



Fueling and Hydrating the Runner

Amy Goodson, MS, RD, CSSD, LD

Registered Dietitian

Certified Specialist in Sports Dietetics

amy.goodson.rd@gmail.com

www.amygoodsonrd.com

The Sports Nutrition Playbook



About Amy

○ Amy Goodson, MS, RD, CSSD, LD

- Registered and Licensed Dietitian
- Certified Specialist in Sports Dietetics
- Speaker, Spokesperson, Writer, Media Specialist
- Author, *The Sports Nutrition Playbook*
- Co-author of book, *Swim, Bike, Run – Eat*
- Nutrition Contributor of book, *The 3-D Body Revolution*
- Has worked with the Dallas Cowboys, Texas Rangers, NBA G-League, FC Dallas, TCU Athletics, PGA Tour Players, endurance athletes, middle and high school athletes as well as the everyday person
- Gatorade Sports Science Institute Speaker and Consultant
- Twitter: @amy_goodson_rd / Instagram: @amyg.rd
- Facebook: @amygoodsonnutritionconsulting



Outline

- Fueling the Day
- The Athlete's Plate
- Fueling Training, Competition and Recovery
- Fuel Schedules





FUELING THE DAY

Sports Nutrition Basics

- **Fuel frequently**
 - Goal is to eat smaller, more frequent meals to keep energy levels up
 - Example: Breakfast-Snack-Lunch-Post Workout Snack-Dinner-Snack
- **80/20 Rule**
 - 80% of the time focus on quality food choices or “eating for health”
 - 20% of the time you can splurge on less nutritious foods and “eat for pleasure”
- **Three nutrients give your body energy**
 - Carbohydrates
 - Protein
 - Fat



Carbohydrates

- **Purpose**: Body's "choice" for energy; primary energy contributor during exercise
- **Types of carbohydrates**: simple & complex
 - Simple: jelly, cookies, hard candy, juice
 - Complex: bread, pasta, cereal, bagels
- Whole grains and wheat products
- Fruits
- Vegetables
- Dairy products
- Sports drinks/gels/goos/blocks



Protein: Best Choices

- **Purpose:** Build/repair muscles, hair/nail growth, boosts immunity, RBC production
- Lean meat
 - Chicken, turkey, lean ham, lean red meat, fish, tuna, turkey bacon and turkey sausage
 - Take the skin off of meat
- Eggs and egg whites
- Low-fat dairy products
 - Milk, cheese, yogurt, cottage cheese
- Whey protein powders and smoothies/shakes made with it...whey protein absorbs very quickly
- Nuts, seeds, peanut butter have some protein





Fat: Best Choices

- **Saturated Fats: “Bad Fats”**

- Fried foods, pastries/baked goods, creamy foods

- **Unsaturated Fats: “Good Fats”**

- Peanut butter, almond butter, nuts, seeds

- Olive oil and Canola Oil

- Avocado

- Flaxseed or flaxseed oil

- Can buy milled, as oil, or in breads and cereals

- Fats in fish like salmon

- **Remember** that you get some fat in dairy products, meats, whole eggs, and energy bars/shakes

Vegetables

- Aim to get in at least 5 servings of vegetables each day
- Vegetables provide vitamins and minerals to help your body fight off illness and recover
- 1 serving =
 - 1 cup raw vegetables/lettuce
 - ½ cup cooked vegetables
- Ways to mix in veggies:
 - Scramble them in an omelet
 - Carrots and hummus as a snack
 - Lettuce and tomato on a sandwich or burger
 - As a side item at dinner





Daily Hydration Needs

○ Fluid needs based on age

- Ages 9-13: 10 cups fluid per day
- Ages 14-18 Female: 10 cups fluid per day
- Ages 14-18 Male: 14 cups fluid per day

○ What counts as fluid?

- Water
- Flavored waters
- Milk, flavored milks and smoothies
- Juice
- Sports drinks
- Tea and flavored beverages
- Soup
- Fruit and vegetables

Fluids to Drink & Fluids to Dump

- Fluids to drink are nutrient-rich providing water, vitamins and minerals
 - Water
 - Low-fat, fat-free milk, dairy-based smoothies
 - 100% fruit and vegetable juice
- Fluids to dump contain large quantities of sugar, fat and caffeine that have no added nutritional benefit to the diet
 - Soda
 - Sweet tea
 - Lemonade, sugary fruit drinks
 - Energy drinks



Fueling with Fluid

- Many athletes struggle to get in the calories they need throughout the day
- Fluids can be an easy way to fuel athletes with poor appetites or that need to gain weight
- Goal of fluids as meals is to provide carbohydrates and protein



Fueling with Fluid

- Nutrient-rich beverage options for calories
 - Smoothie made with fruit, milk, protein powder or yogurt
 - Can add nut butters for more calories
 - Milk and chocolate milk
 - Adding milk or chocolate milk to meals can increase calorie intake at meals
 - Ready-to-drink protein shakes
 - Ready-to-drink smoothies with protein





THE ATHLETE'S PLATE

Putting it all together: Fuel your day!

