Using Nutrition to Optimize Performance and Health in Athletes

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American Nutrition Association
November 4, 2010
My Journey to the Unprocessed Truth!
Agenda

1. Performance and Health Benefits of Real Food
2. The Athlete’s Wish List
3. Determining Fuel Utilization for Sport
4. Nutrient Timing
5. Supplementation: Foundational and Performance
6. Assessment and Practical Application
Performance and Health Benefits
Optimal Nutrition Can:

- **Fuel energy pathways** appropriately for sport and health
  - Generate ATP (energy)
    - ATP-Creatine phosphagens
    - Carbohydrate
    - Fat
    - Protein
- **Switch athlete from catabolism to anabolism**
  - Nutrient timing
  - Adequate energy and nutrient intake
- **Prevent metabolite accumulation** (during exercise)
  - Buffering and minerals for pH balance
- **Neutralize oxidative stress**
  - Providing food antioxidants and other compounds
  - Raises vibration of cells
- **Improve stress handling** (“health”)
  - Minimize effect of physical, emotional, environmental stressors
  - Eliminate dietary stressors
  - Support immunity
  - Create hormone balance
- **Provide adequate hydration**
  - 1 cup of water will improve autonomic nervous system – Dr. Teff
  - Importance of clean and pure water, other beverages water and foods
  - Oxygenating (shaking water bottle)
  - Unrefined sea salt
Conventional Sports Diet vs. SportFuel

- Direct path to insulin resistance and hormonal imbalances!
- Oxidative stress
- Energy and blood glucose highs and lows
- Impaired digestion and immunity
- Multiple nutrition and mineral deficiencies
- Fat storage and undesirable body composition

- Promotes insulin sensitivity and hormonal balance
- Anti-inflammatory
- Provides buffering minerals and neutralization of oxidative stress
- Stable fuel and energy
- Optimal digestion and immunity
- Nutrient adequacy of fat-soluble vitamins and activators
- Fat-burning
- Well-functioning metabolism and desirable body composition
Learning from the Past

• Humans evolved ~2.4 million years as Hunters and Gatherers

  “Agriculture” only began 10,000-15,000 years ago

• Industrial food processing began in last century

• Sugar intake per person
  – 2-3 pounds/year before 1920s
  – 80-90 pounds/year by 1920s
  – NOW 162 pounds of white sugar each year for each American
A Downward Spiral

1911: Crisco - cottonseed oil. Industrial waste product marketed as a health food

1950's: anti-saturated-fat mindset became prevalent

1960's: The American Heart Association introduced the prudent diet, which called for margarine and vegetable oil instead of butter, cold cereal to replace eggs and eating more chicken and fish instead versus red meat.

1970s: Soy lecithin (industrial waste product of soybean oil) introduced. Other examples: margarine, cool whip, egg beaters, Velveeta, Wonder bread!

1992: USDA Food Guide Pyramid introduced

Reported deaths from heart attack in the US:

- 1921: 1
- 1930: 3,000
- 2006: 700,000+

Source: The Liberation Diet by Kevin Brown and Annette Presley
Humans thrived and survived on different diets

- No human culture lived solely on purely vegetarian diets
- Rich in good “real food” fats
- All locally grown
- Food was in natural state
  - Unprocessed truth!
- Some raw food
- Lacto-fermented foods
- Bone broths
- Properly prepared grains
No Low Fat Diets!

- **Saturated Fat from pastured animals**
  - Whole Egg vs. Egg White
  - Grass fed beef over farm raised salmon

- **Essential Fatty Acids**
  - Typical American diet creates imbalance
  - Essential plant and animal sources
  - Only needed in small amounts

- Choose real fats wisely - good sources, high quality, proper processing, and use

**Don’t shun fats!**
Benefits of Organic

Most commonly consumed toxins
Herbicides, pesticides, agricultural and food chemicals, artificial flavorings and preservatives.

Danger of pesticides

- Promote inflammation
- Contribute to bone loss
- Cause mutations in stem cells in bone marrow
- Increase the risk of blood cell cancer such as leukemia and lymphoma.
- Some chemicals mimic estrogen and can raise the risk of estrogen-related cancers.

