Fueling for Performance

April 2005

cboudreau@usa-swimming.org

Optimal Nutrition is …

- **Always having a full tank of gas.**
- **Getting the most economical fuel.**
- **Fueling at the right times and places.**

cboudreau@usa-swimming.org

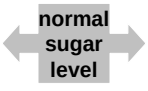
"A race car driver wouldn't show up at the Indy 500 without gas, nor would he bring a car that isn't already in impeccable working condition."

Neither should you.

Nutrition Foundations…

Eat a Variety of Foods from all Food Groups.

Eat Colorful Foods…Including *Recovery*.



Eat Early and Often…Including *Recovery*.

Drink Early and Often…Including *Recovery*.

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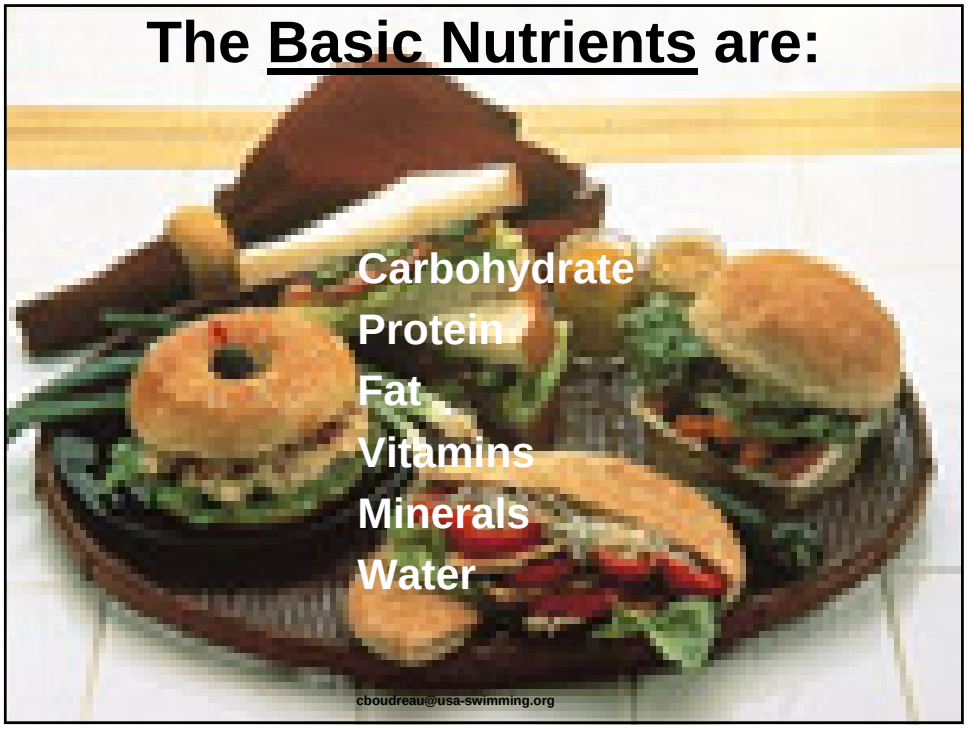
The Basic Nutrients are:



Carbohydrate
Protein
Fat
Vitamins
Minerals
Water

cboudreau@usa-swimming.org

The Energy-Yielding Nutrients:

Carbohydrate
The primary energy source for swimmers.

Protein
Used primarily to build cells.

Fat
Another energy source.

They all provide energy in the form of calories.

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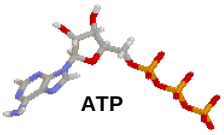
Calories … … … Energy … … … Exercise



Carbohydrate	**4 kcal/gram**
Protein	**4 kcal/gram**
Fat	**9 kcal/gram**

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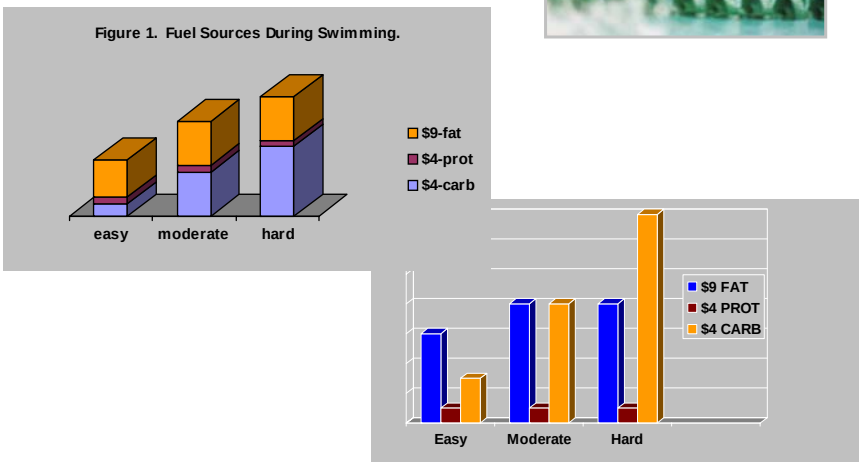
The Energy "CO$T" of Swimming



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What are Carbohydrates?

The primary fuel source for swimmers!

Carbohydrates are <u>NOT</u> fattening.

They get used for *energy*, leaving little to be converted to body fat.

cboudreau@usa-swimming.org

Individual Carbohydrate Requirements

6-10 grams per kg of body weight per day

Body Weight (lbs):	____ lbs
kg = lbs / 2.2:	____ lbs / 2.2 = ____ kg

Carbohydrate:	Daily Requirement:
Low end (easy days)	= ____ kg x 6 = ____ grams
High end (hard days)	= ____ kg x 10 = ____ grams

cboudreau@usa-swimming.org

Glycemic Index (GI)

- Developed to help diabetics control their blood sugar.
- Represents a carb's effect on blood sugar.
- Reflects a food's ability to contribute glucose to the bloodstream…Low = Slow.
- Influenced by amount eaten, fiber content, amount of added fat, food preparation.

cboudreau@usa-swimming.org

Glycemic Index (GI)
(based on 50g)

High-GI Carbs (GI >60)

- enter bloodstream quickly
- best for during and after exercise

Examples:

Gatorade, baked potato, corn flakes, bread, graham crackers, honey

Low-GI Carbs (GI <40)

- enter bloodstream slowly
- best for pre-exercise meals or snacks

Examples:

Power bar, apple, milk, fruit yogurt, dried apricots, underripe banana

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GLYCEMIC INDEXES OF SOME COMMON FOODS

Breads and Grains		***Fruits***		***Snacks***	
Waffle	76	Watermelon	72	Rice Cakes	82
Doughnut	76	Pineapple	66	Jelly Beans	80
Bagel	72	Raisins	64	Graham Crackers	74
Bread, white	70	Banana	53	Corn Chips	73
Bread, whole wheat	69	Grapes	52	Life Savers	70
Cornmeal	68	Orange	43	Angel Food Cake	67
Bran Muffin	60	Pear	36	Wheat Crackers	67
Rice, white	56	Apple	36	Popcorn	55
Rice, instant	91			Oatmeal Cookies	55
Rice, brown	55	***Starchy Vegetables***		Potato Chips	54
Bulgar	48	Potato, baked	83	Chocolate	49
Spaghetti, white	41	Potato, instant	83	Banana Cake	47
spaghetti, whole wheat	37	Potato, mashed	73	Peanuts	14
Wheat Kernels	41	Carrots	71		
Barley	25	Sweet Potato	54	***Sugars***	
		Green Peas	48	Honey	73
Cereals				Sucrose	65
Rice Krispies	82	***Legumes***		Lactose	46
Grape Nut Flakes	80	Baked Beans	48	Fructose	23
Corn Flakes	77	Chick Peas	33		
Cheerios	74	Butter Beans	31	***Beverages***	
Shredded Wheat	69	Lentils	29	Soft Drinks, regular	68
Grape Nuts	67	Kidney Beans	27	Orange Juice	57
Life	66	Soy Beans	18	Apple Juice	41
Oatmeal	61				
All Bran	42				
		Glycemic Index was calculated using glucose as the reference, with a GI of 100. Data from Foster-Powell and Brand Miller (1995).			
Dairy					
Ice Cream	61				
Yogurt, sweetened	33	*Table reproduced by Walberg Rankin, J. (1997). Gatorade Sports Science Exchange 26(1).*			
Milk, whole	27				
Milk, skim	32				

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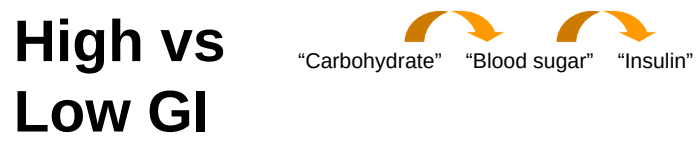
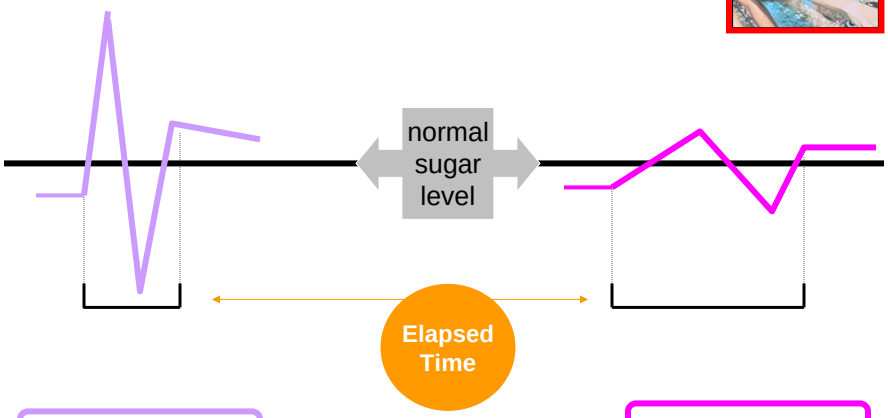
High vs Low GI





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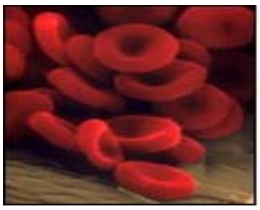
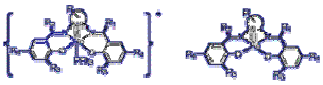


What about Protein?

–Protein builds and repairs muscle.
–Protein produces hormones.
–Protein supports the immune system.
–Protein replaces red blood cells.



Protein provides energy only when other sources are no longer available (starvation, malnutrition).

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What About Extra Protein?

…"Most athletes do not need 'extra' protein, but should focus on the timing of nutrient ingestion."

…Post-exercise CHO reduces protein breakdown.

…Protein post-ex optimizes anabolic response.

…Pulse the system.

…Essentials better than mixed.

…Start IMMEDIATELY! … ACTIVE recovery!

…Source has minimal effect.

cboudreau@usa-swimming.org

What about *extra* Protein?

- Extra protein does not build muscle bulk…exercise does.

- Your need is based on body weight and current training intensity.

cboudreau@usa-swimming.org

Individual Protein Requirements

1.4-1.8 grams per kg of body weight per day

Body Weight (lbs):	____ lbs
kg = lbs / 2.2:	____ lbs / 2.2 = ____ kg

Protein:	Daily Requirement:
Low end (easy days)	= ____ kg x 1.4 = ____ grams
High end (hard days)	= ____ kg x 1.8 = ____ grams

cboudreau@usa-swimming.org

What about Fat?

Our ability to make certain fats limits our requirement to consume them.

- Fats are also know as “Lipids.”
- Fat is a substance in many hormones.
- Fat helps control satiety (fullness after eating).
- Fat stores our fat-soluble vitamins (A, D, E, K).
- Fats deliver our *essential fatty acids.*

Fat supplies the fuel for low-intensity exercise.

cboudreau@usa-swimming.org

I need Fat, but...

Limit Fat intake to 25% of total calories.