- Eat a complex breakfast before school
- Pack healthy snacks for mid-morning and pre/post workout
- Choose a lunch to help you recover from a morning workout and/or fuel your afternoon workout
- Eat a healthy dinner
- Hydrate with water, flavored water and nutrient-rich beverages like milk all day
- Drink sports drinks around your workout only





Start the day with breakfast

○ Cheap, Quick On-the Go Breakfasts

- Whole wheat bagel w/2 spoons peanut butter, banana & 1 bottle 2% milk
- Energy bar, banana & 1 bottle 2% milk
- Peanut butter & jelly sandwich on wheat bread, Yoplait 2x Protein Yogurt and 8 oz low-fat milk
- Peanut butter crackers, 1 cup trail mix, 1 bottle 2% milk
- Smoothie w/fruit, milk & whey protein powder
- Nature Valley Granola bar & add peanut butter on top, string cheese, 1 bottle 2% milk
- Quaker Oatmeal On-the-Go bar, Individual bag of nuts, 1 bottle 2% chocolate milk

Brown Bag Breakfasts

- “Brown Bag Breakfasts” are for early morning practices when you don’t get to eat at home
- Here are some suggestions for on-the-go:
 - Two hard-boiled eggs, whole grain granola bar, peanut butter to-go cup and apple slices
 - Beef jerky, whole grain granola and banana
 - Whole wheat blueberry muffin, peanut butter, strawberries and hard-boiled egg
 - Whole wheat tortilla(s), peanut butter, banana, drizzle of honey and bag of trail mix





Fueling Snacks

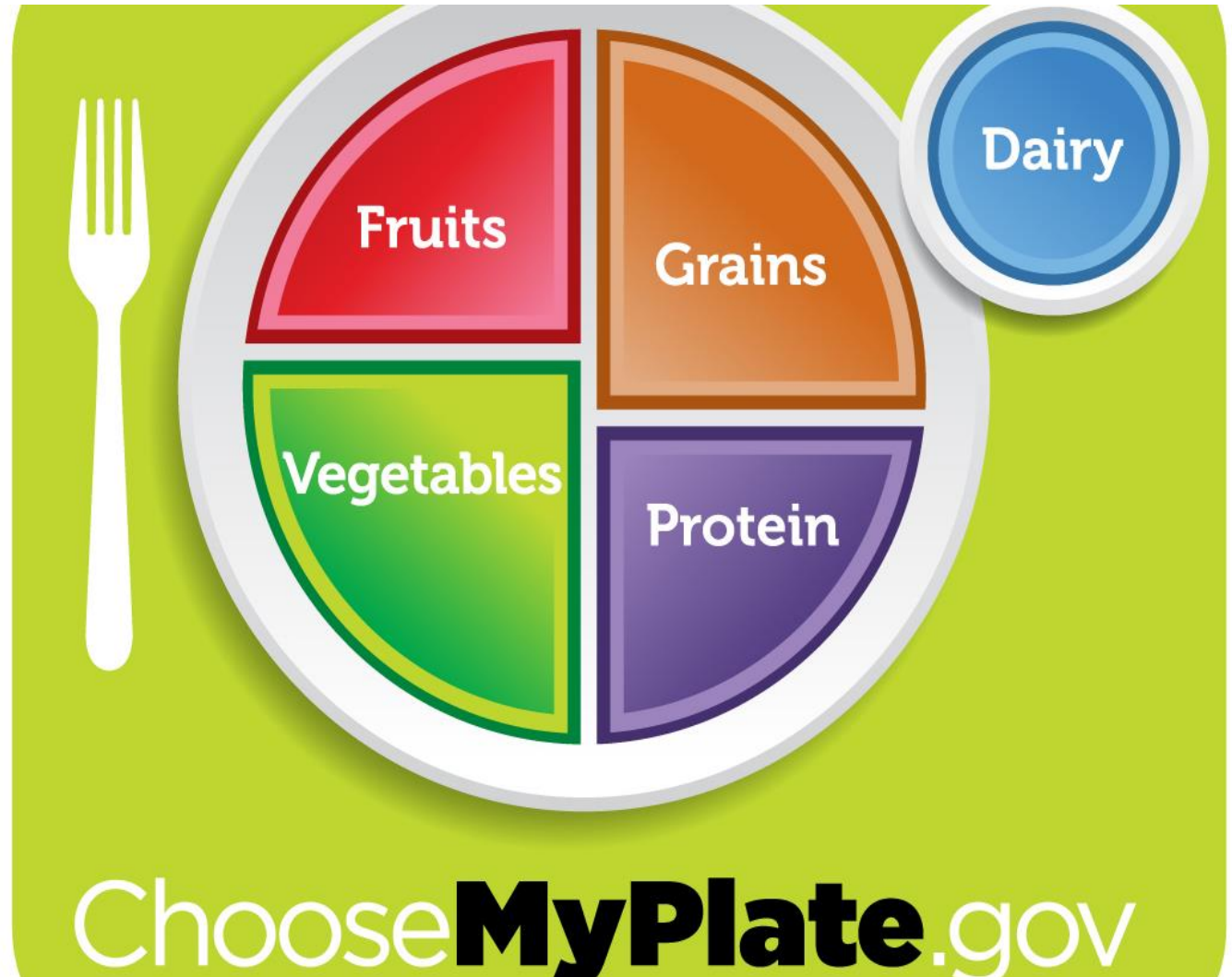
- Energy bar
- Individual bag trail mix
- Beef jerky and a banana
- Granola bar and nuts
- Whole wheat crackers and string cheese
- Yoplait 2x Protein Yogurt and fruit
- Hummus and whole wheat pita bread/pita chips
- Apple and peanut butter
- Popcorn and string cheese
- Peanut butter bites
 - Stir ½ cup peanut butter and ¼ cup honey together
 - Stir in 1 cup oats and ½ cup whey protein powder
 - Roll into 20-22 balls and refrigerate
 - Approx 70 calories, 7 carb, 2 fiber, 3 protein, 3 fat each



