Dr. Brenda Buffington

United States Air Force Academy

Assistant Director; Human Performance Laboratory, Exercise Physiologist

bebuff@hotmail.com

(Former collegiate athlete, Otterbein University and high school coach)

Presents:

THE BEST IN SPORTS NUTRITION:

Words from the Experts

(From Conference to Practice)

Merry Christmas!

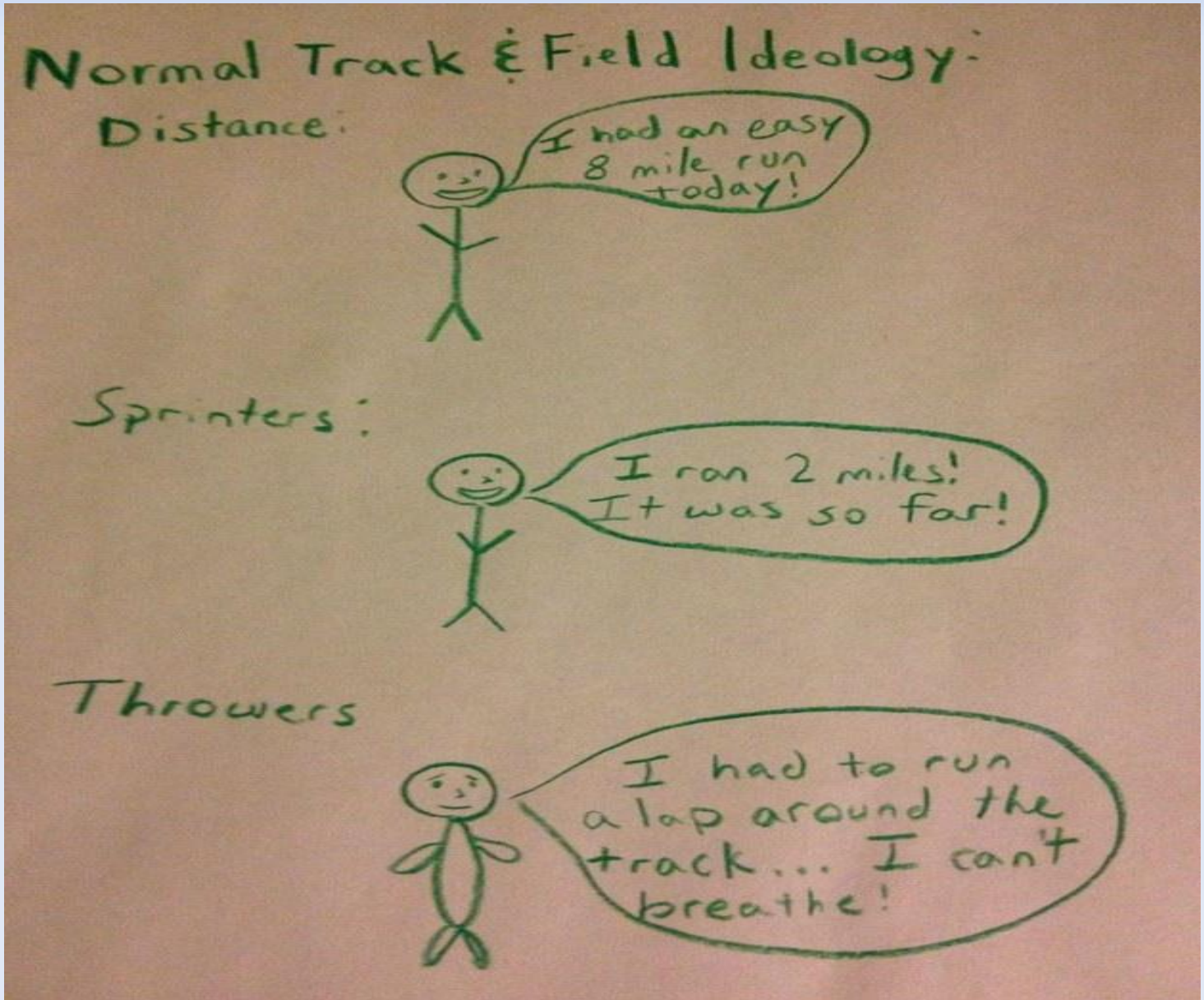
Dear Santa,
For this year I'm requesting, a fat bank account, and a small body.
P.S. This year, please don't mix them up, like you did last year!

There was a Lacrosse and a Baseball coach who went deep into the frozen woods searching for a Christmas tree.