Invest Now or Pay Later
Conventional vs. Organic

Conventionally grown crops

- Grow bigger and faster as a result of nitrogen added fertilizer
- Nitrogen can be converted to cancer-causing nitrates
- Grow fast→ they have less time to extract essential nutrients from soil
- Pesticides→ they spend little energy on generating phytochemicals because they are protected by pesticides

Organically grown crops

- Generate phytochemicals (vitamins and phenolic compounds) for protection against insects, fungi, and other natural stresses of growing
- Contain higher levels of nutrients (polyphenols and antioxidants)
- 25% more nutrient-rich than conventionally grown varieties.
- Nutrients are in a more biologically active form!
- 2002 study found that organically grown foods contain: 27% more vitamin C, 21.1% more iron, 29.3% more magnesium, and 13.6% more phosphorus.

Source: Nutrition and Healing Newsletter September 2010: www.wrightnewsletter.com
Eat Like the Pros Handout
The Athlete’s Wish List
Athlete’s Wish List

- Maximize performance
- Make best foods and fluids choices
- Increase energy
- Reach best playing weight/body composition
- Recover more quickly
- Promote healing
- Prevent illness
- Correct GI disturbances
- Sleep better
- Extend career
- Determine appropriate supplementation
Athletes’ Sources of Motivation

- Avoid a fine
- Make the team
- Health and Energy
- Change body composition
- Perform at higher level
Fuel for Sport
Glucose Sources

Glucogenesis
- Glycogen synthesis and storage from glucose (from diet carbs)

Gluconeogenesis
- Glucose synthesis from non-carbohydrate nutrients (protein & fat)

Glycogenolysis
- Glucose formation from glycogen
Fuel Needs Comparison

Identify the fuel type needed for training and sport

Intensity and duration of activity

Combined with..

Goals of athlete

» Performance
» Body composition changes
» In-season vs. Off-season
# Fuel Usage by Sport

<table>
<thead>
<tr>
<th>Sport</th>
<th>ATP-PCr &amp; Glycolysis</th>
<th>Glycolysis &amp; Oxidative</th>
<th>Oxidative</th>
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<tbody>
<tr>
<td>Basketball</td>
<td>60</td>
<td>20</td>
<td>20</td>
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<tr>
<td>Fencing</td>
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<td>10</td>
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<td>Field Events</td>
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<td>15</td>
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<td>30</td>
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<tr>
<td>Rowing</td>
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<td>30</td>
<td>50</td>
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<tr>
<td>Running (distance)</td>
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<td>20</td>
<td>70</td>
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<tr>
<td>Skiing</td>
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<tr>
<td>Soccer</td>
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<td>30</td>
</tr>
<tr>
<td>Swimming (distance)</td>
<td>10</td>
<td>20</td>
<td>70</td>
</tr>
<tr>
<td>Swimming (50m freestyle)*</td>
<td>40</td>
<td>55</td>
<td>5</td>
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<tr>
<td>Tennis</td>
<td>70</td>
<td>20</td>
<td>10</td>
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<tr>
<td>Volleyball</td>
<td>80</td>
<td>5</td>
<td>15</td>
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<table>
<thead>
<tr>
<th>System</th>
<th>Time</th>
<th>Predominant fuels used</th>
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<tbody>
<tr>
<td>ATP-PCr and Glycolysis (fast)</td>
<td>3-15 s</td>
<td>ATP/CP/CHO</td>
</tr>
<tr>
<td>Glycolysis and Oxidative (Slow)</td>
<td>10-45s</td>
<td>CHO</td>
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<tr>
<td>Oxidative</td>
<td>Peaks at 90 Secs</td>
<td>CHO, fat, some protein (in long-lasting events)</td>
</tr>
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</table>


http://www.sport-fitness-advisor.com/
Ice Hockey

- Quick bursts of high intensity on ice (30-80s)
  - Uses ATP-CP and both fast and slow glycolysis (carbs)
- Rest between shifts and stoppages
  - Using oxidative system (fat burning) that spares carbs and helps recover on breaks
- The ability to repeat high bouts of intensity has to do with good endurance (interval endurance)
- A hockey player who does not replace carbs after would “lose legs” and lower immunity
  - Rely on amino acids for glycogen
  - See on testing and in symptoms
Carbohydrate Re-loading
The Problem with Processed High Carbohydrate Diets

Insulin Resistance (IR)

