



2019 COACHES CONFERENCE

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2.0 CEUS

#COACHES19

Conflict of Interest Statement

I currently have, or I have had in the past 2 years an affiliation or financial interest with Gatorade around this presentation, including:

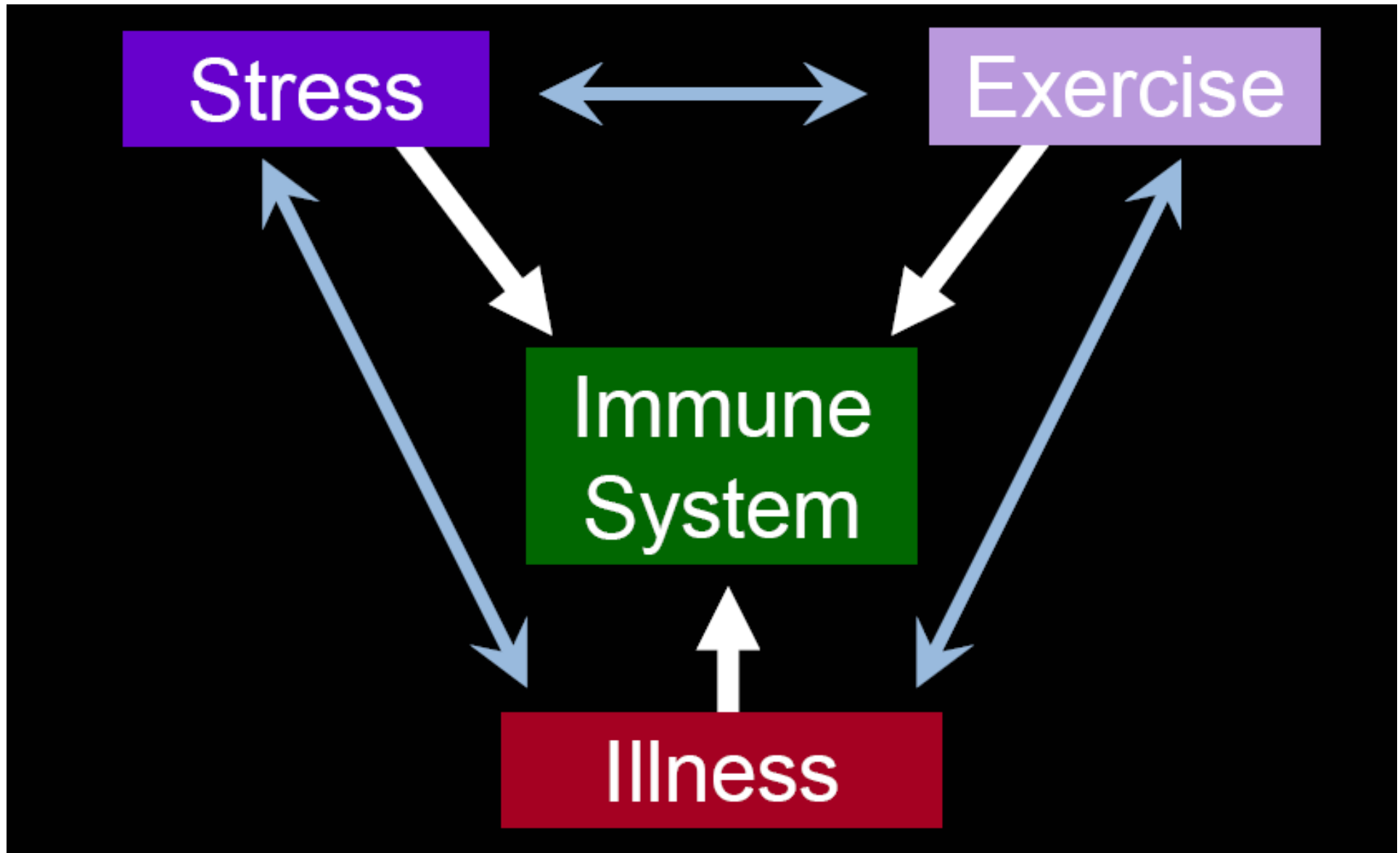
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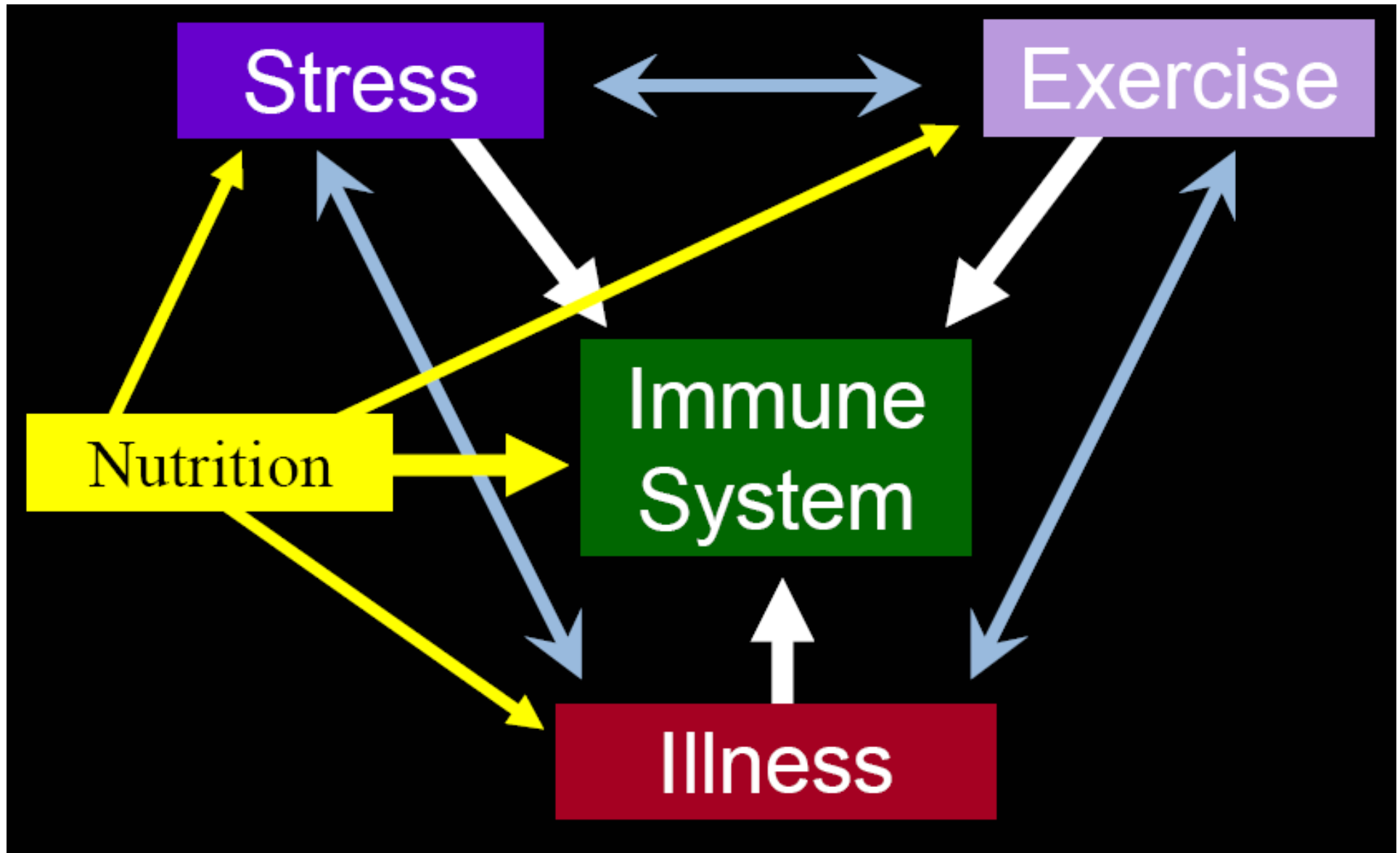
The Basics of Nutrition Intervention for a Successful Strength Program