After hours of subzero temperatures a few close calls with hungry wolves, one coach turned to the other and said,

"I'm chopping down the next tree I see.
I don't care whether it's decorated or not!"

Sound familiar?



Look familiar?

("track/field & cross country feet")

EMPOWER YOUR ATHLETES!

"When they KNOW BETTER, they'll DO BETTER!"

- **The Gluteal Line:**

- ❑ EMPOWER YOUR ATHLETES
- ❑ What & How much to Eat/Drink
- ❑ When to Eat/Drink
- ❑ Ergogenic Aids
- ❑ Should we measure & what should we measure?
- ❑ Ultimately the things that WORK FOR THE ATHLETE (improve performance)

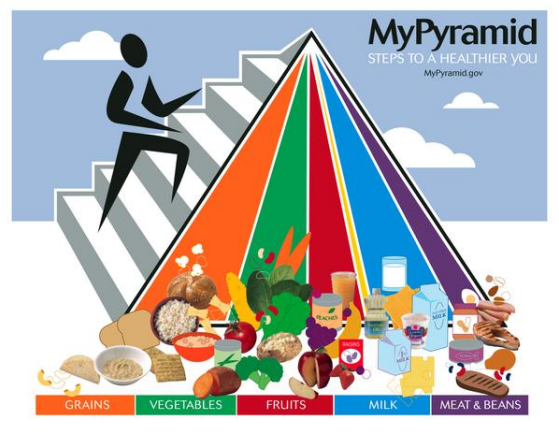

Do the best you can
until you know
better. Then when
you know better,
do better.
Maya Angelou
FB/Treasured Sentiments

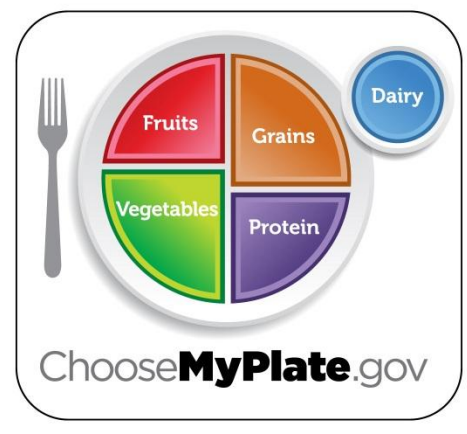
WHAT YOUR ATHLETES KNOW AND DON'T KNOW ABOUT SPORTS NUTRITION AFTER HIGH SCHOOL:

*** U. S. Dept. of Education recommends 50 hours of Nutrition Education per year.**

* Elementary School= 3 hours/year
* Middle School= 6 hours/year
* High School= 3 hours/year

*** THE KICKER: "Knowledge of High School students only lasts a year after learning the nutrition information…unless actively reminded or used."**





Current Research tells us:

- U. S. Air Force Academy Female Athletes– Nutrition Knowledge Test= 62%
- 61% of a group of freshmen athletes believed that Protein is the main source of energy.
- 71% believe that water is better than sports drinks.
- 65% believe that vitamin/mineral supplements increase energy levels.

The Transtheoretical Model:

(this is how their little minds work…)

- **Precontemplation Stage-** most are simply uninformed (They don't know what they don't know.)
- **Contemplation Stage-** changing vs not changing
- **Preparation Stage-** they have a plan of action, take baby steps, make small changes.
- **Action Stage-** actually putting the changes into place.
- **Maintenance Stage-** upkeep, and making minor improvements as needed.

WHAT AND HOW MUCH TO EAT & DRINK:

(Nutrient Dense vs Calorie Dense)

Carbohydrates (CHO) ~ 55% - 65%

(Key Fuel Source)

- Complex CHOs include:
  - * Starchy vegetables like peas, corn, lima beans and potatoes
  - * Dried beans, lentils and peas such as pinto beans, kidney beans, & peas
  - * Grains like oats, barley and rice, therefore, pasta, breads and crackers
- Simple CHOs include:
  - * Fruits, milk products, and sugary processed foods

Importance of Carbohydrates

- **Key fuel source** for exercise, especially during prolonged continuous or high-intensity exercise

- **Limited storage:** Glycogen in liver/muscles

- **Inadequate stores result in:**
  - Fatigue (staleness)
  - Reduced ability to train hard
  - Impaired competition performance
  - Reduction in immune system function
  - Increased risk of injury

How Much CHO?

