RACE DAY NUTRITION COUNTDOWN TO START LINE

by Lisa Jamison Acsm, Usatf L2

Athletes who consume high-sugar foods, (e.g. white bread, ice cream, or high-sugar energy bars), an hour before a run, may become fatigued more quickly. The Journal of Science and Medicine in Sports research indicates athletes performed significantly faster 45 minutes after eating a low sugar meal as compared to a high sugar meal. A lower sugar meal would be a not so ripe banana and peanut butter. Consuming the high sugar foods an hour before a run causes athletes to experience a sugar crash. Low sugar foods sustain runners and help to increase performance.

Sugar Crash Effects: Fatigue, Lethargy, Light Headedness, Hunger, Irritability, Headache Confusion, Difficulty Concentrating and Anxiety.

Juice boxes, kool aids as well as some sports drinks have just as much refined sugar as pop.

The right kind of sugar for the athlete's diet is fructose in combination with glucose. While running, muscles absorb fructose and glucose up to 40% faster than glucose alone (Barnes &Heaton 2019). This combo is found in fruits, vegetables and whole grains.

4 to 5 hours pre-race: Consume 200 to 300 calories in carbs

> 6 to 12 inch turkey sub with veggies, Whole grain cereal (Cheerios) with milk, banana, toast, peanut butter, 2 cups or less of pasta, Veggies, Whole grain bread, Stir-fry vegetables, Peanut butter and jelly sandwich

2 hours pre-race to 90 minutes pre-race:

> Sip on 24 ounces of water AVOID electrolyte sports drinks. Low to No sugar sports drinks are only necessary on days where you are sweating without doing anything physical. When necessary drink half sports drink half water.
>
> Stop eating high-protein/fat snacks like milk, cheese, peanut butter
>
> Recommended carbs are fig newtons, animal crackers, bananas, bag of cheerios, pretzels or ½ of jelly sandwich

90 minutes pre-race:

> Stop eating/snacking 90 minutes before your race

1 hour pre-race

> Sip 4 to 6 ounces of water every 15 to 20 minutes as tolerated

POST RACE/POST WORKOUT NUTRITION

Teenage athletes need to take in quality protein (high in leucine) within 45 minutes of workout completion to help with muscle recovery. Chocolate milk/whey product and cottage cheese is the #1 recommended post workout source of protein due to the quick absorption of leucine. Other quick absorbing leucine rich foods include soy/soybean product, sesame seeds and high quality protein drinks (Barnes & Heaton 2019). Quality protein drinks would be found in the pharmacy section at the grocery store.

RDA recommends individuals take in .8 grams of protein per body weight in kg daily. However all athletes and adults over the age of 50 experience less muscle synthesis at this daily intake amount; therefore all age athletes and adults over 50 suggested daily protein intake is 1.6g to 2.2g of protein per body in kg (Omersbee 2019).

In addition to taking in approximately 20 grams of protein within the 45 minute recovery period, research shows more efficient protein synthesis occurs when athletes take protein four times a day, about every three hours in serving amounts of 20 grams. This protein should come from a variety of meat and plant sources to ensure all the essential amino acids are being ingested (Omersbee 2019).

Teenage runner's caloric intake needs to be at a minimum of 6 grams per body weight in kgs (Thomas & Clark 2018)

Quality carbohydrates are fruits and vegetables. Quality carbohydrates have the proper electrolytes and vitamins a teenage runner needs to replenish after their workouts.

The most common sign of an electrolyte imbalance is a SIDE STITCH while running. Low levels of electrolytes will also cause muscle spasms, muscle weakness, fatigue, dizziness, stiff joints, dry mouth, and/or nausea while running.

The electrolytes athletes need to replace are sodium, potassium, calcium, bicarbonate, magnesium, chloride, phosphate, and sulfate.

Vitamin D, Omega 3s, the Vitamin B complex and iron are also necessary nutrients for teenage athletes both endurance and sprints. Sodium bicarbonate and Beta-Alanine has been known to increase performances in sprints under 2 minutes (Barnes &Heaton 2019).

