



Feeding a better athlete.

Nutrition for adolescent
athletes. By Alysia Bedgood, M.
D.

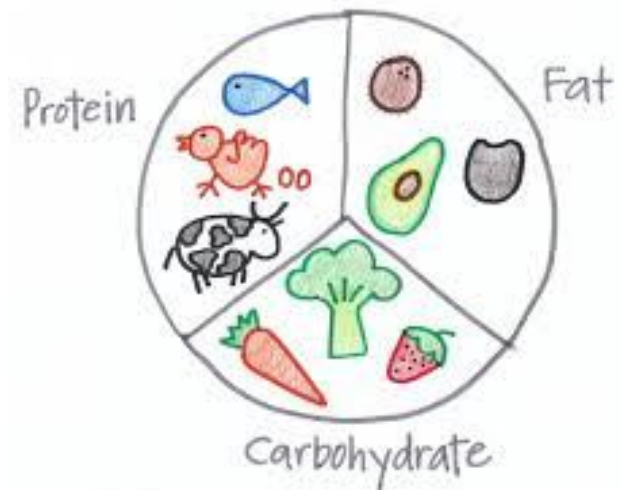
Outline

- The basics
- Meals
 - Quantity
 - Quality
 - Timing
- Hydration
 - Quantity
 - Quality
 - Timing
- Other nutrients
- Meal examples



The basics...

- Every food is made up of carbs, protein and fat.
- Carbohydrates and protein each have 4 calories per gram.
- Fat has 7 calories per gram.



Why do we need all three?

- **Anaerobic exercise** is an exercise intense enough to trigger lactic acid formation. It is used by athletes in non-endurance sports to promote strength, speed and power and by body builders to build muscle mass. Muscle energy systems trained using anaerobic exercise develop differently compared to aerobic exercise, leading to greater performance in short duration, high intensity activities, which last from mere seconds to up to about 2 minutes.
- Sprinters, weight lifters
- Uses stored sugar.



Ultramarathon basics

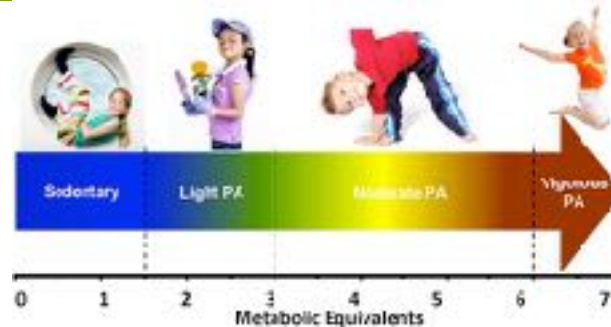
- Left foot
- Right foot
- Left foot
- Right foot

- Repeat for 3 to 72 hours

- Aerobic exercise refers to the use of oxygen to adequately meet energy demands during exercise via aerobic metabolism. Generally, light-to-moderate intensity activities that are sufficiently supported by aerobic metabolism can be performed for extended periods of time. The intensity should be between 60 and 85% of maximum heart rate.
- Cross country runners and skiers.
- Uses both sugar and fat.

Calories...

- Sedentary: Lots of TV and videogame time, some exercise.
- Moderate: 10-30min of exercise 3 times per week.
- Very active: 2.5 hours of recreational activity 4 or more times per week.



Sedentary		
	9-13 yo	14-18 yo
Girls	1600	1800
Boys	1800	2200
Moderately active		
	9-13 yo	14-18 yo
Girls	1800	2000
Boys	2000	2400
Very active		
	9-13 yo	14-18 yo
Girls	2000	2200
Boys	2200	2600

Restaurant	Meal	Calories	Restaurant	Meal	Calories
KFC L'il Bucket	Chicken Little Sandwich	310	Taco Bell child-sized* meal	1 crunchy taco	170
	mac & cheese	170		chips and guac	320
	Capri Sun			7 oz. lowfat choco milk	220
	Roarin' Waters	30		Total	710
	GoGo Squeez Apple Sauce	60			
Total	570				
Burger King	6 piece chicken nuggets	280	Wendy's	kid's cheeseburger	260
	apple slices	30		kid's fries	220
	chocolate milk	160		Jr. Original Chocolate Frosty	200
	ranch dipping sauce	140		Total	710
Total	610				
McDonald's	cheeseburger	300	Boston Market	kid's chicken	310
	small fries	230		mashed potatoes	120
	milk	100		12 oz. lemonade	100
	apple slices	15		cornbread	180
Total	645	Total	710		
Popoye's	4-piece chicken nuggets	150	Jack in the Box	chicken sandwich	410
	regular cajun fries	260		french fries	230
	12 oz. fruit punch	120		12 oz. fruit punch	120
	ranch dipping sauce	150		Total	760
Total	680				
Chipotle	cheese & chicken quesadilla	250	Carl's Jr. Kids' Meal	kid's cheeseburger	340
	white rice & black beans	190		onion rings	530
	12 oz. lemonade	100		12 oz. fruit punch	120
	chips	140		Total	990
	Total	680			
			*Note: Taco Bell does not offer kids' meals; selections based on portions appropriate for kids		

Its not hard to get calories.

