Flatirons Volleyball Club Sports Nutrition Presentation

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Denver Broncos-Director of Team Nutrition
Denver Nuggets-Consulting Sports Dietitian
Colorado Avalanche-Consulting Sports Dietitian
Colorado Rockies-Consulting Sports Dietitian

Background

- **Born and raised in Simla, CO**
- **Population---400**
- **Graduating Class---18**
- **Parents are teachers and coaches so I spent a lot of time on a field or in a gym which developed my passion for sports**
- **3 sport athlete in high school**
- **Played basketball at University of Colorado at Colorado Springs and attended 2 years of college at UCCS.**

Background (cont.)

- Finished Bachelors at UNC (2009)
- Josh McDaniels hired as Broncos Head Coach and wanted an RD
- Interviewed my senior year in college and was brought in for internship for the season (2009)
- Hired FT in 2010 and worked while completing my dietetic internship
- Live in Aurora, CO with my wife Sarah, 8 year old son Kooper, 6 year old daughter Londynn, 4 year old daughter Annistynn, 2 year old daughter Emmy, and 6 month old son Beauen.

Duties and Responsibilities

- **1-1 Consultations with every single athlete**
  - Every training camp and periodically throughout the season
  - Any new player we sign
  - Complete nutrition profile and game plan
  - Helping players gain or lose weight and hit target body composition
- **Dietary Supplement Evaluations**
  - Spend a lot of time evaluating supplement labels
  - 90% take some kind of dietary supplement
- **Travel**
  - Write menu for planes and hotels and coordinate with hotel staff
- **Game-day and Sideline**
  - Hydration and cramp prevention
  - Fueling pre-game and half-time
- **Staff consultations**
  - General
  - Coaches and staff

Duties and Responsibilities

- **Sleep research**
  - **Work with athletes and educate them on the importance of sleep and taking care of their body!**

- **Sweat testing and hydration studies**
  - **Custom bottles on the sideline!**

Sports Nutrition Basics
Fuel with Carbohydrates!

- **Carbohydrates**
  - #1 fuel source the body uses for energy. Primary fuel source
  - Decrease in carbohydrate intake = decrease in muscle glycogen stores = hitting the wall!
  - It takes less oxygen to burn carbohydrates than anything else
  - Protein sparing

- **Protein**
  - Used as energy when muscle glycogen stores are gone!
  - If your diet is inadequate in carbohydrates, especially before a game, your body will convert amino acids (from muscle) to glucose for energy.
  - *Why is this bad? It will lead to a loss in lean muscle mass!*

- **Fat**
  - Used as energy source in low intensity exercises.
  - Not an efficient way to increase energy!

Common Questions and Challenges for Adolescent Athletes

I speak to youth and adolescents in a group setting at least 20 times every single year and 95% of the questions that I get from coaches, parents, athletes pertain to one of these topics below.

* Pre-game fuel
* Hydration
* Sleep
* Recovery
* Supplements

* Anything not covered here just ask!!!!

Pregame Nutrition The Night Before

- **Starts the night before!**
  - What you put in your body the night before will directly impact your energy levels throughout the game.
  - Focus on a balanced meal with an emphasis on carbohydrates.
  - Examples:
    - **Lean proteins, complex carbohydrates, and fluids!**
    - Pasta with meat sauce, lean protein (turkey, chicken, pork tenderloin, tilapia, cod, salmon)
    - Whole grains (bagels, buns, bread, breakfast cereals)
    - Baked potatoes and baked sweet potatoes
    - Fruits and starchy vegetables

Pregame Nutrition
3-4 Hours Before Game

- Small to medium size meal
- High Carbohydrate, moderate protein, low fat
  - Fruit bread, bagels, muffins
  - Turkey sandwich
  - Low fat yogurt
  - Sports drink
  - Breakfast cereal with low-fat milk
  - Fresh fruit
  - Cereal Bars (Nutrigrain bars, granola bars, Clifbar etc…)
  - Nuts including trail mix
    - In moderation

Pregame Nutrition
2-3 Hours Before Game

- **Liquids and some light solids**
  - Liquids digest at a quicker rate than solids
- **Light solid options (preferred 2 hours later)**
  - Toast, bagels, muffins, yogurt, fruit, sports drink, cereal with low fat milk, granola bar, ½ turkey and cheese sandwich, banana bread, low fat muffins
- Stay away from high protein, high fat items that take a long time to absorb and digest

Pregame Nutrition
1 Hour or Less

- Bananas and Oranges
- Applesauce
- Ritz Crackers
- Crackers and cheese
- Yogurt
- Fruit snacks
- Gatorade
- Granola Bars

Pre-game meal and Pre-practice meal

The night before we should be focusing on 65-70% of your meal coming from carbohydrates, followed by lean proteins, vegetables/antioxidants, and fluids.

