because Resting Energy Expenditure plays a larger role during the off-season, keeping it elevated reduces the amount of dietary change that will be required to maintain body weight. This can be accomplished by maintaining lean tissue, as opposed to losing muscle during the off-season. Hence the role of exercise during this time.

Fortunately, the USA Swimming website offers a program to take care of calculating all three of the variables mentioned above. **Nutrition Tracker** is an on-line tool that calculates a swimmer's nutrient needs, based on age, gender, current body weight and daily training schedule.

Of course, the other side of the equation involves intake, or the amount of energy an athlete *consumes* on a daily basis. Nutrition Tracker can do this too. Using Nutrition Tracker, a swimmer can enter an entire day's food intake to see how much carbohydrate, protein, fat and calories are in it, compare what he/she ate to his/her individual needs, and track his/her habits throughout the season and off-season. Upon comparing nutrient needs with the swimmer's current intake, the program generates a feedback report, and stores the information for future reference. Swimmers are provided with an analysis of their current diet on which they can base changes or interventions. Deficiencies and excesses are highlighted based on comparisons with reference ranges established for swimmers. The best part is that the analysis is specific to swimming and current level of training. (*Nutrition Tracker is available to all USA Swimming members. National Team athletes have pre-established accounts. All other users must **register prior to first use.***)

Any complete diet analysis, including Nutrition Tracker, involves a record of every food item that was eaten on that particular day. The most common way to do this is by using a *food recall*.

The typical food recall requires an athlete to report what he/she ate over a 3-7 day period of time. The energy content (i.e. kcal) of each food item and the exact amount eaten are used to determine the total energy content of a full day's menu. Total carbohydrate, protein and fat intakes can also be determined using this format. Knowing the contribution of each of these macronutrients provides information on where the calories are coming from. Unfortunately, when athletes know they have to record what they ate, they (especially females) tend to under-eat and/or under-report their food intake. Therefore, a person's typical caloric intake based on food recall is often misrepresented, under-estimated, or both.

Specifics regarding an athlete's caloric needs are individual. They vary with seasonal changes in training volume and should be discussed with a qualified Sports Nutrition professional. What works for one athlete may not work for another. However, the following guidelines are a good place to start and can be used by anyone who has issues with off-season nutrition:

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**Do-s and Don't-s of Optimal Off-Season Nutrition\***

- Do... Focus on healthful eating and lifestyle habits.
- Do... Use performance and energy level variables to monitor success.
- Do... Decrease normal energy intake according to decreases in training.
- Do... Substitute lower-fat foods for whole-fat foods.
- Do... Reduce the intake of energy-dense snacks.
- Do... Eat more whole grains, cereals, beans and legumes.
- Do... Get at least 5 servings of fruits and 5 servings of vegetables each day.
- Do... Eat low-fat dairy products and lean cuts of meat, fish and poultry often.
- Do... Drink a variety of fluids to maintain hydration.
- Do... Keep snacks on hand for times when hunger might set in.
- Do... Find a place for “favorite foods” to fit in moderation.
- Do... Continue to exercise, even if it’s not as much as the in-season.
- Don’t... Focus on the scale.
- Don’t... Eat low-energy diets (i.e. less than REE).
- Don’t... Reduce energy intake by more than TEE.
- Don’t... Reduce fat intake to less than 15% of total calories.
- Don’t... Skimp on protein or calcium.
- Don’t... Skip meals.
- Don’t... Allow hunger to set in.
- Don’t... Deprive yourself of favorite foods.

*\*These guidelines have been adapted from the American Dietetic Association, Dietitians of Canada and American College of Sports Medicine Position Paper on Nutrition and Athletic Performance and Melinda Manore’s paper on Chronic Dieting in Active Women (Women’s Health Issues 6:332-341, 1996).*

**Dietary Supplements**

**Important Information for Parents**

**Introduction :** As a swimming parent, you may or may not know that the use of dietary supplements among athletes is on the rise and that the regulation of dietary supplements in the United States is currently very loose. Therefore, the use of some dietary supplements by some athletes can present a real danger, physical and/or emotional. Since your child is likely to be faced with the opportunity to take supplements at some point in his/her athletic career, it is important to educate him/her on the issues (s)he may face and to encourage him/her to think critically about the decisions (s)he may have to make. Presenting information to your child can be a learning experience for both of you and an opportunity to open the channels of communication on a very important topic.