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Director of Sports Nutrition

Introduction

- The food we eat generally serves three major functions.
 - Providing an energy source or fuel
 - Providing raw material for tissue development
 - Providing chemical components that regulate all functions in the body
- It is essential that you have a balance of nutrients daily.





Hormonal Influences

- Cortisol
 - Released by the adrenal glands when:
 - Blood glucose levels are low
 - Under periods of stress (intense exercise, sleep deprivation, trauma, burns)
 - Resistance exercise – Cortisol is release at a higher rate

Cortisol & Immune System

- ↑ in blood Cortisol
 - 5 Fold increase during resistance training
 - Lowers concentration of immune cells
 - Failure to provide nutrient supplementation imposes greater risk of immuno-suppression
 - Weakens body's mechanism of fighting infection

5 Tips to Improve Nutritional Quality and Immune System

- Choose Foods High in Antioxidants
- Eat a Variety of Food Colors
- Include Fresh Herbs and Spices in your cooked Meals
- Add Omega 3's to your daily diet
- Aim for 30-40 g of Fiber/day

Five Common Mistakes

1. Recovery after training and competition is not taken seriously
2. Inadequate amount of sleep
3. Improper distribution of food throughout the day.
4. Inadequate consumption of fruits and vegetables
5. Inadequate fluid intake

Acute Effect of Resistance Exercise

1. Skeletal muscle protein degradation (MPD) elevated for 24 – 48 hours.
2. Skeletal muscle protein synthesis (MPS) elevated for 48 hours.
3. Muscle net protein balance will remain negative without nutrient intake.

