



## FREESTYLE

TOM LYNDON

(Reprinted from NEM NEWS)

**TIME TO TAKE THE PLUNGE** "For the past year I have enjoyed receiving NEM NEWS and thinking about competitive swimming. I have finally put aside my insecurities so that I may proceed with working on my skills such as flip turns and racing dives. I've been swimming for about 7 or 8 years, but only in the past 2 or 3 years thinking about speed, form, and now competing. I've done the posted workouts at the... pool and plan to go to...coached workouts. I've heard about the wonderful camaraderies swimmers have and look to that for the confidence I need." (From a recent letter to our club's Registrar, Diane Reed.)

Sound like anyone you know? She sure sounds like a lot of swimmers I know, including myself in 1973, when I read the newsletter for a year while only thinking about going to my first meet. From time to time I step back from the edge of the pool and reassess why I am in the water and what I want to happen because of it.

**AS TIME GOES BY..** The first of a new year is a good time to think about what you want to do in terms of swimming more, less, faster, slower, or differently. Some, like radishes, sprout up quickly, do whatever specific thing they have been thinking about, then vanish from our scene. Other are more complicated annuals. Not so many are perennials in a variety of forms finding fertile ground, which may be only a chink in a "crannied wall". Within our club are swimmers going at it about any way you could imagine. Some think they have a good "game plan" for themselves. Not so many presume to know what's good for others. Each of us has different considerations and weighs them differently. Here's some thoughts on some of them.

**Time** available for workouts is one of the more cunning, because swimming time is not simply something that is given to us. We have to extricate it from our other activities that some would call busy schedules or over committed day to day existences or - more vividly - crazy lifestyles that we find ourselves careening around in. If you want to swim a certain number of times a week, you can probably carve out that time. The question is: what must you give up or reduce to get this time?

I've had years in my life what I could easily find time to swim as frequently as I wished. Some years ago I swam 35 consecutive days. (By the way, nothing special occurred to me in terms of swimming performance breakthroughs, heightened visions of life, or just plain old feeling good, as a result of swimming more than usual.) Sometimes I have had to struggle with each new week's schedule to find niches among the other stuff in my life to find three swim workouts in each week. I've occasionally done two workouts in a day to meet my week's quota.

I have reached one conclusion over and over again. I expect always to have some sort of plan for swimming on a regular basis. Two months ago, when I was regressing when I didn't think I should be, I took a month off. When I resumed, I

enjoyed it more and swam better. It was important for me that I planned to stop and I planned to resume. Don't drift away from it for a while or more without a plan.

Fitness will always be in style, as far as I am concerned, regardless of what those stopwatches say about how fast I'm performing. When I've had periods of slower times than I thought were reasonable compared with my expectations, I eventually came back to that realization. Swimming does help make you fit and that is something I want. The act of swimming certainly contributes to fitness; my outlook on my lifestyle outside the pool may contribute more. When I feel I am fit, I have a sharpened awareness of what's going on in my life, I am more interested in directing my energies towards what matters the most, and I am better able to appreciate the joy of living.

Health is not guaranteed forever by being fit, but fitness improves the odds for good health. That's reason enough.

**Performance** matters for most of us, whether it be less gross flip turns, swimming a 200 yard race for the first time, or achieving a time we have been aiming for. These are ways we can ascertain how we are doing in the performance game and probably should suffice for many.

If anything is a bugaboo, it is this thing called "good". I have many times asked a swimmer at the end of a race if the time he or she just swam was a good one for him or her. Some construe this to mean that a time is only good if it was better than last time, up to some schedule presumably known by an elite few for measuring excellence, or was faster than someone else's. Now there is nothing wrong with these criteria. For the lucky few and - for most - brief periods of time, these criteria work. I've had some real highs off them. However, many of us either can't deliver our bodies over the water to a stopwatch in such a way that we can feel really good about it all the time. I certainly haven't been writing home about my times lately. But I'm satisfied with my performance, because I have established other criteria that I'm comfortable with and sufficiently able to approach if not meet or exceed them.

While it has its edge of sadness, U.S. Poet Laureate Richard Wilbur rightly noted, "Even a bad poem gives you a moment of release." The act of achieving whatever it is you achieved can be more important than what you achieved.

**Camaraderie** can be found many places and many ways. Swimming is one of them. It does get you out of the house and mixing with interesting people, practically all of whom I have liked. Sure, I'm biased, but that's an important reason for me.

I hope this is a fine year for all of us swimmers and that we do what we can to help each other towards whatever it is we're seeking by making plans - resolutions, if you will - for this new year. It will come our way only once. All of us have the opportunity to decide how we want to try to connect our lives to it. Let's give it our best shot!



**15th SE CHAMPIONSHIPS, OAK RIDGE, TN, Oct. 24-25, 1987:**

(1) Bob & Susan Couch, Natalie & Robert; (2) Barbara Weisenseel, Peggy Dartel, Doug & Elaine Call; (3) Kay Miller, Cheryl Bingham, Katie Cottrell; (4) Peter Mullen, Mary Lee Watson; (5) Lee Eisinger, Dexter Woodford; (6) Margery Meyer, Marguerite Meyer, Leen Schappel; (7) Skippy & Greg Mattson; (8) Ann Porter, Martha Perry, Bobbe Smith, Ed Porter, Dean Perry; (9) Kathy Bradley, Jim Impara; (10) Kate Farrar, Ken Miller, Bentley Marane; (11) Jim Impara, Mary Dowlen, Howard Stoker, Milton Gee, John Kortheuer; (12) Pat Wilson, Scott Caden, Linda Wilson.









