Fueling for Performance

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NUTRITION IN ACTION, PLLC

Performance nutrition can help you….

- Improve performance
- Recover faster
- Improve concentration
- Prevent injury
- Heal faster from injury
- Make class/training easier
- Boost immunity
- Get better grades
- Feel happier
- Avoid eating disorders

Based on the science

- Hydrate
- Meet energy needs
- Breakfast
- Balance carbs, protein, fat
- Color and variety
- Eat every 3 hours minimum
- Bookend workouts
- Sleep
- Stress management
- Practice mindful eating

Start with Breakfast

Starting your day with a balanced breakfast sets you up for success with food all day.

- Eggs, oatmeal, berries, milk
- Greek yogurt with granola, almonds, fruit
- Peanut butter toast, banana, honey, milk
- Smoothie with plain yogurt, berries, banana, oats, spinach
- Scrambled eggs, bacon, whole grain toast, milk, berries
- Veggie and cheese omelet, oatmeal, fruit, milk
- Steam buns and dumplings
- Savory breakfast crepes

Eats breakfast

Sleeps in

Athlete's Plate

Carbohydrates

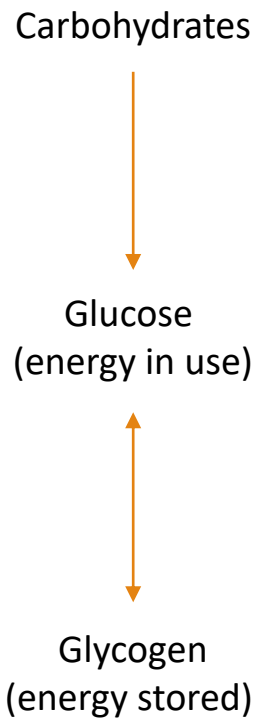
Carbs are our body's primary source of fuel, especially for endurance exercise

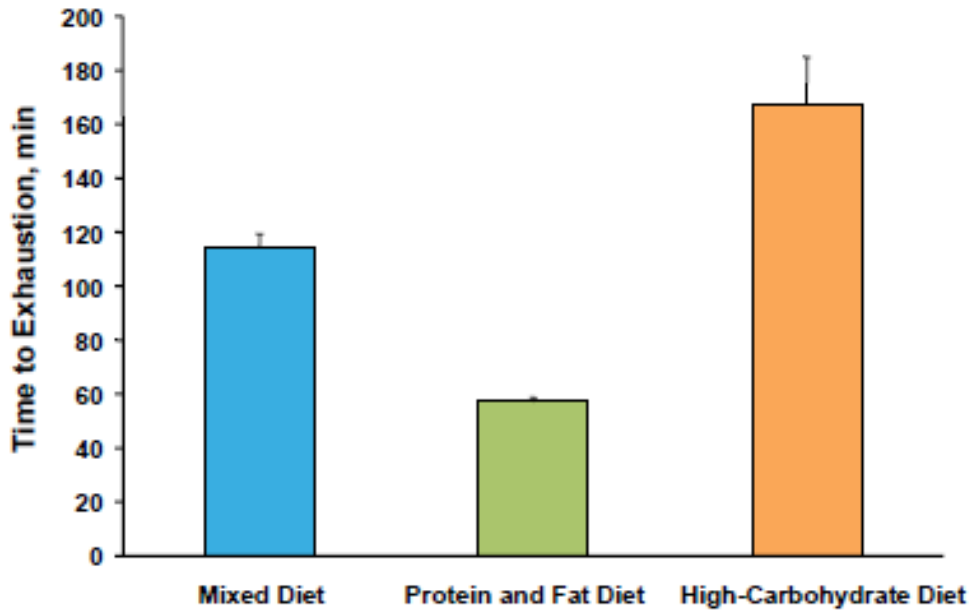
Starting exercise with full glycogen stores can help ensure optimal energy during practice and races and delay onset of fatigue

- "Hitting the wall"

