

Fueling the Body

Amy Goodson, MS, RD, CSSD, LD
 BHSTI Sports Dietitian
amygoodson@texashealth.org
 817.250.7512



Why Sports Nutrition?

- ❖ **Improves performance** both in competing and in training
- ❖ Proper sports nutrition **provides energy** for activity & promotes recovery after exercise
- ❖ Proper nutrition can help **change body composition**
 - ❖ Decrease body fat, increase lean mass
 - ❖ Lose weight/gain weight

Overview

- ❖ **Nutrition**
 - ❖ Carbohydrates
 - ❖ Protein
 - ❖ Fat
 - ❖ Meal Timing
- ❖ **Sports Nutrition**
 - ❖ Pre-Exercise Eating
 - ❖ During Exercise Eating
 - ❖ Post-Exercise Eating
 - ❖ Hydration
- ❖ **The Track Athlete Needs**
- ❖ **Nutritional Concerns with Endurance Athletes**

Carbohydrates

- ❖ **Purpose:** main **fuel** for body, **primary fuel** for exercise, required for brain function
- ❖ All carbohydrates break down into glucose (“sugar” or “energy”) in the body
- ❖ Glycogen is stored carbohydrate or stored “energy” in your muscle & liver
 - ❖ Used for fuel during exercise
 - ❖ ~1600-2000 calories stored in muscle, depending on person, training levels, genetics, etc.
 - ❖ ~300-400 calories stored in liver: used to

Carbohydrates

- ❖ **Types of carbohydrates**
 - ❖ 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

Carbohydrates: Best Choices

- ❖ **Why grains?**
 - ❖ Rich in carbohydrates, B vitamins, give lots of energy
- ❖ Should be the **largest** part of your diet
- ❖ **Best choices**
 - ❖ Wheat bread, oat bread, wheat bagels, wheat English muffins, wheat tortillas
 - ❖ Cereals: Total, Shredded Wheat, Cheerios, Granola
 - ❖ Oatmeal, Cream of Wheat
 - ❖ Brown Rice/Wheat or Multi-grain Pasta
 - ❖ Wheat crackers/whole grain granola bars

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 fastest
- ❖ Nuts, seeds, peanut butter have some protein

7

Fat

- ❖ **Purpose:** major energy source in body
- ❖ **Functions:**
 - ❖ Help cushion the body's organs
 - ❖ Regulate body temperature
 - ❖ Aid in fat-soluble vitamin transport & absorption
- ❖ **Fat usage in exercise:**
 - ❖ In aerobic exercise, both fat and carbohydrate are used for fuel
 - ❖ In anaerobic exercise (high intensity), carbohydrate, a decreased amount of fat, is the primary source of fuel for exercise

8

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

9

Combining Nutrients

- ❖ **What is "combining nutrients"?**
 - ❖ Eating carbohydrates, protein, & fat at the same meal or snack
- ❖ **Why?**
 - ❖ Important to eat a variety of foods at each meal
 - ❖ Combining carbohydrates/protein/fat at each meal & snack provides a feeling of fullness/satiety & prevents hypoglycemia and fatigue
 - ❖ Hypoglycemia is low blood sugar & can make it difficult to train and compete
 - ❖ Symptoms of hypoglycemia include shakiness.

10

Examples

- | | |
|--|--|
| <ul style="list-style-type: none"> ❖ Peanut butter sandwich <ul style="list-style-type: none"> ❖ Bread – carbohydrate ❖ Peanut butter – fat & protein ❖ Yogurt with fruit <ul style="list-style-type: none"> ❖ Yogurt – protein & carbohydrate & fat ❖ Fruit - carbohydrate ❖ Smoothie <ul style="list-style-type: none"> ❖ Milk – carbohydrate, protein & fat ❖ Fruit - carbohydrate | <ul style="list-style-type: none"> ❖ Cheese & crackers <ul style="list-style-type: none"> ❖ Cheese – protein & fat ❖ Crackers - carbohydrate ❖ Chocolate milk <ul style="list-style-type: none"> ❖ Chocolate – carbohydrate ❖ Milk – carbohydrate, protein & fat ❖ Turkey sandwich <ul style="list-style-type: none"> ❖ Turkey – protein ❖ Bread – carbohydrate |
|--|--|

