Don't Swim on Empty! Pre-Exercise Meals/Snacks by Nanci S. Guest, MSc, Sport Dietitian

- All pre-exercise meals and snacks should be high in FUEL (carbohydrates): fruit, bread, low fat muffins, bagels, cereal, pasta, potatoes, rice, beans, chocolate milk, fruit yogurt etc.
- The pre-exercise meal should settle your hunger and help restore carbohydrates (fuel) to the blood stream and muscle reserve (also called glycogen).
- This meal should hydrate you as well as provide some extra energy and strength for your practice, training session and/or race
- High fat and high protein meals take longer to digest (high fat meal up to 4-5hrs to digest), cause heavy/full feeling, and make exercise more difficult. Avoid high-fat fast foods (hamburgers, French fries, cheese, dishes with heavy oil/cream), large servings of meat/poultry/full-fat dairy etc
- The longer you have before you exercise, the more food you can safely consume without risking digestive discomfort or nausea.
- The table below provides a general guideline - food consumption should be modified according to the athlete's body weight and goals (i.e. less food for weight loss/lower bodyweight; more food for muscle gain/higher body weight). Do not eat at all 4 intervals described – choose 1 meal plus the last sport drink top-up at 30-45 min pre-exercise

Pre-Exercise Guidelines	3-4 hours prior to exercise **Medium meal**	2-3 hours prior to exercise **Smaller Meal**	1-2 hours prior to exercise **Very Light Meal**	Only 30-45 min left before race **Liquid Energy**
Food Groups:	2-4 ounces of lean meat/chick/fish or alternative protein source • 1-3 bread/starch serving • 1 fruit servings • 1 dairy serving • 1-2 cups of water	• 1-2 ounces of lean meat/chick/fish or alternative protein source • 1 bread/starch servings • 1 fruit serving • 1 dairy serving • 1-2 cups of water	• low protein • low fat • liquid or blended meals that will empty out of stomach rapidly • low-fat milk products with fruit or energy drinks/bars high in carbohydrates •2-3 cups water	• ZERO fat or protein • 100% liquid carbs • small portion of quick fruit ie ½ banana, handful raisins, 2-3 dates
EXAMPLE:	• Turkey or chicken sub sandwich with veggies & mustard or light mayon • apple/pear/melon • 1 cup of low-fat or skim milk OR 1 cup Pasta with tomato sauce (limit meat portion) + 1 cup of skim milk or ½ cup yogurt OR • Protein Bar (20+g protein) w/ a banana, fruit salad or ¼ cup raisins • 1 cup skim milk OR • 2-3 slices pizza (avoid meat topping) • 1-2 cups of water	• Low Sugar cereal with low-fat milk topped with a sliced banana or ½ cup berries/peaches etc OR • 1 slice of low-fat cheese on toast or a baked potato with chili beans and 1 • 1 oz lean meat/fish OR • 1/2 cup applesauce or light fruit cocktail w/ 1 cup of low-fat milk or yogurt • 1-2 cups of water OR Peanut butter and banana sandwich + 1 cup yogurt or milk OR Smoothie -1 banana, ½ cup yogurt, ½ cup berries, ½ cup milk or juice + ice	• ¾ cup Fat-free fruit yogurt • banana or ¼ cup raisins OR • low fat muffin/bagel OR • low fat energy bar • all solid foods with 2-3 cups water OR • 2-3 cups of sports drink (a quick & convenient fuel source immediately pre-exercise or during exercise when pre-meal is missed)	• Sip on sports drink for the last hour pre-race and continue with water and sports drink throughout game/ training session • Dilute sports drink to 30-50% water if desired

POWERPLAY
NUTRITION · TRAINING · GENETICS
put more power into your play

Carbohydrates RULE the Athlete's Diet – Fueling Tips for *Intense* Training*

Nanci S. Guest MSc, RD, CSCS, PhD (c) - Sport Dietitian/Nutritionist, Sport Conditioning Coach

*The following tips are for serious athletes training 1-2+ hours per day (10+ hours wk) and/or training more than once per day

- When you train hard day after day your muscles can become depleted in fuel, resulting in poor performance and chronic fatigue. In order to avoid or minimize this depletion you must consume LOTS of carbs every day, and *especially* post-workout for optimal fuel recovery. Seems obvious? Well in fact only about 50% of elite athletes actually eat enough to fully replenish their muscle fuel (glycogen) storage!
- You MUST eat lots of CARBS immediately after a race/game/training session to take advantage of the muscle's ability to store fuel at an accelerated rate – this window of opportunity occurs from **Zero-60 min post-exercise.** This means consuming your Carbs within minutes after exercise - *before* stretching, cooling down or showering. A full meal that includes protein and fat, as well as carbs, can be eaten 1-2 hours post-exercise but YOU MUST EAT "QUICK CARBS" TO REFUEL WELL *BEFORE* YOUR POST-EXERCISE MEAL (ideally every 60 min until your next meal).
- What happens if you don't? The next day(s) your performance suffers as your muscles become chronically fuel-depleted. What to Eat? → QUICK-absorbing Carbs - see table below.