Every athlete is different



Examples

- 70lb child
- 100lb child
- 130lb child
- 10 year old that is 4 ft 6 inches
- 13 year old that is 5 ft 1 inch or
- Overweight/muscular 10 year old
- 15 year old that is 5 foot 9 inches or
- Overweight/muscular 13 year old

Carbohydrates



- Fruits, breads, cereal, pasta, potatoes.
- This should be what kids are getting most of.
- 55% of daily calories or 5-8g/kg.
 - That means:
 - 70lb child- 160-250g/day (4 slices of bread, 2 bananas, 1 20oz gatorade)
 - 100lb child- 225-360g/day (4 slices of bread, 2 bananas, 2 gatorades and 1 c mac & cheese)
 - 130lb child- 295-470g/d (4 slices of bread, 2 bananas, 2 gatorades, 1 c mac & cheese, 1 c mashed potatoes, 1 c ice cream)

Protein

- Meats, seafood, beans, tofu, mushrooms
- Kids don't have the ability to grow large muscles until after puberty so don't need a ton of this.
- 10% of calories or 0.85-0.95g/kg/day
 - That means:
 - 70lb child- 27-30g/day (1/2 c grilled chicken and quarter pound burger patty)
 - 100lb child- 38.5-43g/day (1/2 c grilled chicken, 1 quarter pound burger patty, and 2 eggs)
 - 130lb child- 50-56g/day (1/2 c grilled chicken, 1 quarter pound burger patty, 2 eggs, 1 c beans)



Fat

- Fried food, meat, dairy, avocados, nuts, oils
- Do not worry about getting too little, DO worry about getting too much.
- 25-30% of calories (but there are more calories per gram)
 - That means:
 - 70lb child- 60-68g/day* (4 tbsp peanut butter, 3 eggs, 2.5 slices of cheese)
 - 100lb child- 68-75g/day* (4 tbsp peanut butter, 3 eggs, 2.5 slices cheese, and 1 quarter pound burger patty)
 - 130lb child- 75-83g/day* (4 tbsp peanut butter, 3 eggs, 2.5 slices cheese, 1 quarter pound burger patty, and 3 chicken mcnuggets)



Recommendations

- Most kids have no problems getting their calories in but they do not all get them in a healthy way.



Why are high quality foods important?

- Sugar crash
 - Easily absorbed sugars (think candy and desserts) causes a quick spike in blood glucose then a dramatic drop.
- Hyperactivity/Obesity
 - High sugar and high fat foods are closely related to childhood obesity and may be associated with some hyperactivity.
- Nutrients
 - High quality foods are more nutrient dense and therefore help kids to grow properly well not just big.
- Teaching good habits
 - We are shaping these kids minds and bodies. Overweight and obese children are more likely to grow up to be overweight and obese adults.





When to eat what...before

- **Before exercise-** high carb, moderate protein, low fat, low fiber.
- Want things that are easy to digest and won't upset stomachs.
- Base on how long and strenuous activity will be.
- Some kids have nervous stomachs on game day.

TABLE 2: SUGGESTED MEALS FOR PRE-EVENT EATING

This example shows how to calculate the recommended grams of carbohydrate needed per pound of body weight.

1 Hour or Less	Serving Size	Grams of Carbohydrates
Food bar	1 bar	47 g
Raisins	small box (2.5 oz)	34 g
Banana	7 oz	31 g
1/2 Bagel	2 oz	26 g
Pretzels	20 pieces	22 g
Fig bar (2)	1 oz	20 g
Applesauce	4 oz	14 g
Sports drink*	8 oz	14 g
Toast	1 slice	14 g
Crackers	5 crackers	10 g