Sometimes the simplest meals get overlooked because we feel that there ”has to be something better.”

Broncos/Avalanche eat this meal every single night before a game

How many of you have seen this menu as an option or heard a coach tell you to have this the night before a game?

GAME DAY SNACKS AND SCHEDULE

3-4 Hours Before Practice/Game

70% Carb and 30% Protein

Examples:

- **Turkey and cheese sandwich with piece of fruit and water**
- **Bagel with peanut butter and glass of orange juice**
- **Egg, potato, cheese breakfast burrito**
- **English muffin with light jam, bowl of fruit, water**

1-2 Hours Before Practice/Game

80% Carb and 20% Protein

Examples:

- Cheese and Crackers
- Banana with Peanut Butter
- Greek yogurt with Granola
- Cliffbar
- Trail mix (handful)
- Cereal with 1% milk
- Small piece beef jerky with banana

1 Hour or Less Before Practice/Game

Focus on majority of Carbs with light amounts of lean protein

Examples:

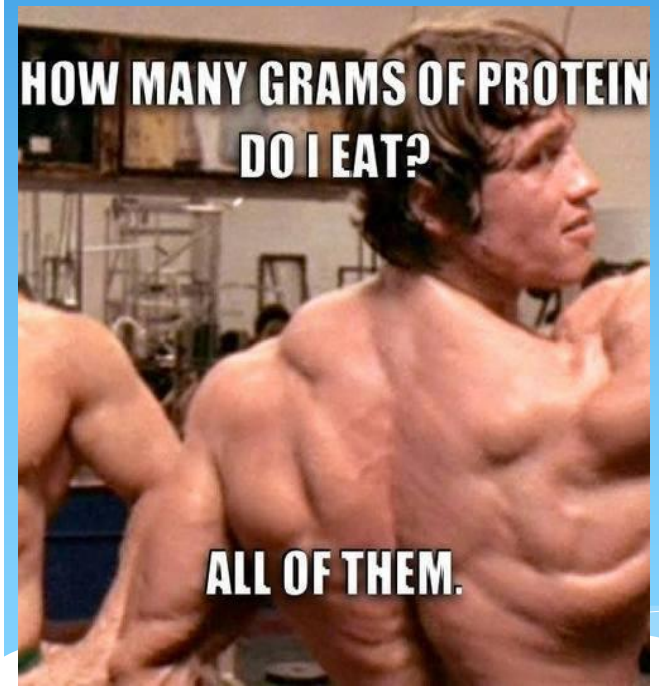
- Gatorade
- Pretzles
- Goldfish Crackers
- Rice Crispy Treats
- Nutrigrain Bars
- Granola Bars
- Fruit Snacks
- Plain Yogurt

RECOVERY NUTRITION

- **YOU HAVE 30 MINUTES!**
  - Studies show you have a 30 minute window after practice and games to get carbohydrates and protein in your bodies.
  - Typically takes your body 24-36 hours to totally recover from strenuous activity like a practice or game.
  - By consuming primarily carbohydrates and small amounts of protein within 30 minutes of a game or practice, the recovery process begins sooner and you could potentially be recovered between 12-16 hours!
  - Looking for a 4:1 ratio of carbs: protein
  - Examples would be chocolate milk, yogurt, recovery bars, whole fruit, peanut butter and jelly (Jamz), crackers, string cheese, banana with peanut butter.

Recovery Nutrition

Carbohydrates + Protein + Fluids



- Stress carbohydrates coupled with protein
  - Case: Player throwing ingredients in a blender.
    - 8 oz. water
    - Ice
    - 4 cracked eggs
    - 3 scoops 100% Whey protein
    - 90-100 grams protein with zero carbs
- Protein Sparing
  - We can't have players losing lean muscle mass throughout the course of the season. We can prevent this through proper education, diet, and recovery.
- Only takes about 20 grams to begin muscle synthesis
- Protein without carbohydrates does not work for recovery.

http://gymmemes.tumblr.com/ Dietitians of Canada and American College of Sports Medicine Joint Position Statement---Nutrition and Athletic Performance

UP TO YOU!