Symptoms of IR

- Brain fog and inability to focus
- Depression
- Fatigue
- Low/High blood sugar
- Increased blood triglycerides
- Intestinal bloating
- Sleep problems
- Weight gain
- Fat storage
- Difficulty losing weight
Determining Insulin Resistance

HOMA - CIGMA Insulin Resistance

**Insulin Resistance** = \( \frac{\text{Glucose} \times \text{Insulin}}{405} \)

\( \geq 1.8 = \text{Insulin Resistance} \)

Viana, Carlos M; “Targeting and Solving Complex Insulin resistance Based Illness”: Part One; Slide number 20; presented 19 August 2010; 19th Annual Symposium of the International and American Association of Clinical Nutritionist
IR and ATP Deficiency

- Fatigue
- Edema
- Muscle stiffness
- Aches and pains
- Muscle spasms
- Longer exercise recovery
- Cardiac Insufficiency
Are carbs needed to fuel sport?  
**Yes**

Should carbs be eaten all day long?  
**No**  
Insulin resistance/Lowers ATP

Should extra high GI carbs be eaten at right times (right before, during, after training)?  
**Yes**

Can athletes maximize their performance by eating a processed food diet including grains and refined sugars?  
**No**
Should athletes choose ‘real foods’ sources of carbs such as root vegetables, fruits, and properly prepared grains if desired and tolerated?  
Yes

Will the amount of carb needed differ from athlete to athlete and from sport to sport?  
Yes

Is it essential for high-intensity athletes to carbohydrate re-load post-training?  
Yes
Pre-workout

Eat **2-3 hours** before to fuel and prevent hunger during activity.

Avoid high GI meal **1 hour** before event

Don’t use sports drink more than **5-10 min** before to prevent a blood sugar drop

Practice food/drink intake **during** training
  – Don’t try something new during competition
Goals
- Support ATP levels
- Reduce oxidative stress

Provide fluids with:
- Buffering minerals
- Carbohydrates (~25-75g/hour depending on intensity)
  - higher intensity = needs are on the higher end
- Ribose
- Sources of Vitamin C and E
- BCAAs (opt)
BCAA and EAA Guidelines

Pre and Post Exercise

Essential Amino Acids
0.09g per kg of LBM

Branched Chain Amino Acids
0.05g per kg of LBM
Recovery Drink

Highly customizable individualized liquid carbohydrate-protein drink

Based on:

- Training
- Goals
- Current body weight
- Habitual diet
- Performance and athlete feedback

Timing: ASAP…Within 30 minutes
Follow with a post-training meal
Recovery Drink

Ingredients

Undenatured Grass-fed Whey protein
- At least 15% di and tri peptides
- At least 2.5 g of leucine (25g of whey protein)
  - Most critical BCAA
  - Stimulates insulin

High glycemic index carbohydrate
- Maltodextrin
- Organic fruit juices

Other: powdered greens, glutamine

Why?
To support anabolic effect of insulin response
- Leucine and high GI carbohydrates
- Go from catabolic → anabolic
See “Recovery Drink” handout
High Glycemic Index Foods

• Cornflakes
• Honey
• Baked potato
• Sports beverage
• Bagel
• White/Wheat bread
• Watermelon
From Catabolic to Anabolic

<table>
<thead>
<tr>
<th>TABLE 19-4</th>
<th>Insulin Action on Liver, Adipose Tissue, and Muscle</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Liver</td>
</tr>
<tr>
<td>Anticatabolic effects</td>
<td>↓ Glycogenolysis</td>
</tr>
<tr>
<td></td>
<td>↓ Gluconeogenesis</td>
</tr>
<tr>
<td>Anabolic effects</td>
<td>↑ Ketogenesis</td>
</tr>
<tr>
<td></td>
<td>↑ Glycogen synthesis</td>
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Hydration Guidelines

Before Exercise
- Drink about 15-20 fl oz, 2-3 hours before exercise
- Drink 8-10 fl oz 10-15 min before exercise

During Exercise
- Drink 8-10 fl oz every 10-15 min during exercise
- If exercising longer than 90 minutes, drink 8-10 fl oz of a sports drink (with no more than 8 percent carbohydrate) every 15 - 30 minutes.

Hydration After Exercise
- Weigh yourself before and after exercise and replace fluid losses.
- Drink 20-24 fl oz water for every 1 lb lost.