# Nutrition & Hydration in Swimming:

## How They Can Affect Your Performance

### Carbohydrate: Premium Fuel for Athletes

Just as a car runs best with a full tank of the proper fuel, your body will perform at its maximum when filled with the right "nutritional fuel." For athletes, that fuel is complex carbohydrate, obtained from foods such as cereal, bread, pasta, fresh fruits, and baked potatoes.

During digestion, carbohydrate is broken down into glucose, an important energy source used by muscles during exercise. Glucose may be used by your body immediately or stored in the liver and muscles as glycogen, readily available as fuel for activity at a future time. That's important, because endurance is related to the amount of glycogen (fuel) stored in your muscles. The greater the amount, the longer your body can delay the onset of exhaustion . . . the point your body runs out of "gas" and fatigue sets in.

Obviously, the best way to prepare your body for intensive training or competition is to build up muscle glycogen levels . . . and that means eating foods that are high in complex carbohydrate. Fig. 1 compares the effect of three different diets on muscle glycogen levels and endurance (time to exhaustion). Clearly, the high-carbohydrate diet is the superior choice for supplying energy and prolonging endurance.

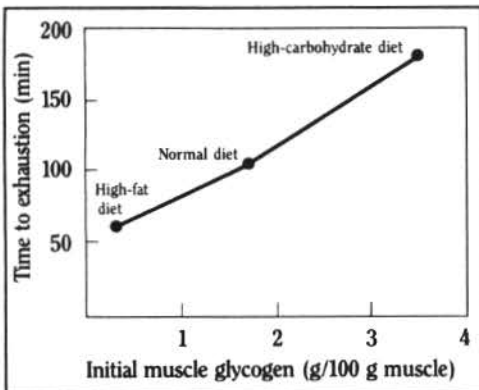


Fig. 1. Effects are shown of a mixed ("normal") diet, a low-carbohydrate (high-fat) diet, and a high-carbohydrate diet on the glycogen content of the quadriceps femoris and the duration of exercise on a bicycle ergometer. (From Borgstrom J, Stromman L, Hellman E, et al. Diet, muscle glycogen and physical performance. Acta Physiol Scand 73:140, 1967.)

### Carbohydrate in Your Diet

If you think all calories are alike, guess again. Calories are derived from three different sources: carbohydrate, protein, and fat. Together, they add up to your total calorie intake. For an athlete's energy requirements, carbohydrate calories are the most important. Many foods contain carbohydrate, but some are far better sources than others. That's important, because if you're consuming 2500 Calories or more each day, about 60% to 65% of total calories should come from carbohydrate. Of the remaining calories, approximately 15% should come from protein and the remaining 20% from fat.

Because of the difference in their metabolic processes, male and female swimmers have somewhat different caloric requirements, although the 60% to 65% carbohydrate objective should be applied equally. For example, if a male swimmer's daily diet consists of 5000 total calories, approximately 3000 of them should be carbohydrate calories (750 grams of carbohydrate). A female swimmer requiring 4000 total calories per day should consume at least 2400 carbohydrate calories (600 grams of carbohydrate). These figures are only approximations, since actual caloric requirements reflect age, sex, body size, and the duration and intensity of daily practice and training.

In any case, it should be clear that swimmers require a steady diet rich in complex carbohydrate to generate the energy and strength needed for competitive swimming. Foods such as hamburgers, chips, mayonnaise, and candy bars contain high levels of fat, making them poor sources of nutrition for the athlete. Instead, choose items from the following table, which lists several foods high in carbohydrate and low or moderate in fat.

### EXAMPLES OF HIGH-CARBOHYDRATE FOODS THAT ARE MODERATE OR LOW IN FAT

Food	Calories	Carbohydrate(g)
Apple, medium	81	21
Grapes, 1 cup	58	16
Strawberry Yogurt, 1 cup	257	43
Peas, cooked, 1 cup	110	19
Applesauce, 1/2 cup	97	26
Banana, medium	105	27
Corn, 1/2 cup	88	21
Baked Potato, large	139	32
Raisins, 1/2 cup	300	79
Whole Wheat Bread, slice	61	11
Corn Bread, 1 piece	198	29
Macaroni & Cheese, 1 cup	217	31
Noodles, egg, 1 cup	178	33
Cheese Pizza, one piece	153	18
Rice, 1 cup	205	45
White Toast, 1 slice	64	12
Corn Tortilla, 6" dia	67	13
Spaghetti with Tomato Sauce, 1 cup	179	34
EXCEED® High-Carbohydrate Source, 1 qt	920	230
EXCEED® Fluid Replacement and Energy Drink, 1 qt	270	68
EXCEED® Nutritional Beverage, 8-oz can	360	47

### Key Nutrition Periods

If you think nutrition starts and stops at the training table, you're mistaken. Nutrition and hydration play important—and different—roles throughout the season. For swimmers, the four nutrition periods of greatest concern are:

- Early Season
- Pre-Competition
- Heavy Training
- Taper Phase

The following graph illustrates where these periods occur within a typical high school swimming season (the Pre-Competition nutrition period is defined as the 4 or 5 hours immediately preceding the meet). The shaded areas designate the periods when swimmers are most likely to suffer chronic glycogen shortages . . . at these times a swimmer's carbohydrate intake is especially important.