- As athletes it is not up to your parents or your coaches to remind you to take care of your bodies.
- It is up to you!
- Plan ahead, SLEEP, pack a bag, put snacks in your locker…
- Common phrase from athletes when I ask them what they eat before games and practices
  - Well “they” don’t give us anything so we have to eat concession stand food.

The Importance of Breakfast

- Common things I hear student athlete's say.
  - "I don't have time to eat breakfast"
  - "I don't like my breakfast options."
- **If you are short on time: Try the following options:**
  - Yogurt with string cheese
  - A couple pieces of whole fruit
  - Nutrigrain bars/granola bars etc…
- **Something is better than nothing!**
- **No excuses… Eat breakfast!**
- **Not eating breakfast is like getting ready to go on a road trip and not putting gas in the gas tank.**

Focus and Concentration

Being depleted and not having enough carbohydrates is the #1 reason that high school athletes lose focus and concentration.

Carbs fuel your brain! No carbs = No focus!

Increasing Fruits and Vegetables

* Increasing fruits and vegetables are easy!
* The more colors you get the more antioxidants you get which prevents you from getting sick! Aim for a variety of colors!
* Make a smoothie!
  * Strawberries, banana, blueberries, tart cherries, Greek yogurt etc. gets you nearly 5 servings and is a great way to start the day!

Gluten Intolerance

* Gluten is a substance/protein that is responsible for the elastic texture of dough. Some people have an allergy.
* Highly debated
* 1% of the population has Celiac Disease, 5% have an allergy or intolerance, and 25% of people follow a GF diet. This means that 19-25% of people are following a diet and they don't need to.
* Unless you have Celiac Disease----You do not need to avoid gluten. There is not enough evidence or science to say that gluten is bad for you… in fact, gluten free foods are some of the most unhealthy foods that you can actually eat from a preservative and ingredient standpoint.
* If you feel that you have an intolerance, speak to your doctor and they will either run a blood test or they will run a Biopsy of the small intestine.

Hydration for Performance

- Goal is to maintain fluid balance
- Sweat rates will increase with workload
- Must replace water to prevent fatigue
- Reduction in body mass of 1-2% results in 44% reduction in performance

Hydration and Athletic Performance

Hydration Performance Facts

- Whether or not you are hydrated DOES impact your performance.
- Dehydration IS preventable
- If you aren't doing your part to stay hydrated, simply put, you are letting your team down
- Your diet can be perfect but if you aren't hydrating properly you can still be tired, fatigued, and not perform at the highest level.
- You may have not felt the impact yet that altitude has on your body.
  - Altitude DOES impact hydration status

Hydration and Athletic Performance

Consequences of Dehydration

- Causes a decrease in athletic performance
  - A drop in 2% of your body weight (3-5 lbs) can have a significant negative effect on athletic performance.
  - I have seen NHL players lose between 2-12 lbs per practice
- Causes muscle fatigue, damage, and cramps
  - Many muscle strains and tears can be traced back to a dehydrated muscle
- Keeps heart rate and body temperature high
  - We don't want that. This means more calories burned, fluid used, and muscle glycogen (energy) being used.
  - Lower weight in bod pod due to dehydration of traveling