Circulating Amino Acids



Circulating levels of amino acids leads to:

1. An increase in muscle protein degradation
2. An increase in amino acids released from muscles



Circulating levels of amino acids leads to:

1. Increased initiation of muscle protein synthesis
2. An increase in amino acid transport into muscle cells

Consuming high quality protein immediately after resistance training increases MPS by increasing circulating levels of amino acids.

Timing of Carbohydrate Intake

1. Supplementing CHO before and during resistance training maintains glycogen stores significantly better than water.
2. Supplementing CHO during reduces cortisol-induced MPD.
3. Supplementing CHO after resistance exercise improves net protein balance by decreasing MPD.

Inflammation

Foods high in antioxidants protect against inflammation caused by exercise and aid in repair of muscle damage.

<u>VEGETABLES</u>	<u>FRUIT</u>	<u>NUTS</u>
Spinach	Cherries	Almonds
Broccoli	Blueberries	Walnuts
Bell Peppers	Raspberries	Sunflower Seeds
Green Beans	Strawberries	
Olives	Pineapples	<u>BEVERAGES</u>
Cauliflower	Apples	Green Tea
Sweet Potatoes	Oranges	Cherry Juice
	Kiwi	Pomegranate Juice
		Vegetable Juice

Other Anti-Inflammatory Foods

- Fatty Fish – Salmon, Tuna, & Sardines
- Allium Family of Foods – Garlic & Onions
- Herbs & Spices:
 - capsaicin (red pepper)
 - Ginger
 - Turmeric (yellow spice in curry)

Pro-Inflammatory Foods (Avoid / Limit)

- Excessive calorie intake (fat gain)
- Excessive alcohol (more than one a day for women; two for men)
- Sugars or white floured foods
- Processed foods
 - Frozen, Pre-Packaged Convenient Meals
- Excessive Saturated fat intake (fatty meat, creams, butter)
- *Trans* fats (Partially Hydrogenated Oils)

Five Common Mistakes

1. Recovery after training and competition is not taken seriously
2. **Inadequate amount of sleep**
3. Improper distribution of food throughout the day.
4. Inadequate consumption of fruits and vegetables
5. Inadequate fluid intake

Inadequate Sleep

1. Inadequate sleep has also been shown to decrease muscle gain and increase fat gain.
2. Aim for 8 hours of sleep each night. Getting enough sleep is imperative for the body to maintain optimal function.
3. Sleep impacts hormones:
 1. Growth Hormone
 2. Cortisol
4. Lack of sleep increases cravings for sugar & fat

Five Common Mistakes

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Protein

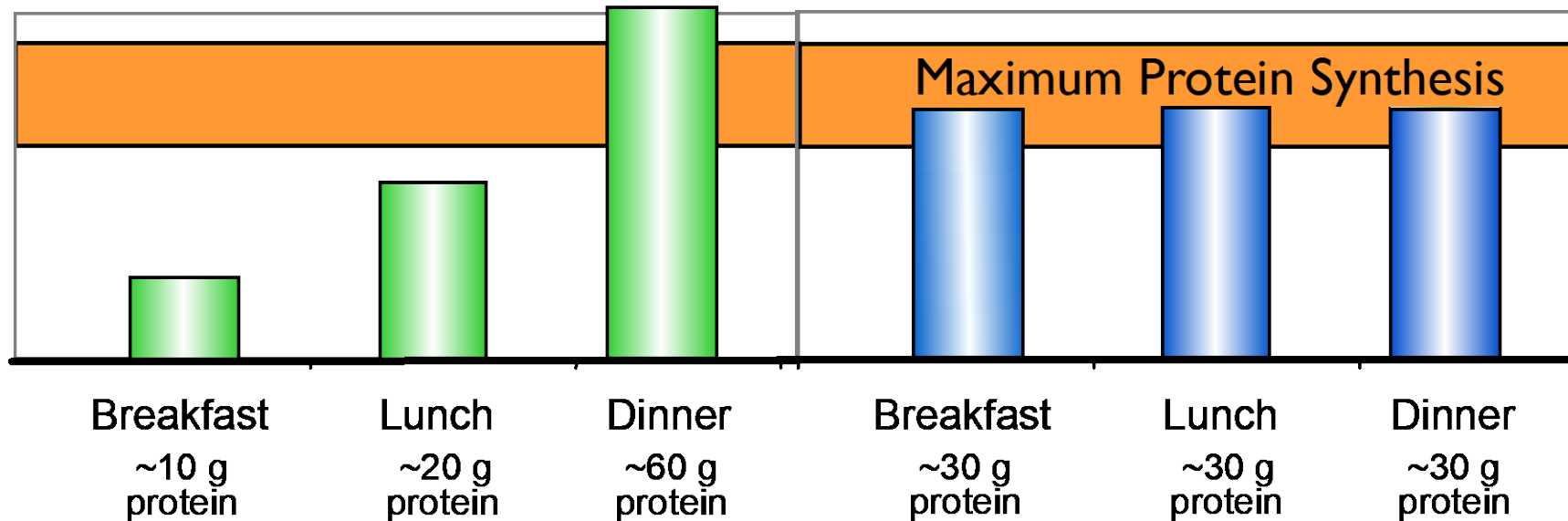
- How much protein is necessary?
 - Body weight dependent (0.4g/kg BW)
 - 20 – 50 grams every 2-4 hours that you are awake.
- Best Sources:
 - It was an animal (Chicken, Turkey, Fish, Beef, Pork)
 - It came from an animal (Eggs, Milk, Yogurt, Cheese)
- Leanest Choices:
 - Count the Legs. The fewer the better!
 - 0 – Fish
 - 2 – Chicken & Turkey
 - 4 – Beef & Pork