ACSM 2007 Fluid and Hydration Position Paper
“Water is not just a solvent for biomolecules but a vital participant for biological processes for electron excitation” - Albert Szent Gyorgyi

Water and electromagnetic fields form the matrix of life!

Purified vs. Spring
• Integrative BioPhysics/Vibrational Medicine
• Dr. Stephen Sinatra
• www.earthinginstitute.net
• Grounding: using the Earth’s energy to facilitate healing
Foundational Supplementation
Food Based Vitamin/Minerals

Addresses most common nutrient depletions seen
(B vitamins, macro and trace minerals)

Increased bioavailability and assimilation

Synergistic effects
  – Whole food complexes

Unrefined sea salt
  – Trace minerals
Digestive Support
“Healing and Sealing”

Why? Most illness starts in the GI tract

Overgrowth of pathogenic organisms
- Added sugars
- Carbonated drinks
- Stress
- Eating while working
- Alcohol (on empty stomach)
  - Antibiotics
  - “Diet of convenience”
  - Pain killers (chronic use of aspirin)
  - Steroids (cortisone) – can lead to candida
  - Toxins

Probiotics allow absorption and digestion of our food
- Minerals (esp. Zn) and enzyme-rich foods
- If digestion is poor, you store
- Detox, bowel movements, skin

Bone broths, grain-free for many (GAPS Diet)

Biofilms/Energetic Remedies and Therapies
Sam Queen’s Butter Recipe
for Healing Intestinal Permeability

- 1 stick organic cultured butter (Organic Valley)
- ½ cup organic extra-virgin cold pressed unfiltered olive oil
- 3 grams (or 6-500 mg caps) glutamine*
- Colostrum
- Probiotics (equal to 40 billion)
- Zinc Carnosine
- 1 pinch (or more to taste) unrefined sea salt
- 1 Tablespoon raw unfiltered honey (optional)

*Assumes G-6 PD and serum bicarb are not elevated
Mix butter and olive oil together. Add in all supplements. Add in honey last, if using.

Eat 2 Tablespoons of mixture for 2 days, then 1 Tablespoon daily for 2 additional days.

Then, take 1 teaspoon for maintenance.

Best results are obtained by allowing butter to melt in mouth, but can be spread on food (such as cracker, etc) for improved tolerance.

Do not microwave or heat the mixture!

Store mixture in refrigerator.
Essential Fatty Acids

Quick Review

**Omega 6**

Linoleic (soy, corn, cottonseed, safflower oils) \(\rightarrow\) GLA (evening primrose, borage, and black current oil) \(\rightarrow\) DGLA (liver, organ meats) \(\rightarrow\) Arachidonic acid (butter, lard, animal fats, brain, organ meats, eggs, seaweed)

**Omega 3**

Alpha-Linolenic (flax oil, wheat, walnuts, green vegetables) \(\rightarrow\) Eicosapentaenoic acid (fish liver oils, fish eggs) \(\rightarrow\) DHA (human milk, pastured egg yolks, fish liver oils, fish eggs, liver, brain, organ meats)

**Ratio:** 1:1 to 2:1 omega-6:omega-3 in the past (20:1 is typical American diet)

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Masterjohn, Chris. “Precious yet Perilous” Wise Traditions. Fall 2010
Essential Fatty Acids

Symptoms of AA deficiency
- Dry scaly itchy skin
- Hair loss
- Dandruff
- Reproductive difficulties (both sexes)
- GI disturbances
- Food intolerances
- Kidney disease
- Inability to maintain weight
- Poor immunity
- Poor growth
- Inflammation

DHA deficiency
- Numbness and tingling
- Weakness
- Pain
- Psychological disturbances
- Poor cognitive function
- Difficulty learning
- Blurred vision
- Poor immunity
- Poor growth
- Inflammation
Essential Fatty Acids

- Needs are higher in athletes, body builders, growing children, injury recovery, diabetes, and insulin resistant.
- High sugar diets cause destruction of EFAs – would need less if decreased sugar intake.
- Excess of either omega-3 or omega-6 can cause imbalance of other.
- Meta-analysis revealed that 1.0g omega-3 per day from fish oil reduces cardiovascular mortality **ONLY in those with CHF or recent heart attack**.
- Fish oil may INCREASE cardiovascular and total mortality (esp. >4yrs use) in combination with SAD.
- Liberal use of organ meats and egg yolks, with small amount of CLO will make EFAs health-promoting and safe.
- Foundation is first.
Essential Fatty Acids

Athletes need balance of omega-3 and omega-6 along with foundational diet.