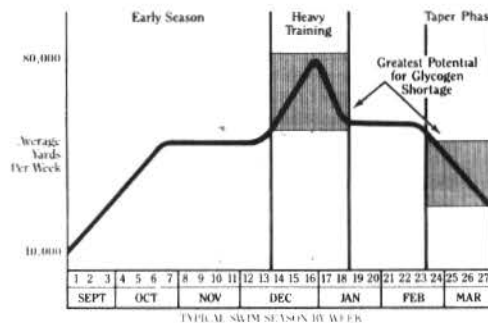


Fig. 2. Unlike most other sports, the workload intensity of swimming practice varies dramatically during the season. Depending on the coach, the workload may increase from 30% to 75% during the Heavy Training Period. Later in the season, the workload may be reduced by as much as 50% to 60% during the Taper Phase. In each instance, swimmers face the potential for glycogen shortages if carbohydrate intake is not monitored and matched to energy expenditures.

Each of these nutritional periods has its own special nutrition and hydration requirements. How well—or how poorly—you meet these requirements can affect how much strength you have, how much endurance you can expect, and how well and quickly you recover from competition.

### Early Season Training: A Key Nutrition Period

How many calories you need during the early season training period reflects how many calories you burn each day. This isn't always easy to determine, because the energy you burn varies according to body size, sex, and the intensity and duration of your workouts. A typical high school level workout may build up to approximately 50,000 yards per week during the early season. Sprinters in the 50- and 100-yard events may average slightly less yardage per week (30,000 to 35,000) while the distance swimmers may average more (60,000 to 65,000).

Assume you burn 5000 Calories per day—not unreasonable for a 16-year-old male high school swimmer averaging 50,000 yards per week. To generate energy for daily activity at this level, your objective should be a 5000 Calorie diet with 60% to 65% of total calories derived from carbohydrate. A typical female swimmer practicing at the same workout level may require 4000 Calories per day, also with 60% to 65% of total calories from carbohydrate.

Your coach, trainer, or team physician can advise you what your energy requirements are and establish carbohydrate objectives matched to your specific needs.

### Carbohydrate Supplements

Often, it's difficult to know precisely how many carbohydrate calories you're consuming. It's important to keep track of carbohydrate, because you're eating for energy and to build endurance. You should try to meet your carbohydrate requirement before your total calorie goal. Swimmers who fail to satisfy carbohydrate requirements may experience chronic glycogen depletion at critical times during the season, as shown in Fig 2. A loss of energy and endurance can definitely reduce the effectiveness of your training, causing your performance to "plateau" or go "stale."

To help meet daily carbohydrate requirements, you may wish to include a carbohydrate supplement in your nutrition program. EXCEED® High-Carbohydrate Source is a supplement that can help you reach your carbohydrate intake goals. EXCEED makes it easy to consume precise, measured quantities of complex carbohydrate in convenient, good-tasting form.

EXCEED High-Carbohydrate Source is a concentrated source of dietary carbohydrate providing 920 total calories per quart. With 230 grams of carbohydrate per quart, High-Carbohydrate Source is ideal for helping swimmers supplement normal carbohydrate intake without the bulk of additional solid foods. Additionally, High-Carbohydrate Source contains 100% of the US Recommended Dietary Allowance (RDA) for important B-complex vitamins to help ensure efficient energy metabolism. Product is supplied in powder form and mixes easily with water to make a Golden Punch-flavored beverage that can be consumed with meals or as refreshment throughout the day. More information about EXCEED High-Carbohydrate Source can be found in the Post-Competition Recovery section.

Shown are two sample breakfast menus that illustrate how EXCEED High-Carbohydrate Source can be used to increase carbohydrate while reducing fat intake.

### SAMPLE BREAKFAST MENU INCLUDING TYPICAL HIGH-FAT FOODS

Item and Portion	Calories	Carb. (grams)	Protein (grams)	Fat (grams)
3 large eggs, fried	248	2	16	19
6 strips of bacon, fried	219	0	12	19
2 slices of bread, toasted	135	25	4	2
2 tablespoons of jelly	98	25	0	0
2 pats of butter	72	0	0	8
1 cup of orange juice	112	27	2	0
Total:	884	79	34	48
% Total Calories:		36%	15%	49%

Compare the same meal after the high-fat items have been reduced or removed, and a single 8-fl-oz serving of EXCEED High-Carbohydrate Source has been added:

1 cup of 2% milk	122	12	8	5
2 slices of bread, toasted	135	25	4	2
2 tablespoons of jelly	98	25	0	0
1 8-fl-oz glass of High-Carbohydrate Source	230	57	0	0
1 large egg, fried	83	1	5	6
3 strips of bacon, fried	82	0	4	7
Total:	750	120	21	20
% Total Calories:		64%	12%	24%

### SPORTS NUTRITIONAL SYSTEM

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Total calories have been reduced by 15% but, more importantly, carbohydrate has been increased by 52%! Note that the carbohydrate total now reaches the 60% to 65% recommended range and that protein and fat fall extremely close to their recommended levels of 15% and 20% of total calories, respectively.

Once you identify the high-fat items in your diet, you can begin to take charge of daily nutrition by reducing or eliminating those items in favor of foods that help you reach your carbohydrate goals. Work with your coach or trainer to determine the carbohydrate sources and quantities best suited to your individual requirements.

## Weight Management: Where Diet and Discipline Come Together

In swimming, energy production is the major concern. Because energy requirements of the sport are so high, swimmers must always be conscious of their daily energy requirements. Some swimmers may actually have difficulty consuming sufficient carbohydrate calories to support an aggressive training program, which can include practice distances as high as 12,000 yards per day in some college programs.