Healthy Convenient Store Snacks

- **7-11's and Quick Trips offer the most options**
- Peanut butter crackers/peanut butter filled pretzels
- Individual bags of trail mix or nuts & a fruit
- Whole grain granola bars & string cheese/nuts
- Box of whole wheat crackers & string cheese
- Protein bar & banana/milk
- Turkey/ham and cheese sandwiches/wraps & baked chips/ fruit cups
- Yogurt & fruit parfaits & a bag of nuts
- Ready-to-drink Protein Shake & a fruit/granola bar
- Add milk/chocolate milk to any snack to increase calories and protein

My Plate for Lunch & Dinner



Choose **MyPlate**.gov



Easy Workout Day

ATHLETE'S PLATE

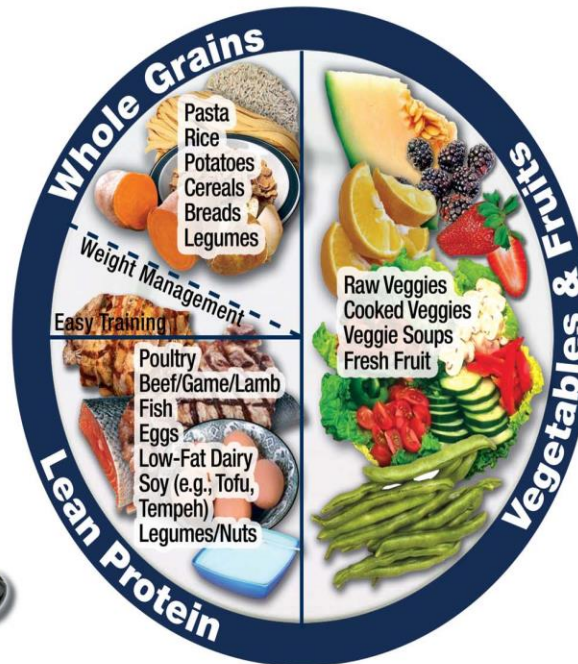
EASY TRAINING / WEIGHT MANAGEMENT:

FATS

1 Teaspoon



Avocado
Oils
Nuts
Seeds
Cheese
Butter



Water
Dairy/Nondairy
Beverages
Diluted Juice
Flavored
Beverages



Coffee
Tea

FLAVORS

Salt/Pepper
Herbs
Spices
Vinegar
Salsa
Mustard
Ketchup



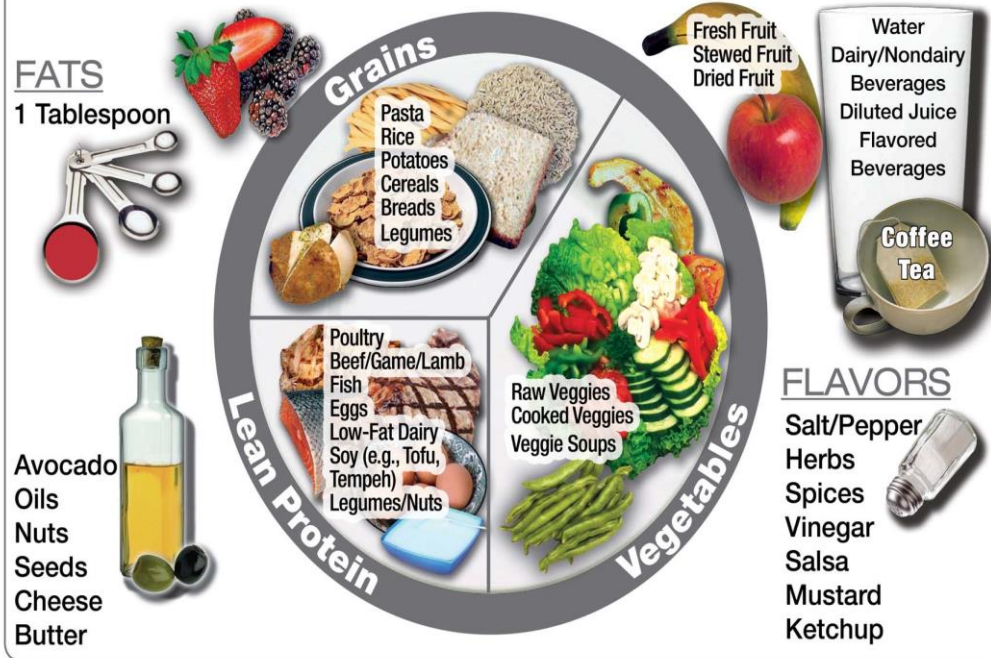
The Athlete's Plates are a collaboration between the United States Olympic Committee Sport Dietitians and the University of Colorado (UCCS) Sport Nutrition Graduate Program.