Focus on **grains**

- Whole grains, noodles, rice (white or brown), bread, pasta, cous cous, oatmeal, potatoes, legumes, quinoa, cereal, crackers
- Fruits and vegetables provide some carbs, however they are lacking in B vitamins
- Dairy: milk, yogurt, kefir (always choose low-full fat)



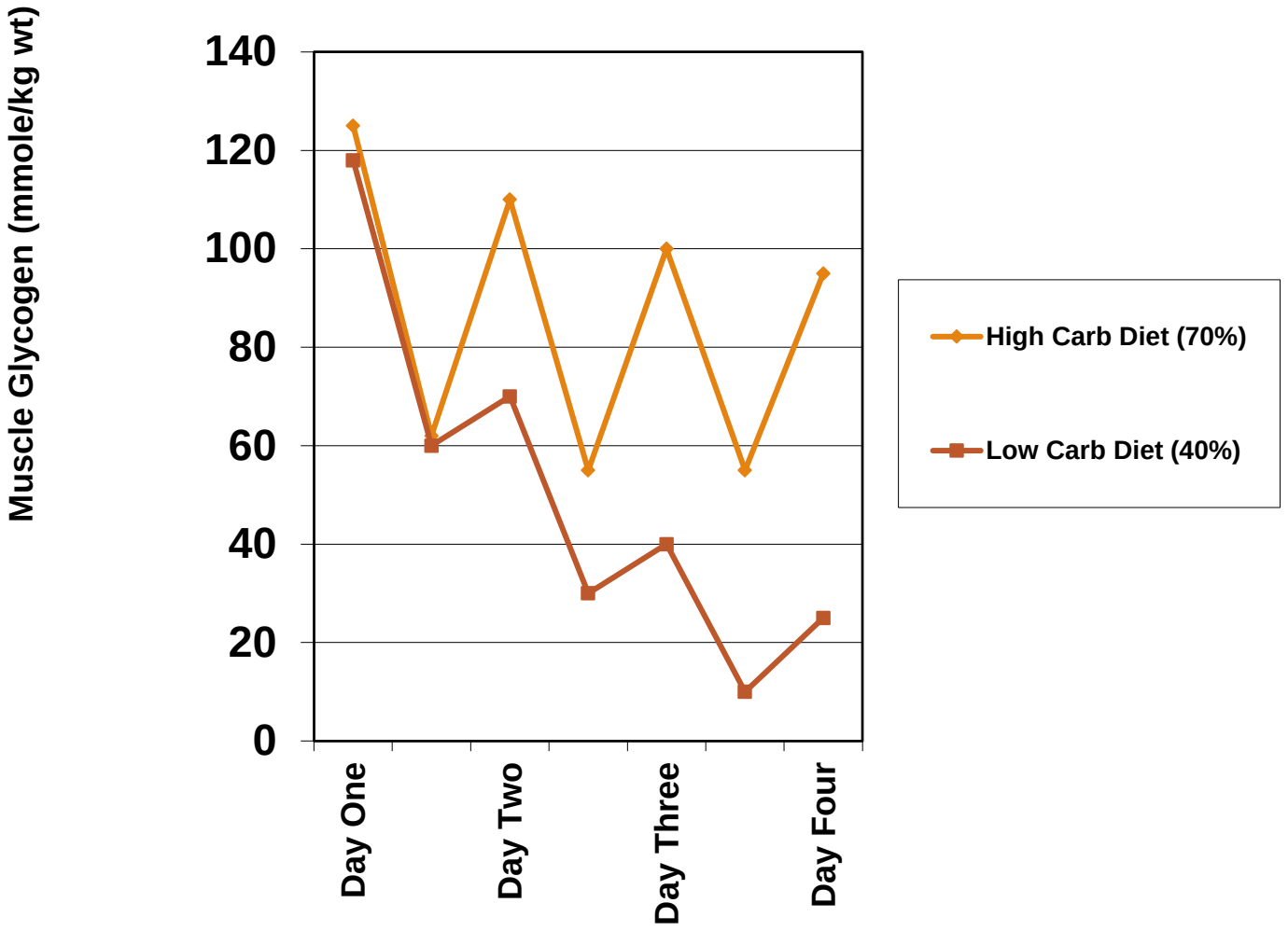


- Subjects (n = 9) cycled to exhaustion before diets
- Diets were fed for 3 days:
  - Mixed diet (self selected)
  - Protein and fat diet (2,800 kcal, 46% fat, 54% protein)
  - High-carbohydrate diet (2,800 kcal, 82% carbohydrate, 18% protein)
- Subjects cycled to exhaustion at end of each diet

Bergström J, et al. *Acta Physiol Scand.* 1967;71(2):140-150.

Muscle glycogen: high carb vs low carb diet

- Results over three consecutive heavy training days
- Muscle glycogen continued to deplete with a low carb diet
- Sample taken from vastus lateralis



Source: Int J Sports Med (1980;1:2)

Protein

Animal Protein

- Serving Size:
  - Deck of cards or palm of hand
- Sources:
  - Chicken
  - Ground beef or turkey
  - Beef or pork cuts
  - Tuna
  - Salmon
  - Eggs

Beta alanine: amino acid found in skeletal muscle.

- What are amino acids? The building blocks of protein!

Beta alanine supplementation is not recommended for young athletes, can get enough through food. Sources:

- chicken, turkey, pork, beef, white fish, salmon, chicken broth, tuna, mackerel

Protein

Dairy Protein

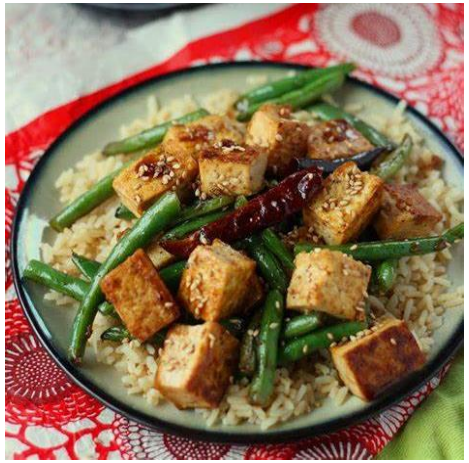
- Sources
  - Milk
  - Yogurt