Distribution

Meal Patterns:

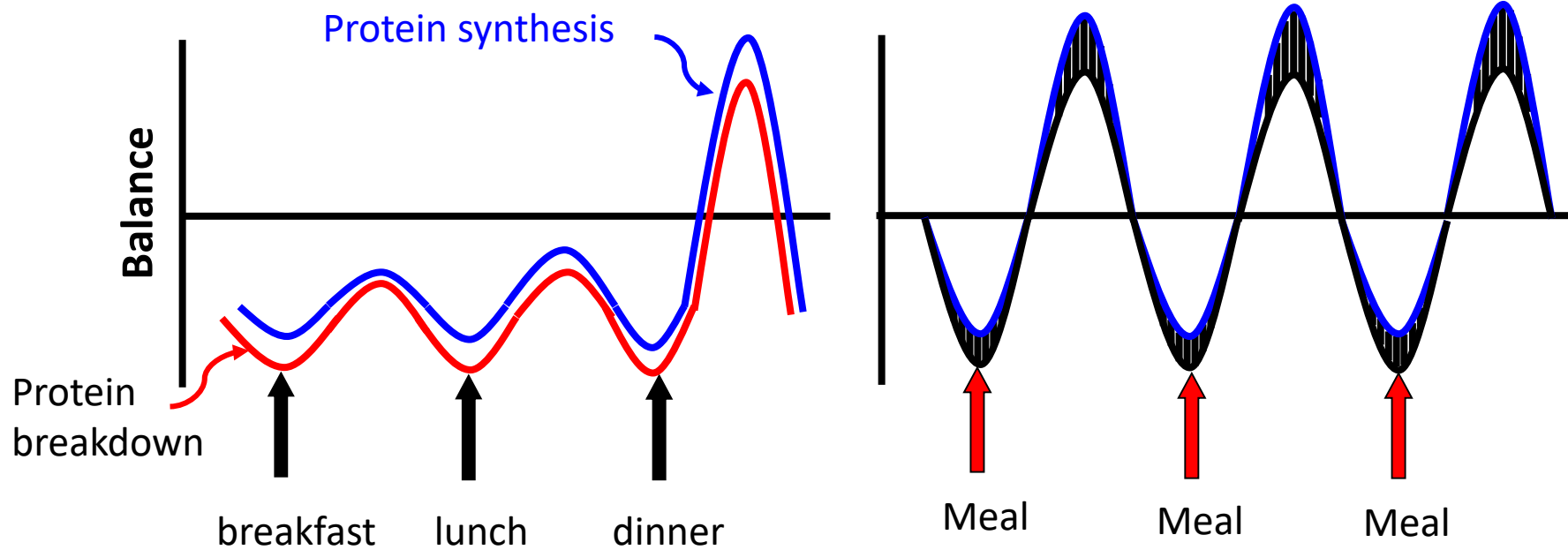
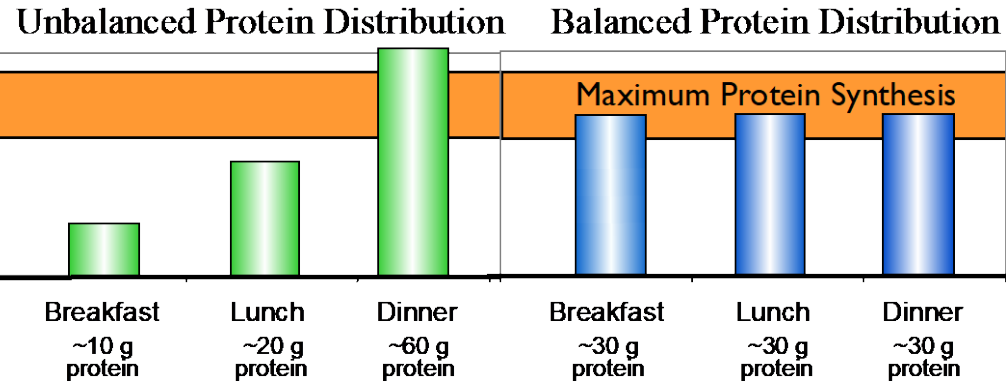
Unbalanced Protein Distribution