Trade high-fat foods for low-fat substitutes:

- *lean cuts of meat instead of meat with visible fat*
- *angel food cake instead of chocolate cake*
- *frozen yogurt instead of ice cream*
- *low fat salad dressing instead of regular*
- *2% or skim milk instead of whole milk*
- *baked <u>anything</u> instead of deep-fried!*

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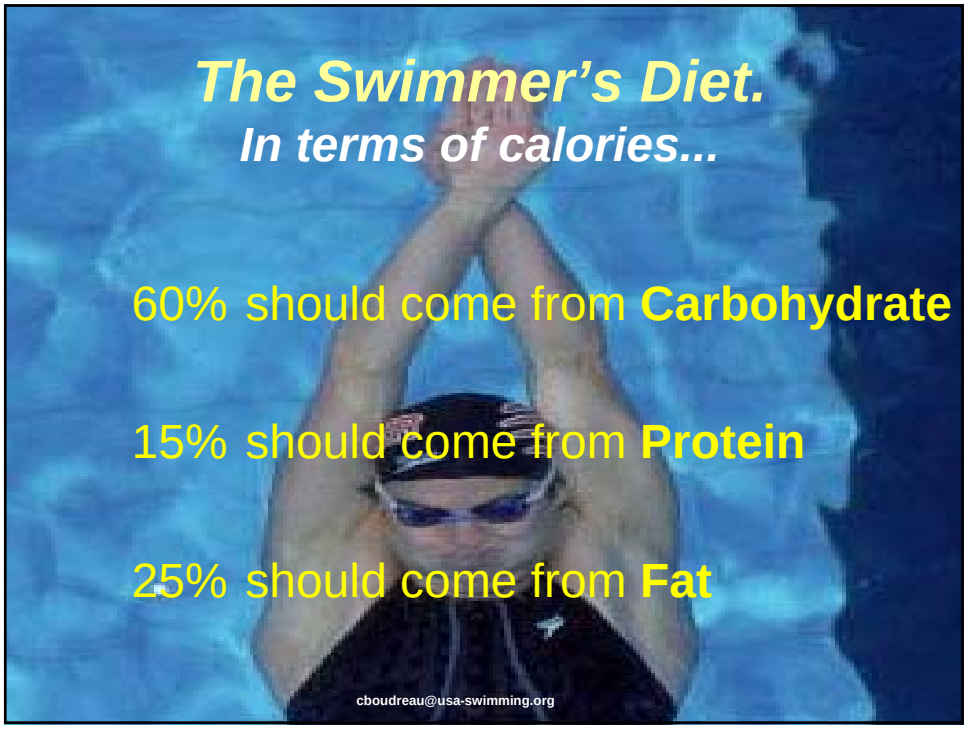

The
Importance
of

TIMING

and

RECOVERY

cboudreau@usa-swimming.org

Nutrition Foundations…

Eat a Variety of Foods from all Food Groups.

Eat Colorful Foods…Including *Recovery*.

Eat Early and Often…Including *Recovery*.

Drink Early and Often…Including *Recovery*.

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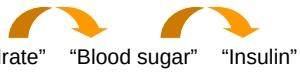
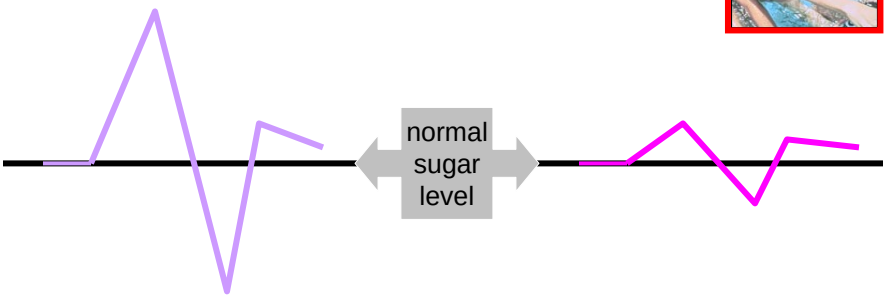
Eat Early and Often





Bigger Meals
(3 per day)
Insulin Spikes

Smaller Meals
(5-6 per day)
Insulin Steady

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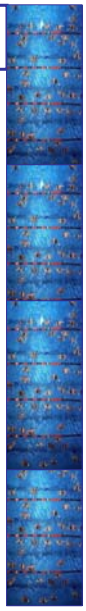
About Glycogen Storage…



- There is a limit to the amount of glycogen that can be stored at one time.
- Remaining blood sugar may be stored as fat.
- A good reason to eat smaller amounts of carbohydrate at more frequent intervals.
- A good reason to eat high-carbohydrate foods that also contain some protein, fat and/or fiber (each of these lessens the glycemic response).
- The exception to this storage limitation is the two hours immediately following a tough workout.

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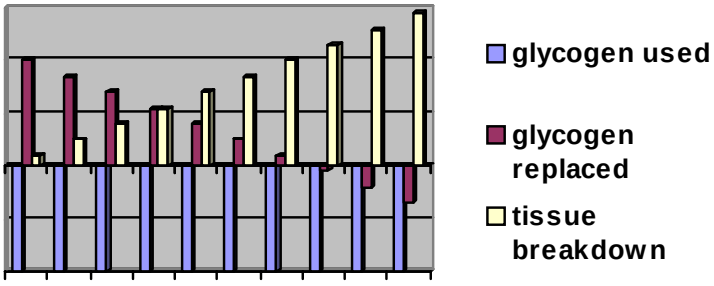
Glycogen and Recovery

Coaches Quarterly 10(1), Spring 2004

Figure 2. Long-term failure to replace glycogen leads to tissue breakdown.



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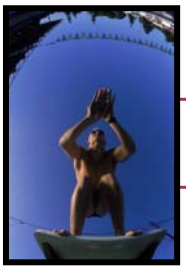

Poor Nutritional Recovery

Training (chronic/long-term)

- "lead legs"
- "can't keep up"
- elevated resting HR
- elevated HR on typical sets

Racing (acute/immediate)
(usually on back end of meet)

- lower post-race peak lactate
- diminished recovery
- feelings of fatigue
- elevated resting HR
- longer post-race HR recovery

cboudreau@usa-swimming.org

Good Nutritional Recovery

Maintains energy. ~ Limits tissue breakdown.
Especially during periods of high volume/high intensity.

Training

Start the replenishment process IMMEDIATELY! The "window of opportunity" for maximizing glycogen repletion starts to close as soon as exercise stops…it lasts for about 2 hours.

1.2-1.5 g/kg/hr for up to 5 hrs post-workout

Racing

Eat a high-carb/moderate-protein snack IMMEDIATELY after your PRELIMS race and immediately after your FINALS race, then again after warm-down.

cboudreau@usa-swimming.org

Individual Requirements

First, covert your weight to kg: _____ lbs / 2.2 = _____ kg

	Low 6 g/kg-carb 1.4 g/kg-prot	High 10 g/kg-carb 1.8 g.kg-prot	Recovery 1.0 g/kg-carb for up to 3 hrs	Foods:
Carb total			---	
Carb recovery	---	---		
Carb remainder			---	
Protein total			---	

cboudreau@usa-swimming.org

Example:

<u>140</u> lbs / 2.2 = <u>63.6</u> kg

	Low 6 g/kg-carb 1.4 g/kg-prot	High 10 g/kg-carb 1.8 g.kg-prot	Recovery 1.0 g/kg/hr-carb for up to 3 hrs	Foods:
Carb total	382	636	---	
Carb recovery	---	---	64	
Carb remainder	318 (382 – 64)	508 (636 – 128)	---	
Protein total	89	114	---	

cboudreau@usa-swimming.org

Eat ONE of the following immediately after workout or racing, then another item an hour later:

Body Weight (lbs)	Carbohydrate Required to meet 1.2 g/kg	DRINK Examples (good anytime, but particularly for race days)	BAR Examples (good anytime, but particularly for race days)	OTHER Food Examples (good anytime, but particularly for home training days)
120-150	65-85 grams	35-50 oz Gatorade®* OR 35-50 oz Powerade®* OR 2 cans Carnation Instant Breakfast ™ OR 1.5 cans Boost ® OR 1.5 cans Ensure™	1.5 PowerBars® OR 1.5 PowerBar Harvest® bars OR 1.5 Clif® bars OR 2 50g pkgs PowerBar® Bites	2 cups apple juice* or cranberry cocktail* OR 2 servings of low-fat yogurt OR 1 cup dried apricots OR 1.5 PBJ sandwich
160-200	85-110 grams	50-65 oz Gatorade®* OR 50-65 oz Powerade®* OR 2.5 cans Carnation Instant Breakfast ™ OR 2.5 cans Boost ® OR 2.5 cans Ensure™	2 PowerBars® OR 2 PowerBar Harvest® bars OR 2 Clif® bars OR 3 50g pkgs PowerBar® Bites	2/3 cup raisins* OR 4 cups grapefruit juice* or orange juice* OR 2 medium bagels OR 4 slices watermelon* OR 1 bagel with peanut butter OR 2.5 cans Ensure™
>200	115+ grams	65+ oz Gatorade®* OR 65+ oz Powerade®* OR 3 cans Carnation Instant Breakfast ™ OR 3 cans Boost ® OR 3 cans Ensure™	2.5 PowerBars® OR 2.5 PowerBar Harvest® bars OR 2.5 Clif® bars OR 3.5 50g pkgs PowerBar® Bites	8 kiwi fruits* OR 2 cups canned fruit salad* OR 2 PBJ sandwich plus 1 serving yogurt

*(*indicates carb-only food)*

cboudreau@usa-swimming.org

Recovery Foods Comparison Chart

	Food Item	Amount	Carbohydrate (g)	Protein (g)	Ratio CHO:Prot	Fat (g)	Calories (Kcal)	Vit A (ugRE)	Vit C (mg)	Vit E (mg aTE)	Sodium (mg)	Potassium (mg)			
Solid Foods	Bagel w / Peanut butter	1w / 2 tbsp	49	16	3.1	17	399	0	0	3	558	345			
	Yogurt w / Grapenuts	8oz w / 1/2 cup	58	13	4.5	4	309	0	2	0	242	556			
	PBJ (white bread)	1 sandwich	44	12	3.7	18	375	0	1.5	3	415	287			
	PBJ (wheat bread)	1 sandwich	46	13	3.5	18	384	0	1.5	3.5	451	370			
	PowerBar (basic)	1 bar (65 g)	45	10	4.5	2	230	0	60	9	90	150			
	PowerBar Bites	1 bag (50 g)	32	8	4.0	5	200	0	54	9	190	160			
	Clif Bar (non-iced)	1 bar (68 g)	48	8	6.0	3.5	230	333	60	10	110	210			
Liquid Nutrition	Milk (2%)	8oz	12	8	1.5	5	122	0	2.4	0.2	122	376	Milk-based	lactose	casein
	Milk w / Chocolate Syrup	8oz w / 2 tbsp	24	9	2.7	5	172	0	2.4	0.2	170	407	Milk-based	lactose, sucrose	casein
	Carnation Instant Breakfast	1 can (10 fl oz)	37	12	3.1	2.5	220	450	30	2.5	230	610	Milk-based	lactose, sucrose	milk
	Boost	1 can (8 fl oz)	41	10	4.1	4	240	250	60	10	130	400	Lactose-free	sucrose,fructose	milk
	Ensure	1 can (8 fl oz)	40	9	4.4	6	250	250	30	2.5	200	370	Lactose-free	sucrose,fructose	soy,whey,milk
	SlimFast	1 can (11 fl oz)	40	10	4.0	3	220	350	60	10	220	600	Milk-based	sucrose,fructose	milk
	Gatorade Nutrition Shake	1 can (11 fl oz)	54	20	2.7	8	370	?	?	?	280	560	?	??	??

VitA, VitC, VitE values based on 1997-1998 Dietary Reference Intakes (DRI) for Adult Males
(Vit A 1000 ug RE, Vit C 60 mg, Vit E 10 mg aTE)

cboudreau@usa-swimming.org

Recovery Tips

Training

- Bring your post-workout or post-race snack to the pool.
- If you have a long drive home after training, eat in the car and then have a decent meal when you get home.
- If you live close to the pool, you should have it ready right after practice to eat on the way home or as soon as you walk in the door.

Racing

- If you're at prelims, eat at least half of your post-race snack before getting in the water for warm-down. Eat the other half, plus another snack when you finish warming down.
- Solid foods are great, but liquid nutrition (ex. Instant Breakfast, homemade smoothies) may be more tolerable and easier to incorporate into a warm-down.

cboudreau@usa-swimming.org

Recovery Summary

- Training when recovered is (+) stress.
- Training when tired is (-) stress.
- Glycogen resynthesis takes 24 hours.
- Get back to basics:
  - ❖CHO
  - ❖Protein
  - ❖Water
  - ❖Salt

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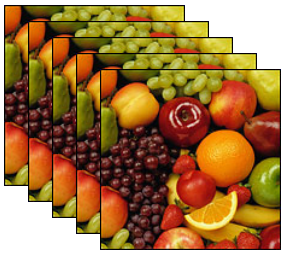
Color – Eat Colorful Foods.