Role of EFAs: cell membrane function, strengthen immunity, lubricate joints, enhancement of insulin binding

In short-term, higher doses may be needed for:

- recovery from injury
- decreasing body fat
- correcting deficiencies from testing
- showing symptoms of deficiency
Vitamin D3 – hormone involved in more than 1000 human genes expressions
- Cardiac health
- Immunity/Cancer
- Athletic performance
- Mood

Vitamin D and Athletic Performance
- Vitamin D may improve athletic performance in vitamin D-deficient athletes.
- At least 50 ng/mL (50-70 ng/dl most likely optimal)

Vitamin D3

How to Get Vitamin D

- Natural sunlight
- Sunning lights-Safely-never burn skin!
- Food sources
  - cod liver oil, fish eggs, pastured meats and eggs
- Synthetic oral vitamin D3

Testing

- Should always test levels; retesting is even more important
- No feedback mechanism with oral vitamin D3
- Adequate levels: at least 50ng/mL-70ng/mL
- Too much = not desirable
Calcium, Magnesium, and Zinc

**Calcium**
- Calming mineral
- Neurotransmitter release
- Muscle and heart contraction
- Cell membrane permeability

**Magnesium**
- 75% of Americans deficient (anxiety, constipation, fatigue, insomnia)
- Calming mineral in some
- Balances cellular absorption of calcium
- Energy pathways
- Decreases insulin resistance

**Zinc**
- Adrenal, immunity
- Insulin production
- Hormonal balance
- Make HCl
- High levels of cortisol can decrease zinc absorption

**Toxins change needs of minerals**
Ribose

- For overtraining prevention
- Readily available for energy
- Can make backbone of ATP from scratch
- Increases available ATP
Insulin Resistance Supplementation
Insulin Resistance Supplementation

- **Ribose** – primer for insulin
- **Magnesium** - insulin sensitivity
- **Zinc** – insulin activity
- **Vitamin D**
- **GTF Chromium 200-1000 micrograms**
  - Chromium: yeast, peas
- **Trace Minerals (Se, V)**
  - Se: Brazil nuts
  - V: Black pepper, shellfish, mushrooms, dill seed, parsley, soy, corn, olives, olive oil, and gelatin.
- **Vitamin E/wheat germ oil**
- **Alpha Lipoic Acid, Carnitine, Coq10**
- **Inositol**
Herbs for Insulin Resistance

- Gymnema
- Bitter melon
- Cinnamon Extract
- Berberine
- Billberry
- Blueberry Extract
- Fenugreek
- Gingko
- Adrenal Support
Magnesium:
Green leafy vegetables (Swiss chard and spinach), seeds (pumpkin seeds and sunflower seeds), and nuts (almond and cashews)

Zinc:
Red meat (beef, lamb, and liver), oysters, nuts & seeds (pumpkin and sesame seeds), and ginger

Chromium:
Brewer’s yeast, animal products (poultry, beef, and liver), and vegetables (potatoes, onions, and tomatoes)
Performance Supplementation
Creatine

- For high-intensity/short duration
- Increase in total body mass, lean body mass with no gain in fat mass
- Reduces inflammation
- Evidence based
- Dosing: 3-6 grams daily

Recommended
SAFE AND EFFECTIVE!
Beta-Alanine
(3-aminoproprionic acid)

Carnosine = Histidine + Beta Alanine (zinc)

- Beta alanine: amino acid derivative
- Synthesized in liver

Food sources: Chicken breasts, some fish

- May delay fatigue through intramuscular H+ buffering (like taking a Tums for the muscle!) and antioxidant
- Higher training volumes and lower subjective feelings of fatigue
- 3-6g BA supplementation per day for at least 14-28 days can increase intramuscular carnosine and improve performance
- Divide doses of BA to prevent flushing
Caffeine

No longer banned by Olympics

- Can improve athletic performance in endurance/sprint exercise by 7.3-8.6% decrease in time (Wiles et al. 2006, Schneiker et al. 2006)

Dosing

- 250-300mg pre-workout
  - 240mg in 12 oz (Tall) Starbucks coffee
  - 120-180mg in 12 oz brewed coffee
- 3-6mg/kg FFM

- Newer research indicates potential benefit of caffeine to enhance glycogen accumulation post-workout

- Increase in beta-oxidation/thermogenesis (Arciero et al. 2000)

Does not dehydrate!

