PERFOMANCE NUTRITION

Food Is Fuel!

Sports nutri ***high school***

Carolinas HealthCare System

Goals of session

- Understanding of the following
  - Nutrition needs of this age group compared to that of collegiate/adult athletes
  - Unique challenges high school athletes face in regards to their nutrition
  - Nutrition tactics for high school sports – how do we close the gap
    - Pregame/pre-exercise fueling
    - Post exercise refueling
    - Hydration
  - Tools to utilize with this age group

Why educate the "healthy kids"…why is nutrition important?

- More than 7.6 million high school students played a sport during the 2010-2011 school year (NFSHSA, 2012)
- For Charlotte Mecklenburg School the approximate number of athletes is 10,000, or a quarter of the student population in high school.
- Post high school the reality is that only approximately 6% will play in college men's athletics and 8% in college women's athletes and 0.2% to 0.5% of high school athletes make it to the professional level (Brenner/AAP, 2007).
  - For CMS athletes, that equals about 600 – 800 playing in college and 20 – 50 athletes going pro
- So what happens to all of the other student athletes?
  - They may be left without a source of exercise or activity comparable to HS level
  - This could lead to potential weight gain or health issues if they continue to eat as they did while playing HS sports
- Other areas to navigate in the athlete population
  - Food insecurity and increased output of energy - there are many athletes that only get their nutrition at school – how to we help them (and others) get the nutrition they need.
  - Identifying disordered eating tendencies – Female athlete triad, RED-S, Anorexia, Bulimia, etc.
  - Getting athletes to utilize the fuel that is available at school meals.
  - On the other hand…if they start eating healthier and making better choices, athletes tend to be leaders in school and may encourage other to make better choices

Youth/Teen Athletes have increased needs

Athletes Require More Calories, Nutrients, Fluids!

- Based on age alone, their body's calorie needs are at a very high level to support growth and development
- Being an athlete, increases those needs even more!
- Daily practices & weekly competitions increase their body's energy and nutrient demands

To Reach Goals

- To increase strength, speed and increased endurance
- they must support your body's energy demands!

Eat At Regular Intervals Throughout The Day And Hydrate Often!

- Biggest mistakes athletes make:
  - Not eating enough and eating at the wrong times
  - The don't spread calories and nutrients evenly throughout the day
  - Hydration is limited which in turn can negatively effect performance

Developmental changes effect on nutrition

Tanner Stages of Maturity and Relationship to Sports			
Female			
Stage	**Age**	**Physical Changes**	**Relationship to sports and nutrition intervention**
Stage 1	<10 (0-15)	Childhood	High Risk for heat illness, energy needs slightly increased
Stage 2	10-11.5 (8 – 15)	Increased activity of sweat glands Beginning of PHV (growth spurt 3-5 in)	Increased energy and protein needs for athletic performance, Dieting may interfere with PHV, Adequate calcium intake needed to prevent stress fractures, increased fluid needs
Stage 3	11.5 – 13 (10 – 15)	End of PHV Beginning of acne Axillary hair present	Peak energy needs decrease, adequate calcium intake needed to prevent stress fractures, increased fluid needs
Stage 4	13 – 15 (10 – 17)	Acne may be severe Menarche begins	Energy and protein needs based on sport, adequate calcium intake needed to prevent stress fractures, increased fluid needs, increased risk of eating disorders and female athletic triad, increased risk for iron-deficiency anemia, low energy intake or dieting increases risk for amenorrhea
Stage 5	15+ (12.5 – 18)	Increase in fat and muscle mass	Adult nutrition standards apply, adequate calcium intake needed to prevent stress fractures, increased fluid needs, increased risk for eating disorders and female athletic triad

PHV = Peak Height Velocity

Adapted from the AND Sports Nutrition Care Manual

Developmental changes effect on nutrition

Tanner Stages of Maturity and Relationship to Sports			
Male			
Stage	**Age**	**Physical Changes**	**Relationship to sports and nutrition intervention**
Stage 1	<9 (0-15)	Childhood	High Risk for heat illness, energy needs slightly increased
Stage 2	9 -11 (10 – 15)	Increased activity of sweat glands	Energy and protein needs increased only slightly, still not able to add significant muscle mass
Stage 3	11.5 – 13 (11.5 – 16)	Voice begins to change Faint mustache/facial hair develops Axillary hair present Beginning of peak height velocity (PHV) (growth spurt 6-8 in)	Increased energy and protein needs for growth and athletic performance, unhealthy supplement intake may increase as a result of desire for competitive edge, increased fluid needs
Stage 4	12.5 – 14 (12 – 17)	End of PHV Voice deepens Acne may be severe Facial hair increases Hair on legs becomes darker and curly	Muscle mass increases significantly; if athlete is in strength sport, protein needs may be increased, increased supplement use and risk for misinformation regarding diet and supplements possible, increased fluid needs
Stage 5	14+ (13 – 18)	Able to grow full beard Muscle mass increases significantly	Continue to add muscle mass, adult nutrition standards apply, increased fluid needs