Find your body weight in the table below to determine how many carbs you should eat post-exercise (1.2 g/kg) and daily (6-10 g/kg) for **intense training (i.e. 8-10+ hrs/wk).** Add up the grams of carbs from the food lists to determine your requirements. Remember: what you eat *today* is your muscle's fuel for *tomorrow*.

Males and Females	**80 lbs**	**100 lbs**	**120 lbs**	**130 lbs**	**150 lbs**	**180 lbs**
Grams of Carbs immediately after training/game etc.	45	55	65	75	85	100
Grams of Carbs at your next meal (1-2 hr after game/training)	50	60	70	80	100	120
Total **Daily** Carb Intake (grams)	250+	300+	350+	400+	500+	650+

Post-Exercise "Quick" Carbs* (very little protein, and NO fat here)		
Food	**Amount**	**Grams of Carbs**
Bagel (jam/ not cheese)	1 large	50
Low-Fat Muffin	1 medium	40
Caramel Rice Cakes	2	36
Banana	1 large	30
Raisins	½ cup	50
Watermelon	2 cups	20
Fruit-to-Go (fruit leather)	2 (14 gram) packages	24
Power/Clif Gel	1 package	25-28
Gatorade/Powerade	710 ml bottle	45
Chocolate Milk	500 ml (lrg carton)	50
Ultimate Carbo	**500 ml bottle**	**112**

* These carbs have a "functional" purpose of quick absorption to optimize glycogen re-synthesis (re-fueling) during intense training, and should NOT replace the majority of healthier carbs to be included in your daily diet (i.e. whole grain breads, cereal, & pasta; beans & lentils; fruits & vegetables).

***Immediately* Post-Exercise Refueling Examples:**

- If you weigh 100 lbs you need at least 55 grams of carbs = 1 Fruit Leather + 500 ml Chocolate Milk (total Carbs = 62 grams)
- If you weigh 130 lbs you need at least 75 grams of Carbs = 1 banana + 710 ml bottle of Gatorade (total Carbs = 75 grams).
- If you weigh 150 lbs you need at least 85 grams of Carbs = 1 bagel + 710 ml bottle of Gatorade (total Carbs = 95 grams)

To meet your <u>daily</u> Carb needs, use the tables below – When you are training, every day counts!

High Carb Foods at Breakfast (also include protein/fat here)		
Food	**Amount**	**Grams of Carbs**
Bread/Toast	1 slice	25
Bagel	1 large	50
Cereal and dried fruit	1 cup	45
Low-fat Granola	1 cup	60
Oatmeal	1 cup	50
Pancakes/Waffles	1 large	25-35
Muffin	1 large	45
Fruit Flavored Yogurt	1 cup	50
Fruit Salad	1 cup	20
Juice	1 cup	25-35
Chocolate Milk	1 cup	25

High Carb Foods at Lunch / Dinner (also include some protein/fat here)		
Food	**Amount**	**Grams of Carbs**
Bread	1 slice	20
Pasta	1 cup	35-40
Rice	1 cup	35-40
Baked Potato	1 large	30-35
Corn	1 cup	30
Baked Beans	1 cup	50
Carrots	2 medium (8 baby)	20
Juice	1 cup	25-35
Chocolate Milk	1 cup	25
Coke (occasionally!)	1 can	40

<u>Additional Tips</u>

- ALWAYS drink a sports drink (e.g. Gatorade/Powerade - dilute w/ 25-50% water only if weight loss is desired) during longer training sessions (60+ min) This will FUEL you to train longer at a desired intensity levels and will minimize amino acid (protein) use as fuel, thereby improving recovery. Providing these sport drinks during training will also help to prevent you from using all of the fuel stored in your muscles (i.e. glycogen sparing), so you can have access to this fuel storage for same day or next day training sessions/competitions, i.e. if you save some muscle fuel now, you have less to replace later.
- Consume 8-10 servings of a *variety* of fruits and vegetables daily, to provide your body with valuable plant chemicals (antioxidants) that help to promote muscle recovery and repair after intense training.