  - Cottage cheese
  - Cheese
  - Whey protein powders

Protein

Plant-based protein

- Plants don’t contain all essential amino acids and act slower in MPS than animal proteins
- When legumes and grains eaten together or throughout the day, provide all you need
  - Rice & beans
  - Couscous & lentils
  - PB & J

- Sources:
  - Soy (complete)
  - Beans
  - Lentils
  - Peanuts



Dietary Fat

- Provide energy (at lower intensities)
- Transports fat-soluble vitamins
- Conducts nerve impulses
- 60% of brain composition
- Required for hormone production
- Helps us feel satiated, adds flavor, nutrient rich
- Delays gastric emptying
  - Time fat intake outside of competition

Fat

- Salmon
- Tuna
- Walnuts
- Pecans
- Flaxseed
- Avocado/Guacamole
- Oils: Olive, canola, peanut, avocado
- Nut Butters
- Nuts

- Butter
- Cream
- Cheese
- Coconut Milk
- Fried Foods
- Higher fat meats
- Oils (Palm and Coconut)
- Sour Cream
- Fast-food, highly processed foods

Fueling in between meals

A	+	B		A + B Snacks
Fruit	☐	Peanut (Nut) Butter	☐	Greek Yogurt
Carrots/snap peas	☐	Hummus	☐	Chocolate milk
Dried Fruit	☐	Almonds (Nuts)	☐	Yogurt
Crackers/chips	☐	String Cheese	☐	Trail Mix
Chocolate	☐	Beef or Turkey Jerky	☐	Bars (Lara, Kind, Zing, Clif, Homemade)
Pretzels	☐	Edamame	☐	Fruit Smoothie with Protein
Applesauce	☐	Sunflower Seeds	☐	Quesadilla
Granola	☐	Guacamole	☐	Beans and Rice
Bagel/Toast/Pastry	☐	Cream Cheese	☐	Sushi
Oatmeal	☐	Cottage Cheese	☐	
Popcorn	☐	Hard boiled eggs	☐	
Cereal	☐	Tuna/Sashimi/Salmon Lox	☐	