PHV = Peak Height Velocity

Adapted from the AND Sports Nutrition Care Manual

Unique Challenges for the High School Athlete

- 30% (or more) **DO NOT** Eat Breakfast
- 50% Eat Alternative Lunch (i.e. Chicken Sandwich/Fries or Pizza) ~650 calories vs Regular Lunch ~850 calories *(Based on 2000 calorie diet)*
- Rules against eating/drinking during school hours
- Most athletes go into practice on <1000 calories and early stages of dehydration
- No extra food available (11+ hours on campus); often vending is the only option
- Common for athletes to lose weight ~6-8 lbs. during sport season
- 35% report taking supplements to try to fix problem
- Calories after practice are heavy in just fluid consumption

Reference: *My Sports Dietitian*

Common Athlete Actions

Majority of High School Athletes are Simply Under Fueled Especially During the Season

Reference: *My Sports Dietitian*

Athletes who are Consistently Calorie Deficient

Food Energy Intake – Exercise Energy Expenditure

= Energy Availability

SYMPTOM WATCH: ENERGY METER

The signs and symptoms listed below might be your body's way of telling you to look closer at how you are managing your energy. Nutrition might be a key factor!

- Chronic fatigue
- Anemia
- Recurring infections and illnesses
- Depression
- Disordered-eating thoughts
- Inability to gain or build muscle or strength
- Poor performance
- Absent or irregular menstrual cycles
- Stress fractures or repeated bone injuries
- Decreased muscle strength
- Irritability
- Always being hurt or injured
- Training hard, but not improving performance
- Gastrointestinal problems
- Weight loss

- 1st utilize their body fat as back up fuel
- Back up to the back up is **break down of muscle tissue**
- **Loss of muscle mass will negatively effect performance!**

Sports Nutrition 101

- **Emphasize carbs for energy.** Carbohydrates provide fuel for exercise and movement and should be eaten throughout the day. Normally complex/whole grain choices are best. Good sources are whole grain breads, whole grain pasta, brown rice, sweet potatoes, fruit, milk, and vegetables. The closer to exercise, less fiber for easier digestibility and tolerance.
- **Protein for growth and muscle development** – including quality protein at each meal helps with both your growth during the teen years and also repair and build muscles. Quality protein sources are lean meat, fish, eggs, beans, and dairy.
- **Drinks plenty of fluids**. Being even slightly dehydration can leave you feeling sluggish, so make sure your getting plenty of fluids. During long training sessions, you should drink fluids every 20-30 minutes if possible - 2 to 3 gulps.
- **Positive Hydration**: Urine color should be lemonade color or lighter.

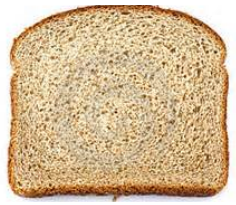
Practice and Game Fueling Tactics

- The goal is to meet your energy needs for the day! Try to eat every 3 – 4 hours with a combination of carbohydrates, lean protein, healthy fat and fluids.
- **Eat a healthy breakfast. :**
  - **Do not skip breakfast!** Even if it means a quick snack before leaving and one at school
  - Prep the night before so its ready.
  - Early practice or game? Eat a mini-breakfast 60-90 minutes before the event; high in easy to digest carbohydrates and moderate in protein.
    - ✓ If you can't eat much food, drink lots of liquids; milk, juice, sports drinks- all fluids count!
- **Eat lunch**
  - **Do not skip or skimp!**
  - Bring lunch as needed and buy milk, fruit, or yogurt to add on.
- **Snack before practice**
  - About an hour to an hour and a half before practice or games add an easy to digest carbohydrate snack.
    - Pretzels, sports drink, easy to digest fruit i.e. banana, granola bar
- **Begin drinking fluids early:** water, milk, some juice to stay hydrated. Sports drinks only right before or during exercise ideally.
- **Avoid fatty foods and high fiber foods on game day.** Diverts energy for digestion and can leave you feeling full, lethargic, or cause stomach discomfort if too close to exercise

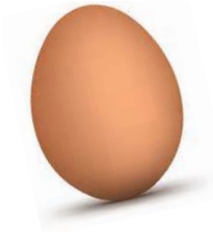
Training Day: Breakfast Foods

Build a better breakfast: 1-2-3 !

Step 1: Pick a Healthy Carbohydrate



Step 2: Pick a Protein and Healthy Fat (at least 20 protein)



Step 3: Pick Fruit or Veggies (or Both)

+ HYDRATION

Tricia Azra, RD, LDN

Training Day: Lunch Packing Guide

In 4 Easy Steps!

Step 1: Pick a Grain & Protein(20 – 30 grams protein)

Step 2: Pick Fruits and Veggies

Tricia Azra, RD, LDN

Step 3: Pick a Side

Step 4: Hydrate!