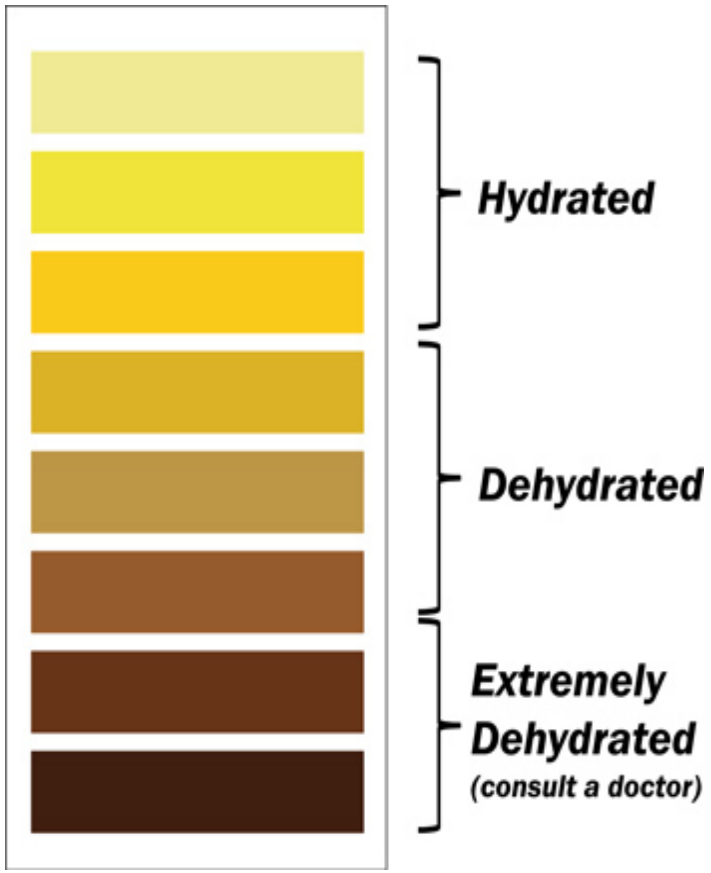
Hydration for Performance

How do I know I am dehydrated?

- Urine color
  - You want your urine to look like water or lemonade
  - Great indicator of dehydration
- Weigh before and after practices
- Most athletes aren't losing muscle or fat during one practice or game… If you are losing weight it reflects hydration!
- Sweat stains
  - Heavy sweaters often have sweat rings around their head, neck, and chest.
  - This shows you are at an elevated risk for dehydration.
  - Place an emphasis on sodium. Consume a mix of water and sports beverage like Gatorade

Am I Dehydrated?

- Best way to determine hydration status?
  - Urine color!
  - Aiming for clear or lemonade color
- Before and after weigh in
  - Weigh yourself before and after practice and games.
  - You need to drink 16-24 oz of fluid for every pound lost.
  - This is a minimum of 1 bottle (16oz) of water for every pound lost.
- Salty Sweater?
  - Sweat rings---Increase sodium



Hydration for Performance

How do I stay hydrated?

- Many athletes go in to practices and games ALREADY dehydrated
- Drink 16 oz of water or sports drink around 2-3 hours before competition.
- Drink 16-24 oz of water or sports drink for every pound lost during practice or competitions. Consume this before your next practice!
- STAY AWAY FROM ENERGY DRINKS

Sports Drinks or Water?

- General Recommendation:

- If exercising longer than one hour it is recommended you consume a sports drink like Gatorade. Why?
  - Electrolytes---Sodium, potassium etc…
  - Sodium makes you thirsty which leads you to drink more!
  - Carbohydrates---Energy source for muscles

Sports Drinks or Water?

* Alternative to Gatorade:
* More worried about the carbohydrates than I am the electrolytes!
* Applesauce, bananas, oranges are easier to consume on the bench… Go Go Squeeze, cut up bananas and sliced oranges.
* Need to eat something to make up for the lack of carbohydrates.

Hydration for Performance

BOTTOM LINE

- There is no excuse for you to be dehydrated.
- It WILL impact your performance, either positively or negatively
- Fluids and Sodium are the focal points
- You MUST drink more at high altitudes
- Focus on sports drinks during competition and water in between
- I had a player tell me that hydration didn't have an impact on his performance because he physically couldn't feel it make a difference. That same player cramped up on game day and couldn't be on the field which let his team down. It can impact performance… if you let it.

Dietary Supplements and Energy Drinks

- The dietary supplement/energy drink market is a 40 billion ($40,000,000,000)dollar industry. They are primarily marketing to YOU!
- They make more money than the NHL, NFL, NBA, MLB, NASCAR COMBINED
- Rarely do supplements actually do what they say they are going to do!
- Anything that reads “supplement facts” on the label means it is NOT regulated by the Food and Drug Administration (FDA).

Dietary Supplements and Energy Drinks

Sports drinks are not energy drinks and energy drinks are not sports drinks. They are different and often times confused by high school athletes as being the same.

Not just worried about caffeine content! Energy drinks and pre-workout supplements have MANY other ingredients that function as stimulants including Guarana and Yerba Mate that also contain caffeine.

For every 1g of Guarana that is found in a pre-workout product or energy drink it is equal to 80mg of caffeine. Most high school/college kids don't understand this.

In 2007, there were 5,448 cases of caffeine overdose patients and 46% of those cases were kids under the age of 19.

