HIDDEN TRAINING: NUTRITION & RECOVERY: *WHY, WHEN, HOW*



Mark Hesse
Sport Performance Consultant

- With USA Swimming since June 2012
- 30 year career as a club coach in Potomac Valley, Florida, Texas, Indiana & Colorado
- Placed swimmers in Olympic Trials Semi-Finals & on National Junior Team
- ASCA Level 5 Certified Coach

#SwimmerNutritionProblems

#SwimmerProblems

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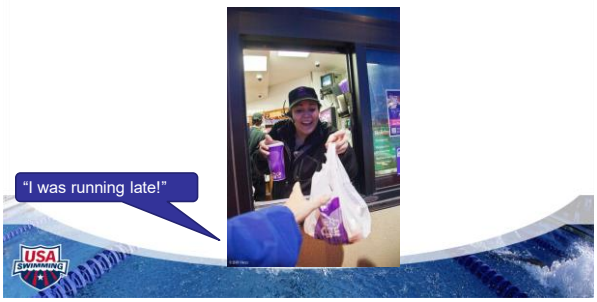


#SwimmerProblems

Olympian Andrew Gemmell

"My resolution is to do a better job recovering – sleeping, eating the right things at the right time, etc. The older I get, the more important it is to recover well."

Why is "nutrition" important?

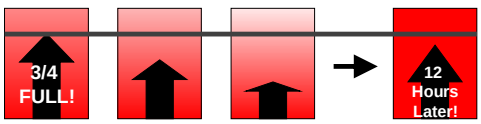
"Compete in the Kitchen"

"The 24/7/365 Athlete"

Effect of Improper Fueling

- Increased perceived exertion
- Shortened time to exhaustion
- Increased time for 100% recovery
- Over eating at next meal

Poor Nutrition Habits



Consistency is the Key

Pre-event meal is not a "cure-all"

Nutrition Foundations…

normal sugar level

- Eat a variety of foods from all food groups
- Eat colorful foods (5 on your plate) …including *recovery*
- Eat early and often …including *recovery*
- Drink early & often …including *recovery*

Functional Fuel

Functional Fueling: **Carbohydrates**

Carbohydrate is changed into glucose → used as fuel by muscles & the brain

Carbohydrates are the PRIMARY FUEL SOURCE for Swimmers

Functional Fuel: **Carbohydrates**

Good Sources:

Functional Fueling: **Protein**

Builds, maintains & repairs muscle fibers

Aids in the absorption of carbohydrates during recovery

Protein does not provide energy!

Functional Fuel: **Protein**

Good Sources:





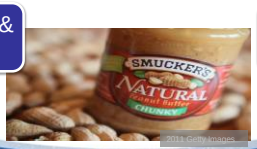


Functional Fuel: **Fat**

Fuels low intensity exercise

Aids in the absorption of many vitamins

Promotes skin & eye health



Provides flavor

Functional Fuel: **Fat**

Good Sources:





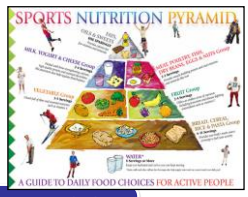
Proper Fuel: **Well Balanced Diet**

Carbohydrates……~60%

Protein…….~15%

(Carbs:Protein = 4:1)

Fat ……≤25%



Carbs & Protein 1 Gram = 4 calories

Fat 1 Gram = 9! calories

Nutrient Density >

ND = Amount of Nutrients/Serving of Calories

- Vibrant fruits and vegetables
- Packed full of vitamins and minerals
  - Whole Grains (brown rice, oatmeal)
  - Dark Color Veggies
  - Nuts/Seeds
  - Avocados
  - Fish
  - Granola

Orange & Yellow Contain beta-carotene, zeaxanthin, flavonoids, lycopene, potassium, and vitamin C. These nutrients reduce age-related macula degeneration and the risk of prostate cancer, lower LDL cholesterol and blood pressure, *promote collagen formation* and healthy *joints, fight harmful free radicals*, encourage alkaline balance, and *work with magnesium and calcium to build healthy bones.*

Red Contain nutrients such as lycopene, ellagic acid, Quercetin & Hesperidin, which reduce the risk of prostate cancer, lower blood pressure, reduce tumor growth & LDL cholesterol levels, ***scavenge harmful free-radicals & support join tissue*** *in arthritis cases*.