Recovery

- Carbs are the #1 priority post exercise: REFUEL
- Protein REPAIRS and REBUILDS
- Post practice, have a high carb/moderate protein snack within 30 minutes of exercise
  - Glycogen window
- Have a mixed meal within 2 hours

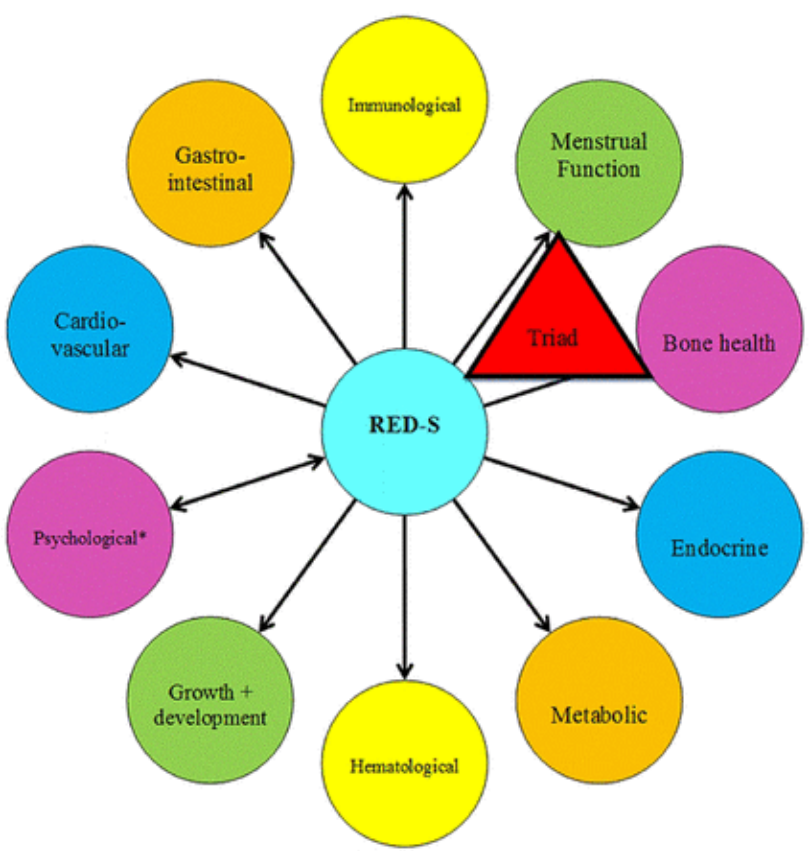
Daily training

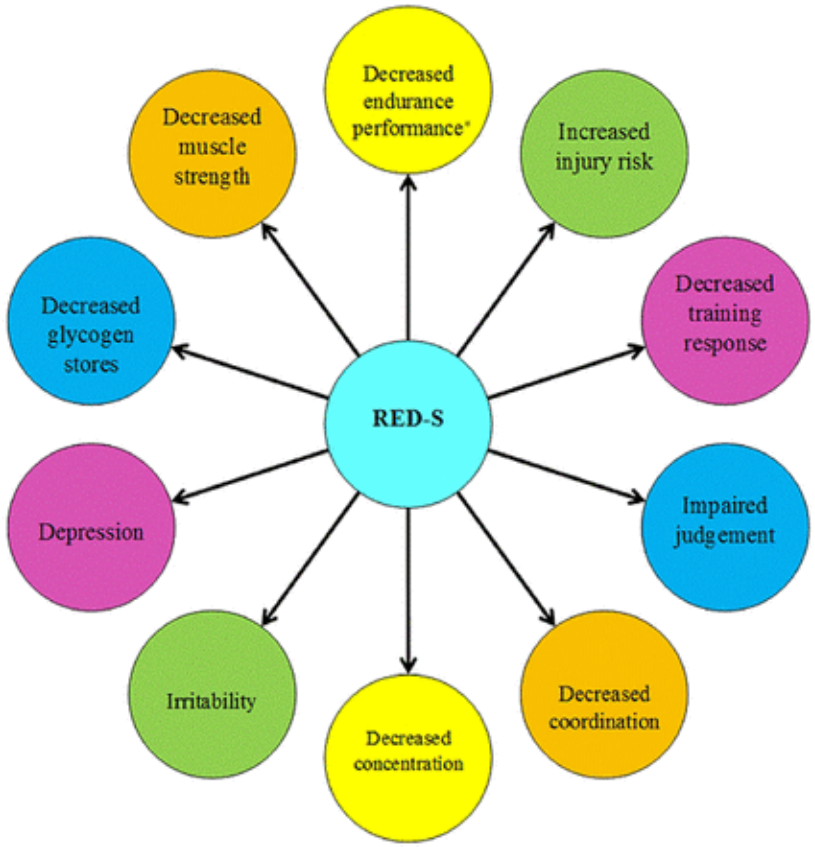
INADEQUATE ENERGY INTAKE

- Fatigue
- Loss of muscle mass
- Reduced metabolic rate
- Sub-optimal nutrient density
- Greater risk of injury
- Slower recovery from injury
- Reduced immune function
- Suboptimal growth and development

INADEQUATE CARBOHYDRATE INTAKE

- Fatigue
- Reduced endurance
- Poor concentration
- Depressed mood
- Irritability
- Greater risk of injury
- Reduced immune function





Relative Energy Deficiency in Sport (RED-S)

Mindful Eating

Texture

Aroma

Speed

Temperature

Experience

- Eating to support your future self

Hydration

- How do you know if you're hydrated?
- When should you hydrate?
- Why should you hydrate?
- Being dehydrated:
  - ↓ muscle strength
  - ↓ speed
  - ↓ stamina
  - ↓ energy
  - ↓ cognitive skills
  - ↑ risk of injury
  - ↑ risk for cramping
  - ↑ perceived effort of exertion

Sleep

BENEFITS OF ADEQUATE SLEEP

- Allows your heart to rest and cells and tissue to repair
- Prevent illness