Balanced Protein Distribution



Distribution

Meal Patterns:



Five Common Mistakes

1. Recovery after training and competition is not taken seriously
2. Inadequate amount of sleep
3. Skipping breakfast
4. Inadequate consumption of fruits and vegetables
5. Inadequate fluid intake

Fruits & Vegetables

1. Both provide necessary carbohydrates or energy for your workouts.
2. They also provide the necessary vitamin and minerals to promote health and optimal physical performance
3. Fresh Fruits and Vegetables also contain phytonutrients such as: Flavonoids, Anthocyanins, Zeaxanthin, Lycopene, Beta Carotene
4. Have a serving of either every time you eat.
5. Try to get a variety of colors, but choose **GREEN** daily.

Eat a Variety of Foods

Red	Yellow/Orange	White
Apples	Butternut Squash	Apples
Cherries	Cantaloupe	Bananas
Craisins	Carrots	Cauliflower
Cranberries	Grapefruit	Onions
Raspberries	Oranges	Pears
Red Bell Peppers	Peaches	White Peaches
Red Cabbage	Pineapples	White Potatoes
Strawberries	Pumpkin	
Tomatoes	Sweet Potatoes	
Watermelon	Tangerines	
	Yellow Bell Peppers	

Eat a Variety of Foods

Green	Blue/Purple	Brown
Asparagus	Black Olives	Almonds
Broccoli	Blackberries	Walnuts
Brussels Sprouts	Blueberries	Peanuts
Collards	Plums	Pecans
Green Bell Peppers	Prunes	Sunflower Seeds
Green Olives	Purple Grapes	Wheat Germ
Guacamole	Raisins	
Kale		
Mustard Greens		
Romaine Lettuce		
Spinach		

Five Common Mistakes

1. Recovery after training and competition is not taken seriously
2. Inadequate amount of sleep
3. Improper distribution of food throughout the day.
4. Inadequate consumption of fruits and vegetables
5. **Inadequate fluid intake**

Inadequate Fluid Intake

About 60% of your body is water.

- The human brain is ~ 85% water.
- Skeletal muscle is ~ 75% water.
- Red blood cells are ~ 60% water.

Dehydration decreases your metabolism by up to 10%.

Dehydration increases your risk of muscle injuries.

