Swimming Nutrition for young athletes

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Swimmer Nutrition 101 - outline

- **Your Young swimmer health, development and performance is like a chair, needs four legs to balance. Kids won't "balance" without proper training, rest, recovery and good nutrition habits.**
- **You don't get faster by training harder, you get faster when you recover from hard training! You can't out train a bad diet.**
- **Failing to plan is planning to fail – all sound cliché' but they are all TRUE!**

- What does a typical "healthy plate" look like for a swimmer's plate? Why/how is it different? Time to establish new habits?
- Eating for Functional Fuel– strategies for keeping your engine running with a full tank of gas
  - Why is Nutrition important – Fuels activities, restores energy, strengthens and repairs bones and muscles, boosts the immune system, helps produce Red Blood cells, aids recovery
  - Nutrition Basic Tenets – Eat to LIVE, don't DIE-it, Eat to train/don't train to eat, you are a 24/7/365 athlete, Nutrition timing/planning
  - Nutrition = Functional Fueling; swimmers are comparable to tri-athletes , they train with high volume (lots of yardage) with varying intensities, plus dry land so must be fueled like an endurance athlete
- What are the "Functional fuel" Macronutrients? Protein/Carbohydrates/Fats
  - Understanding carbohydrates – primary fuel for intense exercise, carbs=sugar=glycogen converted in liver for tissues and brain, refuels the "gas tank" it's a Primary fuel source for swimmers. Input vs output, finding that balance, 60% of DCI
  - Why is Protein needed and how much? Target protein at every meal to maintain AND build muscle, aid carb absorption and replace red blood cells – NOT a PRIMARY FUEL SOURCE
  - Why are good fats important - fuels lower intensity workouts, can balance energy input vs output, calorically dense, fights inflammation to aid recovery, healthy skin and eyes, slows digestion, increased satiety
  - Micronutrients/Minerals/Electrolytes – Sodium/Potassium/Magnesium/Calcium/Vit D3
- What does a race day of healthy eating/hydration look like? Sample meal plan building and journaling
  - Keep a food/hydration log on meet days
  - Carbs Vs Carbs? What are good vs less good carbs?
  - What to pack/planning list
  - Hydration Fact sheet - Yes, swimmers sweat, Gatorade isn't that healthy, takes longer to rehydrate than dehydrate, just 1% dehydration hurts performance, know your urine color and frequency
  - Supplementation – USADA/NSF/Reading labels/recommendations
  - Recipes (see separate handouts)

Is this your plate? If not, it should be!

Food is Fuel and Fuel = SPEED

- **Fuel Sources** - When you consume a meal or a snack, the food you eat is digested in the body and nutrients are absorbed, this food provides the body with energy to perform its necessary functions as food is transformed into calories and glycogen. Found in the liver and muscles, muscle glycogen is converted into glucose by muscle cells, and liver glycogen converts to glucose throughout the body including the Central Nervous System. To maximize athletic performances, consume enough calories from a variety of different food sources, since athletic activity burns calories faster than when the body is at rest.

  - A balanced intake of carbohydrates, proteins and fats can provide proper proportions of nutrients to your body and give an edge during exercise. Carbohydrates are the most important source of energy for endurance and power. Proteins help build new muscle and repair tissues, and fats provide energy when you are exercising at lower intensity.

  - **Carbohydrates**: Carbohydrates may be the most important nutrient for swimmers because they are the most efficient fuel for energy production. In addition to fueling our central nervous system, carbohydrates are stored in the body as glycogen, like gas in a car, to fuel your training and racing!

  - **Proteins:** Protein is what rebuilds and repairs your muscles after a tough workout or meet, but it also primes your engine to make sure the right amino acids are available to your muscles during the workout. For this reason, protein, like carbs, is needed both before and after your workout, but timing is key.

  - **Fats**: Fats aren't bad as you might hear people say and some fats are REALLY good — providing energy and essential fatty acids to your body. Healthy Fats also help your body use vitamins and phytochemicals, as well as move substances in and out of cells and keep your brain, nervous system, and skin healthy.

What should I be eating before/during/after I race?