For educational use only. Print and use front and back as 1 handout.

Moderate Workout Day

ATHLETE'S PLATE

MODERATE TRAINING:



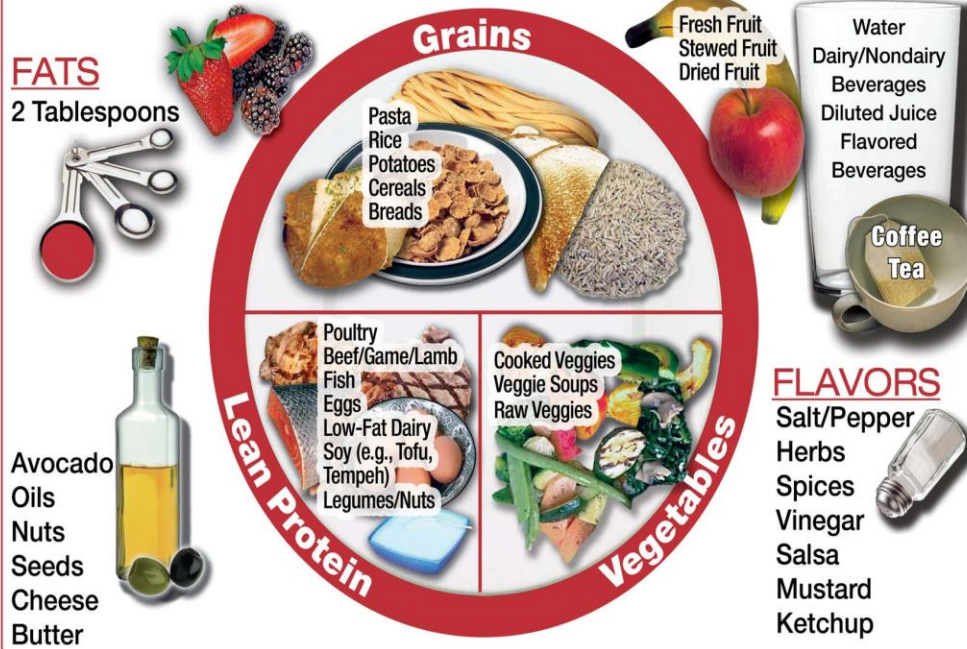
The Athlete's Plates are a collaboration between the United States Olympic Committee Sport Dietitians and the University of Colorado (UCCS) Sport Nutrition Graduate Program.

For educational use only. Print and use front and back as 1 handout.

Hard Workout Day

ATHLETE'S PLATE

HARD TRAINING / RACE DAY:



The Athlete's Plates are a collaboration between the United States Olympic Committee Sport Dietitians and the University of Colorado (UCCS) Sport Nutrition Graduate Program.
For educational use only. Print and use front and back as 1 handout.

Nutrient-Rich Lunch “Ingredients”

- Whole grain

- Bring it: bread, crackers, granola bar, etc.
- Buy it: rice, potato, pasta, roll

- Lean protein

- Bring it: deli meat, peanut butter, nuts
- Buy it: chicken, fish, beef, peanut butter

- Low-fat dairy

- Bring it: yogurt, cottage cheese, cheese, milk
- Buy it: milk, chocolate milk, yogurt parfait

- Vegetable:

- Bring it: veggies on sandwich or raw vegies with dip
- Buy it: side item with entrée or salad

- Fruit

- Bring it: whole fruit, 100% apple sauce
- Buy it: whole fruit, side chopped fruit, 100% juice



Easy Brown Bag Lunches

- Easy lunches to pack the night before school:
 - Turkey, cheddar cheese, tomato and lettuce wrap on whole wheat tortilla with crispy pretzels, carrots, hummus and fruit
 - Peanut butter and jelly on whole wheat bread with apple slices, cheese stick and sliced red peppers
 - Whole wheat pita with hummus, cherry tomatoes, cucumbers, turkey slices and cheese cubes paired with yogurt fruit parfait
 - Toast with avocado and hard-boiled eggs, cheese stick, cherry tomatoes and cantaloupe slices