- Prevent injury
- Helps us retain memories
- Improved overall mood

CONSEQUENCES OF SLEEP LOSS

- Cannot process rapidly changing information
- Alternations in how body processes carbohydrate
- Decreased focus
- Difficulty in determining why you are making errors
- Difficulty controlling mood & emotion
- Confusion remembering instructions and facts
- Loss of sequences of thoughts

Sleep Coach Sheri Mah: Stanford University

MORE SLEEP:	
BASKETBALL	▪ faster sprints ▪ higher shooting accuracy (free throws and field goals) ▪ faster reaction time
TENNIS	▪ faster sprints ▪ increased hitting accuracy (including valid serves) ▪ better hitting depth
FOOTBALL	▪ faster 20-yard dash shuttle ▪ faster 40-yard dash
LESS SLEEP:	
WEIGHT-LIFTING	▪ decrease in maximal bench press ▪ decrease in maximal leg press ▪ decrease in maximal dead lift

Supplements

- Food first approach
- Supplements are not regulated in the United States, and unfortunately ignorance is not an excuse
- When looking into supplements/powders look for the NSF for sport label or informed sport

Race weekends

Night before

Dinner: + water
- ½ plate rice, ¼ plate chicken, ¼ broccoli cooked with fat + milk

Evening snack:
- Greek yogurt with granola and berries
- Toast with peanut butter and honey

Sleep: 10+ hours!