1 HOUR BEFORE, keep your intake small. At all times make sure to keep in-taking fluids to ensure you are properly hydrated. Try to get your BIG meal, pre race or hard workout, in your belly at least 2 hours before a race/meet/practice! Give it time to digest and do it's job, fill your muscles with glycogen for energy!

During Breaks/between races - If you have a long meet or practice or time between swims, drink H20r AND even better, your favorite homemade low sugar hydration products.

- The sodium in a low or moderate carb sports hydration drink (Gatorade/G2, Nuun, LiquidIV, Bonk Breaker, Skratch, Xendurance) will help your body retain important fluids and keep you hydrated and give you additional fuel for your workout, especially in hot weather! Pay attention to intake of electrolytes, i.e. sodium, potassium and magnesium, especially in hot weather! Keep salt packets handy too for emergencies.
- You can eat a small snacks, similar to what you would consume in the 30 minutes before a workout, such as a few pretzels, whole grain bagel, but keep it light, low in fat and protein so it doesn't weigh you down when you jump back into your work out or race. On race day your body needs carbs!

After the RACE - After HARD WORKOUTS AND LONG MEETS, your body needs to rebuild and repair, and you need to replenish all the fluids you lost through sweating (yes you sweat in the pool). The most essential thing to do is rehydrate. Check the color of your urine. If it is dark, you are dehydrated and need to drink more; if it is light yellow or clear then you are getting enough fluids through your body. Drink three cups of water to every pound of body weight that you lost while active — you usually lose a pound or two in every tough workout (that's six cups of water).

During the workout your body used stored energy (glycogen) in your muscles to power through. As soon as possible post workout, ideally within ONE HOUR , get carbs and protein into your body to allow your muscles to replenish the glycogen that was used and rebuild/ repair any damage done. Post-workout food is especially important if you train hard every day to avoid soreness and injury. A low-fat protein shake, chocolate milk, string cheese, pretzels, fruit, deli meat, a protein bar, bagel, all good options!

What should I be eating before/during/after

- **Breakfast day of meet - wake at least 1.5-2 hours before warm-ups, get moving, and prime your muscles, do a 5-10 minute dynamic warm up and get food in you so it has time to digest and get into the muscles/tissues and fill up your glycogen stores!** Eating breakfast replenishes your body's glycogen, which is lower in the morning due to the energy used for sleeping. Eating breakfast each morning is crucial to top performance throughout the day. Student athletes who eat breakfast perform better in the classroom than those who skip breakfast.

  Breakfast Before a Workout – ALWAYS Eat 1 -2 hours before a workout to give yourself proper fueling and energy

- Pre-exercise snacks with low/moderate sugar should be carbohydrate-rich to top off muscle glycogen
- Include a small amount of protein to reduce post-exercise muscle soreness
- low in fat and fiber to ensure faster digestion.
- **NIGHT BEFORE** before a hard workout or RACE day, eat your heavy meal with generous amounts of carbohydrates, moderate protein and moderate fat
- 2-3 hours before exercise try a light meal with a moderate amount of carbs and protein and almost no fat.
- **Post-workout meals** could be anything from a small snack such as a smoothie or low-fat chocolate milk to a meal of turkey, potatoes, rice and milk. Just make sure that your post-workout food intake contains a fair amount of both protein and complex carbohydrates regardless of the time of day

Macro (large) nutrients = Protein/Carbs/Fats

Protein – Animal protein contains all the nine essential amino acids needed to build new proteins (muscle). **Protein = 4 calories per gram, i.e. 20g protein = 80 k/cal**

- Protein is very important to our bodies but try to avoid unhealthy sources of protein such as cheeseburgers, fried chicken or bacon. Rather aim for lean proteins such as: grilled lean meats including chicken or turkey; soy products such as tofu; fish; or beans. Young teen athletes need between .7 and .9 Grams of protein per LB of bodyweight. 100 lbs = 70-90Grams daily.