FUELING TRAINING, COMPETITION AND RECOVERY



Pre-Exercise Meal Timing

- **How much time should I allow for digestion of food?**
 - Allow 3-4 hours for large meal
 - Meat, pasta, vegetables, salad, roll
 - Allow 2-3 hours for smaller meal
 - Sandwich, crackers/baked chips, fruit
 - Allow 1-2 hours for a blenderized meal to digest
 - Smoothie, protein drink/shake
- **Carbohydrate snack 30 minutes before exercise provides “energy burst” for performance**
 - 50-70% carbohydrate, low-moderate protein



Pre-Exercise Eating

○ Pre-exercise meal

- High carbohydrate
- Low in fat & fiber
 - These slow down digestion
- Moderate protein
- Combine protein + carbohydrate
- Plenty of fluids

○ Immediate Pre-exercise Snack

- 30 minutes before workout/game
- High carbohydrate, small amount of protein to provide you with a boost of energy

Pre-Exercise Hydration

○ Pre-Exercise

- Goal is to provide adequate carbohydrate and fluid to start exercise with an athlete's fluid "tank" full
- 2% dehydration level = ~10% decrease in performance
 - As dehydration worsens, performance declines
- Check urine color before beginning exercise as a basic check of hydration status
- 2-4 hours pre-exercise hydration
 - 5-7 mL fluid per kg body weight
 - 1 oz per 10 lb of body weight
 - Generalized: 16-20 oz fluid
 - Approximately one bottle of water or sports drink



Pre-Exercise Hydration

○ Pre-Exercise

- 2 hours pre-exercise
 - If profuse sweating is expected, drink another 3-5 mL fluid per kg body weight
 - 0.6 oz per 10 lb of body weight
 - Generalized: 7-12 oz fluid
- 10 minutes before workout/game
 - 5-10 oz fluid (water or sports drink)
- No pre-exercise electrolyte recommendations
 - Encourage salty food intake like pretzels, tomato juice, pickles, soups, and other salty snacks



Morning Training

- **Lots of carbohydrate; more bland foods**
- **Aim to get in 12 – 16 oz fluid**
- **Good choices for early morning:**
 - Shake with carbohydrates & some protein
 - Shake powder mixed with water or skim milk, fruit, 1 scoop protein powder, ice and water
 - Energy bar with lots of carbohydrate and up to 10 grams of protein
 - Low-fat granola bar like Kashi crunchy/chewy, Nature Valley, Quaker Oatmeal Square
 - Fruit (i.e. banana, nothing very acidic)
 - Plain bagel or dry cereal/granola mix



Fuel for Before or During Workouts

- More dense foods provide more calories per bite which are ideal when time is limited
- Peanut butter crackers/filled pretzels
- Trail mix
- Lenny and Larry Complete Cookies or Muscle Brownies
- Granola with nuts
- Protein bars – store bought or homemade
- Peanut butter bites
 - Stir $\frac{1}{2}$ cup peanut butter and $\frac{1}{4}$ cup honey together
 - Stir in 1 cup oats and $\frac{1}{2}$ cup whey protein powder
 - Roll into 20-22 balls and refrigerate
 - Approx 70 calories, 7 carb, 2 fiber, 3 protein, 3 fat each



During Workouts

- **Carbohydrate-rich foods/drinks**
 - Carbohydrates digest the quickest & thus provide energy faster!
- **Avoid fat and fiber when exercise**
 - Slows digestion and increases time in which energy is available to be used
- **Carbohydrate needs during exercise**
 - <30 minutes = None Required; Water works
 - 30-60 minutes = Mouth rinse or small amounts
 - 1-2.5 hours = 30-60 gm carbohydrate/hour
 - >2.5 hours = Up to 90 gm carbohydrate/hour
 - Ideally around 1 gm carbohydrate per kg body wt



During-Exercise Hydration

○ During Exercise

- Goal to keep an athlete as fueled and hydrated as possible
- Fluid need = match sweat losses
 - Consume 5-10 oz fluid every 15-20 minutes
 - Increase fluid intake every 15-20 minutes if you are a heavy sweater and/or if you have calculated your sweat rate
 - Water and sports drink to replace electrolytes
 - One medium mouthful = about 1 oz



Why do Athletes Cramp?

○ Typical causes:

- Fatigue
- Dehydration due to loss of electrolytes

○ Foods to improve/prevent cramping

● High salt foods

- Crackers, popcorn, baked chips, pretzels
- Tomato sauces, soups, pickles & pickle juice
- Salt your food!