GROCERY LIST

Researched and proven performance enhancing nutrients

Leucine Rich Foods: **4 oz Cottage cheese 14g protein 1.4g leucine, Tuna 1 can 41g of protein 3.3g of leucine, Beef (depends on cut) Chicken breast 25g protein 1.8g leucine, Whey protein isolate 24g protein 2.5g leucine, 3 large eggs 19g protein 1.5g Leucine, Greek Yogurt 15g protein 1.5g leucine, chocolate milk 8g protein .8g leucine** (Bonci, 2019).

Beta-Alanine rich foods: **Chicken, turkey, beef, white fish, pork, salmon , chicken broth, and tuna**

Bicarbonate rich foods: **apples, bananas, grape juice, lemon juice, raisins, spinach, broccoli carrots, and potatoes.** Sodium bicarbonate (baking soda) helps to increase performance in anerobic sprints reducing fatigue (Barnes & Heaton 2019). 0.3 grams per body weight in kg 1-3 hours before exercise (Davidson, Petre & Tinsley 2023)

Nitrates: **Beetroot juice, Spinach and Arugula** (Thomas & Clark 2018)

Vitamin D rich foods: **fish, yoo-hoo chocolate drink, egg yolk, liver, cheese. Vitamin D fortified cow's milk, soy milk, rice drinks, margarine and breakfast cereals.** Midwest athletes often need additional supplement Vitamin D sources.

Necessary performance sustaining electrolytes

Potassium rich foods: **potatoes, sun-dried tomatoes, fish, avocado, kidney beans, dried figs, dried peach, dried apricot, bananas, acorn squash, milk, and dark leafy greens.**

Calcium rich foods: **milk, cheese, yogurt, kidney beans, white beans, chick beans, sesame seeds, sardines, salmon, oranges figs, kale, broccoli, spinach, collards as well as the calcium fortified versions of soy milk, orange juice, rice milk, and whole grain cereal.**

Sodium rich foods: **beets, celery, chicken breast.**

Magnesium rich foods: **beans, nuts, brown rice, whole wheat bread and green leafy vegetables** (Low magnesium causes weakness, muscle spasms, muscle cramps). If supplementing Magnesium, Magnesium Glycinate is recommended as it very absorbable for your body. Magnesium citrate is not well absorbed by your bodies and therefore empty out your bowels.

Chloride rich foods: **kelp (seaweed), olives, rye, tomatoes, lettuce, and celery.**

Phosphate rich foods: **dairy products, nuts, seeds, dried beans, peas, chocolate and whole grain foods** (Phosphorus is important in turning food into energy).

Sulfate is present in foods that contain sodium, calcium, iron, magnesium, manganese, zinc, copper, ammonium, and potassium.

Vitamin B complex rich foods: **milk, yeast, liver, whole-grain cereals, nuts, eggs, yogurt, fruits, meats and leafy vegetables.**

Iron rich foods: **Red meat, eggs, Spinach, Sweet potatoes, Peas, Broccoli, String beans, Beet greens, Dandelion greens, Collards, Kale, Chard, Strawberries, Watermelon, Raisins, Dates, Figs, Prunes, Prune juice, Dried apricots, Dried peaches, Kidney beans, Garbanzo beans, or White beans, and Tomato products like sauces and paste.**

Omega 3s: **Fish (including anchovies and sardines), Oysters, flax seed, chia seeds and walnuts. This can also be supplemented with gel pills.**

Multi-Vitamins may also be helpful to replenish the needed nutrients

Diary free athletes

When athletes experience repeated stomach and intestinal discomfort during practices/meets the first component of their diet we remove is dairy. In many cases removing dairy from the diet is appropriate especially if the athlete has a dairy allergy but this means they need to ingest their leucine, calcium, vitamin D from other sources.