11

Pre-Exercise Meal Timing

- ❖ **How much time should you allow for digestion of food/meals?**
 - ❖ Allow 3-5 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**

12

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

13



Morning Training

- ❖ Lots of carbohydrate; more bland foods
- ❖ 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 like Balance, Zone, Clif, Go Lean Crunch, Luna, Power Bar Harvest/Triple Threat, Gatorade, Odwalla
 - ❖ Low-fat granola bar like Kashi crunchy/chewy, Nature Valley, Quaker Oatmeal Square
 - ❖ Fruit (i.e. banana)
 - ❖ Plain bagel or dry cereal/granola mix

14



During Practices/Runs

- ❖ **Carbohydrate-rich foods/drinks**
 - ❖ Carbohydrates digest the quickest & thus provide energy faster!
- ❖ **Avoid** fat, protein, & fiber when exercising... slows digestion & increases time in which energy is available to be used
- ❖ 100-300 calories of carbohydrates per hour, **after** the first hour of exercise
 - ❖ 30-60 grams of carbohydrate per hour
 - 15-minute intervals optimal for gastric emptying
 - ❖ More specifically 1gm carbohydrate/kg BW/hour
 - 50 kg female runner would need 50 gm carb

15



Runs Over 1 hour

- ❖ **Key is knowing what the athlete can tolerate**
- ❖ Easy-to-carry, easy-to-digest foods
- ❖ Sports drinks
- ❖ Energy bars + water
- ❖ Fruit + water
- ❖ Hard candies + water
- ❖ Fruit snacks/gummy bears or crackers + water
- ❖ Sport carbohydrate products
 - Goos, gels, blocks, jelly beans

16



Mid-Practice/Meet Snacks

- ❖ **Carbohydrates, some protein, little fat**
 - ❖ Energy bars
 - ❖ Granola bars
 - ❖ Plain bagels
 - ❖ Peanut butter crackers
 - ❖ Dry cereal/trail mix with minimal nuts
 - ❖ Recovery drinks (i.e. Muscle Milk Collegiate, Slim Fast, low-fat chocolate milk, smoothies)
 - ❖ Sports drink with snack
- ❖ **Athletes losing weight**
 - ❖ Need to eat snack during practice, maybe twice
 - ❖ Constantly drink sports drink for carbohydrate

17



Post-Exercise 2-Hour Window

- ❖ **2-Hour Window of Recovery**
- ❖ Your body has a **specific time period**, post-exercise, when you are able to more effectively take up nutrients
 - ❖ **0-45 minutes**
 - Best time to eat at least a snack...muscles more sensitive to absorb nutrients!
 - ❖ **45 minutes – 2 hours**
 - Try to get a nice-size meal or larger snack
- ❖ The **window** is the most important time to consume **plenty of carbohydrate, protein, & fluids** to **replenish & refuel**
- ❖ Essential if participating in twice a day training

18



Post-Exercise Eating

- ❖ **4:1 carbohydrate: protein ratio**
 - ❖ What is that?
 - ❖ This ratio represents a food that has 4 grams of carbohydrate for every 1 gram of protein
 - ❖ Why is that important? 2 main reasons...
 - ❖ Body NEEDS lots of carbohydrate post-exercise to replace energy stores...**carbs come first!**
 - ❖ Carbohydrates "help" protein enter the muscle cell; they "unlock" the cell to allow nutrients in
 - ❖ Body needs some protein to start repairing tiny muscle tears

19



Post-Exercise Eating

- ❖ **Ratio of 4:1**
 - ❖ 4 grams carbohydrate to 1 gram of protein
- ❖ Examples:
 - ❖ Snacks (if meal is not available w/i 45 minutes)
 - Yogurt with 40 grams of carbohydrate, 10 grams of protein
 - 16-20 oz Low-fat chocolate milk
 - Granola bar and 8-10 oz milk
 - Energy bar (Clif, Gatorade, Odwalla) & Gatorade
 - Smoothie made with 1-2 cups low-fat milk, fruit, cold water, ice, and 1 scoop protein powder
 - Replacement shake (Powder or Smoothie King)