Dehydration

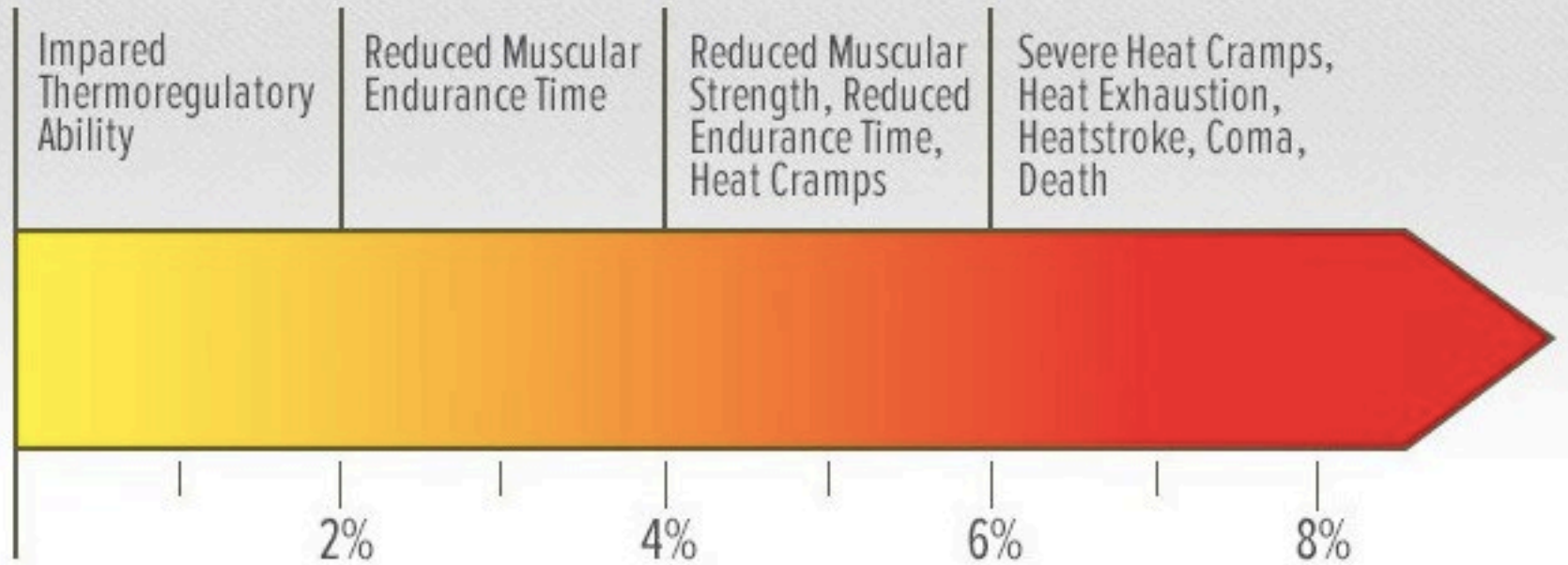


P E R F O R M A N C E

H E A T I L L N E S S

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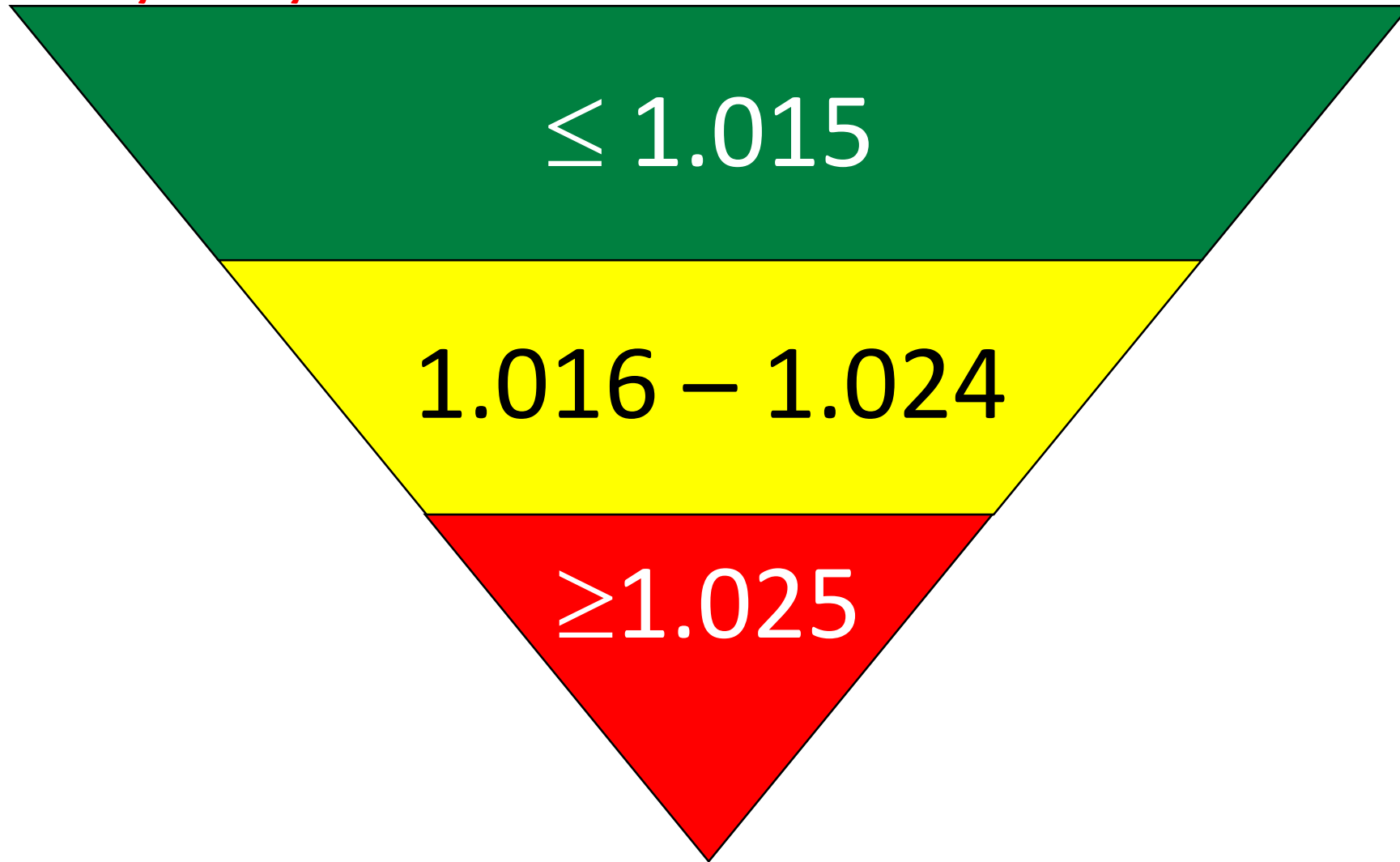
EFFECTS OF DEHYDRATION ON PERFORMANCE ¹