- Vitamins
- Minerals
- Antioxidants
- Free Radicals*
- Carbohydrate
- Recovery
- Health



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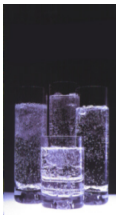
Drink Early and Often



Weight loss of 2% can impair performance.

IF YOU'RE THIRSTY, IT'S TOO LATE!

Sports Drinks?  **Ok, IF 6-8% carbohydrate.**

Check your hydration status:

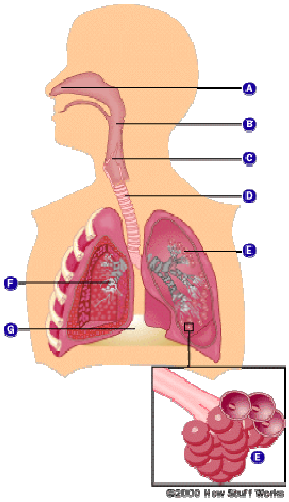
Dark Gold=Drink More!

Pale Yellow=Good Job!

cboudreau@usa-swimming.org

The Thirst Mechanism…

- **Thirst is not always an accurate indicator of when an athlete should *begin* hydrating.**
- **Thirsty = already dehydrated.**
- **Make the intake of fluids, including sports drinks, an important part of the daily nutrition program, especially during the recovery phase.**
- **Fluids containing sodium may be more efficient at hydrating than plain water alone.**
- **"one should consume adequate fluids during the 24-hour period before an event and drink about 500 ml (about 17 oz) of fluid about 2 hours before exercise to promote adequate hydration and allow time for excretion of excess ingested water." (ACSM)**



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Athlete Wallet Card…aka The "P" Card

Armstrong Urine Color Chart

1	Hydrated
2	
3	
4	Possible Dehydration
5	
6	
7	**DEHYDRATION**
8	

Collect sample in clear plastic container.
Hold up to bright light for comparison.

The urine color chart is reproduced with permission from Lawrence Armstrong and Human Kinetics and was originally published in Lawrence Armstrong's book titled *Performing in Extreme Environments*. The book may be purchased from Human Kinetics by calling 800-747.4457 or online at www.humankinetics.com.

GENERAL FLUID RECOMMENDATIONS

- Training/Competition of less than 1 hour
  - *Pre:* 1 x 8-10 oz of CHO-E
  - *During/After:* 2 x 8-10 oz of Water or CHO-E
- Training/Competition between 1 to 3 hours
  - *Pre:* 1 x 8-10 oz of CHO-E (30-60 min pre)
  - *During:* 1 x 8-10 oz per hour of CHO-E
  - *After* - 1 x 8-10 oz of CHO-E (every 30 min. for 2 hrs)

CHO-E = Carbohydrate-Electrolyte drink (eg.,Powerade)

17ºC = 63ºF
25ºC = 77ºF
32ºC = 90ºF
40ºC = 104ºF

CARB Sources - bread, granola, potato, rice, pasta, fruit, yogurt, juice, Powerade, corn, squash, raisins

PROTEIN Sources - chicken, meat, fish, cheese, yogurt, tofu, nuts, beans, hummus, peanut butter, beans, eggs, milk, lentils

IRON Sources - beef, shrimp, spinach, tofu, whole grains, peas, beans, cereal

ANTIOXIDANT Sources - berries, broccoli, carrots, spinach, kale, apricots, cantaloupe, peanuts, almonds, seeds, tuna, eggs, garlic

SODIUM Sources - salted pretzels, Gatorade, table salt

When traveling internationally AVOID - raw fish, tap water, condiments, meat that is not cooked and hot

Hyponatremia
over-drinking + salt loss

At meets, athletes should:

- Be aware of urine output
- Limit sun exposure
- Ensure adequate Na intake
- Drinks in addition to water
- Be aware of excessive and/or salty sweating
- Be aware of symptoms

Symptoms of Hyponatremia

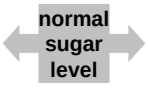
- Lightheadedness
- Yawning
- Headache
- “drunk”, goofy
- Vomiting
- Nausea
- Combative
- Delerious
- Muscle spasms

cboudreau@usa-swimming.org

Back to the Big Picture: Nutrition Foundations…

Eat a Variety of Foods from all Food Groups.

Eat Colorful Foods…Including *Recovery*.



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cboudreau@usa-swimming.org

Variety

Eat a Variety of Foods from all Food Groups.

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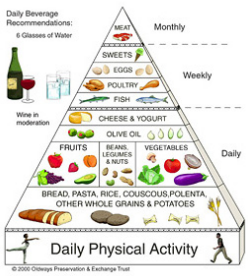
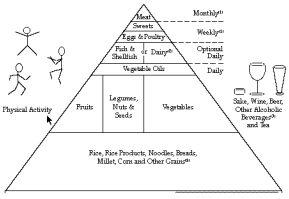
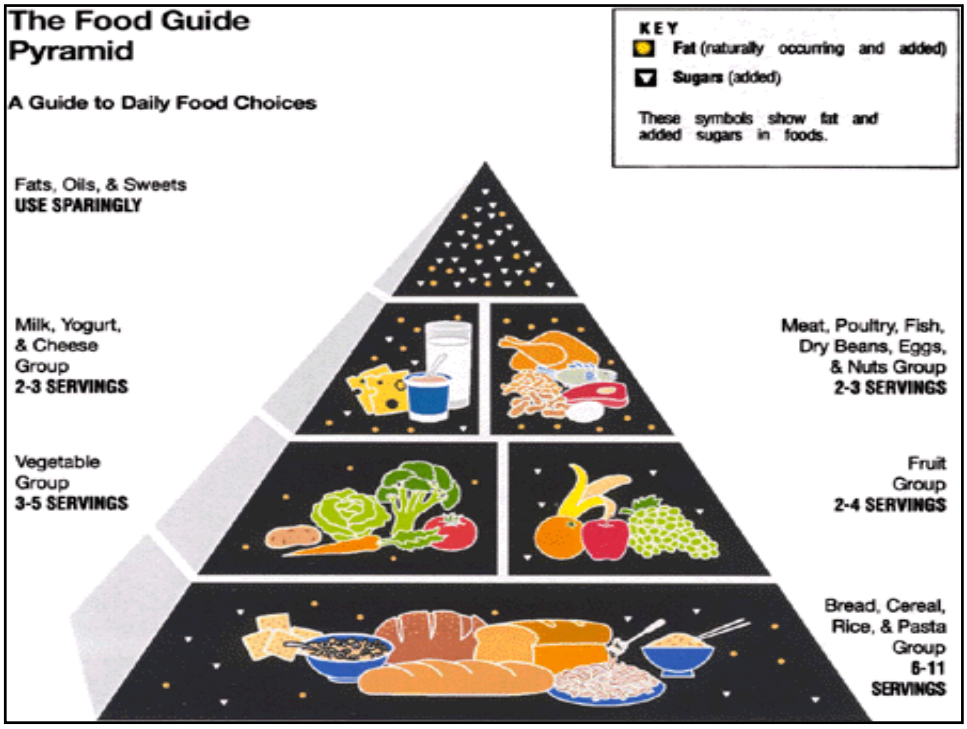
www.nal.usda.gov/fnic/index.html



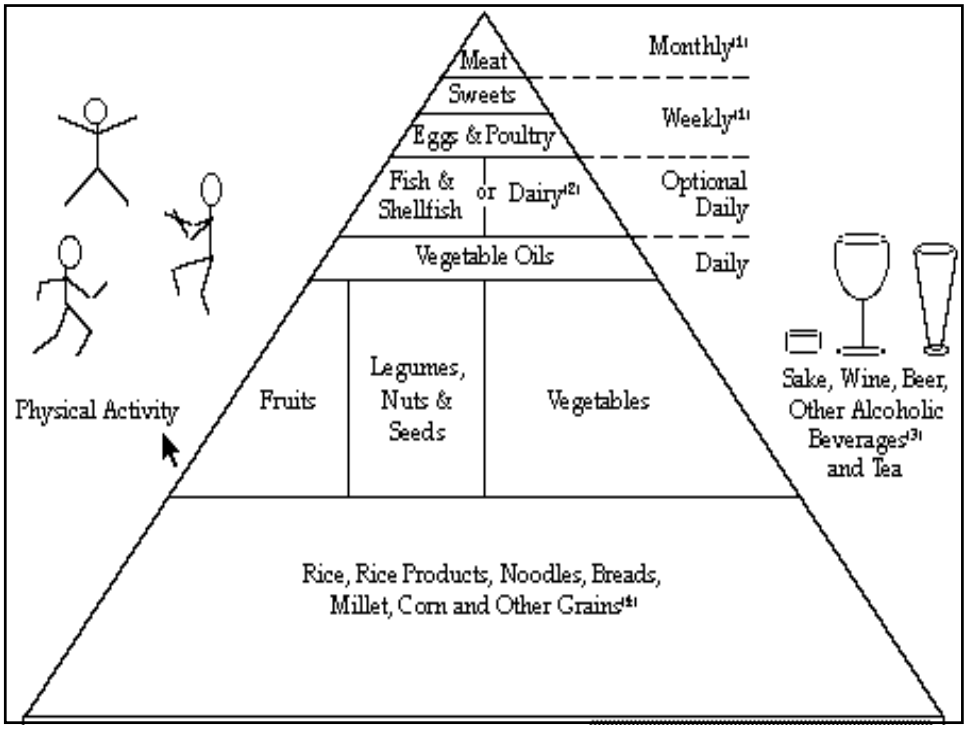


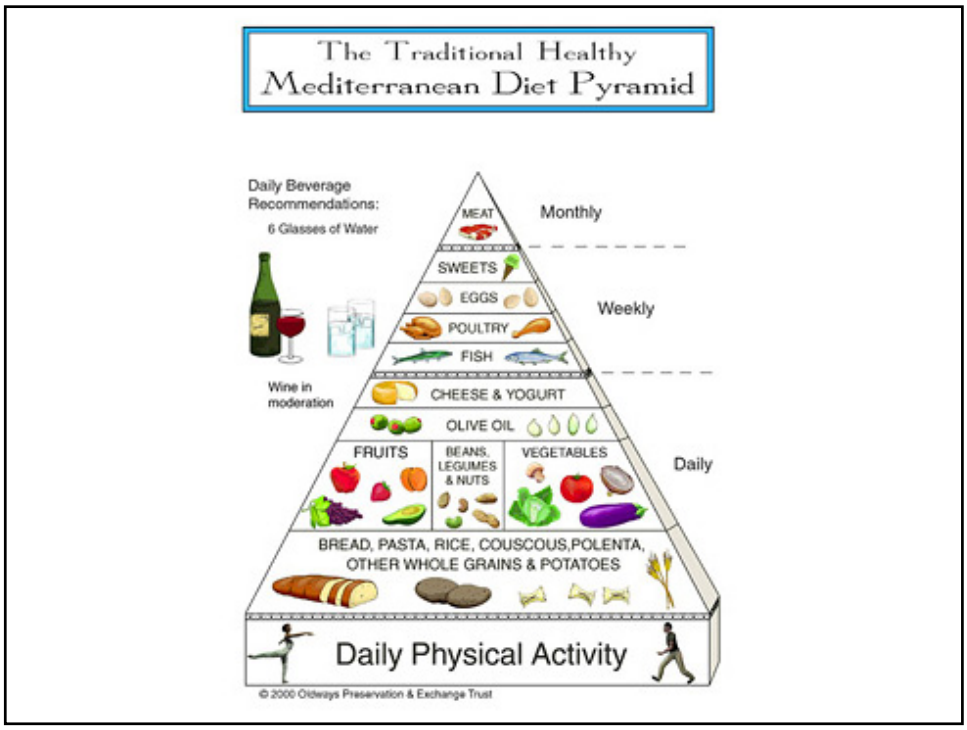
Also available via www.usaswimming.org (Coaches Nutrition Section)

cboudreau@usa-swimming.org


The Food Guide Pyramid
A Guide to Daily Food Choices
KEY
Fat (naturally occurring and added)
Sugars (added)
These symbols show fat and added sugars in foods.
Fats, Oils, & Sweets
USE SPARINGLY
Milk, Yogurt, & Cheese Group
2-3 SERVINGS
Meat, Poultry, Fish, Dry Beans, Eggs, & Nuts Group
2-3 SERVINGS
Vegetable Group
3-5 SERVINGS
Fruit Group
2-4 SERVINGS
Bread, Cereal, Rice, & Pasta Group
6-11 SERVINGS


Coma bien a diario.