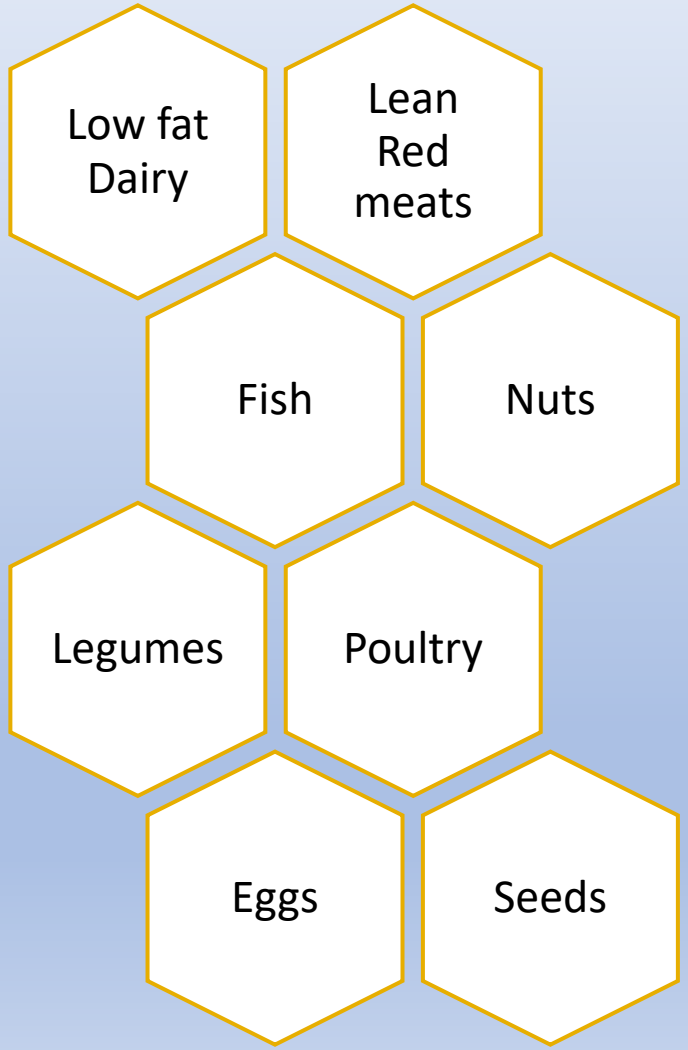
Carbohydrates – Carbohydrates provide the body with the fuel it needs for physical activity and for proper organ function. They are sugar molecules found in a wide variety of foods—bread, beans, milk, popcorn, potatoes, cookies, spaghetti, pizza, soft drinks and fruits and vegetables. **Carbs = 4 calories per gram, i.e. 20g carbs = 80 k/cal**

- Variety of Forms - the most common and abundant forms are sugars, fibers, and starches.
- The digestive system handles all carbohydrates in much the same way—it breaks them down (or tries to break them down) into single sugar molecules and it converts most digestible carbohydrates into glucose (also known as blood sugar) for the body to use as energy. If it is not used it is converted into fat and stored.

Healthy fats – A terrific source of energy as well as a depot for storing it. It is an important part of cell membranes, helps govern what gets into cells and what comes out. Fats are biologically active molecules that can influence how muscles respond to insulin's "open up for sugar" signal; different types of fats can also fire up or cool down inflammation.

- **Fats = 9 calories per gram, i.e. 20g fat = 180 k/cal (example 2 tbsp peanut butter)**
- "Good" fats—monounsaturated and polyunsaturated fats—lower disease risk. Good fats include vegetable oils (such as olive, canola, sunflower, soy, and corn), nuts, seeds, and fish.
- "Bad" fats—saturated and, especially, trans fats—increase disease risk. Foods high in bad fats include fatty red meat, butter, cheese, and ice cream, as well as processed foods made with trans fat from partially hydrogenated oils.