- **Sprinters & Throwers = 6 - 10 grams/kg of body weight**
  (In reality: Males = 3.3-5.4 g / kg Females = 2.9-3.4 g / kg)

  * **Moderate days = 6-8 g / kg**
  * **High Intensity days = 8-10 g / kg**

- **Endurance Athletes (Mid Distance & Distance) = 5 - 12 grams/kg of body weight**
  (In reality: Males = 5.3-11.5 g / kg Females = 4.4-6.4 g / kg)

  * **Moderate days = 5-7 g / kg**
  * **High Intensity days = 7-12 g / kg**

WHY?

Because they believe the myth that CHOs are BAD, they make you FAT

CHOs are GOOD, they give you ENERGY, they make you BETTER.

Carbohydrate Needs

Situation	Total Daily Carbohydrate Needs	126-lb (57-kg) Athlete
Low-intensity/skill-based activities	1.4-2.3 g per lb body wt (3-5 g per kg)	179-294 g of carbohydrate per day
Moderate exercise program (~1 hr/day)	2.3-3.1 g per lb body wt (5-7 g per kg)	294-400 g of carbohydrate per day
Endurance Program (moderate-to-high intensity 1-3 hrs/day)	2.7-4.5 g per lb body wt (6-10 g per kg)	346-580 g of carbohydrate per day
Extreme commitment (moderate-to-high intensity >4-5 hrs/day)	3.6-5.5 g per lb body wt (8-12 g per kg)	463-710 g of carbohydrate per day

Carbohydrate Needs

Banana/Apple = 15-45g

Bagel = 30-60g

Pasta (1 cup) = 35-45g

Potato or Sweet Potato= 30-45g

Situation	Total Daily Carbohydrate Needs	175-lb (80-kg) Athlete
Low-intensity/skill-based activities	1.4-2.3 g per lb body wt (3-5 g per kg)	245-403 g of carbohydrate per day
Regular training	2.3-3.6 g per lb body wt (5-8 g per kg)	403-630 g of carbohydrate per day

Source: Burke and Deakin, Clinical Sports Nutrition, 3rd Edition, McGraw-Hill Australia Pty Ltd, 2006

How Much PRO?

Q: Why did the vegetarians stop **running cross country**?

A: They didn't like meets!

Recommendation:

- The General Population = 0.8 g / kg

- Strength Athletes = 1.6 – 2.0 g / kg

- Endurance Athletes = 1.2 – 1.4 g / kg

(A serving of beef or poultry = 25 g of PRO vs a serving of grains or veggies = 2 g PRO)

Protein in Your Diet

Function= Tissue growth and repair

Spread out your protein throughout the day

* Your body can only absorb up to 30 grams of protein at one time

Sample daily intake for about 100 g of protein per day	**Grams of protein**
1 cup cereal, 1 with milk	11
Clif Bar	10
Sandwich, 3 oz turkey	24
½ cup baby carrots	1
1 cup low-fat milk	8
8 oz low-fat yogurt	8
3 oz chicken breast	25
1 cup brown rice	6
1 egg	7
Total grams of protein	**100 grams**

Protein & Performance

Group	Total Daily Protein Needs	126-lb (57-kg) Athlete
Elite female endurance athletes	0.62 g per lb body weight (1.36 g per kg)	80 g of protein per day
Moderate-intensity endurance athletes (4-5 days/wk for 45-60 min)	0.55 g per lb body weight (1.2 g per kg)	70 g of protein per day
Recreational endurance athletes (4-5 days/wk for 30 min)	0.36–0.45 g per lb body weight (0.8-1.0 g per kg)	47–59 g of protein per day
Resistance athletes (early training)	0.68-0.77 g per lb body weight (1.5-1.7 g per kg)	88-100 g of protein per day
Resistance athletes (steady state)	0.45-0.55 g per lb body weight (1.0-1.2 g per kg)	59-70 g of protein per day

Protein & Performance

Group	Total Daily Protein Needs	175-lb (80-kg) Athlete
Track & Field Athletes	0.55–0.8 g per lb body weight (1.2–1.7 g per kg)	96-140 g of protein per day
Resistance athletes (early training)	0.68-0.77 g per lb body weight (1.5-1.7 g per kg)	119-135 g of protein per day
Resistance athletes (steady state)	0.45-0.55 g per lb body weight (1.0-1.2 g per kg)	79-96 g of protein per day

Source: Burke and Deakin, Clinical Sports Nutrition, 3rd Edition, McGraw-Hill Australia Pty Ltd, 2006

WHAT DOES THAT REALLY LOOK LIKE?