20



Post-Exercise Eating

- ❖ **Post-Exercise Meal Examples**
 - ❖ 1 whole wheat turkey sandwich w/low-fat cheese & veggies 15 whole wheat crackers, and fruit
 - ❖ 3 oz chicken, 1-2 cups pasta with marinara sauce, 1 cup veggies, & 1 whole wheat roll
 - ❖ 6oz fish, 1 sweet potato, 2 cups salad with light dressing, and 1 piece fruit
 - ❖ 1 whole wheat pita with 3oz chicken, ¼ c low-fat cheese, lettuce/tomato, light sour cream & 15-20 wheat crackers or pretzels
 - ❖ 1 packet oatmeal, 1 scoop protein powder, sprinkle nuts & dried fruit, 8-12 oz skim milk
 - ❖ 20 oz Smoothie King-like smoothie with whey protein
 - ❖ 1 cup whole grain cereal with ½ c skim milk, 1 low-fat yogurt, 1 fruit
 - ❖ Turkey & low-fat cheese sandwich on wheat bread & yogurt w/ ¼ cup granola mixed in

21



Hydration

- ❖ 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
 - ❖ Recommendation: Every 15 minutes: 5-10 oz fluid
 - ❖ Water and sports drinks
 - ❖ Sports drinks after 1 hour of exercise and/or in very hot/humid conditions
- ❖ Post-exercise
 - ❖ 17-24 oz fluid for every pound lost
 - ❖ 23-24 oz if in 2-a-days or need to rehydrate

22



Hydration continued

- ❖ **Water**
 - ❖ Consumed during ENTIRE workout & all day
- ❖ **Sports drinks**
 - ❖ Essential after 1 hour of exercise
 - ❖ 4-8% carbohydrate beverages (Gatorade, PowerAde, Hydrade, etc.)
- ❖ **Sodium**
 - ❖ Enhances palatability and the drive to drink
 - ❖ Can be included in pre- & during-workout snack
 - ❖ Sources: Crackers, pretzels, soups, sports drinks
- ❖ **Potassium**
 - ❖ Sources: banana, strawberries, potatoes

23



Vitamin/Mineral Issues

- ❖ **Athletes at greatest risk for poor micronutrient status**
 - ❖ Those who restrict energy intake, participate in severe weight loss practices, eliminate one or more food groups, or consume high-carbohydrate, low micronutrient-dense diets (low in fruits and vegetables)
- ❖ **At risk nutrients** (primarily for female athletes)
 - ❖ Calcium
 - ❖ Iron
 - ❖ Zinc
 - ❖ Antioxidants, if consuming a diet very low in fat, void of fruits and vegetables, or those restricting calories

24



Take-Home Message for Athletes

- ❖ Consume 5-8 meals/snacks per day
- ❖ Include a good amount of carbohydrate, moderate protein, and some healthy fat at each meal/snack
 - ❖ Carbohydrate – “The Fist Rule”
 - ❖ Protein – “The Palm Rule”
- ❖ Include fruits and vegetables in meals/snacks to ensure adequate vitamin/mineral intake
- ❖ Drink fluids ALL day; not just around exercise
 - ❖ Water, Flavored Waters, Crystal Light, Propel, etc.
 - ❖ Sports drinks (Gatorade, PowerAde, etc.) for training

25



Sample “Eating Day”

- ❖ Breakfast – 7:00-8:00 am
- ❖ Mid-morning snack – 10:00 am
- ❖ Lunch – 12:00-1:00 pm
- ❖ After school/pre-workout snack – 3:00 pm
- ❖ Practice – 3:00-5:00 pm
 - ❖ Water & sports drink
 - ❖ If on long run, 30-60g carbohydrate during 2nd hour
- ❖ Post-workout snack – 5:00-5:30pm
- ❖ Dinner – 7:00 pm
- ❖ Evening snack – 9:00 pm
- ❖ Bedtime – 10:30-11:30 pm

26



Weight Gain Tips

- ❖ Eat 6-7 meals/day
- ❖ Do not skip breakfast; guys trying to gain weight typically need 600-900 calories in the morning
 - ❖ Can eat and go back to bed if they have to
- ❖ Drink milk and/or juice with meals
- ❖ Eat a 30-min pre-exercise snack, every hour during exercise, and immediately post-exercise
- ❖ Eat a high-calorie meal or shake right before bed
- ❖ Make high-calorie food exchanges