Healthy Protein List



Healthy Carbohydrates

Carbohydrates	Leafy Green Vegetables	High quality fruits
Baked Potatoes/Sweet Potatoes/Yams	Romaine lettuce/Kale/Arugula	Blueberries
Ezekiel Bread/Whole Grain breads/Bagels	Spinach	Raspberries
Multigrain/Corn/Whole grain Tortillas	Asparagus	Strawberries
White or brown rice	Cucumber	Apples
Quinoa	Broccoli/Cauliflower	Blackberries
Oatmeal	Onions	Grapefruit
Rice cakes	Green Beans, snap peas	Melon
Granola/Muesli	Mushrooms	Kiwi
Cream of rice or wheat cereal	Zucchini	Oranges
Oat Bran cereal	Bok Choi	
Beans, chick peas, lentils	Cabbage	
Iron Fortified Cereals	Bell peppers	

Healthy fats

Good Healthy fats
Avocados
Natural Nut Butters like peanut, almond, sunflower seed, cashew, etc. (natural means no added sugars)
MCT oil (medium chain triglycerides) or Powder
Raw unsalted nuts
Fatty fish i.e. Tuna, Salmon
Walnuts
Olive Oil/Canola oil
Flax/Chia seeds
Vinaigrette Dressings
Coconut oil (for cooking)
Nut milks (without added sugars)
Hemp milk and seeds

Race Day Food List * pack this in your swim bag)

Quick Carbohydrates* sodium source	Proteins (low fat)	Fruits (high water content)
Sweet Potatoes	Low Fat fruit yogurts	Blueberries
Bagels/Low fiber muffins*	String Cheese	Raspberries
Ramen noodles*	Turkey Bacon/Sausage	Strawberries
White rice	Low fat Chocolate Milk	Apples
Pretzels*	Hard boiled Eggs	Blackberries
Goldfish crackers*	Deli turkey/chicken	Cherries
Energy Chews/Haribo gummies	Tofu	Watermelon
Rice Krispy Treats/Rice rolls/Rice cakes	Protein Smoothies/Shakes	Grapes
Baked Potato Chips*	Grilled chicken	Oranges
Fruit juices	Lean Turkey Burgers	High water content fruits
Saltines/Crackers*	Low fat cottage cheese	Bananas
Cheerios multigrain/Chex/Life/Special K/Frosted Mini wheats*	Nuts/Seeds (moderate measure portions)	

“empty” calories – calories from solid fats and added* sugars

Carbohydrates

Food	Serving sz	Calories	Empty Calories *
Whole wheat bread	1 slice (1 oz.)	69	0
White bread	1 slice (1 oz.)	69	0
English muffin	1 muffin	132	0
Blueberry muffin	1 small muffin (2 oz.)	259	69
Croissant	1 medium (2 oz.)	231	111
Corn flakes cereal	1 cup	90	8
Frosted corn flakes cereal	1 cup	147	56
Whole wheat crackers	5 crackers	85	25
Round snack crackers	7 crackers	106	42
Chocolate chip cookies	2 large	161	109
Chocolate cake	1 slice of two-layer cake	408	315
Glazed doughnut	1 medium, 3 ¾" diameter	255	170
Baked potato	1 medium	159	0
French fries	1 medium order	431	185
Onion rings	1 order (8 to 9 rings)	275	160
Pepperoni pizza	1 slice of 14" pizza, regular crust	340	139
Regular soda	1 can (12 fluid oz.)	136	136
Fruit-flavored drink	1 cup	128	128
Stick margarine	1 teaspoon	36	32
Cream cheese	1 Tablespoon	41	36

Dairy and Proteins

Food	Serving sz	Calories	Empty Calories *
Fat-free milk (skim)	1 cup	83	0
1% milk (low fat)	1 cup	102	18
2% milk (reduced fat)	1 cup	122	37
Whole milk	1 cup	149	63
Low-fat chocolate milk	1 cup	158	64
Cheddar cheese	1 ½ ounces	172	113
Nonfat mozzarella cheese	1 ½ ounces	59	0
Whole milk mozzarella cheese	1 ½ ounces	128	76
Fruit flavored low-fat yogurt	1 cup (8 fl oz.)	250	152
Frozen yogurt	1 cup	224	119
Ice cream, vanilla	1 cup	275	210
Cheese sauce	¼ cup	120	64
Extra lean ground beef, 95% lean	3 oz., cooked	146	0
Regular ground beef, 80% lean	3 oz., cooked	229	64
Turkey roll, light meat	3 slices (1 oz. each)	165	0
Roasted chicken breast (skinless)	3 oz., cooked	138	0
Roasted chicken thigh with skin	3 oz., cooked	209	47
Fried chicken with skin & batter	3 medium wings	478	382
Beef sausage, pre-cooked	3 oz., cooked	345	172
Pork sausage	2 patties (2 oz.)	204	96
Beef bologna	3 slices (1 oz. each)	261	150