4 or more Hours before	Serving size	Grams of carbohydrates
Spaghetti with meat sauce	2-3 cups	75-100 g
Pasta/ Chicken/ Vegetables	pasta: 1 cup chicken: 4 oz vegetables: 1 cup	pasta: 60 g chicken: 0 g vegetables: 6 g
Grilled chicken/ rice (white)/ fruit (chopped apple)	chicken: 3 oz rice: 6 oz fruit: 1 cup	chicken: 0 g rice: 44.4 g fruit: 19 g
Granola bar (oatmeal raisin walnut)/ sports drink*	1 bar drink: 8 oz	bar: 43 g drink: 14 g
Liquid meal replacement	1 can (11 fl oz)	40 g
Fruit juice	6 oz	18 g
Turkey sandwich (w/3 slices deli meat, 2 slices whole wheat bread, low-fat mayo)/baby carrots	turkey: 1 slice mayo: 1 tbsp bread: 2 slices 7 carrots	turkey: 0 g mayo: 0 g bread: 12 g carrots: 3 g
Tuna sandwich (2 slices whole wheat bread)/ nonfat mayo	tuna: 2 oz drained bread: 2 slices mayo: 1 tbsp	tuna: 0 g bread: 24 g mayo: 0 g
Trail mix with nuts/raisins	1/3 cup	20 g

During

- **During exercise** (halftime)- ~ 30 g per hour of continuous activity.
- If just standing on the sidelines do not need as much as those playing the whole game.
- Similar to pre-exercise or even higher carb, lower fat and protein.
- Quick energy (fruits like oranges, watermelon, grapes, gatorade)





After

- After exercise- need to replenish what energy (glucose/glycogen) was used up and rebuild muscle.
- Spread carbohydrates and protein from immediately after to 6 hours after.
- Recent studies show benefit of having a few grams of protein before bedtime in helping to gain muscle for teens and adults.



Examples (snacks)

- Fruit and yogurt
- Cereal and milk
- Trail mix with nuts and raisins
- Lunch meat sandwich
- Cheese and crackers

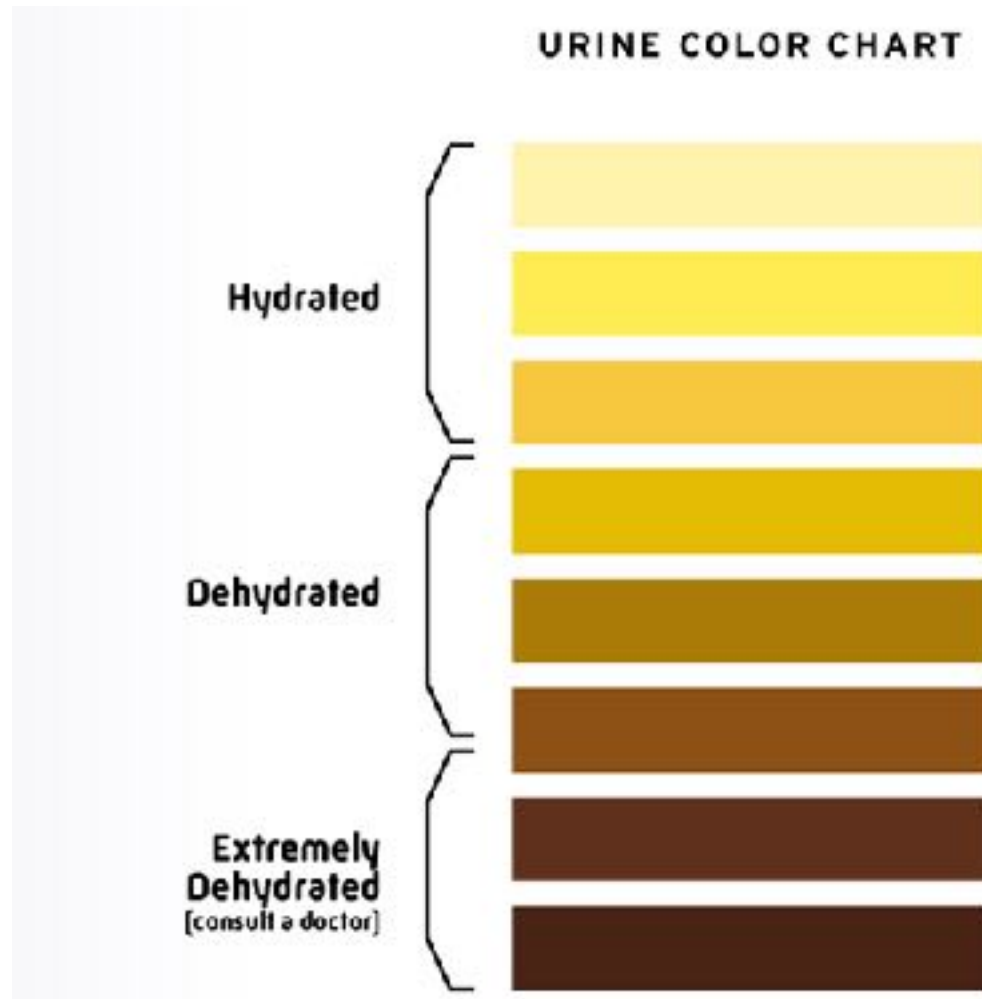


Hydration!