Morning session

Wake-up: 12-16oz of water

Breakfast (1-2 hours before warm-up)
- 2 eggs, toast
- Egg and noodle soup
- Banana and peanut butter toast

Pre-race (30-60 minutes before):
- Applesauce
- Banana
- Gatorade

Post-race (within 30 minutes after):
- Chocolate milk
- Clif bar

Lunch:
- PB&J or turkey sandwich with pretzels + water/sports drink

Afternoon session

Wake-up: 12-16oz of water

Balanced breakfast
- Bagel with cream cheese, fruit, eggs
- Eggs and toast with fruit smoothie
- Oatmeal with brown sugar, fruit, eggs

Lunch:
- PB&J or turkey sandwich with pretzels and water/sports drink

Pre-race (30-60 minutes before):
- Applesauce
- Banana
- Gatorade

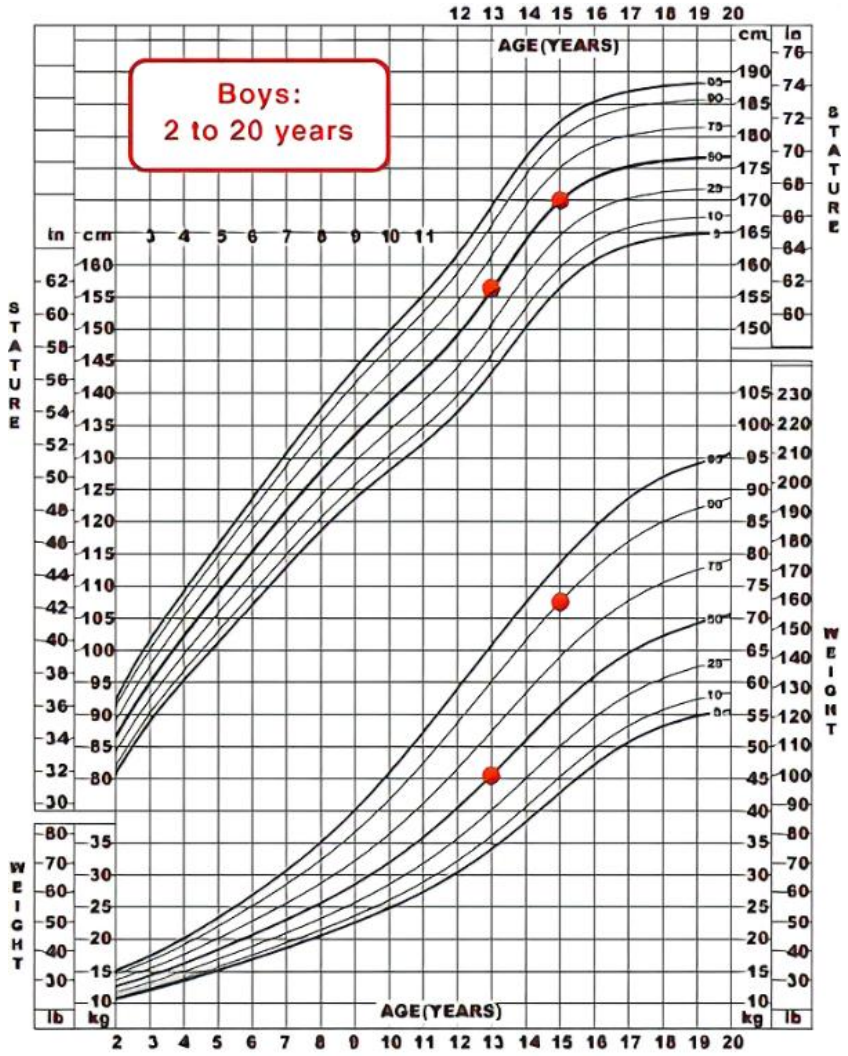
Post-race (within 30 minutes after)
- Chocolate milk
- Clif bar