Tips & Tricks to eat / stay Lean n' Mean

- **NEVER EVER PRACTICE ON AN EMPTY STOMACH – PERIOD! Fuel up 1 – 2 hours before exercise!**
- **Eat Every 3 -** Keep that metabolism going and keep your energy level up! You need your muscles fueled for your sport!
- **Plan! –** Think ahead and pack your snacks before practice, your fuel is as important as taking your equipment, take responsibility for your own nutrition!
- **HYDRATE** - If you feel hungry, you are usually thirsty! Water should be handy all day EVERY day. Especially HEAVY exercise days! Sweetened drinks AND SPORTS DRINKS AND SODA DO NOT count as WATER! HYDRATE PLEASE!
- **Artificial sweeteners –** *Limit soda, diet sodas or teas and sport drinks and juices.* The chemicals in sodas cause intestinal bloat and still cause blood sugar levels to rise and stimulate your brain to crave junk foods and eat empty calories. SODA is NOT FOOD! NEITHER is Starbucks guys! Even Gatorade can be unhealthy at the wrong time and place!
- **Eating Out – Limit take out/fast foods the week of big meets as they are high in saturated fats and salts and sugars which can make you sluggish and bloated come race day.** Try ordering grilled chicken instead of chicken fingers, lean cuts of red meats, fish and pastas, rice, veggies. **Try limiting eating out to weekends/special occasion**– eat at home more often, like athletes do!
- **Shakes /smoothies aren't the answer- try eating REAL whole food whenever you can!** I do like protein bars, shakes and smoothies as extras, but I prefer real food. For convenience' sake, they can be an important part of a swimmer's diet especially for recovery post workout or race. Choose low sugar options like Luna and Kind Bars, Think thin bars, and choose low sugar whey protein and make your own fresh fruit smoothies with Greek yogurt, fresh fruit and good quality whey or vegan protein, plus good carbohydrates like oats and maltodextrin added in.
- **Protein Protein Protein**: Eat a serving of protein at every meal and snack……muscle makes and keeps muscle! And muscle makes you engine go, it's your engine! There is protein in nuts, seeds, string cheese, Greek yogurt, lunch meat, lean dairy and even chocolate milk!

What are micronutrients? Are you getting enough?

Vitamins and Minerals are micronutrients - Vitamins and Minerals don't give you more energy, but they do help to unlock the energy stored in food so your body can use it as fuel. Your body needs elemental minerals like calcium, magnesium, potassium, fluoride and vitamin D to keep your body systems balance and functioning optimally. You should be getting these from the food you are eating and drinking, but if you are not, ask your coaches and pediatrician about taking daily supplements. You'll often hear coaches refer to your electrolytes being balanced so know this!

- Daily Multivitamin – provides essential micronutrients often lacking in foods
- Calcium/Magnesium/Potassium/Zinc– protects bones and brain, healthy muscle and nerve function and blood pressure/hypertension, regulates heartbeat and blood sugar levels, and supports the immune system.
- Vitamin C- antioxidant, encourages growth and maintenance of tissues throughout the body , generating the collagen that builds skin, cartilage, tendons, ligaments and blood cells
- Vitamin D- The main function of vitamin D is to maintain normal levels of calcium and phosphorus in the blood to support bone mineralization (hardening of bones), cell functions, and proper nerve and muscle function. Vitamin D acts as a hormone, enhancing the absorption of calcium and phosphorus in the small intestine. Vitamin D is needed for normal growth
- Omega 3's/EFA – heart health, reduces inflammation, aids recovery, natural blood thinner

REFERENCES/RESOURCES

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http://www.usda.gov/wps/portal/usda/usdahome

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