For most high school programs, however, weight control can play an important role by helping swimmers maximize what can be described as lean body weight, or muscle tissue. In general, a useful guideline for swimmers (and all athletes) to remember is that **BODY COMPOSITION IS MORE IMPORTANT THAN WEIGHT IN DETERMINING ATHLETIC PERFORMANCE**. For swimmers, this means attaining a weight that incorporates a desirable ratio of *lean* body weight to *fat* body weight.

To accomplish this, a swimmer should follow a regular diet that contributes heavily to energy and strength development without depositing too much body fat. As previously noted, swimmers need to eat for energy and should emphasize carbohydrate in their food selections.

## Managing Fat Weight

Fat in the body is basically stored energy, although to be efficiently utilized as fuel, it needs to be burned in the presence of oxygen. Swim training is very oxygen-intensive (aerobic), so fat does play a role as an energy source.

However, excess fat also represents extra weight that you must carry during competition. Additionally, body fat contributes nothing to strength and power . . . important aspects of your performance. Your dietary and training challenge, then, is to strike an acceptable balance between lean body weight and fat body weight.

Research suggests that adolescent male swimmers should strive to maintain a range of 5% to 8% body fat. For females, the suggested range is 15% to 19%. Although this range may seem high, remember that basic differences in the metabolic processes make it natural for females to have a higher percentage of body fat than males, even when participating in highly aerobic sports activities. As a reference point within those ranges, you may wish to note that the *average* percent body fat for men on the 1984 US Olympic Swim Team was 6%, and for women 17%.\*

\*Source: Sports Medicine Program, USA Swimming, Inc.

### Play It Safe!

Male and female swimmers alike have little to gain by attempting to lower their percent body fat below recommended levels. It's not possible to lose *all* body fat, and losing too much can be medically unsafe. Female swimmers in particular should beware of weight-obsession, which may lead to starvation or crash dieting and serious medical problems.

The best approach is to work with your coach or trainer to identify a percent body fat "target" that's best for you. Once a goal has been established, your coach or trainer will probably use a skinfold caliper to periodically monitor percent body fat so you can determine the effectiveness of your diet and training. And once you've reached your target percent, stick with it; the belief that the leanest body composition automatically leads to improved performance has never been demonstrated.

## Losing Fat Weight

Losing weight properly takes discipline and patience. The most healthful way to accomplish body fat loss is to maintain or increase exercise while reducing food intake. Starvation and crash diets aren't effective because muscle tissue begins to break down. Additionally, swimmers who don't consume sufficient carbohydrate calories on a daily basis may experience a loss of muscle tissue as well as chronic fatigue. Any time weight loss is in the form of muscle tissue, an accompanying loss of strength, power, and muscular endurance will also occur.

To lose fat weight, you need to reduce the number of calories you consume while maintaining or increasing your training workload. For each pound of fat you want to lose, you'll need to eliminate 3500 Calories from your diet. To lose 2 pounds in a week, for example, requires an energy deficit of 7000 Calories, or 1000 Calories per day. That's a lot of calories to remove from your diet while participating in a sport that demands a constant supply of energy. A better way to lose the 2 pounds is to eat 500 fewer Calories each day *and* burn an additional 500 Calories each day for a week. However, under no circumstances should the average high school athlete consume fewer than 2000 Calories per day. Good nutrition is absolutely essential to a growing athlete during the high school years. Bone growth in particular may be especially sensitive to the effects of bad nutrition caused by starvation and crash diets.

The following table shows *approximate* energy burned for various sports and exercises. You may wish to increase your swimming time or add one or more of these activities to your workout program as a way to burn additional calories.

Approximate Calories Expended per Hour  
for Various Sports Activities\*

Swimming	1200 Calories
Calisthenics	750 Calories
Jogging	750 Calories
Bicycle Riding	500 Calories

\*Actual calories expended will vary according to the intensity of exercise, age, and body size.

Allow time to lose weight; about 1 or 2 pounds per week can be safely lost using the dietary and exercise guidelines in this chapter.

## Gaining Lean Body Weight

Adding a few pounds may seem easy, but unless the weight you add is muscle, you may wind up with little more than body fat. If you're going to add weight, do it right . . . gain weight that makes you stronger and allows you to compete more effectively.

To gain 1 pound of muscle requires 2500 *additional* calories in your diet plus increased exercise. That's 350 extra calories per day, if your objective is to gain a pound in 1 week. The majority of these calories should be in the form of carbohydrate, and here is where a supplement such as EXCEED® Nutritional Beverage can help. EXCEED provides 360 total calories (188 carbohydrate calories) per 8-fl-oz serving, so it's easy to calculate the addition to your normal diet. And, EXCEED provides you with an appropriate blend of carbohydrate, protein, and fat to help support the development of lean body weight.

However, the additional calories you consume *must* be supported by an increase in your weight program or workout schedule. It's *exercise* that stimulates muscle growth and improves strength. If you don't increase exercise, the added calories may simply be converted to fat. To ensure the weight you gain appears in the form of muscle, you *must* increase the workload to the muscle groups needed for competition.