- Most kids do not drink enough.
- Smaller bodies have more surface area to body mass ration so actually lose more water for size.
- Houston is HOT!
- Salty sweaters
- Medications like Adderall and allergy medication can increase dehydration.
- If kids wait until they are thirsty it is to late.
- Performance is affected when someone becomes 2-3 percent dehydrated.
- Some kids (salty sweaters) are more prone to fluid and electrolyte loss than others.

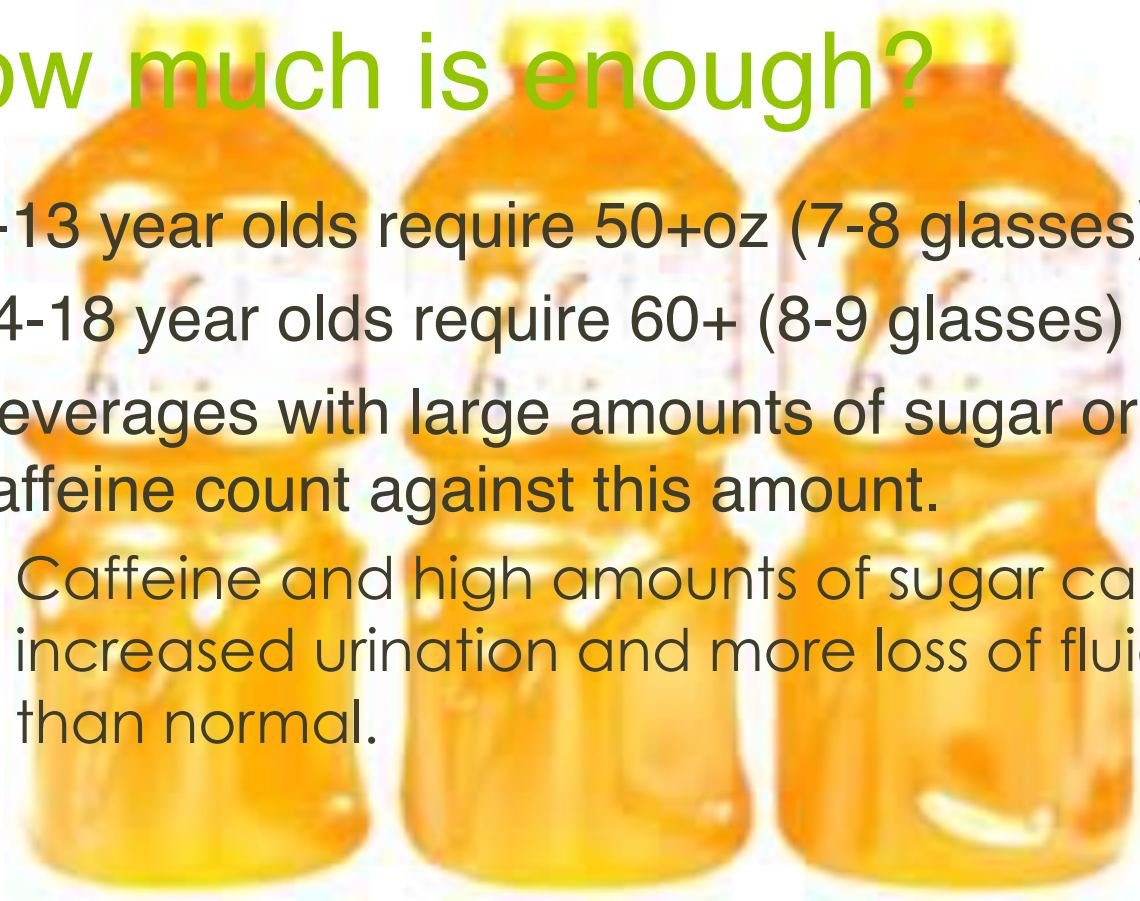


URINE COLOR CHART



How much is enough?