● High potassium foods

- Bananas, strawberries, cantaloupe, raisins
- Avocados, potatoes, beans, broccoli, spinach
- Yogurt, milk, tomato juice, soybeans

● Sports Drinks



Getting your carbohydrates in while training and racing

• Race/Long Run Nutrition:

- Goal of 30-60 gm carbohydrate per hour (probably divided into 2 little snacks an hour)
 - 4 Gatorade Endurance Energy Chews = 31 gm
 - Gatorade Endurance Carb Energy Drink = 30 gm
 - 1 gu = 25 gm
 - ½ Bonk Breaker Bar + 6-8 oz Gatorade Endurance = 25-30 gm
 - 1 pack sports jelly beans (1 oz) = 25 gm
 - ½ Clif Bar = 20-22 gm
 - 8 oz Gatorade Endurance = 14 gm
 - ½ banana = 15 gm
 - 15 grapes = 15 gm



Mid-Practice/Meet Snacks

- **Carbohydrates, some protein, little fat**
 - Energy bars
 - Granola bars
 - Half peanut butter jelly sandwich and fruit
 - Peanut butter crackers
 - Peanut butter-filled pretzels and a fruit
 - Beef jerky and a banana
 - Beef jerky and a granola bar
 - Trail mix and a banana
 - Sports drinks and water as hydration



Post-Exercise Nutrition

- **The three R's to post-workout recovery:**
 - **Replenish** carbohydrate burned during exercise
 - **Rebuild** damage done to lean muscle mass
 - **Rehydrate** the body to euhydration



Recovery Nutrition Post-Workout

- The Post-Workout “Window of Opportunity”
 - In the two hours after a workout, the body absorbs carbohydrate and protein for recovery more quickly
- Goal
 - 0 to 45 minutes
 - Consume simple carbohydrate (glucose, fructose, sucrose, lactose, etc.) to promote quicker digestion and absorption
 - Consume 10-20 gm quality protein, ideally whey protein
 - Begin to replace fluids lost, especially if another workout is that day
 - Try to consume snack with little to no fat in this window
 - 45 minutes to 2 hours
 - Consume a meal rich in carbohydrate, lean protein and fluid
 - Low in fat



Recovery Nutrition Post-Workout

○ Carbohydrate - Replenish

- Body NEEDS lots of carbohydrate post-exercise to replace energy stores
- Simple carbs are best: milk, sports drink, fruit, juice

○ Protein - Rebuild

- Body needs some protein to start repairing tiny muscle tears
- Ideally 20 gm protein immediately post-workout
 - Whey protein is the highest in BCAAs, specifically leucine which has been shown to re-synthesize muscle the fastest after a workout



Post-Exercise Fuel

○ Carbohydrate-Protein Combo Food Examples

- Carbohydrate-Protein Replacement Shakes
- Energy bar + sports drink
- Smoothie made with 1-2 cups low-fat milk, fruit, ice, and 1 scoop whey protein powder
- 16-20 oz low-fat chocolate milk
- Granola bar + low-fat milk
- Greek yogurt with fruit and/or honey and granola



Chocolate Milk: Nature's Sports Drink

- 90% water which helps replace fluids and rehydrate the body
- Contains calcium, Vitamin D and phosphorus to help promote, maintain and build strong bones
- Contains protein to reduce muscle breakdown
- Contains carbohydrate to fuel muscles during exercise and help muscles recover after exercise
- Contains potassium which helps with fluid and mineral balance and muscle contraction
- Contains B vitamins that help convert food to energy to fuel working muscles





Easiest Hydration Test

○ Best Ways to Measure Hydration Status

○ Urine color

- Urine should be pale lemonade color; if it looks like apple juice, you are probably dehydrated!

○ Body weight

- Weigh athlete pre and post exercise to determine how much fluid is lost and thus needed to rehydrate adequately
- Replace each pound lost with 24 oz of fluid
 - 150% of fluid lost

Easy Hydration Test

ARE YOU DEHYDRATED? Check Your Urine

1, 2, 3 Well hydrated	1
	2
	3
4, 5 Hydrated but not well	4
	5
6, 7, 8 Dehydrated - You need to drink more	6
	7
	8



Hydration - Rehydrate

○ Pre-exercise

- 2-3 hours prior exercise: 16-20 oz fluid
- 10 minutes prior exercise: 5-10 oz fluid

○ During-exercise

- Really individualized to sweat rate
- Every 15-20 minutes: 5-10 oz fluid
- Water and sports drinks
 - Sports drinks especially after 1 hour of exercise and/or in very hot/humid conditions

○ Post-exercise

- 16-24 oz fluid for every pound lost
- 24 oz if in 2-a-days or need to rehydrate quickly



Hydration Take-Home Message

- Carry a water bottle and drink consistently throughout the day
- Choose water, low-fat milk or chocolate milk at lunch
- Avoid empty calories from beverages like soda, sugar-sweetened beverages and drinks that provide little to no nutrients
- Follow pre, during and post-exercise hydration recommendations
- Eat plenty of fruits and vegetables