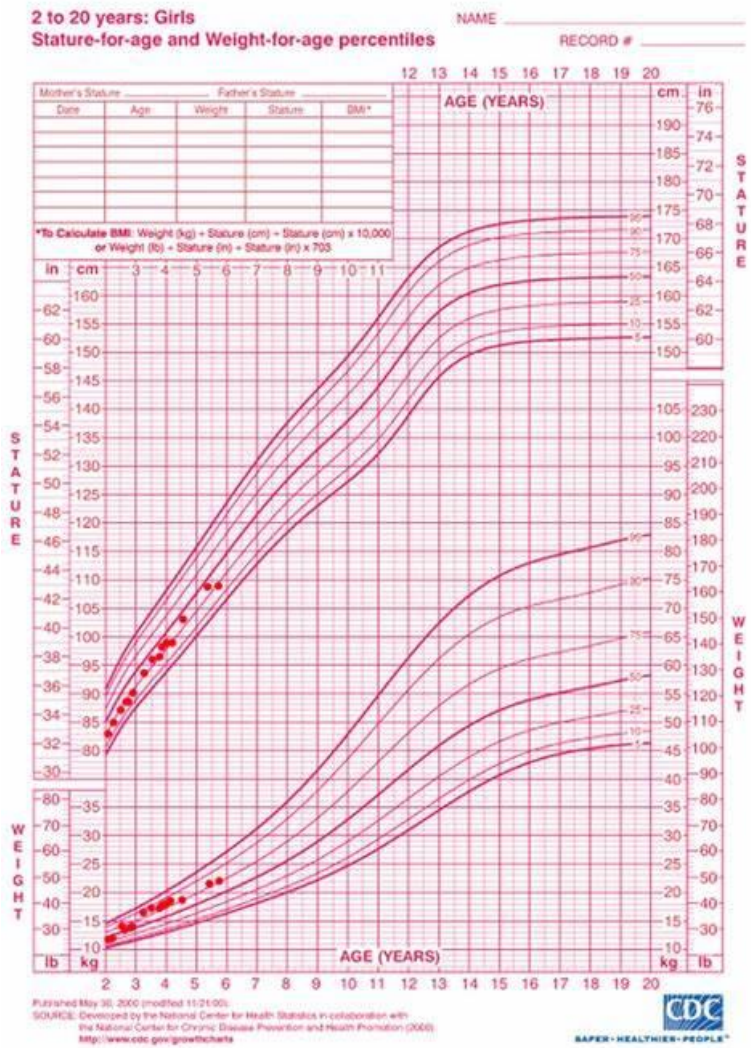
Optional snacks depending on timing

Nutrition needs through puberty

- Growth in height can be delayed when intake is restricted
- Peak weight gain follows linear growth spurt by 3-6 months
- Average weight gain during puberty for girls is 38# and slows down around first menses
- Average weight gain during puberty for boys is 52#
- Nutrient needs are similar in boys and girls prior to the onset of puberty
- At the peak of adolescent growth spurt nutritional needs may be twice as high as during the rest of adolescence
- Low energy intakes can lead to delayed onset of puberty and overall slowing of growth
- Lack of adequate protein intake can lead to reduced linear growth and reduced accumulation of lean body mass

Growth curves





Minerals important during adolescence

- Calcium
  - Higher needs in adolescents due to significant skeletal growth—needed for development of dense bones
  - High-calcium foods: yogurt, milk, tofu, cheese, sardines, Chinese cabbage (cooked), kale (cooked), broccoli (cooked)
  - Works together with vitamin D to support bone health

- Zinc
  - Needed for protein formation
  - Plays of role in growth and sexual maturation
  - High-zinc foods: beef, crab, turkey, pork, chicken, pine nuts, cashews, pecans, Brazil nuts

Minerals important during adolescence

- Iron
  - Needed to transport oxygen in the blood
  - Higher iron needs with rapid growth—increased blood volume and muscle mass
  - Menses increases iron needs for girls
  - Iron-rich foods: beef, chicken, clams, mussels, canned tuna, raisin bran cereal, spinach
    - Heme vs. non-heme iron

Questions?

THANK YOU ALL!