- ◉ 9-13 year olds require 50+oz (7-8 glasses)
- ◉ 14-18 year olds require 60+ (8-9 glasses)
- ◉ Beverages with large amounts of sugar or caffeine count against this amount.
 - ◉ Caffeine and high amounts of sugar cause increased urination and more loss of fluids than normal.



But water is boring...

- Sports drinks are good for events longer than one hour.
- Should include 4-8% carbs as well as sodium.
- Milk is also good after activity since it has hydration, carbs and protein.



When and how?

- The best time to hydrate is before activity.
- 1 hour before
- Every 20 minutes of activity
- After activity



- Incorporating water and high fluid foods (soups, fruits)
- Water- 4-8oz (6-12 year olds)
8-16oz (13-18 year olds)
- Water or sports drink- 5-10oz for any age
- Water or sports drink- 16-24oz/lb lost



Other important notes.

- All kids need calcium for good bone health.
 - Age 9 and older need 3 c milk or equivalent calcium.
- Most adults and especially kids do not require supplements for proper growth.



The buzz



- Caffeine not only causes dehydration but can lead to heart problems such as arrhythmias in high doses.
 - Can increase fatigue and cause withdrawals.
 - Recommendation is no more than 100mg/day.
 - Common amounts:
 - 16 ounces of Monster energy drink: 160
 - 9.5 ounces of Starbucks Frappuccino: 115
 - 8.4 ounces of Amp energy drink: 74
 - 12 ounces of Mountain Dew: 54
 - 16 ounces of Snapple (peach): 42
 - 12 ounces of Coca-Cola: 35
 - 8 ounces of hot cocoa: 9



Sample diet 10 yo

- Breakfast- 2, 4 inch round pancakes, 1/2 c. 1% milk, 1 c. blueberries
- Lunch- Sandwich (2 slices of bread, 1.5 slices lean turkey, lettuce, tomato, 1/2 tbsp mayo), medium apple, 2 tbsp peanut butter.
- Pregame- 1, 20oz gatorade and 1 c orange sections.
- Game time- water
- Half time- goldfish crackers (55 pieces), 1, 20oz gatorade
- Dinner- 1/2 c. homemade lasagna with meat sauce, 1 slice white bread, 1/2 c vanilla ice cream.
- Before bed snack- 2 bon bel cheese
- Totals: 1,815 calories, 317g carbs, 65g fat, 67g protein

Sample diet 13 yo

- Breakfast- 2, 4 inch round pancakes, **1** c. 1% milk, 1 c. blueberries
- Lunch- Sandwich (2 slices of bread, **3** slices lean turkey, lettuce, tomato, ½ tbsp mayo), medium apple, 2 tbsp peanut butter.
- Pregame- 1, 20oz gatorade and 1 c orange sections.
- Game time- water
- Half time- goldfish crackers (55 pieces), 1, 20oz gatorade
- Dinner- **1** c. homemade lasagna with meat sauce, 1 slice white bread, ½ c vanilla ice cream.
- Before bed snack- 2 bon bel cheese
- Totals: 2,024 calories, 334g carbs, 74g fat, 83g protein

Sample diet 15 yo

- Breakfast- **3**, 4 inch round pancakes, **1** c. 1% milk, 1 c. blueberries
- Lunch- Sandwich (2 slices of bread, **3** slices lean turkey, lettuce, tomato, $\frac{1}{2}$ tbsp mayo), medium apple, 2 tbsp peanut butter.
- Pregame- 1, 20oz gatorade and 1 c orange sections.
- Game time- water
- Half time- goldfish crackers (55 pieces), 1, 20oz gatorade
- Dinner- **1** c. homemade lasagna with meat sauce, 1 slice white bread, $\frac{1}{2}$ c vanilla ice cream.
- Before bed snack- **3** bon bel cheese
- Totals: 2,262 calories, 357g carbs, 84g fat, 96g protein

Resources

- http://www.usada.org/resources/nutrition/?gclid=Cj0KEQjw_42eBRDHqcG1psmtneEBEiQAWPL8WMv6-2BiLKwCJqCsaaombmpZz3IJzhs_8kfFITQdQYaAmDY8P8HAQ (U.S. Anti-doping agency)
- <http://www.todaysdietitian.com/newarchives/011012p14.shtml> (Today's dietitian)
- <file:///C:/Users/abedgood/Desktop/Hydration-in-Teenagers.pdf> (National hydration council)
- http://www.ocde.us/hydration/documents/hydration_tips.pdf
- http://www.washingtonpost.com/blogs/on-parenting/post/why-caffeine-is-bad-for-your-kids/2012/05/23/gJQAH7fSIU_blog.html