Monthly[1]
Meat
Sweets
Weekly[1]
Eggs & Poultry
Fish & Shellfish
or
Dairy[2]
Optional Daily
Vegetable Oils
Daily
Physical Activity
Fruits
Legumes, Nuts & Seeds
Vegetables
Sake, Wine, Beer, Other Alcoholic Beverages[3] and Tea
Rice, Rice Products, Noodles, Breads, Millet, Corn and Other Grains[4]


The Traditional Healthy Mediterranean Diet Pyramid
Daily Beverage Recommendations:
6 Glasses of Water
Wine in moderation
MEAT
Monthly
SWEETS
EGGS
POULTRY
Weekly
FISH
CHEESE & YOGURT
OLIVE OIL
FRUITS
BEANS, LEGUMES & NUTS
VEGETABLES
Daily
BREAD, PASTA, RICE, COUSCOUS,POLENTA, OTHER WHOLE GRAINS & POTATOES
Daily Physical Activity
© 2000 Oldways Preservation & Exchange Trust

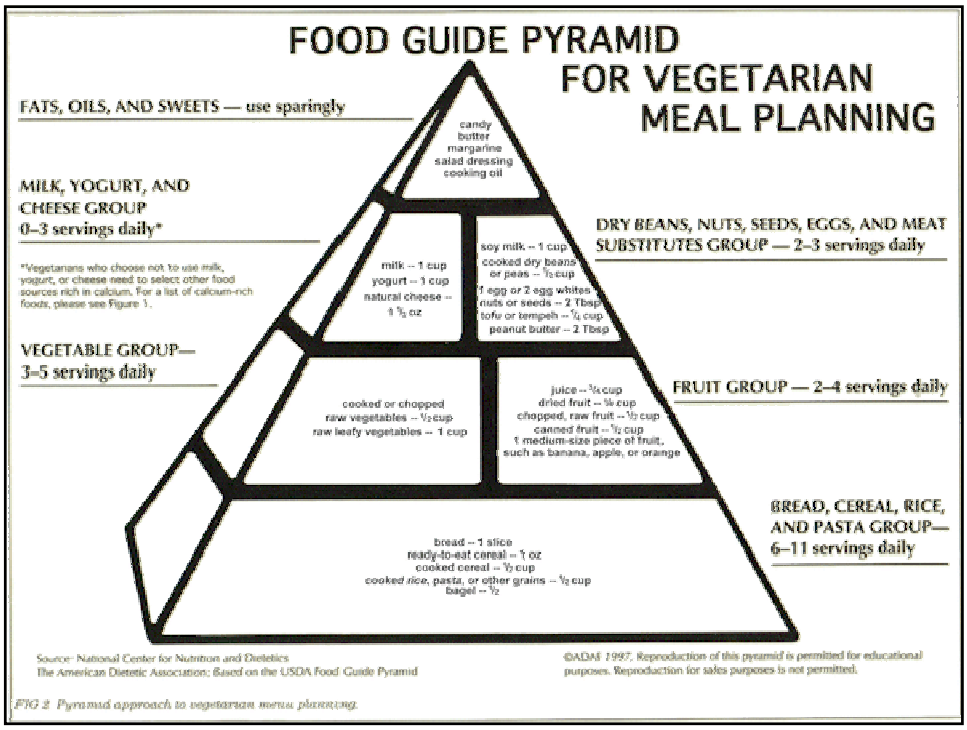
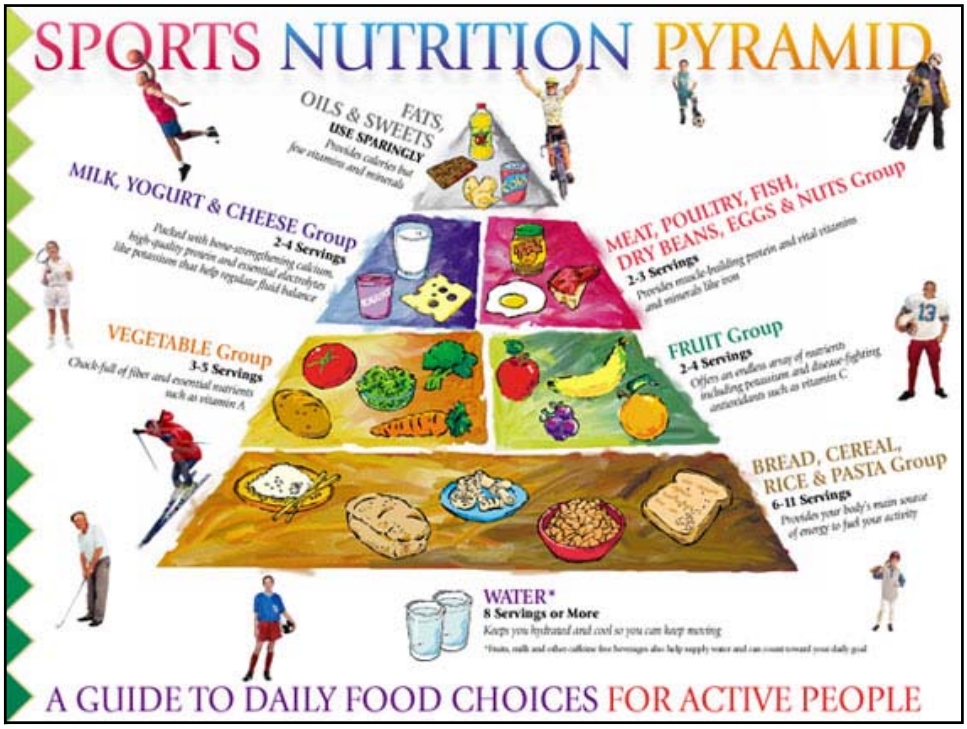
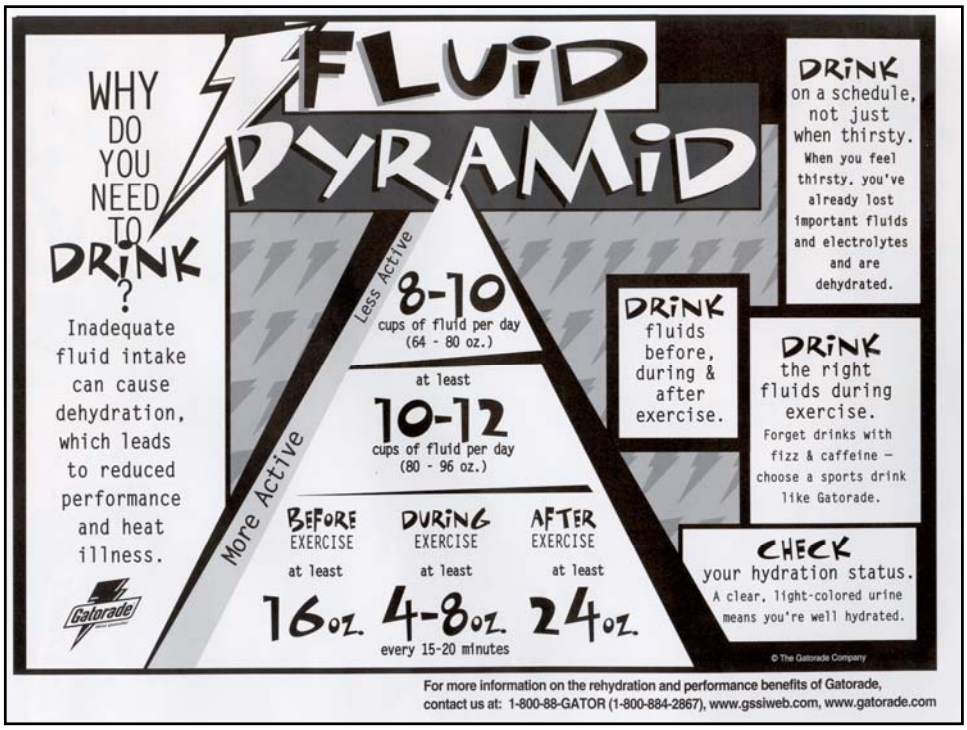
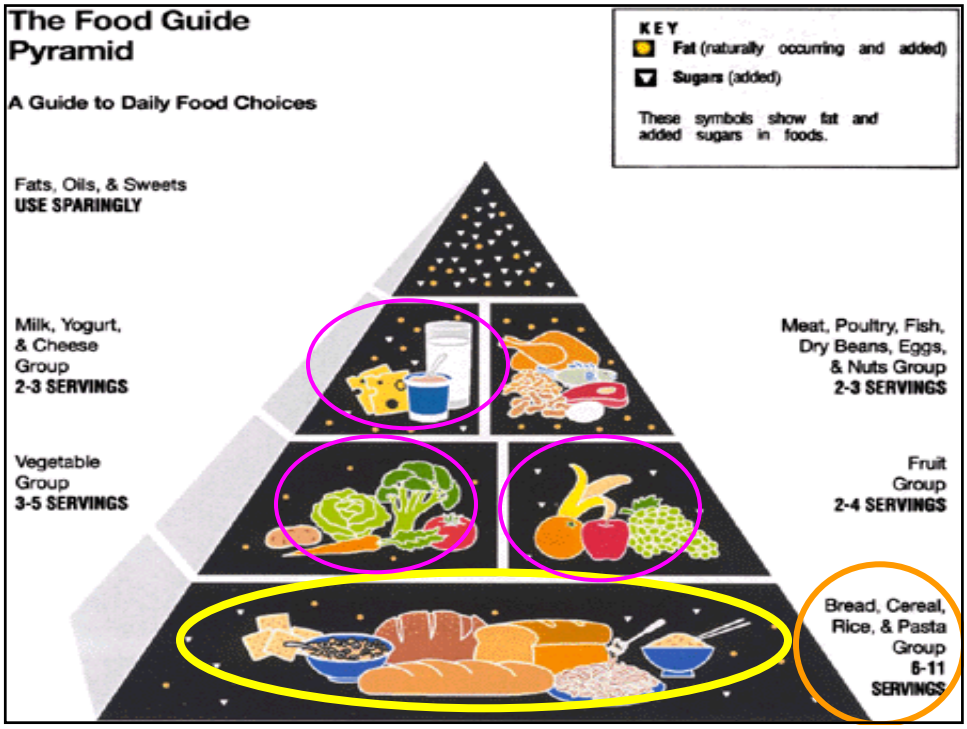


FIG 2 Pyramid approach to vegetarian menu planning.