## The Pre-Competition Meal

The pre-competition meal is really a "mini nutrition period" that occurs in the 4 or 5 hours before the start of the meet. Unfortunately, many swimmers don't understand the exact role of the pre-competition meal. It has little effect on increasing muscle glycogen levels. It is the foods eaten 3 to 4 days before a meet that help establish glycogen levels in the muscles. By meet day, glycogen levels are mostly "set" and there is little you can do to increase them in the hours before competition.

The pre-competition meal is important for maintaining your blood glucose and liver glycogen stores, key energy sources used in the early stages of competition. By maintaining blood glucose levels at the start of the meet, your dependency on muscle glycogen will be delayed, and *that* helps prolong endurance.

To avoid stomach upset, nausea, or that "stuffed" feeling, consume the meal 3 to 4 hours before the start of the meet. Avoid spicy, fatty, and high-fiber foods, too. These are difficult to digest and may cause intestinal distress or nausea later during the meet. You'll swim more comfortably when you've eaten easy-to-digest foods and your stomach is relatively empty.

## What To Eat

Nutrition-conscious athletes now avoid traditional foods such as the steak dinner, as well as other high-fat, high-protein foods such as hamburgers, French fries, chips, and mayonnaise. These foods remain in the stomach too long and slow down the digestion process.

Foods that are rich in complex carbohydrate are generally easier to digest and empty from the stomach faster than high-fat, high-protein foods. That's important, because *not only* do you want to swim on a relatively empty stomach, you also want the foods you eat to be efficiently converted to energy. Cereals, pasta, baked potatoes, and muffins are good carbohydrate sources that are easily digested and converted into glucose.

Vegetables and fruit juices are also good pre-competition meal items, as are some dairy items such as lowfat yogurt, ice milk, and lowfat milk.

## Pre-Competition Meal Supplements and Substitutes

Swimmers who prefer a light, non-filling pre-competition meal often substitute a sports nutrition beverage for solid food or supplement a small, light meal with a nutritional beverage.

EXCEED Nutritional Beverage is an ideal choice for your pre-competition meal; it's nutritionally complete and well-balanced, so you won't sacrifice essential nutrients if you use it in place of solid food. And because EXCEED empties from the stomach quickly, you can enjoy it close to competition without worrying about a full stomach. Sixty-six percent of EXCEED Nutritional Beverage empties from the stomach in 1 hour; 98% in 2 hours.

## Post-Competition Recovery

Another "mini" nutrition period occurs immediately after intensive training or competition. Even with regular fluid breaks you may have lost large quantities of body water in the form of sweat. Muscle glycogen levels may be low, leaving you feeling weak and exhausted. If competition has been especially intense and prolonged, as in a 2- or 3-day championship meet, muscle glycogen levels may be unusually depleted. Now is the time to start the recovery process so you can resume practice with renewed energy and endurance.

Rehydrating body tissues *and* replenishing muscle glycogen can be accomplished with EXCEED High-Carbohydrate Source. One or two 8-fl-oz glasses of EXCEED are ideal to help stimulate glycogen resynthesis.

Fig 4 illustrates the effect of carbohydrate on replenishing muscle glycogen levels. Note that depletion occurs initially at the same rate, but that a diet rich in carbohydrate dramatically improves the rate of glycogen recovery.

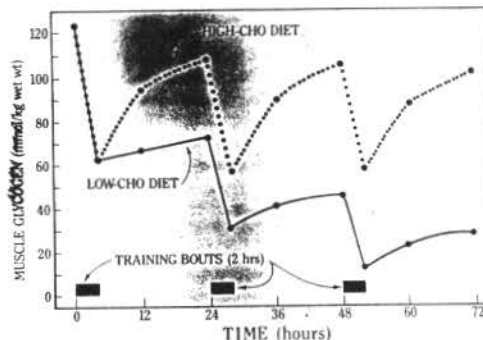


Fig 4. Muscle glycogen content is shown during 2 successive days of heavy training with diets whose caloric compositions were 40% carbohydrate (low CHO) and 70% carbohydrate (high CHO). (From Costill DL, Miller JC. Nutrition for endurance sport: Carbohydrate and fluid balance. *Int J Sports Med* 1:2, 1986.)

Obviously, the best time to start recovery is as soon as possible after your last event of the day, preferably within 30 minutes. Because it mixes easily with water, EXCEED High-Carbohydrate Source can be quickly prepared after the day's action, or kept pre-mixed in a cooler ready for immediate use.

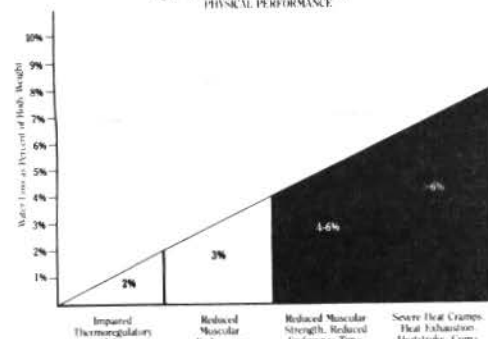


## Nutrition and Hydration During Competition

Once competition is under way, your body still needs fluids and nutrients to sustain physical effort and fight fatigue. Although many coaches and swimmers don't realize it, dehydration can be a problem in swimming, especially if the air and water temperatures are warm. Remember, sweating is the body's main mechanism for cooling itself; even though your practice and competition take place in the water, you can still lose a great deal of body water in the form of sweat. Additionally, water is also needed to aid digestion and energy production. Dehydration robs your body of the primary means to cool itself and generate energy.

The following graph illustrates the effects of dehydration on athletic performance. To help guard against dehydration, have yourself weighed before and after practice sessions. Drink a pint of water for every pound lost during practice, even though you may not feel thirsty.