FUELING SCHEDULES

Morning Exercise Fuel Schedule Example



Time	Meal	Example
4:00 – 6:00 am	Pre-workout Snack	Banana and water/sports drink
6:00 – 7:30 am	Workout	Water/sports drink
Within 45 minutes	Post-workout Snack	Chocolate milk
7:30 – 8:30 am	Breakfast	Oatmeal, peanut butter, berries, egg and milk
10:30 am (optional)	Mid-morning Snack	Apple and string cheese
12:30 – 1:30 pm	Lunch	Turkey, cheese and veggie sandwich, fruit, yogurt and whole grain crackers
3:30 – 4:30 pm	Mid-afternoon Snack	Hummus and veggies with pistachios
6:00 – 8:00 pm	Dinner	Lean beef kabobs with roasted potatoes, salad and fruit
9:00 – 9:30 pm (optional)	Evening Snack	Strawberries with yogurt

Afternoon Exercise Fuel Schedule Example

Time	Meal	Example
6:00 – 8:00 am	Breakfast	Scrambled eggs with veggies, whole grain toast with jam, banana and milk
10:00 – 10:30 am	Mid-morning Snack	Grapes and cheese
12:30 – 1:30 pm	Lunch	Whole grain wrap with chicken, avocado and veggies, blue corn chips, baby carrots and string cheese
3:30 – 4:00 pm	Pre-workout Snack	Granola bar and beef jerky
4:00 – 5:30 pm	Workout	Water/sports drink
Within 45 minutes	Post-workout Snack	Milk and banana
6:00 – 8:00 pm	Dinner	Whole grain pasta with beef and marinara sauce, salad, fruit and milk
9:00 – 9:30 pm (optional)	Evening Snack	Apple and peanut butter



2-a-day Exercise Fuel Schedule Example



Time	Meal	Example
4:00 – 6:00 am	Pre-workout Snack	Granola bar and water/sports drink
6:00 – 7:30 am	Workout	Water/sports drink
Within 45 minutes	Post-workout Snack	Chocolate milk
7:30 – 8:30 am	Breakfast	Bagel sandwich with eggs, cheese and lean meat, fruit and yogurt
12:00 – 1:00 pm	Lunch	Whole grain crackers, turkey and cheese roll-ups, almonds, berries and cherry tomatoes
3:30 – 4:00 pm	Pre-workout Snack	Energy bar and sports drink
4:00 – 5:30 pm	Workout	Water/sports drink
Within 45 minutes	Post-workout Snack	Small fruit smoothie
6:00 – 8:00 pm	Dinner	Nourish bowl with lean beef, veggies, sweet potato, brown rice, cheese and avocado
9:00 – 9:30 pm (optional)	Evening Snack	Graham cracker with peanut butter

Game Day Fuel Schedule Example

Time	Meal	Example
6:00 – 8:00 am	Breakfast	Whole grain toast with peanut butter, honey and banana with beef sausage
8:00 – 9:00 am	Light workout	Water
Within 45 minutes	Post-workout Snack	Smoothie with milk and fruit
11:30 am – 12:30 pm	Lunch	Whole grain turkey and cheese sub sandwich, baked pita chips and fruit
3:30 – 4:30 pm	Pre-Game/Event Meal	Grilled chicken, mashed potatoes, corn, green beans, fruit and whole grain roll
6:30 – 7:00 pm (optional)	Pre-Game/Event Snack	Energy bar and sports drink
Half-time	Half-time Snack	Half PBJ, pretzels and sports drink
9:00 – 10:00 pm	Post-Game/Event Meal	Beef lasagna, salad, fruit and breadsticks