Empower your athletes!!!

1) Convert Height to “cm” and Weight to “kg”
   Inches x 2.5 = Centimeters
   Pounds / 2.2 = Kilograms

2) Calculate an Athlete’s Resting Metabolic Rate:

   * Google- “Calculate RMR”+ Add 10%.

   * Athlete’s RMR (kcal/d) =
   -857 + 9.0 (Wt in kg) + 11.7 (Ht in cm)

Easy Days
(50-63 % of Max HR)

- **Activity Level: 1.375 X RMR = _____ calories/day (OFF DAYS or VERY EASY DAYS)**

Your body weight in Kg =_____ X (5 – 12 grams) = _____ g/day

AMOUNTS OF CARBOHYDRATES (CHO): _____ g/day x 4 = _____ calories / day

Your body weight in Kg = _____ X (1.2 – 2.0 grams) = _____ g/day

AMOUNTS OF PROTEINS (PRO): _____ g/day x 4 = _____ calories / day

Moderate Activity Days

(64 – 76 % of Max HR)

- **Activity Level: 1.55 X RMR = _____calories/day (MOST OF YOUR TRAINING DAYS)**

Your body weight in Kg =_____ X (5 – 12 grams) = _____ g/day

AMOUNTS OF CARBOHYDRATES (CHO): _____ g/day x 4 = _____ calories / day

Your body weight in Kg = _____ X (1.2 – 2.0 grams) = _____ g/day

AMOUNTS OF PROTEINS (PRO): _____ g/day x 4 = _____ calories / day

High Intensity Days
(77-93 % of Max HR)

- **Activity Level: 1.725 X RMR = _____calories/day (VERY INTENSE/HARD DAYS)**

Your body weight in Kg =_____ X (5 – 12 grams) = _____ g/day

AMOUNTS OF CARBOHYDRATES (CHO): _____ g/day x 4 = _____ calories / day

Your body weight in Kg = _____ X (1.2 – 2.0 grams) = _____ g/day

AMOUNTS OF PROTEINS (PRO): _____ g/day x 4 = _____ calories / day

Daily Requirements

(Female example; RMR= 1432, Weight=126 lbs /57 kg)

Activity Level: 1.375= 1,969 calories/day

Activity Level: 1.55= 2,220 calories/day

Activity Level: 1.725 = 2,470 calories/day

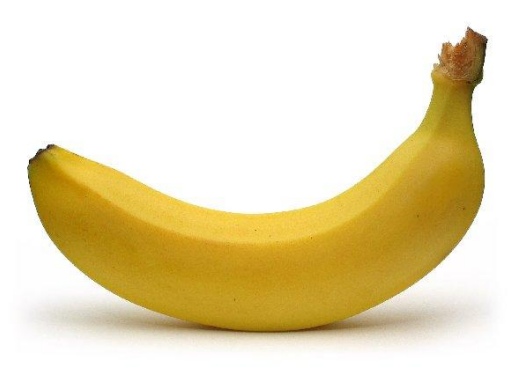
Activity Level: 1.55 = 2,220 calories/day

(training day for a 126 lb./ 57 kg multi-event athlete)

- **CHO:** 399 g / day or 1596 calories/day
- **Protein**: 102 g/ day or 408 calories/day
- **Fat:** 24 g /day or 216 calories/day