SPORTS NUTRITION PYRAMID
FATS, OILS & SWEETS
USE SPARINGLY
Provides calories but few vitamins and minerals
MILK, YOGURT & CHEESE Group
2-4 Servings
Packed with bone-strengthening calcium, high-quality protein and essential electrolytes like potassium that help regulate fluid balance
MEAT, POULTRY, FISH, DRY BEANS, EGGS & NUTS Group
2-3 Servings
Provides muscle-building protein and vital vitamins and minerals like iron
VEGETABLE Group
3-5 Servings
Chock-full of fiber and essential nutrients such as vitamin A
FRUIT Group
2-4 Servings
Offers an endless array of nutrients including potassium and disease-fighting antioxidants such as vitamin C
BREAD, CEREAL, RICE & PASTA Group
6-11 Servings
Provides your body's main source of energy to fuel your activity
WATER*
8 Servings or More
Keeps you hydrated and cool so you can keep moving
*Fruits, milk and other caffeine-free beverages also help supply water and can count toward your daily goal
A GUIDE TO DAILY FOOD CHOICES FOR ACTIVE PEOPLE


WHY DO YOU NEED TO DRINK?
Inadequate fluid intake can cause dehydration, which leads to reduced performance and heat illness.
FLUID PYRAMID
Less Active
8-10 cups of fluid per day (64 - 80 oz.)
More Active
at least 10-12 cups of fluid per day (80 - 96 oz.)
BEFORE EXERCISE at least 16oz.
DURING EXERCISE at least 4-8oz. every 15-20 minutes
AFTER EXERCISE at least 24oz.
DRINK on a schedule, not just when thirsty. When you feel thirsty, you've already lost important fluids and electrolytes and are dehydrated.
DRINK fluids before, during & after exercise.
DRINK the right fluids during exercise. Forget drinks with fizz & caffeine – choose a sports drink like Gatorade.
CHECK your hydration status. A clear, light-colored urine means you're well hydrated.
Gatorade
© The Gatorade Company
For more information on the rehydration and performance benefits of Gatorade, contact us at: 1-800-88-GATOR (1-800-884-2867), www.gssiweb.com, www.gatorade.com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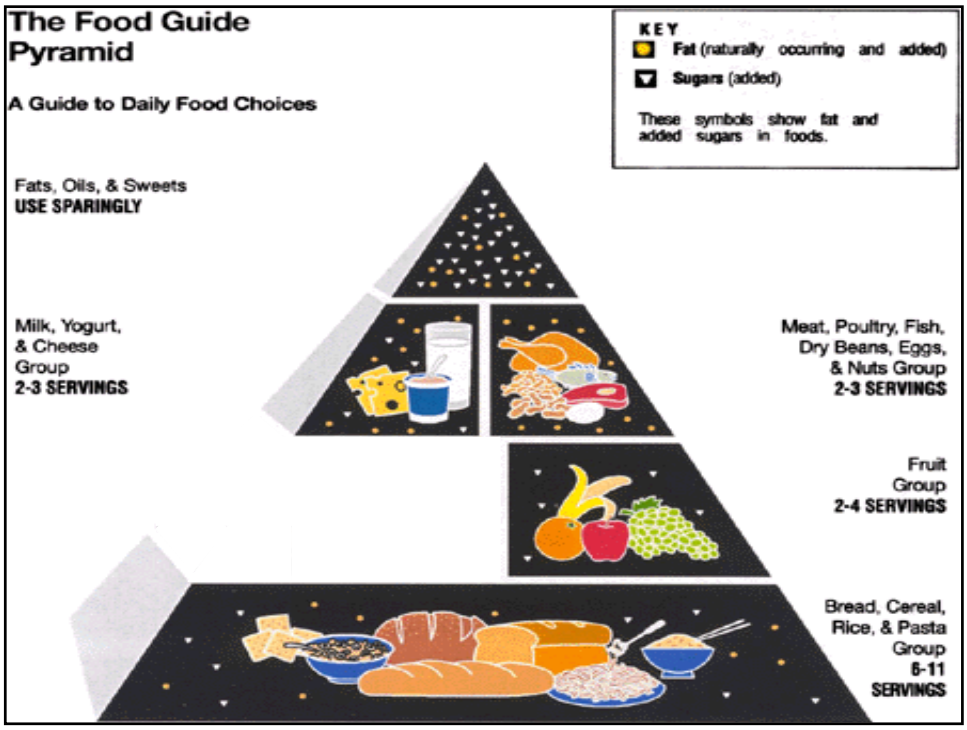
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Bread, Cereal, Rice, & Pasta Group
6-11 SERVINGS

The Food Guide Pyramid

A Guide to Daily Food Choices

Variety

Eat a Variety of Foods from all Food Groups.

- No magic foods.
- No magic food groups.
- Vitamins and Minerals.
- Servings grow as YOU grow.

cboudreau@usa-swimming.org

Diet Analysis

Males

Females

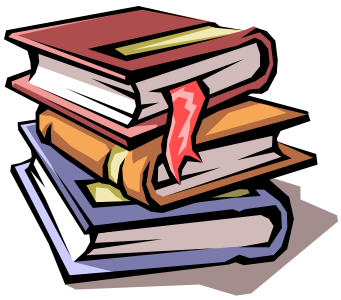
Age
Weight
Training Level

cboudreau@usa-swimming.org

Determining
Nutrient Intake & Distribution

Food Diary

What?
How much?



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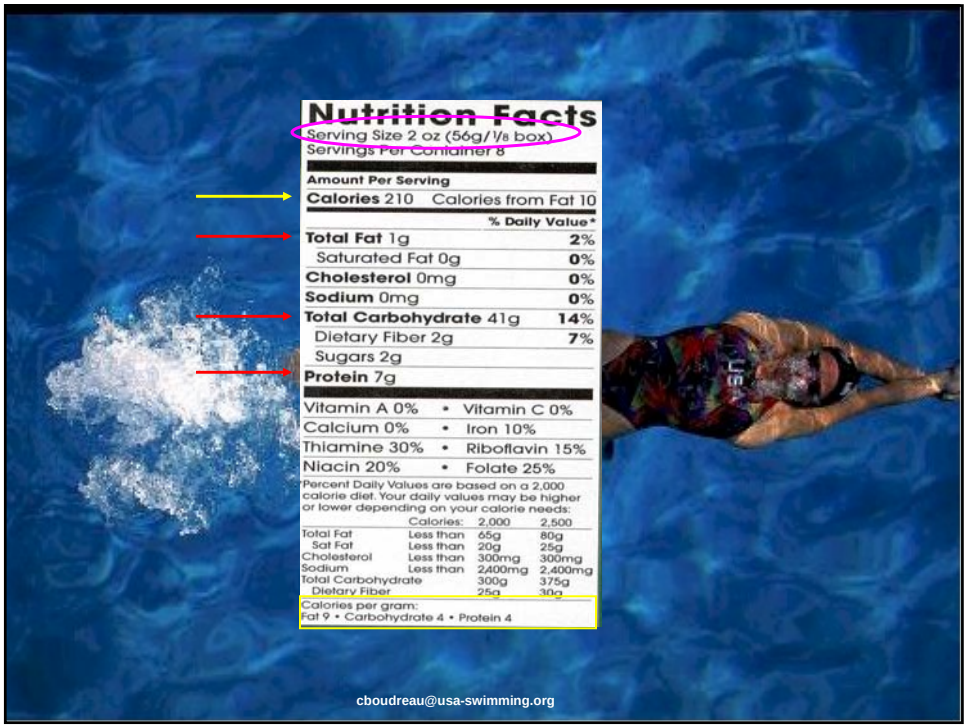


Determining Total Caloric Intake

Total Caloric Intake:

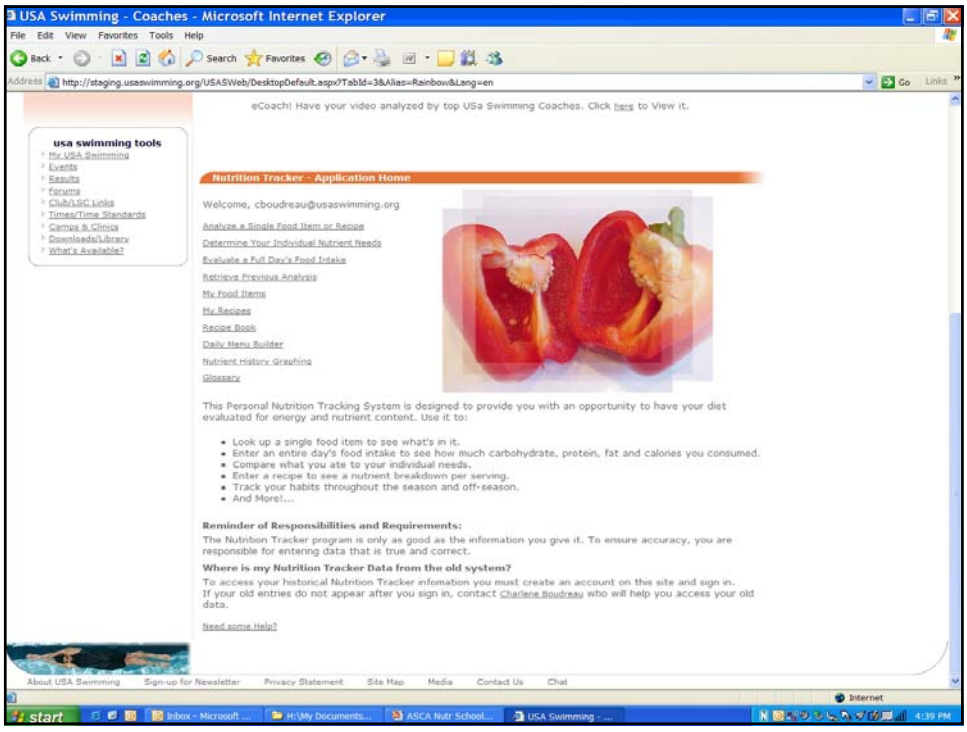
CHO Intake
\+ PROT Intake
\+ FAT Intake

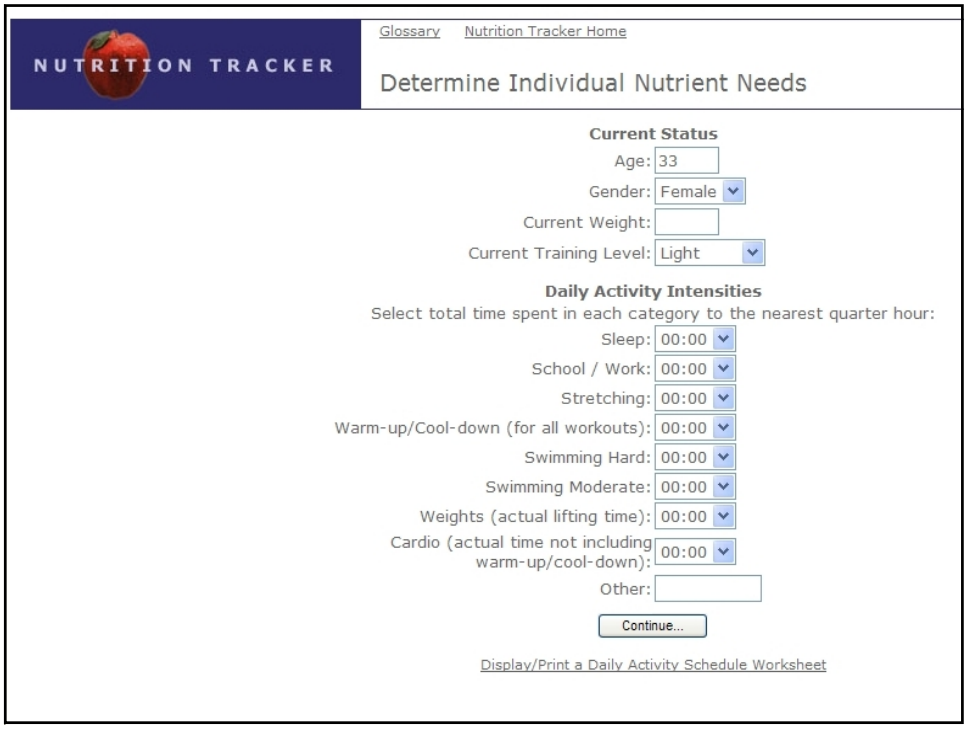
cboudreau@usa-swimming.org

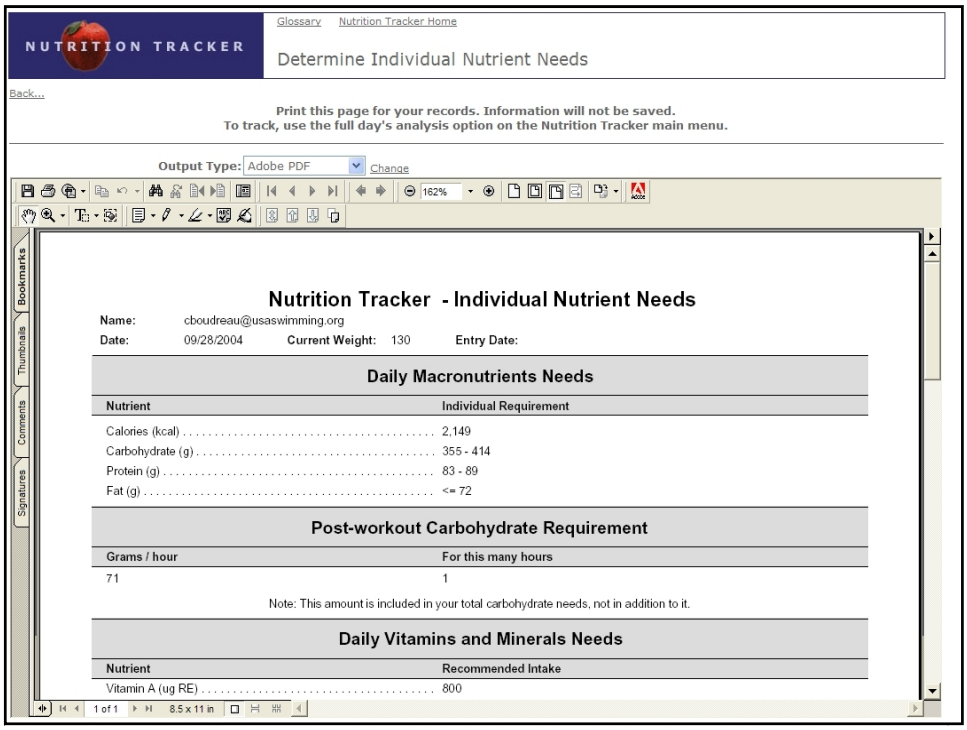
NUTRITION TRACKER

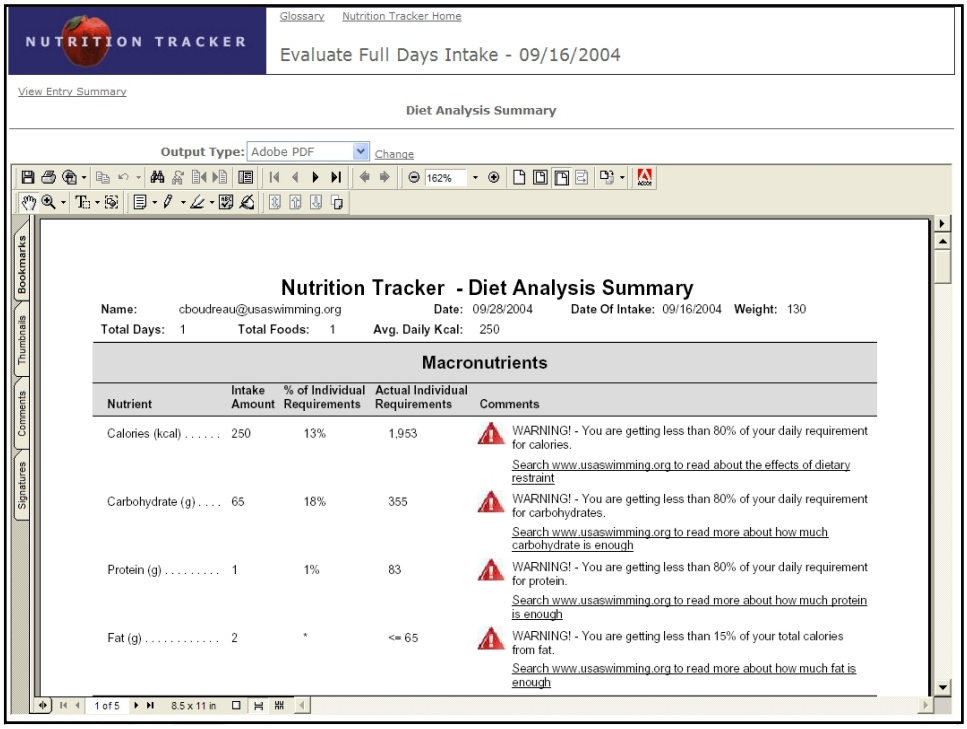
- Access large database of food items (USDA).
- Evaluate current nutrition status and dietary practices.
- Analysis specific to swimming and current level of training.

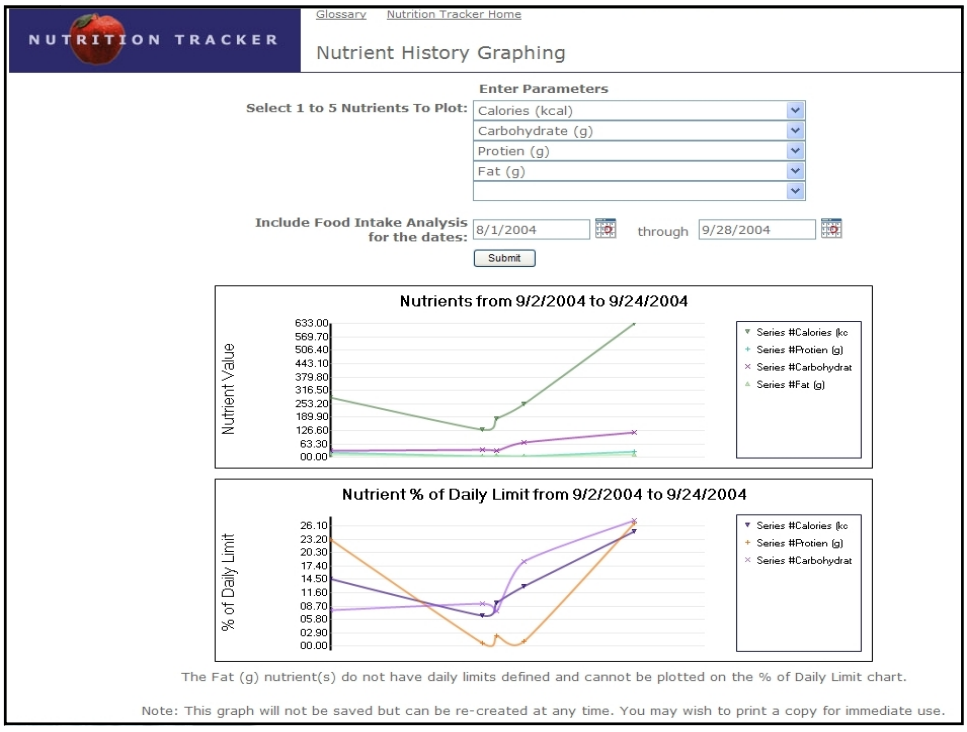
cboudreau@usa-swimming.org




NUTRITION TRACKER
Glossary
Nutrition Tracker Home
Determine Individual Nutrient Needs
Current Status
Age: 33
Gender: Female
Current Weight:
Current Training Level: Light
Daily Activity Intensities
Select total time spent in each category to the nearest quarter hour:
Sleep: 00:00
School / Work: 00:00
Stretching: 00:00
Warm-up/Cool-down (for all workouts): 00:00
Swimming Hard: 00:00
Swimming Moderate: 00:00
Weights (actual lifting time): 00:00
Cardio (actual time not including warm-up/cool-down): 00:00
Other:
Continue...
Display/Print a Daily Activity Schedule Worksheet


NUTRITION TRACKER
Glossary
Nutrition Tracker Home
Determine Individual Nutrient Needs
Back...
Print this page for your records. Information will not be saved.
To track, use the full day's analysis option on the Nutrition Tracker main menu.
Output Type: Adobe PDF
Change
Nutrition Tracker - Individual Nutrient Needs
Name: cboudreau@usaswimming.org
Date: 09/28/2004 Current Weight: 130 Entry Date:
Daily Macronutrients Needs
Nutrient
Individual Requirement
Calories (kcal) 2,149
Carbohydrate (g) 355 - 414
Protein (g) 83 - 89
Fat (g) <= 72
Post-workout Carbohydrate Requirement
Grams / hour
For this many hours
71
1
Note: This amount is included in your total carbohydrate needs, not in addition to it.
Daily Vitamins and Minerals Needs
Nutrient
Recommended Intake
Vitamin A (ug RE) 800


NUTRITION TRACKER
Glossary
Nutrition Tracker Home
Evaluate Full Days Intake - 09/16/2004
View Entry Summary
Diet Analysis Summary
Output Type: Adobe PDF
Change
Nutrition Tracker - Diet Analysis Summary
Name: cboudreau@usaswimming.org
Date: 09/28/2004
Date Of Intake: 09/16/2004
Weight: 130
Total Days: 1
Total Foods: 1
Avg. Daily Kcal: 250
Macronutrients
Nutrient
Intake Amount
% of Individual Requirements
Actual Individual Requirements
Comments
Calories (kcal) 250 13% 1,953
WARNING! - You are getting less than 80% of your daily requirement for calories.
Search www.usaswimming.org to read about the effects of dietary restraint
Carbohydrate (g) 65 18% 355
WARNING! - You are getting less than 80% of your daily requirement for carbohydrates.
Search www.usaswimming.org to read more about how much carbohydrate is enough
Protein (g) 1 1% 83
WARNING! - You are getting less than 80% of your daily requirement for protein.
Search www.usaswimming.org to read more about how much protein is enough
Fat (g) . . . . . 2 * <= 65
WARNING! - You are getting less than 15% of your total calories from fat.
Search www.usaswimming.org to read more about how much fat is enough
Bookmarks
Thumbnails
Comments
Signatures


NUTRITION TRACKER
Glossary
Nutrition Tracker Home
Nutrient History Graphing
Enter Parameters
Select 1 to 5 Nutrients To Plot:
Calories (kcal)
Carbohydrate (g)
Protien (g)
Fat (g)
Include Food Intake Analysis for the dates:
8/1/2004
through
9/28/2004
Submit
Nutrients from 9/2/2004 to 9/24/2004
Nutrient Value
633.00
569.70
506.40
443.10
379.80
316.50
253.20
189.90
126.60
63.30
00.00
Series #Calories (kc
Series #Protien (g)
Series #Carbohydrat
Series #Fat (g)
Nutrient % of Daily Limit from 9/2/2004 to 9/24/2004
% of Daily Limit
26.10
23.20
20.30
17.40
14.50
11.60
08.70
05.80
02.90
00.00
Series #Calories (kc
Series #Protien (g)
Series #Carbohydrat
The Fat (g) nutrient(s) do not have daily limits defined and cannot be plotted on the % of Daily Limit chart.
Note: This graph will not be saved but can be re-created at any time. You may wish to print a copy for immediate use.

Remember: *Optimal Nutrition* is…

- Always having a full tank of gas.
- Getting the most economical fuel.
- Fueling at the right times and places.

cboudreau@usa-swimming.org

- Preventative Maintenance
- **Specialized Preparation**
- **Last Minute Details**
- **Show Time!**

cboudreau@usa-swimming.org

Specialized Preparation

2-3 days prior to meet.

- Reduced training load.
- Focus on high-GI carbohydrate.
- Replenish glycogen stores.
- Keep protein and fat intake consistent.

cboudreau@usa-swimming.org

Last Minute Details

The night before

– High-carbohydrate snack.
– WATER/FLUIDS (2 full water bottles).

Breakfast

– 250 kcal about 1 hour before meet.
– High-carbohydrate.
– WATER/FLUIDS (one full water bottle).

cboudreau@usa-swimming.org

Show Time!

- Focus on fueling for the day, not the race.
- Maintain energy/blood sugar levels.
- Maintain hydration.
- Timing is everything!
- High- /Low-GI carbs, depending on race schedule.

cboudreau@usa-swimming.org

Show Time!

<1 hour to race

– easily digestible, high-carb, low-GI foods

2-4 hours to race

– solid, carb-dense, moderate- to high-GI foods

>4 hours to race

– solid, carb-dense, high-GI foods/meals

cboudreau@usa-swimming.org

Timing is Critical

One hour or less to go	2-3 hours to go	3-4 hours to go
Fruit and vegetable juice such as orange, tomato or V-8	Fresh fruit and fruit and vegetable juices	Fresh fruit and fruit and vegetable juices
AND/OR	**AND**	**AND**
Fresh fruit such as apples, watermelon, peaches, grapes or oranges	Breads, bagels, English muffins with limited amounts of butter, margarine, cream cheese, or peanut butter	Breads, bagels, baked potatoes, cereal with low-fat or skim milk, low-fat yogurt, sandwiches with a small amount of peanut butter or lean meats and cheese
AND/OR	**AND/OR**	**AND/OR**
1-1/2 cups of a sport drink like Gatorade	4 cups of a sport drink like Gatorade	7 1/2 cups of a sport drink like Gatorade

cboudreau@usa-swimming.org

Competition Cuisine

BREAKFAST

- **Order pancakes, waffles, French toast, bagels, cereal, English muffins, fruit or juice. These foods are all high in carbohydrates.**
- **Avoid high-fat choices such as bacon, sausage or biscuits and gravy.**
- **Pack containers of dry cereal, crackers, juice or dried fruit such as raisins and apricots; or pack fresh fruits such as apples or oranges in case the restaurant does not provide these items.**
- **If you eat breakfast at a fast food restaurant choose foods like cereal, fruit juice and muffins or pancakes instead of breakfast sandwiches.**

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EXAMPLES OF HIGH CARBOHYDRATE BREAKFAST MEALS

Orange juice
Fresh fruit
Low-fat yogurt
Pancakes with syrup
2% or skim milk

Plain English muffin
Strawberry jam
Scrambled Egg
Orange juice
2% or skim milk

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BREAKFAST AT FAST FOOD RESTAURANTS