Pre-Training Snacks- Pack It! Carbs & Protein

1 – 1 ½ hours pre exercise - these are examples of choices – you may need more or a combo of choices

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- **30g of carbohydrates. Choose light easy to digest carbohydrates(low fat & fiber), 10 grams or protein or less.**
- **Pack easy snacks that don't spoil.**
  - **Good choices: Sports drinks, juice, fruits, jelly sandwich, or a handful of pretzels.**
- **Drink 8-16oz of fluids**

During Competition Fuel

- If you're competing **longer than an hour**, you'll need **30-60 grams of carbohydrates** per hour of exercise to boost your energy levels
- **Good Choices: Sports drinks, gels, animal crackers, pretzels, applesauce pouches, bananas, orange slices**
- **Drink 4-8oz of water or sports drinks every 15-20 minutes of exercise**

RECOVERY WINDOW

The muscles are ready to absorb nutrients at a faster rate within 1 hour or less after exercise, and again 2 hours later!

GLYCOGEN RECOVERY

15-30 minutes

45 minutes

60 minutes

TOO LATE
To
Maximize
Recovery

ELAPSED TIME POST EXERCISE

Post Competition Re-Fueling:

DON'T MISS THE RECOVERY WINDOW!

- **After exercise, the muscle cells are like sponges ready to soak up all the nutrients.**
- **Protein is needed for rebuilding muscle tissue.**
- **Carbohydrates are needed to restore glycogen in the muscles.**

15-30 minutes after exercise:

- ❑ Drink 16oz of water for every pound lost during exercise.
- ❑ Eat both carbs and protein. 30 - 45g carbs + 20g protein.
- ❑ Good choices: Chocolate milk, bananas, fruit cups, yogurt smoothies, peanut butter & jelly sandwich, a bowl of cereal.

2 hours after exercise:

Eat a well balanced meal.

- ❑ 50-100g carbs + 20-40g protein.
- ❑ Good choices: Soup & sandwich, Grilled chicken & rice, pasta with meat sauce.

Protein ideas: Peanut butter, Greek yogurt, cheese stick, chocolate milk, chicken, tuna, eggs, & beans, protein bar.

Post Competition Foods

15-30 minutes post exercise snack:

- ❑ Fluids + Carbs + Protein + electrolytes: About 30 - 60g Carbs + 20g Protein.

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2 hours post exercise meal:

- ❑ Fluids + Carbs + Protein: 50-100g Carbs + 20-40g Protein.

+

When You Improve the Eating Habits of Athletes

Reference: *My Sports Dietitian*

Eric Reid Jr. Story

Height	6’1”
Weight	175 lbs.
Goal	.5 pound a week
	Bigger, faster and stronger
Grade	Junior

Meal	Calories In	Calories Needed
Breakfast	0	840
Snack #1	0	420
Lunch	850 (Hot Lunch)	1075
Snack #2	300 Vending	420
Dinner	1000	1075
Snack #3	400	420
Total	**2550**	**4250**

6:30 am	Breakfast	700 calories
9:30 am	Snack	400 calories
12:00 pm	Lunch	700 calories
3:00 pm	Snack	400 calories
3:30-6:00 pm	During Workout	200 calories
6:00 pm	Post Workout Drink	650 calories
7:00 pm	Dinner	800 calories
9:30 pm	Snack	400 calories
		4250 calories

This program helped this athlete add 25 pounds of lean muscle during his junior year

eat2winchallenge.com

Eric Reid Jr. Story

Junior High School
175 lbs.

Senior High School
200 lbs.

LSU
210 lbs.

49ers
213 lbs.

Bad Eating Habits → **Good Eating Habits**

eat2winchallenge.com

Sports Dietitian Services in the High Schools

- **Ask the Sports RD:** Monthly Office time
  - ✓ Students can ask nutrition questions
  - ✓ Review their daily nutrition intake & advise
  - ✓ Set up meetings for individual assessment and recommendations
- **Team Talks**
  - ✓ Meet with teams to discuss fueling strategies to enhance their goals (pre-season, in season, off season)
  - ✓ Pillars of Performance Nutrition: Hydrate, Fuel, Recover & Repeat.
  - ✓ Eat to Gain: 4 week program designed to provide quick education pertaining to nutrition intervention for muscle gain during strength training paired with food journal review
- **Nutrition Resource**
  - ✓ Support to parents, coaches, trainers, and students.
    - ❑ Pre-game meal ideas, tournament snacks, on the road meals.
    - ❑ Sport specific recommendations

Tools to assist the student athlete

- www.mysportsdconnect.com – website, education materials, podcasts, app (coming soon)
- http://www.teamusa.org/about-the-usoc/athlete-development/sport-performance/nutrition - USOC
- http://www.sportsrd.org/ - Collegiate and professional sports dietitians
- www.scandpg.org – sports dietitians professional association
- Apps – NSF sport, Your Sport Nutrition Coach, myfitnesspal
- Utilize a sports dietitian to assist with your school or team.
- When looking for sports nutrition info online/print, look for sports RD's or CSSD's in their name.

In Conclusion - Help your athletes be the best they can be!

"Good Eating Habits can make a Good athlete Great"

And…

"Bad Eating Habits can make a <u>Great</u> athlete Good"

- The biggest challenge in meeting a HS athletes overall nutrition needs is getting enough total intake!
- Make sure they are focusing on the nutrient timing to help ensure they are getting the total energy, carbohydrates, and protein they need to fuel their sport properly.
- Healthier food choices better for everyone! Encourage them, model them!

Reference: *My Sports Dietitian*

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