27



High Calorie Food Exchanges

- | Choose: | Instead of: |
|----------------------------|--------------------|
| ❖ Bagel/Thick rolls | Bread |
| ❖ Waffles | Toast |
| ❖ Granola | Cereal |
| ❖ Peanut butter jelly | Butter or |
| ❖ Nuts | Candy |
| ❖ Trail Mix | Granola bar |
| ❖ 2% milk | Skim milk |
| ❖ Sautéed vegetables | Steamed |
| ❖ Milk/juice at meals | Water |
| ❖ Sports drink at practice | Water |

28



Weight Gain Food Ideas

- ❖ Add 2 Tbs. peanut butter to oatmeal
- ❖ Add peanut butter & honey to waffles, pancakes, toast, & bagels
- ❖ Add low-fat granola to cereal, oatmeal, or yogurt
- ❖ Put nuts on salad, tuna, in cereal & trail mix
- ❖ Mix high-calorie protein powder with 2% milk
- ❖ Drink shakes made with low-fat chocolate milk
- ❖ Eat a PBJ sandwich as a “dessert” post

29



Weight Loss/Leaning Out Tips

- ❖ Eat small meals often...5-7 times/day
- ❖ Don't skip meals & eat adequate portions
 - ❖ Fist, palm, and plate rules
- ❖ Eat quality, healthy foods combining complex carbohydrates, lean protein, & healthy fat at each meal & snack and lots of water
- ❖ Eat more carbohydrates in the morning, daytime, & around exercise. Eat a smaller quantity at dinner & late at night; use the fist rule at dinner
- ❖ Avoid refined carbohydrates, fried food, alcohol, high fat foods, baked goods/pastries/doughnuts, creamy sauces/spreads/dips

30



Choosing Quality Calories

❖ <u>Quality</u>	<u>Not Quality</u>
-Oatmeal	Pop-tarts, Corn Flakes
-Whole wheat bagel	Croissant
-Whole wheat crackers	Chips
-Egg white omelet & biscuit	Egg & sausage
2 pc. WW toast	
-Energy Bar & fruit	Candy bar & Coke
-Grilled chicken, brown rice, green veggies breadstick	Creamy alfredo chicken pasta &
-Salad w/lean turkey, fry	Sweet & Sour chicken stir
nuts, fruit, & wheat toast	
-Low fat yogurt w/fruit	Frozen yogurt w/topping
-Peanut butter crackers	Cheez-its or cookies

31

“Underrecovery” & Nutrition

- ❖ **Underrecovery**
 - ❖ Failure to fulfill current recovery demands
 - ❖ Can lead to progressive fatigue and underperformance
- ❖ **Nutrition Recovery**
 - ❖ Pre-run/workout fuel so body has energy to train
 - ❖ Fueling immediately post-run/workout with carbohydrates, fluids, and some protein to promote muscle carbohydrate (glycogen) re-synthesis and repair of lean muscle mass tears
 - ❖ Fueling on the “off-day”
 - ❖ Off-day is a chance to recover nutritional status to 100%
 - ❖ Athletes should consume meals and snacks as frequent as training days including carbohydrate, protein, healthy fat, & lots of fluids
 - ❖ The “Gas Tank” – if you end Saturday with no gas in your car and add no fuel on Sunday, even though the car just

32

Sports Nutrition Goals

- ❖ **ENERGY:** Eat often all day; approximately 5-7 meals/day
 - ❖ Fuel adequately every day; try not to skip meals and snacks...be prepared
- ❖ **RECOVERY:** Just as important as training
 - ❖ If recovery is not adequate, carbohydrate stores will not be replenished & you will start with a decreased amount of energy next time you train or compete
- ❖ **HYDRATION:** Drink fluids all day, not just around exercise

33

For More Information...

- ❖ www.texashealth.org/benhogan
- ❖ Click on “Sports Nutrition” on the left hand side & click on specific handouts
 - ❖ General Nutrition
 - ❖ Pre, During, Post-Exercise Eating
 - ❖ Hydration
 - ❖ Healthy Grocery Shopping
 - ❖ Eating Out/Fast Food Eating
 - ❖ Healthy Breakfast
 - ❖ Weight Loss/Weight Gain

34