While eating can feel like
a part-time job,

**ADEQUATELY FUELING YOUR
BODY IS ESSENTIAL TO
PERFORMANCE SUCCESS**

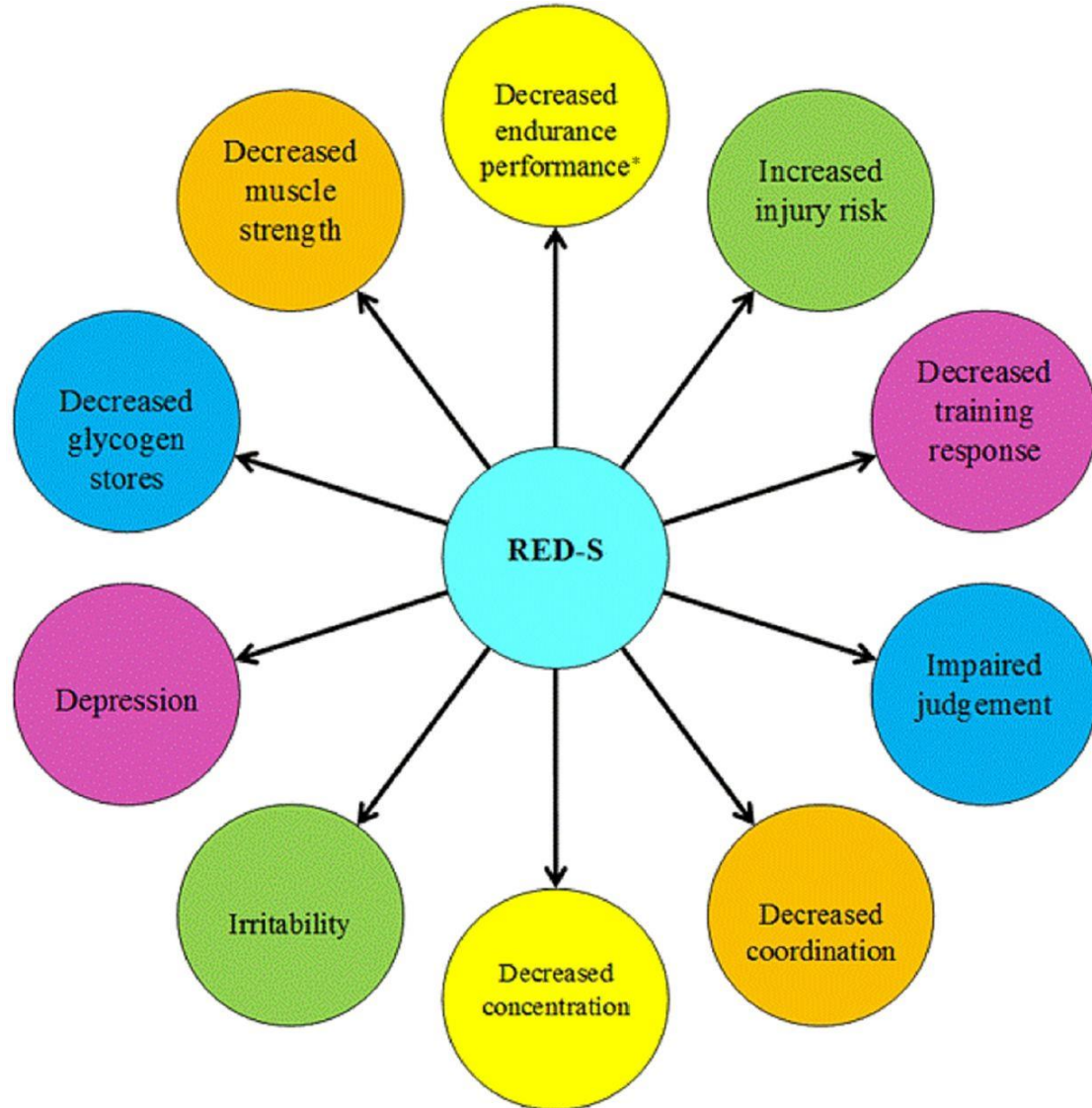


What is “Under-fueling”?

- What is under-fueling?
 - An energy deficiency relative to the balance between dietary energy intake and energy expenditure required for health and activities of daily living, growth and sporting activities
- What does under-fueling affect?
 - Physiological function
 - Health of the athlete
 - Athletic performance



Consequences of Under-fueling

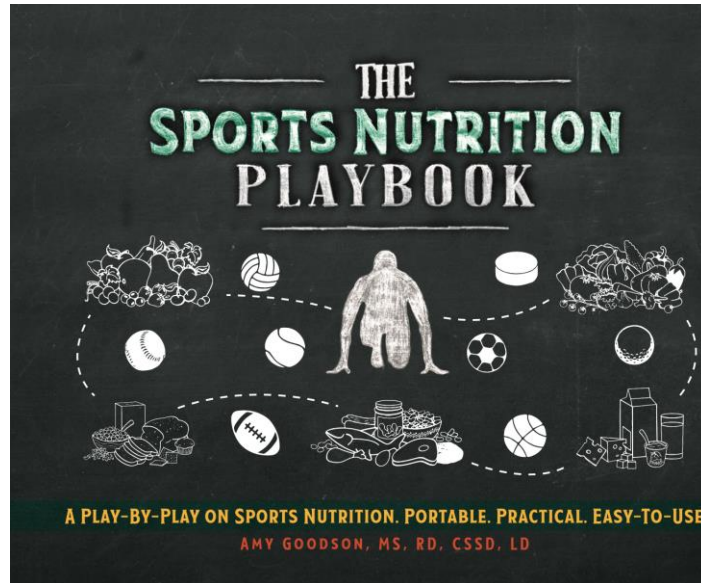


Putting it all together: Fuel your day!

- Eat a complex breakfast before school or gym
- Pack healthy snacks for mid-morning and pre/post workout
- Choose a lunch to help you recover from a morning workout and/or fuel your afternoon workout
- Don't forget post-workout nutrition
- Eat a nutrient-rich dinner
- Hydrate with water, flavored water and nutrient-rich beverages like milk all day
- Eat to match your energy needs



Q&A



Instagram: @amyg.rd
amygoodsonrd.com
amy@amygoodsonrd.com