Hot cakes with syrup
(hold the margarine and sausage)
Orange juice
low-fat milk

OR

Cold cereal with low-fat milk
Orange juice
Apple, bran or blueberry muffin

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BREAKFAST AT Grocery Stores and Family Style RESTAURANTS

Fruit flavored yogurt

Large bran muffin or prepackaged muffins

Banana

Orange juice

Low-fat milk

Pancakes, waffles or French toast with syrup (hold the margarine, bacon and sausage)

Orange juice

Low-fat milk

cboudreau@usa-swimming.org

LUNCH AND DINNER

- Try restaurants that offer pastas, breads and salads.
- Order thick crust rather than thin crust pizza for more carbohydrates.
- Order vegetables such as mushrooms and green peppers on the pizza. Avoid high fat toppings such as pepperoni and sausage.
- Order vegetable soups accompanied by crackers, bread, or muffins.
- Emphasize the bread in sandwiches, not the filling, mayonnaise or potato chips.
- Avoid deep fat fried foods such as French fries, fried fish and fried chicken.
- Choose low-fat milk or fruit juices rather than soda pop.

cboudreau@usa-swimming.org

EXAMPLES OF HIGH CARBOHYDRATE LUNCH OR DINNER MEALS

Large turkey sandwich on 2 slices of whole-wheat bread
slice of low-fat cheese
lettuce, tomato
Fresh vegetables like carrots and celery
Low-fat yogurt
Fresh fruit or fruit juice

OR

Chili on a large baked potato
Whole grain bread or muffin
Low-fat chocolate milkshake
Fresh fruit

Minestrone Soup
Spaghetti with Marinara Sauce
Salad Bar
Italian Bread
Fresh Fruit
2% or skim Milk
Sherbet

OR

Thick crust cheese and vegetable pizza
Side salad
Fresh fruit
2% or skim milk

cboudreau@usa-swimming.org

Packing for Meets

NNM 2004

- ✓ Dry cereal (ex: Frosted Mini Wheats, Honey Nut Shredded Wheat)
- ✓ PBJ sandwich halves
- ✓ Granola bars
- ✓ Power Bars
- ✓ 100% Juice boxes
- ✓ Whole fruits (ex: orange, peach, nectarine)
- ✓ Container of berries (ex: strawberries, raspberries, blackberries)
- ✓ Yogurt w/ side of grapenuts cereal for mixing
- ✓ Individual packets of oatmeal
- ✓ Trail mix (nuts, raisins, dried cranberries, mini pretzels, chocolate chips or M&Ms)
- ✓ Water
- ✓ Electrolyte drink (ex: Gatorade)

Tips:

- ❖ Pack things in small servings.
- ❖ Think finger food.
- ❖ Include an ice pack.
- ❖ Include enough variety for selection based on on-the-spot preference.
- ❖ Include things you know they like and are likely to eat.
- ❖ Avoid things you know they won't eat.
- ❖ Provide utensils.
- ❖ Avoid items that require cutting (cut it at home!).
- ❖ Don't require them to bring to cooler home empty. Use this to see what they eat and don't eat.

cboudreau@usa-swimming.org

Concession Stands

NNM 2004

Sandwiches ~ Pizza ~ Snacks ~ Fruit & Veggie Snacks ~ Drinks

Sandwiches
Cut into halves
Condiments upon request)
Keep chilled.

Pizza
A good seller
By the slice
Cheese and veggie
More nutritious v. chili dog/ nachos.

Drinks
Electrolyte drinks
Nutrition drinks
Soda provides little nutritional value
Limit soda to non-swimmers at meets.

BE CREATIVE!
Presentation can make or break concession sales. If your situation allows it (or requires it), consider outside vendors whose products are in line with your club's philosophy regarding nutrition and performance.

Snacks
Individually packaged snacks
Recruit volunteers
Ziplocs with dry cereal and trail mix.
Granola bars, PowerBars, PowerBar Bites
Yogurts with individual packs of grapenuts/granola
Oatmeal packets
Popcorn
Great substitutes for candy!

Fruit and Veggie Snacks
Think color
Individual half-cup containers of berries
Sell as option with the yogurts (i.e. pick fruit or grapenuts/granola or both).
Sell what people are likely to buy.
Baby carrots, sugar peas
Celery sticks with peanut butter or ranch dip are typically better sellers than raw broccoli or cauliflower.

cboudreau@usa-swimming.org

Vending Machines

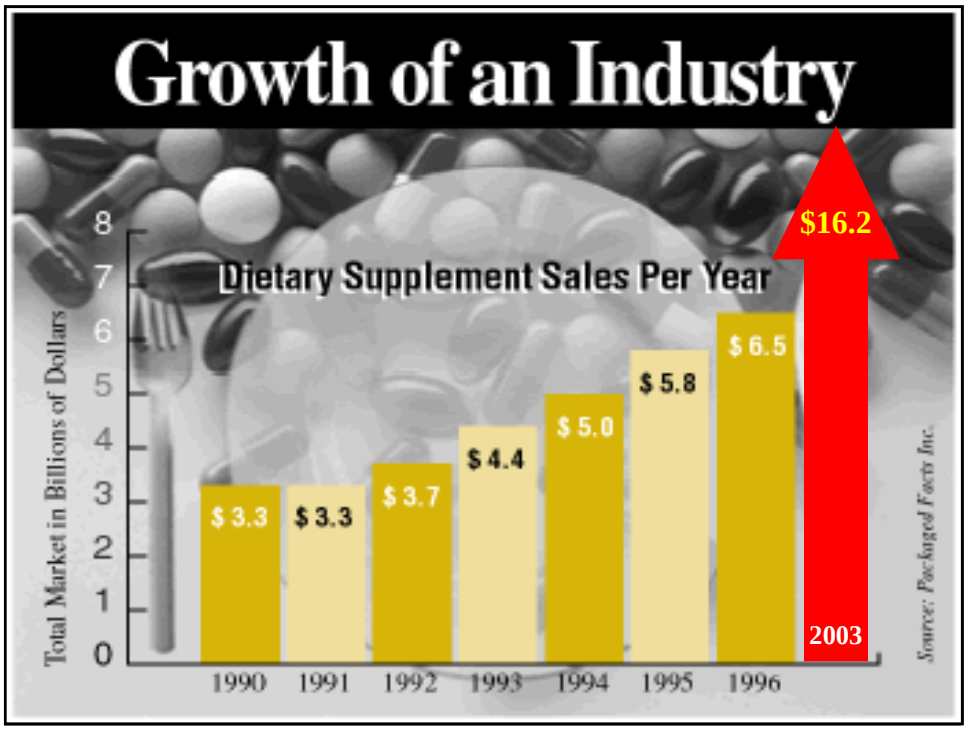
NNM 2004

- A good way to ensure that food and drinks are available before and after workouts and during home meets.
- Avoid providing "junk food."
- Talk to your vendor about stocking with **nutrient dense items**:
  - cereal bars, granola bars, trail mix, pretzels, PowerBars, gels, Carnation Instant Breakfast, etc
- Consider a vending cooler that offers yogurt, whole fruits, sandwiches, juice, water and sports drinks.
- A local deli or organic foods store may work with you within the terms of a business arrangement.
- Be creative.
- Items you would *WANT* them to eat!

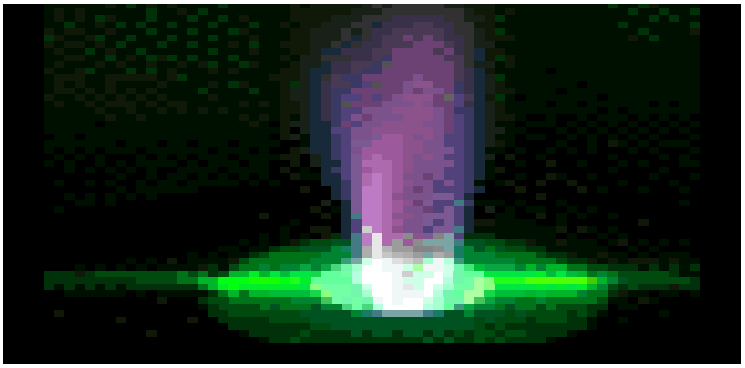
cboudreau@usa-swimming.org

What About Supplements?

cboudreau@usa-swimming.org



THE TIMES – *September 20, 2001*



"Nearly 40 of 200 over-the-counter food supplements tested in one of the world's leading drugs laboratories contain nandrolone. None of these food supplements carried warnings that they might contain a substance banned in most international sports."

Variability in commercial ginseng products: an analysis of 25 preparations.

The American Journal of CLINICAL NUTRITION

Analysis of 25 commercial ginseng products from a local health food store.

- Concentrations of "marker compounds" were significantly different from the amounts indicated on the labels.
- Siberian **ginseng** products showed the most inconsistency (versus Asian ginseng).
- Liquid extracts varied more than powdered products.
- Variability from product to product was significant.

73:*1101-1106, 2001*

cboudreau@usa-swimming.org

Commercially marketed supplements for bodybuilding athletes.

A survey found unusual or unidentifiable ingredients in supplements advertised in bodybuilding and health magazines.

22% of the products provided no ingredient information in the advertisement.

cboudreau@usa-swimming.org

Hormone Products and Analytical Challenges

- 1 in 8 brands of androstenedione conformed to DSHEA requirements.
- So-called “pure” andro contained nandrolone metabolites , causing subjects to exceed IOC threshold for nandrolone (2 ng/mL).

Int J Sp Med, 2001 (Kamber)
JAMA 2000 (Caitlin et al), pp 2618-2621

cboudreau@usa-swimming.org

Nutritional supplements as a source for positive doping cases.

Analysis of 75 different nutritional supplements bought through the internet.

- 7 out of 17 prohormones contained different substances than listed on the labels.
- Two “mental enhancers” contained **caffeine** and **ephedrine**, neither of which was clearly declared on the label or declared at all.

Kamber, M, N Baume, M Saugy and L Rivier. (2001).
***International Journal of Sport Nutrition and Exercise Metabolism 11**:258-263.*

cboudreau@usa-swimming.org

Positive doping cases with norandrosterone after application of contaminated nutritional supplements.

Researchers detect testosterone and various forms of androstenedione and 19-norandrostenedion/diol in 3 different commercial products:

Chrysin, **Tribulus Terrestris** and **Guarana**.

Geyer, , MK Henze, U Mareck-Engelke, G Sigmund and W Schanzer. (2000).
***Deutsche Zeitschrift fur Sportmedezin 51**:378-382.*

cboudreau@usa-swimming.org

More News…

USA Today - June 18, 2001

Norwegian weightlifter Stian Grimseth, who tested positive for the steroid **Nandrolone** 2 weeks before the Sydney Olympics, was suspended for 6 months. He said the positive was caused by an improperly labeled food supplement, and tests showed the supplement contained substances not listed on the label.

CNN SI.com - August 29, 2001

PARIS (AP) -- French sprinter Christophe Cheval has denied knowingly taking a banned steroid for which he tested positive at this month's Edmonton World Championships, a French newspaper reported Wednesday. Cheval, 30, told the French sports daily *L'Equipe* that he had taken a food supplement that did not indicate it contained the banned substance **nandrolone**. "Naturally, nandrolone wasn't mentioned on the wrapper," he said. "I realized I might be lacking in magnesium and iron. I was trying to make up for this shortage."

cboudreau@usa-swimming.org

WHY IS THIS HAPPENING?

cboudreau@usa-swimming.org

DSHEA, 1994

Claims made by the manufacturers / distributors of dietary supplements regarding the effectiveness of their products are not being evaluated by the US Food and Drug Administration.

cboudreau@usa-swimming.org

DRUGS	SUPPLEMENTS
• Must be proven safe before approved for market.	• Must be proven harmful before removed from market.

cboudreau@usa-swimming.org

Question on FDA Checks

Q: Who/how much is being paid to audit DSHEA's implementation of checking supplements?

A: Most dietary supplement companies have their own high quality QC programs.

In other words… **NOBODY**.