### What ARE Dietary Supplements?

The FDA's (Food & Drug Administration's) definition of dietary supplements is a bit long, so to summarize, dietary supplements are vitamins, minerals, herbs and other botanicals or amino acids used to supplement the diet by increasing the total daily intake. They include concentrates, metabolites, constituents, extracts or combinations of these ingredients and are intended for ingestion in pill, capsule, tablet or liquid form. Another familiar form is powder. Dietary supplements include everything from the basic daily multi-vitamin, energy bar and sports drink to the most exotic herb and "booster." Most importantly, dietary supplements are not represented for use as a conventional food or as the sole item of a meal or diet.

When most people think of dietary supplements, they think Pills and Powders. However, many of the products we **commonly** use are **ALSO** dietary supplements:

- Sports Drinks (Gatorade, Powerade, Hydrafuel, Endurox, etc)
- Energy Bars (Power Bar, Harvest Bar, Balance Bar, Luna Bar, Clif Bar, etc)
- Protein Bars
- Gels
- Multivitamins

### The Use of Dietary Supplements in Sports

There are lots of athletes using one or more of the products mentioned above. Some of the reasons they do this is because they have been told that:

"Supplements will help with your workouts in the pool."

"Supplements will improve your times at meets."

"Supplements will help you recover faster."

"Supplements will help you stay healthy and not get sick."

"Supplements will help you lose weight and look cut."

Does this sound too good to be true? It probably is.

### Food vs Drug vs Supplement

Let's take a step back and take a look at dietary supplements and "conventional" foods and how these two differ from drugs.

There are some distinct differences between foods and drugs. Food is what we eat to obtain energy and vitamins and minerals. For the most part, foods are under the control

of the FDA. The FDA checks food products all the time to make sure they ARE what they say they are. The FDA also checks on prescription drugs. As for supplements, we already know what the definition is and that the FDA is “the Boss.”

While the differences seem pretty clear, there is still some confusion about what is a food, what is a drug and what is a dietary supplement. To demonstrate the confusion, think of food and drug on opposite ends of a rainbow. One thing we know about rainbows is that they come with rain. And one thing we know about rain is that it comes with clouds. Imagine a big fluffy gray cloud smack-dab in the middle of your perfect rainbow. This is where we most often find dietary supplements. The cloudy, gray area.

### **Houston, We have a Problem...**

#### **It's called Regulation and Labeling...Safety and The “Open Door” Analogy.**

Even though the FDA is supposed to be watching over dietary supplements, they are often too busy to make sure everybody who sells them is doing the right thing. Because of this, people are able to get away with being sloppy. Sometimes this happens during the manufacturing of a product, and sometimes it happens during the labeling process. And sometimes it even happens in both! Unfortunately, what this leads to is not knowing if a supplement really contains what the label says it does. There are several ways this can affect your child:

1. He/she may be getting something in a supplement that is not listed on the label.
2. He/she may be getting something that is listed on the label, but in a different amount, maybe more, maybe less.
3. He/she may not be getting what's listed on the label, in which case he/she has just wasted hard-earned money on a bottle of "nothing."

What is the point? If you can't be sure that a product's ingredients list matches its contents 100%, how do you know that what your child is getting is safe? Maybe he/she is allergic to one of the unidentified ingredients. Maybe his/her body can only tolerate certain amounts of ingredients. And what if one of those ingredients that got left off the list is prohibited?