Nutritional Assessment and Practical Applications
Assessment

**Client Forms**
- New Client Information
- Health History
- Food/Supplement Intake
- Signs and Symptoms
- Metabolic Typing Questionnaire

**Hair Mineral Analysis**
- Mineral ratios, heavy metal toxicity, trends for health

**Saliva Hormone Testing**
- Adrenal status, hormonal panels, gluten sensitivity, GI health

**Vitamin D and lab tests from physicals**

**Urine Amino Acid testing**
Advanced Diet Customization

Likes and dislikes
Food sensitivities

Modified Metabolic Typing

- Autonomic nervous system dominance
  - Parasympathetic and Sympathetic

- Oxidation state (from hair test and history)
  - Fast vs. slow oxidation

Blood typing and secretor status
Meet “Jim”
Pro football player

**Goals:** Keep lean weight on, more energy

Had transitioned to real foods diet since working with great educated trainer. Was feeling good for last 6 months when performance, weight and energy went down

**Assessment:**

1. Not having enough carb after training
2. Drinking alkaline water (long-term)
3. Long-term magnesium over supplementation
4. Elevated DHT and estradiol (saliva)
5. Trace minerals inadequate
6. Mineral imbalances (calcium, copper, mercury)
7. Weakened adrenals (hair/saliva)
8. Fatty acid imbalance and urine organic aminos
Jim’s Customized Program

1. Continue with real foods diet and tweak to address male hormonal imbalance
2. Add ribose for energy/ATP
3. Balance minerals according to metabolic typing and hair test (calcium, bioavailable copper, trace minerals)
4. Change fatty acids dosages and types (BCSO addition)
5. Adjust recovery drink – add adequate carbohydrates with protein to support for training and correct timing
6. Hydration changes- spring water/coconut water
7. Adaptogenic adrenal support
5 alpha reductase catalyzes: testosterone $\rightarrow$ DHT

Nutrients that reduce 5AR activity: zinc, soy, flaxseed, pumpkin seed, and evening primrose oil, linolenic acid (omega-3)

Foods that enhance breakdown of DHT in the liver: garlic, broccoli, cabbage, cauliflower, and berries
Hormonal Balance with Diet

Aromatase inhibitors

Limits estrogen conversion while increasing natural production of testosterone

Foods that reduce aromatase activity or enhance effectiveness of aromatase inhibitors

- arugula, black tea, blueberries, broccoli, Brussels sprouts, cabbage, cauliflower, celery, cherries, collard greens, cranberries, red grapes, purple grape juice, honey, horseradish, kale, kefir, mustard, mustard greens, peas, pomegranate juice, tomatoes, watercress, white button mushrooms

Note: A diet higher in protein in relation to carbohydrates helps to reduce aromatase activity.
Practical Applications
“Slow Steps”

1. Create a checklist of healthy foods that you would actually eat OR try

2. Start by changing up your snacks

3. Reduce the number of meals you eat outside of home

4. Create a list of “Easy Meal” options
   - Chili, Stews, Soups, meatloaf

5. Cook up a few “Meat Portions” to eat later

6. Purchase a variety of “Organic Frozen Vegetables”
   - Add some grass-fed butter, high quality olive oil or coconut oil

7. Purchase already cooked pastured proteins

Compiled by Chef Max Reeves, RD (ELTP)
Sample Meal Plan Handout
Pre-game Training Table

For 7:30pm game

Pre game meal at 12:30pm

- Mixed greens, spinach, carrots, tomatoes, garbanzo beans, walnuts, sunflower seeds, olive and vinegar, Ranch (✔)
- Regular and wheat pasta, meat sauce
- Sweet potatoes and white, assorted veggies with butter, brown rice
- Soup, Wild Salmon, White fish, Grilled Chicken, Filet steaks
- Assorted fruit

Snack up until 4:45pm (when they leave for stadium)

- Carb-rich foods (oatmeal/cereals/grains)
- Variety of proteins: meats/tuna/cheese/hard boiled eggs
- Fruits
- Fluids
Optimal Nutrition Can:

- Provide fuel for energy pathways used for sport & health
- Switch player from catabolism to anabolism
- Prevent metabolite accumulation (during exercise)
- Neutralize oxidative stress
- Improve stress handling (“health”)
- Provide adequate hydration
- Balance minerals
Appreciation is one of the most powerful care feelings of all. When applied sincerely, it rapidly brings about a quick attitude adjustment and perception shift. With a new understanding of appreciation and a little sincere practice on engaging the power of the heart you can make great strides towards living a life that's more enjoyable and less stressful.