The blame is on the bad QC companies.

cboudreau@usa-swimming.org

EDUCATION

CRITICAL THINKING

cboudreau@usa-swimming.org

Critical Question #1

Do the proposed effects of this supplement apply to my sport in terms of the nature of training and/or competition?

cboudreau@usa-swimming.org

Critical Question #2

Is this product legal?

cboudreau@usa-swimming.org

Critical Question #3

Are the ingredients listed on the outside label for this supplement exactly what are inside the container?

cboudreau@usa-swimming.org

Implications:

The failure of a supplement's ingredients list to match the product's contents 100% opens the door for:

1. **Positive drug tests.**
2. **Adverse health affects.**
3. **Wasted dollars.**

cboudreau@usa-swimming.org

Supplement Contamination: Is the Risk Real?

- Clin J Sports Med 11:254-259, 2001
- Deutche Z Sportmed 51:378-382, 2000

- IOC Study from Cologne
  - Vitamins
  - Iron

- Study from Austria
  www.dopinginfo.de

- IOC Consensus statement

"Don't rely on ConsumerLab.com in a court of law."
(Ron Maughan)

Nobody will guarantee "purity."

cboudreau@usa-swimming.org

Critical Question #4

Are the proposed effects of this supplement and/or each of its key ingredients supported by science?

Do the amounts of the ingredients on the label of this supplement match the amounts that have been studied?

cboudreau@usa-swimming.org

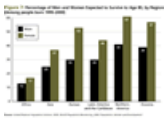
State of the Research on Supplements

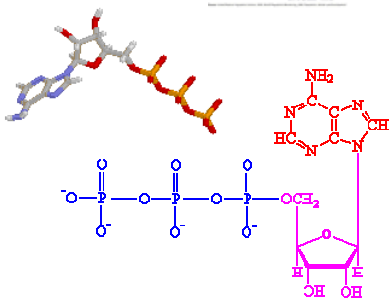
"Vitamin and mineral supplementation is appropriate when well-accepted, peer-reviewed, scientific evidence shows safety and effectiveness."

(American Dietetic Association, 1996)

cboudreau@usa-swimming.org

Problems with Research
Scenario A





- Training study
- Trained the subjects
- Gave them a supplement
- Pre-test and Post-test
- Post-test shows improvement

Was it the supplement?

No.
They used
UN-trained subjects!

cboudreau@usa-swimming.org

Problems with Research
Scenario B

- Study using athletes
- Give them a supplement
- Pre-test and Post-test
- Post-test shows improvement
- Was it the supplement?

Probably, BUT…

The subjects were **deficient** in that nutrient to begin with!

cboudreau@usa-swimming.org

Other Issues in Supplements Research

Responders // Non-Responders

Inter-Subject Variability

Long-Term Effects Unknown

cboudreau@usa-swimming.org

Ex. Creatine

- 300+ studies
- Increase 0-50%
- Non-responders vs
- High-responders
- High inter-subject variability…why??
- Side effects mild
- Long-term safety unknown
- Is it cheating?

cboudreau@usa-swimming.org

Gatorade Sports Science Institute

Ex. Caffeine

- Caffeine is NOT for children.
- Some performance effect at low doses.
- Physiology vs CNS.
- **Responders vs non-responders.**
- **Avoid energy drinks.**
- 3-6 mg/kg (200 mg) low doping risk, but **cannot be guaranteed**.

Effective January 1, 2004, caffeine was removed from the prohibited substance list.

cboudreau@usa-swimming.org

Gatorade Sports Science Institute

Ex. "Fat Burners" EPHEDRA

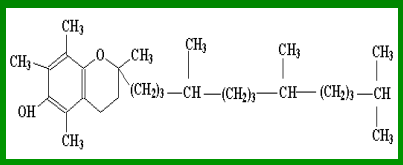
- Companies are starting to make non-ephedra "fat-burners" or are masking ephedra with new names.
- Effective for weight loss…Yes.
- Effective for performance…No.
- Safe? NO
- Ephedra should NOT be freely available or used by athletes.

cboudreau@usa-swimming.org

Gatorade Sports Science Institute

Ex. Antioxidants (ACE)

Vitamin C Crystals



Chemical structure of Vitamin E

- Tissues with higher antioxidant capacity experience less damage.
- Antioxidants work as TEAMS.
- Improve performance? NO.
- Increased need for athletes? NO.
- Effects of altitude, heat, humidity still unclear.
- ***"Get your antioxidants from conventional foods."***

cboudreau@usa-swimming.org

Ex. Immune Function

Cortisol is the Culprit!

Fat

Antioxidants

Glutamine

Carbohydrate

cboudreau@usa-swimming.org

Ex. Cramps

- Calcium pills
- Magnesium pills
- Phosphate
- Quinine pills
- Salt tablets
- Saline
- Salt in diet

cboudreau@usa-swimming.org

Stacking

One Plus One Does Not Always Equal Two

Antagonism	1+1=0	…Soy Protein and Iron …Iron and Zinc …Magnesium and Phosphate
Synergism	1+1=3	…Vitamin C and Iron …Ribose and Creatine
Potentiation	1+1=10	…Ginseng and Caffeine …ZMA and Terrestris

cboudreau@usa-swimming.org

Critical Question #5

Are there reports of risks and/or adverse health effects associated with taking this supplement?

Have the short-term and long-term effects of using this supplement and/or any of its key ingredients been studied?

cboudreau@usa-swimming.org

Critical Question #6

Are there foods or other alternatives to using this supplement that may have the same effect(s)?

cboudreau@usa-swimming.org

USA Swimming's Position on Dietary Supplements

In an effort to maintain the integrity of our sport and the safety of our athletes, USA Swimming has taken a proactive role in making athletes and coaches more aware of the risks involved in the use of commercially available dietary supplements that have been linked to enhancing performance. Along with the US Anti-Doping Agency (USADA), USA Swimming considers dietary supplements "take at your own risk," placing full responsibility for any effects and repercussions on the athlete.

It is the role of USA Swimming to educate swimmers, coaches and parents on the issues of dietary supplements, including general and specific risks, normal values and toxicity, drug testing and drug interactions, stacking, and conventional dietary alternatives. It is also the role of USA Swimming to validate or repudiate via research review or sanctioned research the answers to the many questions that surround scientific and anecdotal evidence versus actual application. Any recommendations or opinions offered by USA Swimming regarding the use of dietary supplements are based on a yellow-orange-red light continuum Health & Contamination Risk Chart for Dietary Supplements and the most current publicly available scientific and consumer-specific information.

Claims made by the manufacturers/ distributors of dietary supplements regarding the effectiveness of their products are not stictly regulated by the US Food and Drug Administration. Any commercial dietary supplement is susceptible to containing substances that may appear on the Prohibited Substance list(s) of FINA and/or the IOC. The potential exists for commercial supplements to contain substances that do not appear on the product's list of ingredients (see Dietary Supplement Health and Education Act for more information). Statistics indicate that in some cases, the use of legal dietary supplements has been linked to positive test results for prohibited substances in athletics.

The choice to use a dietary supplement is the sole responsibility of the athlete and one that should not be made in haste. An athlete is advised to weigh the options heavily, consider the consequences, and take responsibility for his/her actions.

July 2003

Health & Contamination Risk Chart for Dietary Supplements

WARNING: *Lack of regulation in the supplement industry opens the door for supplement contamination that may result in adverse health effects and/or positive drug tests. Athletes are subject to sanctions even if a positive test is the result of a contaminated supplement.*

*Lower risk of adverse health effects and/or contamination.**	*Increased risk of adverse health effects and/or contamination.*	*High risk of adverse health effects and/or contamination.*
Major Brands** of Basic Multi-vitamins or Iron pills or carbohydrate-electrolyte drinks or nutritional bars ****Major Brands" means reputable well-established companies that do not also make products containing prohibited substances.**	-Mega-dose pills (more than 300% of daily requirement) -Herbal products and products containing herbal additives (not listed as RED) -Protein powders/shakes -Creatine -Amino Acid mixtures -"Proprietary" ingredients -YELLOW risk products made by companies that manufacture any RED risk products.	Anything with the words: -"Andro-" or "Nor" **(Prohibited!)** -Ephedrine or Ma Huang or Guaranna - **(Prohibited!)** -"Anabol" or "Diol"*** or "Test"*** -"Reduces water retention"*** -"Energizer" or "Energy"*** -"Weight Loss"*** -"Muscle Builder" or "Stack" or "Stak" *** ****Likely to be or contain prohibited substances.** Avoid products from companies that manufacture any of the above or any other prohibited substances.

*Lower risk does not equal "zero" risk. There is evidence linking various YELLOW and ORANGE risk products to positive doping results.

Along with the US Anti-Doping Agency (USADA), USA Swimming considers dietary supplements "take at your own risk," placing full responsibility for any effects and repercussions on the athlete. The ultimate decision to use a dietary supplement is the sole responsibility of the athlete and one that should not be made in haste. All athletes are advised that the use of dietary/nutritional supplements is completely at the athlete's own risk, even if the supplements are "approved" or "verified." If you take dietary/nutritional supplements you may test positive for a prohibited substance, which is not disclosed on the product label. This would result in a doping violation. Please visit www.usa-swimming.org and www.usantidoping.org for important information regarding the risks of taking dietary supplements and the regulation of supplements in the United States. This chart was prepared by USA Swimming, 1 Olympic Plaza, Colorado Springs, CO (719) 866-4578.

For health reasons, athletes who have not completed puberty should not use any product with an ORANGE or RED risk.

Responsibility:

Professionals are not responsible for an athlete's intake of a prohibited substance.

The decision is yours.

The responsibility is yours.

Educate Your Doctor

- Discuss supplements with your physician.
- Educate your physician to check with the Drug Reference Line to determine the status.
- A doctor's signature/prescription does not permit you to use *prohibited* substances.

On-Line Information:

www.usa-swimming.org

Dietary Supplements Database

fda.gov
usda.gov
eatright.org
gssiweb.com
acsm.org
nutrition.gov

cboudreau@usa-swimming.org (719) 866-3549

smichael@usa-swimming.org (719) 866-3584

The 4 Foundations…

Eat a Variety of Foods from all Food Groups.

Eat Colorful Foods.

Eat Early and Often.

Drink Early and Often.

SIMPLE.
But not easy.

cboudreau@usa-swimming.org

To inspire and enable our members to achieve excellence in the sport of swimming and in life.

Good Luck!

Swim Fast!

A Message from Tom Malchow

Road to Athens Journal – October 29, 2003

Cancer, kidney damage, heart attack, liver damage, infertility, death, humiliation and disqualification. What do all these things have in common? They are all potential consequences of using performance-enhancing substances. I have been reading a lot about this problem lately, especially as it concerns the U.S. track and field athletes and the discovery of the previously undetectable designer steroid THG. I am sickened by the problem and fear that these performance-enhancing substances are ruining all sports. These drugs create an uneven playing field. It is no longer a battle of competitor against competitor, but a battle of user versus nonuser. Attention is being taken away from sports and the spirit of competition. Instead, the focus is shifting to the abusers and what the national governing bodies are doing to test, report and punish their athletes, or worse yet, which oversight agencies are not vigilant or are denying the problems and allowing them to proliferate.

Who is to blame for this mess? In my opinion the reasons are very simple. Money and fame. The vast sums of money and the celebrity status associated with winning has encouraged some athletes to take the extra risk as they seek to gain the extra edge. They think they can become superstars by taking drugs, and unfortunately the easy availability of the performance enhancing substances and the non-regulation of the supplement market puts this temptation within easy grasp of every athlete. In addition, I believe that some athletes are lazy. They are looking for the big rewards without doing the hard work.

A Message from Tom Malchow, Cont'd

Road to Athens Journal – October 29, 2003

Supplements are not the same as performance enhancing substances, but they do raise some of the same issues. They create health risks, and it is difficult for the layperson to determine where supplements stop and banned performance enhancing substances start. These products are not regulated by the Food and Drug Administration, so there is no guarantee of the chemical makeup of the product. I know I am not interested in using a product from a company that is not held to any standard other than their own.

I have used supplements in my swimming career, but knowing what I know today, I wish I hadn't. I never saw any benefit from them, and I now realize that one undisclosed ingredient or accidental contamination could have ended my career in disgrace and disappointment. I have not taken any supplements in three years, and I feel as good in and out of the water as I have ever felt. I am very careful and very protective of my body. I am always aware of what I consume and the risks associated with it. My health, my image, and the future of this sport are important to me and are worth protecting. I want swimming to continue to be the most dominant and successful team in the U.S., not the next U.S. sport with a performance enhancing scandal.

If you have any questions regarding this issues check out the United States Anti Doping Agency website. (usantidoping.org). Be safe and healthy, not sorry.

Keep up the good work in and out of the pool,
Tom