Healthy Eating Habits for Athletes

Nanci S. Guest MSc ,RD, CSCS Sport Dietitian/Strength & Conditioning Coach

1.	Drink **plenty of water**! Water regulates body temperature and carries nutrients and waste products throughout the body. Low fat milk, 100% juice, tea (black or green) and water sum up the healthy beverage list. However, as a "functional beverage" during training, try a commercial sports drink (or homemade: "diluted orange or cranberry juice" - 1 cup juice per 2 cups water, & a tiny pinch of salt) to provide fluid and fuel to muscles and your brain! Sodium in sports drinks helps your body hydrate, and sugar will **a)** fuel to allow maximal efforts right to the end of a game/training session **b)** prevent the use of protein as a fuel source and **c)** inhibit stress hormone release. High levels of stress hormones suppress immune function (so muscle recovery takes longer and you may also get sick easier).
2.	**Eat breakfast!** What you eat <u>today</u>, fuels <u>tomorrow</u>'s workout. Glycogen (muscle fuel) storage today will be critical as an energy source tomorrow. **Carbohydrates fuel** exercise. Eat fruit, healthy muffins, bagel or toast & peanut butter, cereal, pancakes, waffles, or French toast. Add eggs, yogurt or glass of milk for protein, & add a banana or orange juice for potassium.
3.	**Calcium**, found in milk, soy milk, yogurt, cheeses, cottage cheese, tofu, and green leafy vegetables, such as broccoli, collard greens, and kale is needed for strong bones and may protect against muscle cramps. Calcium strengthens bone density. Select 3 to 4 servings per day of calcium rich low-fat dairy products & 1-2 servings of green leafy vegetables.
4.	**Carbohydrates** are the **fuel source for muscles** and **the brain**, and they spare muscle protein. These are the primary energy sources for all types of exercise. 55-65% (6-10g/kg bodyweight /day) of calories should come from carbohydrates: whole grain breads, cereals, & pasta; potatoes, rice, beans, fruit & vegetables. Select 6-12+ servings of carbohydrate foods (fruits, veggies & grain products) per day. <u>Half</u> of the plate should be carbs (grains + produce)
5.	Eat **fruits and vegetables** for fiber, potassium, and vitamins C & A, and lots of phyto (plant) chemicals. Green & black teas also have lots of antioxidant power. Select 8+ servings of vegetables (at least 1 green leafy veg like broccoli or spinach), and 3+ servings of fruits (1 citrus fruit) DAILY. Optimal health/immunity means your best sport performance & better **recovery from training**! More variety = more nutrients = better performance/recovery
6.	Meat, poultry, fish, beans, eggs, tofu, dairy products and nuts are protein sources needed for **muscle development & repair**, sources of B vitamins, and iron. 4-5 servings are needed per day. 12-15% (1.5-2 g/kg bodyweight) of the day's total calories should come from protein sources. Try eating small amounts of protein often throughout the day, as it is not stored in the body - amino acids in your blood stimulates muscle growth/recovery. Bedtime protein snack for overnight muscle repair is essential – eg yogurt, protein shake, cheese and crackers.
7.	Fats and oils should be used sparingly to ensure adequate arbs/protein. 20-25% of the day's total calories should come from fat (mostly good fats!). Good fats include nuts, seeds, avocado, olive oil & other plant-based sources. Fatty **fish (eg salmon**) are an important source of **omega-3 fats** – this can be taken as a fish oil supplement to ensure consistency/reduction of heavy metals common in ocean fish. Limit fats found in whole fat dairy products (choose low fat varieties), fried foods, meat, poultry, hot dogs, fast food burgers & fats in snack foods (chips, cookies, pastries, muffins, fries, donuts, ice-cream).
8.	**Snacks can be healthy** – whole grain bagels with cheese and veggies, low fat muffins, cereal topped with fruit, energy bars, fig Newton's, yogurt, bananas, apples, oranges, peanut butter and crackers, popcorn, raisins, carrots, & lightly salted nuts (almonds, pistachios, cashews, walnuts, peanuts). Snacks supply additional protein for muscle development, and carbohydrates for muscle fuel & maintenance of blood sugar levels. Plan ahead so you always have snacks available before & after training (keep "healthy" trail mix, energy bars, protein bars, cheese strings, raisins, apples & bananas, sport drinks in school/gym bag or locker).