Fig. 3. EFFECTS OF DEHYDRATION ON PHYSICAL PERFORMANCE



Observe good nutrition and hydration habits in the time before you compete. If you find yourself with several hours until your event, enjoy a light snack or refreshments if you wish. But if you're going to swim right away or your event is an hour or less away, be very cautious about what you eat or drink. In the hour preceding competition, drink only plain water. Soft drinks, fruit juices, and beverages or snacks that contain sugar in any form aren't appropriate this close to competition . . . they can trigger a sudden drop in blood glucose (hypoglycemia) with the onset of intense activity. Additionally, drinks that contain high concentrations of sucrose (table sugar) tend to empty from the stomach more slowly than water. You don't want to start swimming with a stomach full of anything, including liquids.

Once your event is under way, fluid requirements change. Your body loses water in the form of sweat, particularly in the distance events, and it should be replaced. You also lose energy as your blood glucose and liver and muscle glycogen stores are used. Replacing the water is easy, but until recently there wasn't much you could do about replenishing energy.

A product that can help accomplish both is EXCEED® Fluid Replacement and Energy Drink. It helps replenish the water your body loses in the form of sweat and provides a source of energy in the form of POLYCOSE® Glucose Polymers, an easily digested carbohydrate polymer. In tournaments or long practice situations, EXCEED Fluid Replacement and Energy Drink should be used like plain water . . . that means taking regular fluid breaks between events or practice intervals. The glucose polymers in EXCEED help your body fight fatigue by maintaining blood glucose levels.

## Heavy Training Period

With the approach of the Thanksgiving and Christmas holidays, most coaches take advantage of vacation time to dramatically increase the duration and intensity of workouts. Where the team averaged 40,000 to 50,000 yards per week during normal training, the average may now be as great as 65,000 to 75,000 yards per week, an increase of 50%.

For swimmers, daily caloric requirements may increase by as many as 2000 Calories to meet the additional need for energy. You may require more or less, depending on your age, body size, sex, and the intensity of training. At the college level, for example, where the duration and intensity of training may be much greater, the female swimmer may now require as many as 5000 total calories per day, with male swimmers needing as many as 6000 Calories.

This is a critical nutrition period for swimmers, who may respond by "eating everything in sight." Unfortunately, this often leads to excess consumption of high-fat snacks and meals. What's needed during this time is a high-calorie, high-carbohydrate diet.

Carbohydrate supplementation is essential to meet the needs of the heavy training period. Greater portions of pasta, potatoes, and breads can help, but many swimmers may prefer the concentrated carbohydrate contained in EXCEED High-Carbohydrate Source as a way to generate additional energy without the bulk of extra solid food. Additional quantities of High-Carbohydrate Source can be easily integrated into your daily menu to supplement normal carbohydrate intake. Similarly, EXCEED Nutritional Beverage can be added to meals or used as a nutritious, high-carbohydrate snack between meals.

The additional carbohydrate you consume must be timed carefully, however. As the heavy training period ends, energy requirements drop back to the "normal" level of regular training for a few weeks. Swimmers who have grown accustomed to enjoying larger portions and more variety in their menus may have difficulty cutting back on calories.

## The Taper Phase

As the season winds down, many coaches drastically reduce the duration and intensity of workouts in preparation for the championships. The taper phase usually occurs 2 to 3 weeks before the championships, and yardage may be cut 60% to 80% during this time. In some cases, this can mean the average practice distances drop as low as 15,000 to 20,000 yards per week.

For swimmers, the taper phase is nutritionally complex and one of the most difficult periods to deal with. After 5 or more months of eating to meet high energy demands, you're suddenly faced with reduced energy requirements that can drop your needs to fewer than 3000 Calories per day. For female swimmers in particular, this is a difficult time. Unless carbohydrate and total calories are tailored appropriately, there is a definite tendency to gain weight. To counteract this, many female swimmers may resort to starvation or crash dieting, which can easily lead to chronic glycogen shortage or eventual medical problems.

The best approach is to work closely with your coach so you'll know when to plan for a change in your diet. As a rule, the correct nutritional approach during the taper phase is "Low Calorie—High Carbohydrate." Excess dietary fat in this period has a great tendency to be stored as body fat rather than burned as energy. But carbohydrate is still needed in abundance to support your training and build muscle glycogen levels in preparation for championship competition.

EXCEED High-Carbohydrate Source is an ideal supplement for this period, allowing you to cut back on high-fat, high-protein foods without compromising carbohydrate intake.

Work with your coach or trainer to establish a carbohydrate objective in the taper phase. Once this is known, you can adapt your nutrition accordingly and choose a supplement that meets your nutritional and carbohydrate objectives.

## Summary

Regardless of the techniques or products you use in your swimming nutrition and hydration programs, use common sense and good judgment throughout the season. The following tips summarize many of the sections in this booklet and should help you achieve a safe and rewarding season:

- Eat three balanced meals a day, including foods from all the major groups: dairy, meat, fruit and vegetable, and grain.
- Avoid high-fat, high-sugar foods and snacks such as chips, soft drinks, mayonnaise, candy bars, and desserts.
- Emphasize foods that are rich in complex carbohydrate—cereals, pasta, baked potatoes, muffins, and vegetables.
- Use skim milk instead of whole milk. Substitute diet soft drinks for high-sugar brands. (Better yet, drink fruit juice.)
- Make sure your snacks are nutritious and good sources of energy. Fresh fruits, juices, and EXCEED Nutritional Beverage are good choices.
- Remember—good nutrition is something you apply every day throughout the season . . . not just the day before a meet. If you take shortcuts, expect to pay the price in reduced performance.