Green Contain chlorophyll, fiber, lutein, zeaxanthin, calcium, folate, vitamin C, calcium & Beta-carotene. These nutrients reduce cancer risks, lower blood pressure & LDL cholesterol levels, normalize digestion time, support retinal health & vision, ***fight harmful free-radicals & boost immune system activity***.

Blue & purple Contain the nutrients lutein, zeaxanthin, resveratrol, vitamin C, fiber, flavonoids, ellagic acid & quercetin; which support retinal health, lower LDL cholesterol, ***boost immune system activity, support healthy digestion, improve calcium & other mineral absorption, fight inflammation***, reduce tumor growth, act as an anti-carcinogens in the digestive tract, & limit the activity of cancer cells.

White foods contain nutrients such as beta-glucans, EGCG, SDG, and lignans that provide powerful immune boosting activity. These nutrients also activate natural killer B and T cells, reduce the risk of colon, breast, and prostate cancers, and balance hormone levels, reducing the risk of hormone-related cancers.

Protein Density

Be protein savvy

- What makes one better than another?



Food	Serving	Protein (g)	Food	Serving	Protein (g)
Chicken Breast	4 oz	27	Tofu, soft	1 cup	10
Fish	4 oz	23	Tofu, soft	1 cup	10
Beef	4 oz	19	Tofu, firm	1 cup	20
Egg (whole)	1 large	7	Yogurt, Greek non-fat	1 cup	15
Legumes, most beans/peas (cooked)	½ cup	7	Yogurt, Light	1 cup	8
Soybeans, cooked	½ cup	11	Yogurt, Soy	1 cup	8
Soy Milk	1 cup	7	1% fat Cottage Cheese	½ cup	14
Skim Milk	1 cup	8	Vegetarian Burger	1 patty	6-16
Quinoa (cooked)	1 cup	11	Sunflower Seeds	3 Tbsp	5
Brown Rice (cooked)	1 cup	5	Almond/Peanut Butter, natural	2 Tbsp	6
Oatmeal, regular (cooked)	1 cup	6	Fresh Vegetables (cooked), most	½ cup	2-3
Nuts, most	2 Tbsp	7			

Energy Needs Are Always Changing

Duration & Intensity

Taper & "Breaks"

ATHLETE'S PLATE

EASY TRAINING / WEIGHT MANAGEMENT:

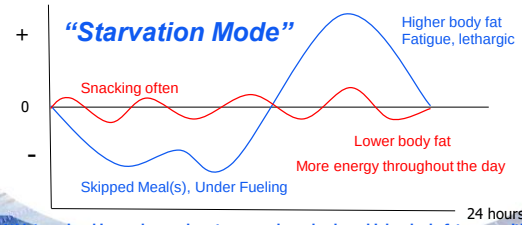
Get the Timing Right

It's not just WHAT you eat, but WHEN you eat it!

Don't skip meals – ever!

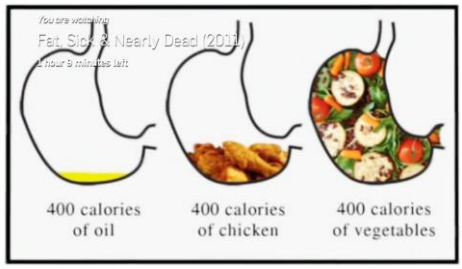
Never go more than 2-3 hours without a snack or meal

Proper Fuel: **Effects of Skipping Meals**



Adolescents who skip meals or only eat one meal per day have higher body fat composition

2000 Med Sci Sports Exerc 32(3) 659-68



(De)Hydration

Dehydration: **The Facts**

- Water delivers and flushes nutrients throughout the body
- Even slight dehydration (1%) changes how the body works

- Increased Heart Rate & Blood Pressure
- Blood Volume is Reduced
- Aerobic is no longer Aerobic

Dehydration: **Monitor Fluid Loss**

- Weigh in before practice & after practice
  - ✓Consume 3 cups of fluid replacement per pound lost)
- Check the color of your urine

Urine Color	#	
	1	Well hydrated
	2	
	3	Drink 1–2 cups of water before heading to the court
	4	
	5	Check in with sport dietitian or athletic trainer prior to practice

Note: Certain vitamins will temporarily change urine color

Hydration: How Much and When

Practice

- >16 oz. of water 30-90 minutes before
- 4-8 oz. of water every 15 minutes during

During the day

- 16-20 oz. of water first thing in the morning

Role Of Fluid In The Body

Physiological

- Transport: Glucose and O2
- Muscle Contraction: Dependent on H20
- Removal of toxins: Urine Production
- Regulation of core body temperature: Via Sweat

Psychological

- Motivation: Decreased Perceived Exertion
- Concentration: Ability to focus on race
- Drive to compete: Both physical and psychologically!