WATER LOSS AS PERCENT OF BODY WEIGHT

¹Adapted from Armstrong, L.E. (1998) Research update: Fluid replacement and athlete hydration. National Strength and Conditioning Journal 10:69-71.

Urinary Hydration Test



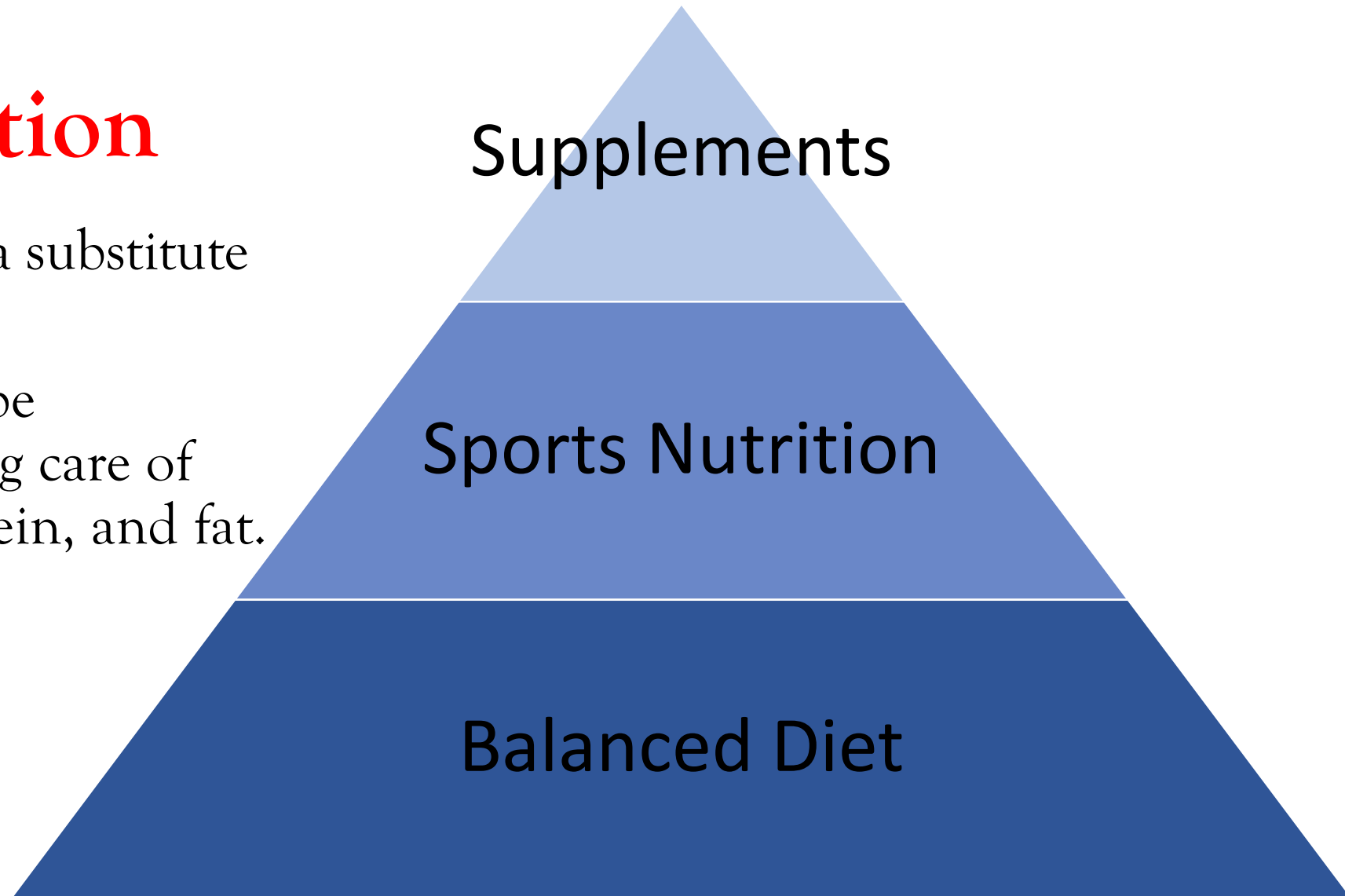
Hydration Strategy

- 200 lb: Drink 8 oz every hour
- 250 lb: Drink 10 oz every hour
- 300 lb: Drink 12 oz every hour

- For every pound you lose in practice, you need to replace it with 20 - 24oz.
- For every pound you lose in practice, add 2 oz to your hourly fluid intake.