## Question and Answer Clinic

**Q: There's been almost no mention of protein in this booklet—isn't protein an essential nutrient for swimmers?**

**A:** It is, but there's also a lot of myth and misunderstanding about the role of protein in the athlete's diet. A major function of protein is to provide structure for many body tissues, including muscles, tendons, ligaments, skin, and hair. Athletes *do* need more protein in their diets than non-active people, about 75 to 100 grams per day for the average athlete. However, the typical American diet delivers 150 to 200 grams per day, much more than you actually need—or can use. That's the "myth" of the so-called high-protein diet . . . even swimmers don't need more than 75 to 100 grams per day. Typically, all that happens with a high-protein diet is that excess protein is either burned as fuel or converted to fat and stored. If you eat right to begin with, a high-protein diet is generally a waste of time and money.

**Q: What about protein powders and amino acid tablets . . . aren't they supposed to stimulate muscle growth?**

**A:** About the only thing these products stimulate is a decrease in your spending money. If you eat right to begin with, you get plenty of protein in your diet. Muscle growth *cannot* be stimulated merely by increasing protein or amino acid intake alone. Whatever the body doesn't need to make muscle tissue, blood, or supportive tissue is simply broken down and used as energy or converted to fat and stored. Research studies (and there have been a lot of them) have failed to discover any beneficial effect on strength, power, or muscular endurance as a result of excess protein or amino acid intake.

**Q: Will increased vitamin intake build stamina or endurance?**

**A:** Sorry, but even megavitamin doses have little or no effect on stamina or endurance. The quantities of vitamins you need on a daily basis are usually expressed as "Recommended Dietary Allowance," or RDA for short. Increasing your intake beyond RDA levels won't increase enzyme activity or energy metabolism. If you're unsure whether your diet contains the necessary RDA levels of essential vitamins, a daily multivitamin pill is usually more than enough to make up the difference. The claim that high vitamin doses will enhance athletic performance is based on the unscientific notion that if a little bit of something is good for you, a lot of it will be even better. Unfortunately, when it comes to vitamins—or protein or amino acids—research has failed to discover any truth in these claims.

**Q: Is there any supplement or food product that really seems to boost energy?**

**A:** About the only thing that remotely qualifies is caffeine, and practically all coaches and physicians condemn its use. Caffeine is, after all, a drug and while it may cause you to feel more energetic for a while, it may also cause you to feel nervous, tense, and unable to concentrate. Many so-called "miracle energy formulas" rely on caffeine to create a false sense of energy and vigor (there is *no* caffeine in any EXCEED Sports Nutritional product). As we stated on the very first page: There are no substitutes for good nutrition and plenty of training and practice.

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**BRISBANE WORLD CHAMPIONSHIPS 1988** - Following the USAS convention it may be helpful to clarify the information concerning travel for the Brisbane World Championships. Entry forms and meet information for the 2nd FINA/MSI World Championships are available from Margaret Samson, MSI News, P.O. Box 70366, Pasadena, CA 91107. Swimmers who plan to participate in the World Championships should book their travel and lodging with a travel agent that is associated with JET-SET Tours. The three U.S. travel agencies currently associated with Jetset are: 1) Swimtour

International/Ask Mr. Foster of Connecticut - the official USMS travel agent for "World Masters Swim '88", 413 Canal St., Stamford, CT 06902, 800/243-6346. 2) Away to Travel - Joyce Wydrzynski, 7314 NE Fremont, Portland, OR 97213, 503/281-1234. 3) Travel Magic - Brisbane-88, Shannon Sullivan, 818/891-7871 (call collect), or Margaret Samson, MSI News, PO Box 70366, Pasadena CA 91107, 818/793-2582.....

**PAN-PACIFIC MASTERS AQUATIC GAMES** - To be held October 7-15, 1989. To be held at the Indiana University Natatorium - Indianapolis (IUPUI), Eagle Creek Park, Indianapolis, IN. To be held for male and female Masters athletes in swimming, diving, synchronized swimming, water polo, and long distance (open water) swimming. Countries to be represented include Pacific rim nations, including United States, Canada, Mexico, Korea, Japan, Australia, New Zealand, Chile, Peru, Colombia (top 10 nations to be represented). To be expected - 2500 athletes, including 500-750 from outside of the United States. For further information contact Tom Boak, USMS President, 713-367-4533 or Tina Martin, FINA Masters Committee, 818-793-5862.....

## '89 Masters swim meet set for city

The first International Masters aquatics meet to be staged in the United States will come to Indianapolis in the fall of 1989.

Mel Goldstein, chairman of the Greater Indiana Masters Swimming Association, has announced that the Pan-Pacific Masters Aquatic Games will be held here Oct. 7-15. Four of the disciplines — swimming, diving, synchronized swimming and water polo — will be held in the Natatorium at IUPUI.

The other discipline, long distance (open water) swimming, will be held in Eagle Creek Park.

Goldstein, who will be meet director, projects that at least 2,500 athletes from as many as 10 countries will compete in various age groups. The meet is sanctioned by FINA, the international governing body for aquatics.

The Masters classifications

start at age 25.

Besides the host country, the meet is expected to attract athletes from Canada, Mexico, Korea, Japan, Australia, New Zealand, Chile, Peru and Colombia.