"Sport" Drinks

- Contain a blend of sugars and electrolytes
- Are absorbed into the body as quickly as water
- 'Refueling' during practices longer than 90 minutes

Stimulant "Energy" Drinks

Stimulant "Energy" Drinks

Short-term – energy boost by accelerating consumption of the body's fuel stores

Long-term – robs the user's true energy from carbs, protein, fat, hydration, and rest

Stimulant Drinks

Adverse Effects:

- Anxiety, tremor, insomnia
- Aggressiveness
- Addiction
- Increased risk of heart/circulatory issues

Supplements for Kids?

"There is no place in the sport of swimming, for our children, to be using sports-supplements which are clearly intended for adults. They aren't made for kids, they may not be safe in the first place, and the potential for great harm is present."

- Frank Busch
USA Swimming National Team Director

Dietary Supplements

- Vitamins, minerals, herbals, energy drinks, shakes, etc.
- Can be harmful to your body & **current/future** health
- Products are **not** magic potions/pills!
  - Sleep
  - Healthy eating
  - Training
  - Hard work
- Consult your coach prior to taking any dietary supplement

Nutrition: Facts vs. Supplements

USADA
United States Anti-Doping Agency

Regulation and Validity

According to an International Olympic study, the risk of buying a contaminated supplement in the U.S. is almost 20%. So, one in five supplements purchased in the U.S. could be contaminated with substances that could lead to a doping violation."

Regulation and Validity

Claims made by the manufacturers and distributors of dietary supplements regarding the effectiveness of their products do not require evaluation by the US Food and Drug Administration. The failure of a supplement's ingredients list to match the product's contents 100% opens the door for…

positive drug tests!

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- Eat a variety of foods from all food groups
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- Eat early and often …including *recovery*
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Recovery: When to Begin?

- BEFORE practice?
- DURING practice?
- AFTER practice?
- **ALL OF THE ABOVE!**

Sleep

How Much Sleep?

- Physical & mental learning happen during deep sleep
- 30 hours = -11%
- Naps can help <20 min or >90 minutes

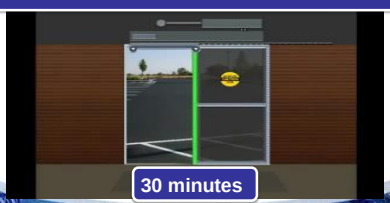
- Make sleep a priority over electronics, social media, entertainment, etc.

Sleep Hints

- Make sleep a priority over TV, Facebook, Snapchat, etc.
- Keep your room cool, quiet & dark (use eyeshades if necessary)
- Use bright light in the morning to signal your body to wake up

Recovery: When to Eat

"Carbohydrates and protein are absorbed very quickly, **IMMEDIATELY** after exercise."



Recovery: **Plan, Plan, Plan**

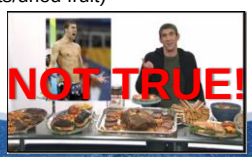
normal sugar level

- Eat a carbohydrate/protein snack before morning workouts
- Practices >90 minutes should include a carbohydrate snack or a sports drink
- Bring a carbohydrate/protein snack for immediately after practice
- Eat a meal within 1-2 hours after practice

4 R's of RECOVERY Nutrition	FOODS to EAT
Rehydrate with **FLUIDS** & **ELECTROLYTES**	**Water or Sports Drinks (3 cups/pound lost**
Replenish muscle glycogen stores with **CARBOHYDRATES**	**Fresh/Dried Fruit, Breads (w/Peanut Butter and/or Jelly), Sports Drinks/Bars**
Repair & **R**egenerate muscle tissue with high quality **PROTEIN**	**Dairy Products, Recovery Mix** (w/whey, soy, casein protein)
Reinforce your immune system with **ANTIOXIDANTS**	**Apples/Bananas/Oranges, Spinach, Carrots, Peppers**