Thank you!
Questions
Resources
Resources: books

- Cereal Killer by Alan Watson
- Cracking the Metabolic Code by James LaValle, R.Ph, CCN, ND
- Gluten-free Cooking by Dr. David Brownstein
- Nourishing Traditions by Sally Fallon, Mary Enig
- Nutritional Medicine by Alan Gaby, MD
- The MD Emperor Has No Clothes by Peter Glidden BS, ND
- The Fat Loss Bible by Anthony Colpo
- The Guide to Healthy Eating and all books by Dr. David Brownstein
- The Liberation Diet by Kevin Brown and Annette Presley
- The Truth about Supplements by Brian Dean, MS, RD
- Gut and Psychology Syndrome by Natasha Campbell-McBride, MD
- The Metabolic Typing Diet by William Wolcott and Trish Fahey
- Power Eating by Dr. Susan M. Kleiner, PHD, RD, FACN, CNS, FISSN
- The Key To Longevity-New Nutrition for Athletes by MV Kaminsky, MD and Rose Lopez de Vaughn, PhD
- Johnny Bowden books
- Phil Maffetone books
- Mary Enig books
- ISSN books
  - Essentials of Nutrition Supplements
  - Essentials of Creatine in Sports and Health
  - Essentials of Protein and Amino Acids in Sport
Resources: websites

- Eat Like the Pros (eatlikethepros.com)
- Sportfuel (sportfuel.com)
- Weston A. Price Foundation (westonaprice.org)
- Celiac testing/Food sensitivities by Dr Tom O’Bryan (www.thedr.com)
- Eat Wild (eatwild.com)
- Earthing (earthinginstitute.net)
- Iodine: Why You Need It and Why You Can’t Live Without It (www.drbrownstein.com)
- Sunning lamps - Mercola (mercola.com)
- Milk and Honey: Nutrition News from Selene River Press (seleneriverpress.com)
- Nutrition and Healing (wrightnewsletter.com)
- Julie’s nutrition videos- Pro Tips 4U (protips4u.com)
- Hair and Saliva testing - Restorative Endocrinology (resorativeendocrinology.com)
- Salt (www.drbrownstein.com)
- Dr Janet Lang (www.restorativeendocrinology.com)
- Cholesterol - SpaceDoc (spacedoc.com)
- The Tuesday Minute by Joe Buishas (tuesdayminute.net)
- Energy utilization in sport- Sport Fitness Advisor (sport-fitness-advisor.com)
- Liberation Wellness Blog (liberationwellnessblog.com)
- Nourished Kitchen (nourishedkitchen.com)
Resources: people & products

- Charles Poliquin (charlespoliquin.com)
- Chef Fredy Cuisine (cheffredy.com)
- Chris Masterjohn (cholesterol-and-health.com, Wise Traditions contributor)
- Dr. Steven Haltiwanger (electromagnetichealth.com/dr-stephen-haltiwanger/)
- Dr Carlos Viana, OMD, CCN
- www.Celtic Sea Salt by the Grain and Salt Society (celticseasalt.com)
- Go Raw (goraw.com)
- Green Pasture Cod Liver Oil (greenpasture.org)
- Iso-5 Natural Sports Drinks (brazilbotanicals.com)
- Living Nutz (livingnutz.com)
- Medi Herb (mediherb.com)
- Sommers Organic (sommersorganic.com)
- Standard Process Supplements (standardprocess.com)
- Tallgrass Beef (tallgrassbeef.com)
- U.S. Wellness Meats (grasslandbeef.com)
- Zing bars (sportfuel.com)
Resources: organizations

• American Nutrition Association (americannutritionassociation.com)
• IAACN (iaacn.org)
• Weston A. Price Foundation (westonaprice.org)
• Price Pottenger Foundation (www.ppnf.org)
• Nutrition and Metabolism Society (nmsociety.org)
• Vitamin D Council (vitamindcouncil.org)