The Natatorium hosted the U.S. Masters swimming championships in 1983 and has been the site of numerous other world-class aquatics competitions since it was opened in 1982.

"We are very pleased this event is coming to Indianapolis," said Tom Boak of Houston, president of U.S. Masters Swimming. "The Natatorium is one of the finest facilities of its kind in the country — if not the world. There are no few places in the U.S. capable of hosting an event of such magnitude and Indianapolis is uniquely qualified.

"The city is committed to sports. The support we get from Indiana University and IUPUI people is unusual in the sports world."

The Natatorium will host U.S. Olympic trials in synchro swimming and diving next year, along with the NCAA Division I men's championships. Indianapolis is also bidding for the 1992 World Masters Aquatics Games.

**WORLD SENIOR GAMES** - October 10-22, 1988 - to be held in St. George, Utah. All participants must be 50 years of age by 12/31/88. The Preliminary Schedule has swimming scheduled for Wed, Oct. 12, Thur. Oct. 13 and Fri. Oct. 14.....

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## SWIM CALENDAR

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FEBRUARY 1988

FEB	6	Pentathlon - OMS, 18476 Timbergrove Ct., Lake Oswego, OR 97034
	6	SC - Curt Mosso, 2293 Featherhill Rd., Santa Barbara, CA 93108
	7	SC - Suzanne Rague, 263 West End Ave., 9C, NY, NY 10023 - Merchant Marine Academy
	7	SC - Bruce Erickson, Team Seattle, 600 E Pine St #515, Seattle, WA 98122
	7	SC - Tom Lyons, Rt. 1, Box 555, Broad Run, VA 22014 (703) 471-4035 or 347-7528
	7	Fairport Meet (near Rochester), Contact Gary Austin (716) 544-2427
	12-13	SC - Ken Hickey, 905 Muldoon Rd., A-35, Anchorage, AK 99504
	12-15	SC - Dick Bower, 600 Haring Road, Metairie, LA 70001
	13	SC - Dick FAdgin, 301 DeLoach St., Memphis, TN 38111
	13-14	SC - David A. Parler, 1639-F Juniper St., Charleston, SC 29407
	13-14	SC - Leo Letendre, 167 Glandore Drive, Manchester, MO 63021
	14	SC - Valley Forge Winter Classic - Swathmore College
	14	SC - Suzy Johnson, 39 Colligan Point, Plattsburgh, NY 12901
	20	SC - Animal Meet - Gordon Gray, PO Box 84, Keyport, WA 98345
	20	SC - Brenda Hennessy, 1414 Glengarry, JAX, FL 32207 - U of North Florida at JAX
	20	SC - Maureen Rohers, Toms River YMCA, 1088 Whatty Rd., POB 130, Toms River, NJ 08754
	21	SC - Mike Litzinger, University of Iowa Pool, Iowa City, IA 52240
	21	MCC Marauders Distance Meet (Rochster) - Lorie Gibson-rick, (716) 671-8159
	28	SC - Curt Mosso, 2293 Featherhill Rd., Santa Barbara, CA 93108
	28	Downtown Athletic Club 1650 Meet - Ed Coyne (212) 425-7000
	28	University of Rochester - Gary Austin (716) 544-2427
MAR	4-5	Pentathlon- OMS, 18476 Timbergrove Ct., Lake Oswego, OR 97034
	6	SC - Ed Wojtowicz, JCC, 18900 NE 25 Ave., North Miami Beach, FL 33180
	6	Pentathlon - Darien Y - Peg Erlenkotter (203) 329-1131
	12-13	SC - Dynamo Community Swim Center, R. Anderson, 4549 H Northside Pky, Atlanta, GA
	13	SC - Curt Mosso, 2293 Featherhill Rd., Santa Barbara, CA 93108
	13	SC - Ann Degnan, Plainville Parks & Rec (203) 747-6022
	19	Pentathlon - Meadows Park Pool, Boca Raton, FL
	19	SC - Joanita Reed, Rt. 20, Box 208 KK, San Antonio, TX 78218 (512) 625-3511
	19	SC - Andy Knapp, 1020 Timberidge Rd., Harrah, OK 73045
	19-20	SC - Dottie Whitcomb, 1981 Villafane Dr., Pensacola, FL 32503
	19-20	SC - Mike Lewellyn, JCPRD, 6501 Antioch Road, Shawnee Mission, KS 66202
	26-27	SC - Maury Schott, c/o Triad Masters Swimming, POB 10428, Greensboro, NC 27404
	26	SC - Ron Banks, 80 Pebble Beach Dr., Little Rock, AR 72212
	26-27	SC - Buffalo Meet - Gene Donner (716) 652-9151
	26-27	SC - Harry Rawstrom, Carpenter Sports Bldg, Univ. of DE, Newark, DE 19716
	27	SC - Curt Mosso, 2293 Featherhill Rd., Santa Barbara, CA 93108
CORONADO MASTERS ASSOCIATION - Alicia Coleman, 24 The Point, Coronado, CA 92118		
Mar 13 SC, Mar 20 SC, May 29 LC, Jul 24 LC, Oct 9 SC, DEC 4 SC Distance		
MAY	13-16	CANADIAN MASTERS SCM CHAMPIONSHIPS - Vancouver, B.C.
	19-22	USMS SC NATIONALS - Huddie Murray, c/o TX Swim Ctr, 1900 E Campus Dr, Austin, TX

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