Athletes eating plant based protein as their leucine source need to ingest a lot more grams of plant protein to equal the amount of leucine they would have received in one dose of whey protein (Ormsbee 2019). Whey protein contains approximately 10% leucine per gram of protein (Norton, Wilson, Layman, Moulton, & Garlick 2012). Not every protein snack throughout the day needs to be high in Leucin. But the most beneficial time to eat a high Leucin protein snack is post workout and before bedtime.

Diary free athletes can source their Leucine proteins from canned tuna, chicken breast, pumpkin seeds, white beans, flax seeds and eggsThey will just need to research, how much flax seed do they need to eat to equal 20 grams of protein/2 grams of leucine.

20 grams of whey protein

Calcium can be sourced from canned tuna, vitamin fortified cereal, tofu soybeans products, soy yogurt, white beans as well as from the leafy greens of collard, turnip greens, kale, and bok choy (Bonci 2019)

Lactose Intolerant Athletes

Lactose intolerant athletes are still able to eat dairy however they will need to source their dairy differently. Lactose intolerant athletes can ingest up to 12 grams of lactose a day which is the equivalent to 8 oz of milk (Bonci 2019). They also need to time their dairy intake differently. These athletes will want to only ingest dairy after they have completed their workouts/races for the day in the form of whey isolates which are high in leucine and quickly absorbed.

Whey isolates are filtered to have no to minimal lactose content. Whey isolates can be ingested in the form whey isolate protein powder, lactose free cow's milk, and lactose free cottage cheese. Cheese such as cheddar, colby, swiss, mozzarella and monterey jack naturally have minimal lactose (Bonci 2019).

Gluten Free athletes

Gluten free athletes need to be mindful they are eating enough carbohydrates throughout the day. Healthy carbs to eat in place of gluten carbs are rice, starchy vegetables, sweet potatoes, bananas, raisins, dates, dried fruits, gluten free bars such as Kind bars, Clif bars, Lara, Odwalla and Hammer bars (Thomas & Clark 2018).

MEAL SUGGESTION FOR POST WORKOUT and PRE-RACE

Post workout meal/Meal night before race Post workout/ Post race protein intake:

Approximately 20 grams of high content Leucine within 90 minutes of completion of exercise/race. Then 20 grams every 3-4 hours. Athletes' daily protein intake should be 1.6g to 2.2g of protein per body weight in kg everyday (Ormsbee 2019). Quality protein drinks would be found in the pharmacy section at the grocery store.

Post Workout snack and bedtime snack is a great opportunity for high protein snack. Protein would equal .4 grams per body weight in kg + Carbs at .5g per body weight in kg, example cottage cheese with peaches (Barnes & Heaton 2019).

GOOD CHOICES

Lean Meat with Veggies from the grocery list, Baked potato with meat/veggie toppings, 1 cup Whole grain pasta, Whole grain bread, Fruit from the grocery list, Milk and Water

Make sure the veggies you eat do not mess with your digestive system!! (e.g. broccoli)

Breakfast before afternoon race: Cereal is NOT the greatest choice

GOOD CHOICES

Hard Boiled Eggs (add salsa or guacamole if you do not like them plain), Fried eggs, Peanut butter toast, Avocado toast, Omelets with veggies, Pancakes with fruit/jam/jelly (try avoiding syrup), Bagels w/ ham and cheese or peanut butter/jam, Real Orange juice, Real Grape Juice, Banana, Water

Lunch is the main pre-race meal: High Fats are NOT the greatest choice also avoid apples, pears and pasta 3 to 4 hours pre-race)

GOOD CHOICES

Oatmeal with honey or brown sugar, Meat sandwich with favorite veggies, avoid cheese (Subway Sandwiches are quality and convenient), Veggie or Meat wraps, Pickle, Yogurt, Banana, Raisins, no more than 4 ounces of 100% Juice (Orange or Grape Juice) if desired and 12 to 20 ounces water.

Another source for recipes can be found here:Center for Nutrition and Athletics| Recipes - Center for Nutrition and Athletics

References

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