Recovery: What to Eat

- Chocolate milk
- Granola or breakfast bars
- Bagel with peanut butter
- Rest of your sports drinks
- Turkey sandwiches
- Trail mix (nuts/dried fruit)
- Fresh fruit (apples, bananas, oranges, grapes)
- Pita and hummus
- Fruit smoothies homemade
- Meal replacement shakes
- Other "bars"



Body Weight (Lbs.)	Carbs 1 g/kg of Bodyweight	Protein .5g/kg of Bodyweight	Food Examples	Drink Examples	Bar Examples
77-110 Lbs.	35-45 grams	15-20 grams	12 oz. CHOCOLATE MILK + 1 small banana or 2 cups apple juice or cranberry cocktail OR 2 servings of low-fat Greek yogurt OR 1 cup dried apricots OR 1.5 PBJ sandwich	32 oz. of sport drink OR 1.5 cans of Carnation Instant Breakfast OR 1 cans of Boost or Ensure	Sports Bar (40g carbs/15g protein) + WATER
110-132 Lbs.	45-60 Grams	20-30 grams	16 oz. CHOCOLATE MILK or 2/3 cups of raisins OR 4 cups grapefruit juice OR 2 medium bagels OR 4 slices of watermelon OR 1 bagel w/peanut butter OR 6 oz. Greek yogurt with fruit	~50 oz. Sports drink OR 2 cans of Carnation Instant Breakfast OR 1.5 cans of Boost or Ensure	1.5 Sports Bar + glass of skim milk + water
154-176	70-80 Grams	30-40 grams	24 oz. CHOCOLATE MILK or 8 kiwi fruits OR 2 cups canned fruit salad OR 2 PBJ sandwich PLUS 1 serving of yogurt	50-65 oz. of sport drink OR 2.5 cans of Carnation Instant Breakfast OR 2.5 cans of Boost or Ensure	2+ Sports bars + water

WARMDOWN

What is Lactate Production?

High Intensity Performance utilizes the Anaerobic Pathway

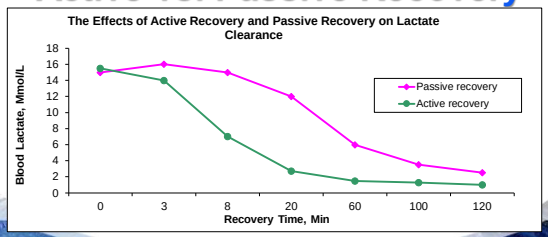
What Happens?

How Do We Fix It?

Removal takes place in muscle, liver and kidneys & requires movement and elevated heart rate

Must be cleared for optimal performance in the next race, set or workout

Active vs. Passive Recovery

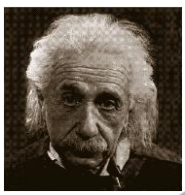


What Should I do for Cool Down?

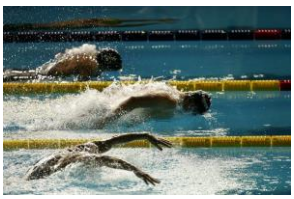
Event/Distance Orientation	Duration	Intensity	Heart Rate
Sprint Events (50-100m)	15-30 min	65-70%	130-140 22-23 (10 sec)
Mid-Distance Events (200-400m)	15-25 min	70-75%	140-150 23-24 (10 sec)
Distance Events (800m and above)	15-20 min	75-80%	150-160 25-26 (10 sec)

Challenges?

- Cool-down facility is not available
- You have very little time between events
- The pool deck or venue is cold
- Other issues?



With Great Nutrition & Recovery Habits…



Without…

Resources

US Anti Doping Agency (USADA) – TrueSport Nutrition & Supplement Info http://www.usada.org

USA Swimming: Nutrition Center
http://www.usaswimming.org/DesktopDefault.aspx?TabId=1546&Alias=Rainbow&Lang=en

USDA MyPlate http://www.choosemyplate.gov/

Team USA Nutrition Fact Sheets http://www.teamusa.org/

There's an App for That

www.sparkpeople.com (free)

www.nutriTiming.com ($.99)

LoseIt! *– Free*

MyFitnessPal *– Free*

Thanks To:

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Questions?