Smart Supplementation

- Supplements are not a substitute for a good diet.
- Supplements should be considered after taking care of hydration, carbs, protein, and fat.



What are supplements?

Definition

- Any vitamin, mineral, amino acid, herb, or other botanical

AKA

- Dietary supplements, nutritional ergogenic aids, sports supplements, therapeutic nutritional products
- Can include sports drinks and protein bars.

20 billion dollar industry

Regulation?

- Dietary Supplement Health and Education Act of 1994.
 - Placed dietary supplements in own category, separate from food & drugs
 - ***FDA = limited regulatory power***
 - FDA relies on supplement manufacturers to ensure the safety of their products before it reaches the consumer.
 - The FDA only acts when a supplement has been identified as unsafe *after* it has been on the market.

Which Means...

Supplement manufacturers can start selling their product, but do **NOT** have to prove:

Safety
Effectiveness
Potency



Supplement Issues To Be Aware Of

- **Spiking**: where a manufacturer specifically adds a raw material to a formulation so the product has a desired effect.
- **Adulteration**: where a product or raw material is contaminated with an inferior material used to pass known analytical testing parameters.
- **Cross Contamination**: inadvertent contamination due to poor manufacturing conditions or poor cleaning procedures.

These issues happen in the US and as well as China where the majority of raw materials are manufactured.

Contamination...

A real concern

A recent study has shown that 15% of supplements around the world are “contaminated” or adulterated with anabolic steroids.

- Of those purchased in the US, 19% were contaminated.
- Products that were labeled as amino acids, creatine and HMB were among the products that tested positive for steroids.

Problems start with poor ingredient suppliers

- Many ingredients are sourced strictly on price and overseas.
- Brokers and distributors make supply chain safety and management very difficult, if not impossible.
- Fact: 100% of synthetic Vitamin C, used in supplements, fortification of bars, protein drinks and food come from China. This is true of most synthetic letter vitamins. 90% of vit A, B and E.
- 30% fish oil
- 90% of primary amino acids
- 80% of whey protein
- 50% of aspirin, acetaminophen
- China sourced raw ingredients have an impact on the global dietary supplement market

What Do All the Certifications Mean?



Certified for Sport™
www.nsf.org

- **NSF for Sport**

- Banned substance screening (200+)
- Label claim review
- Toxicology review
- Contaminant review
- GMP audit

- **USP**

- GMP audit
- Product & ingredient testing



- **Informed Choice**

- Uses HFL Sport Science to do testing
- 146 substances screened



- **BSCG**

- Banned substance screening (200+)



Resources

- Drug Free Sport Axis
 - DrugFreeSport.com
- National Institutes of Health - Office of Dietary Supplements:
 - <https://ods.od.nih.gov>
- USADA's Supplement411:
 - <https://www.usada.org/substances/supplement-411/>
- 3rd Party Certification Websites
 - <http://www.nsf sport.com>
- Natural Medicines Comprehensive Database
- Trusted Colleagues

Nutrition Scorecard

1. Did you eat breakfast today?
2. Did you eat 4-6 times today?
3. Did you eat a meal ~3 hours or a snack ~1 hour, before practice/workouts?
4. Did you eat a meal or snack with quality protein and carbs within 60 minutes post workout? (a shake or bar counts)
5. Did you include protein at every meal and snack?
6. Did you eat ≥ 5 servings of different colored fruits and veggies today?

Nutrition Scorecard

7. Did you eat healthy fat today? (Fish Oil, nuts, seeds, peanut butter, hummus, avocado, fish, olive oil, and/or flaxseeds)
8. Did you choose whole grains at least 50% of the time? (i.e. choose whole wheat vs. white bread)
9. Did you get ≥ 3 servings of low fat dairy products today?
10. Did you stay hydrated today? This means carrying, and drinking from, a water bottle all day and having clear to pale-yellow urine.
11. Do you get at least 7 hours of sleep last night?
12. Do you take vitamin D and/or multivitamin today?

Nutrition Scorecard

- National Champion Nutrition = **10-12**
- ACC Champion Nutrition = **7-9**
- Better luck next year = **< 7**

Rules to Live By:

1. Eat breakfast daily
2. Eat every few hours (4-6 times daily).
3. Try to choose the least processed foods.
4. Eat a variety of colors.
5. Include a lean protein source at every meal.
6. Consume a combination of carbs and protein before and after workouts.
7. Stay hydrated!