**□ The failure of a supplement's ingredients list to match its contents 100% opens the door for health risks and positive drug tests.** Now, let's clarify that even though things like bars, gels, sports drinks and basic multivitamins ARE supplements and therefore also have the potential to open that door, it's probably only open a crack. These products have been around a long time and have not been implicated in any scandals. However, as variations of them become more exotic, with added herbs and other substances, their potential to open that door wider increases. Powders, herbals and muscle-building supplements tend to be more susceptible to contamination with

prohibited substances. In addition, their ingredients lists tend to be more inaccurate, more often.

## **Critical Questions**

Regardless of the situation, there are several critical questions that should be asked ANY time the use of a dietary supplement is being considered. Knowing important details about a supplement empowers athletes, coaches and parents to make informed decisions about its use. So ask these questions about ANY supplement:

1. Is the product legal?
2. Is it safe?
3. Is it helpful?

Chances are the answers to ALL of these questions are not available. And if you don't have all the answers, it's probably best to err on the side of caution. However, if the answer to each of these questions is YES, then there is a decision to be made.

### Is the product legal?

If a product is not legal, then the point is moot. If it's not legal, your child shouldn't be using it anyway. And if he/she is considering using it, he/she on his/her own.

### Is the product safe?

In order to determine the safety of a product, we have to test both short- and long-term effects. Information like this is rare. The fact is that a lot of supplements haven't been around long enough for scientists to test it enough to know whether or not it is safe. This means that the answer to this question is almost ALWAYS "I don't know."

### Is the product helpful?

Whether or not a product will be helpful to your child's swimming can be determined through research studies that look at the effects of the product on swim performance. The problem with this is that many studies misrepresent their findings, saying a supplement works when the way they conducted the study can't really prove it. Consider these two scenarios:

- A group of people takes a vitamin supplement for "x" number of weeks. They complete a 100 m time trial before and after this time. Their times improve. The researchers conclude that taking this supplement improves performance. But what they don't tell you is that this particular group of people was **deficient** in this nutrient to begin with! So what *really* happened was a matter of correcting a nutritional deficiency, which 9 times out of 10 can be corrected by making small healthy adjustments to the regular diet.

- A group of people who are not deficient are given a supplement while they train for 6 weeks. Pre- and post-tests indicate that their performance improved. The supplement improved their performance, right? Not necessarily! What gets left out is the fact that the people who improved were **untrained** to begin with! You train ANYBODY for 6 weeks, and they will get better. It's a simple fact.

And so we have two examples of how the research on dietary supplements is not yet good enough to conclude that supplements improve performance. We just don't know enough about it.

### **Responsibility**

When it comes down to it, your child alone is the only one responsible for what goes into his/her mouth. Not the coach. Not you, the parent. Not the doctor. Not the nutritionist. Not the team-mates. **THE ATHLETE**. This is where your child is required to assume some responsibility for his/her actions. The decision to take a supplement is his/hers to make. We hope he/she makes the right one. After all, he/she is the one who has to live with any consequences. The responsibility is huge.

**Summary :** The fact is that your child's nutrient needs can be met through dietary means. That means eating a variety of foods from all of the food groups, and eating them in quantities that are sufficient to support his/her caloric demands of training and recovery. Turning to supplements for the "quick fix" is not the answer. Here are a few points to help you remember why:

1. Claims made by the manufacturers/distributors of dietary supplements regarding their effectiveness do not require evaluation by the Food & Drug Administration (FDA).
2. **The majority of products themselves are legal, but the ingredients listed on the label do not guarantee the contents of the product. There are cases where supplements contained prohibited substances that were not clearly identified on the label.**
3. The failure of a supplement's ingredients list to match the product's contents 100% opens the door for positive drug tests. This is now becoming known as "inadvertent doping."
4. Some products contain substances that may not be prohibited, but which cause changes in the body's chemistry that are considered illegal. One example is the effect of products that contain ingredients to enhance the body's natural production of testosterone.
5. The proposed effects of most supplements have not been supported by science, and too much CAN be harmful.
6. Companies use marketing strategies that lure the consumer into believing the claims made about the product, as well as its quality and safety.