This problem is real.

Dietary Supplements and Energy Drinks

- Memphis Grizzlies guard O.J. Mayo says he believes an "energy drink" he bought at a gas station contained the substance that led to his 10-game suspension for violating the NBA's drug policy.

- "I didn't know it had any bad substances in it, and it caused a 10-game suspension," Mayo said. "It's not like I went to a GNC and got some Muscle Armor or ordered some supplement off the Internet or anything. It was just a local gas station that kind of got me hemmed up."
  OJ Mayo-Memphis Grizzlies

- "Lewis said in a statement that he took an over-the-counter supplement late last season that included a substance he did not realize was banned by the NBA."
  Rashard Lewis-Orlando Magic

The leagues (NBA, NFL, MLB, NHL) do not care if a player "didn't know."

Dietary Supplements and Energy Drinks

Supplement Headlines in the News

Is the Seller to Blame?
Workout Supplement Challenged After Death of Soldier

What Is Jack3d? Behind The DMAA Supplement Marathoner Claire Squires Used Before She Died

Family claims rogue batch of fat-burning supplement killed super-fit 34-year-old

Sports Supplements blamed for heat stroke death

Bottom Line:

Who has the time, money, and resources to control and regulate a 40 BILLION dollar industry?

Until there are deaths that can be tied to supplements, the FDA will not step in a take these products off the market.

SLEEP AND ATHLETIC PERFORMANCE

- Are you sleeping enough? Probably not.
- If you are going to perform at the highest level, you need 8-10 hours of sleep per night.
- Not sleeping impacts recovery and lean muscle mass!
  - Our bodies secrete human growth hormone when we hit the deep REM sleep. This usually takes place after 6 hours of sleep.
  - Not sleeping = body not secreting HgH = not recovering as well as you could be.
  - You have an elevated perceived exertion of almost 17-19%. This means you feel like you are working harder!!

SLEEP AND ATHLETIC PERFORMANCE

"Athletes spend hours in the training room on recovery modalities and treatments. They may only get 5-6 hours of sleep. Sleep is the best recovery! Sleep is 90% of recovery, regeneration and repairing the body and mind. Everything else is 10%."

Navin Hettiarachchi

Director of Athletic Performance/Strength and Conditioning

Washington Wizards

Sleep and Athletic Performance

The Stanford Sleep Disorders Clinic and Research Laboratory does a great job of analyzing sleep patterns and quality sleep that athletes get.

Sleep is Crucial

- Often overlooked
- Research shows athletes need a minimum of 9 hours per night
  - My guess is most get probably 5-6 hours.

Sleep Debt

- There is research that shows you can accumulate "sleep debt."
  - For example, if you need 8 hours per night that is equal to 56 hours per week. If you only get 6 hours per night for 7 days you only get 42 hours total for the week and you end up accumulating 14 hours of "sleep debt" per week or 56 hours per month.

- Stanford University Sleep Disorders Clinic and Research Laboratory—Cheri Mah---Center for excellence in the field of sleep medicine.

SLEEP AND ATHLETIC PERFORMANCE

Direct correlation between not sleeping enough and increased risk of injury. One study showed that athletes were 68% more likely to get injured if they were sleeping on average of 8 hours or less per night.

J Pediatr Orthop. 2014 Mar;34(2):129-33. doi: 10.1097/BPO.0000000000000151.

SLEEP AND ATHLETIC PERFORMANCE

The average high school athlete is sleeping MAYBE 7 hours per night, skipping breakfast, not hydrating properly and not recovering the right way after lifting weights.

What kind of gains are you expecting?

SLEEP AND ATHLETIC PERFORMANCE

- What can we do?
  - Establish a bed-time routine
  - Avoid Spicy Foods
  - Put your electronics away!
  - No cell phones, computers, laptops. Blue frequencies in light can influence the way you sleep!
  - Video games

- Make your room like a cave!
  - Dark, cool, quiet. Temperature of room should be between 68-72 degrees!

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CONCLUSION

- There are 5 things that you should do every single day as an athlete.
  - Get 8 hours of sleep minimum
  - Eat breakfast
  - Hydrate and refuel during exercise
  - Recover within 30 minutes of every single workout, game, and practice
  - Stay away from ALL dietary supplements and energy drinks

How many of you do this every single day?

Imagine how good your team would be if every single one of your teammates did these 5 things.

Questions

Thank you for the opportunity!