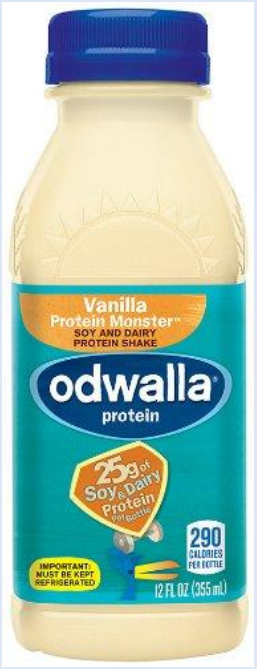
Breakfast

Snack



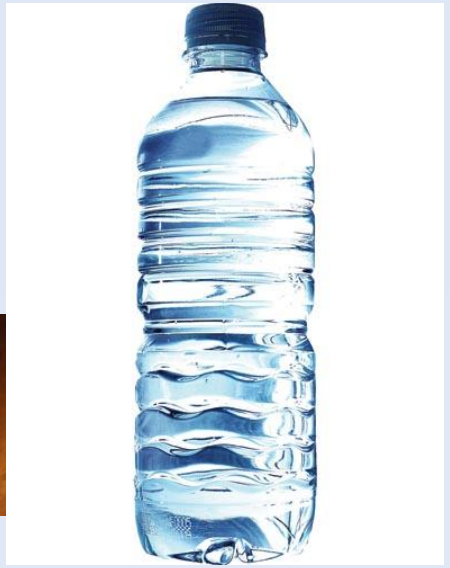
Lunch

Snack


Vanilla
Protein Monster™
SOY AND DAIRY
PROTEIN SHAKE
odwalla
protein
25g of
Soy & Dairy
Protein
290
CALORIES
PER BOTTLE
IMPORTANT:
MUST BE KEPT
REFRIGERATED
12 FL OZ (355 mL)

Dinner

Snack



Daily Requirements

(Male example; RMR= 2,420, Weight=200 lbs / 91 kg)

Activity Level: 1.375= 3,328 calories/day

Activity Level: 1.55= 3,751 calories/day

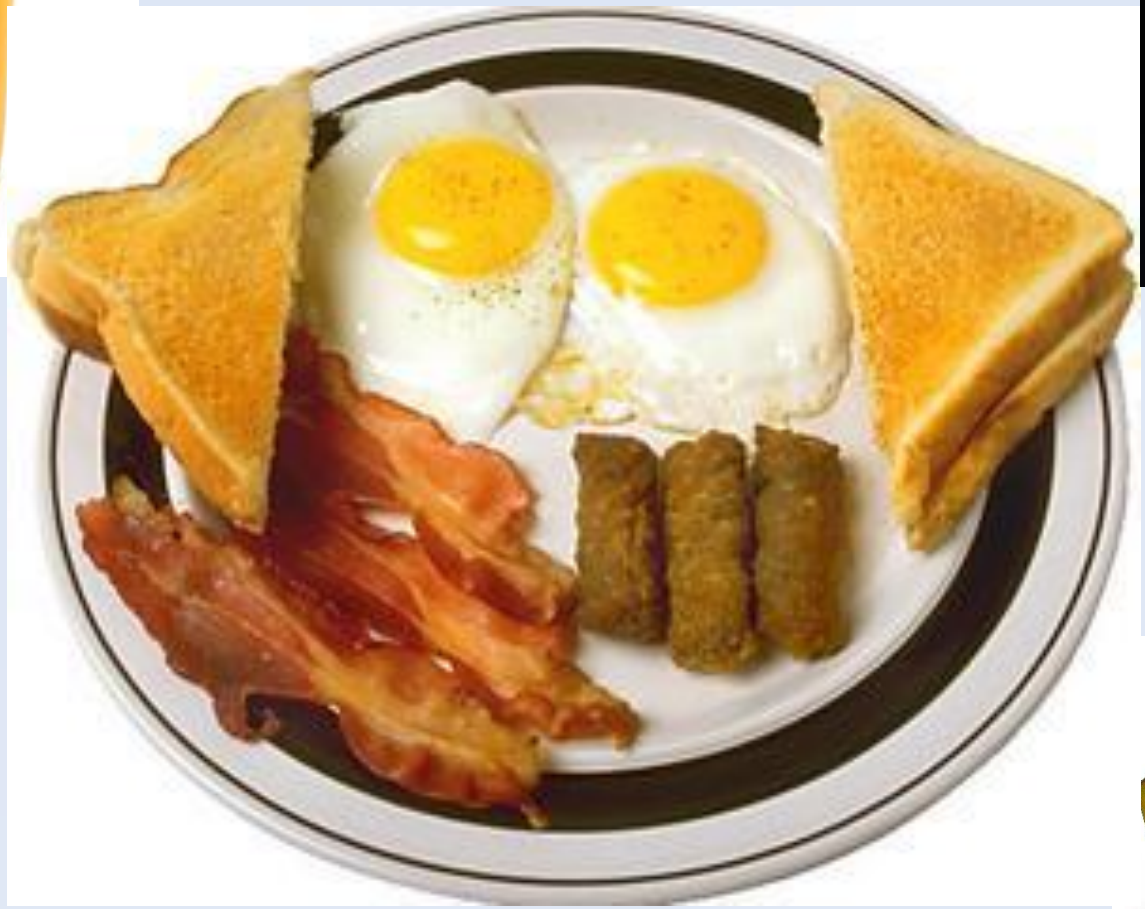
Activity Level: 1.725 = 4,148 calories/day

Activity Level: 1.55 = 3,751 calories/day

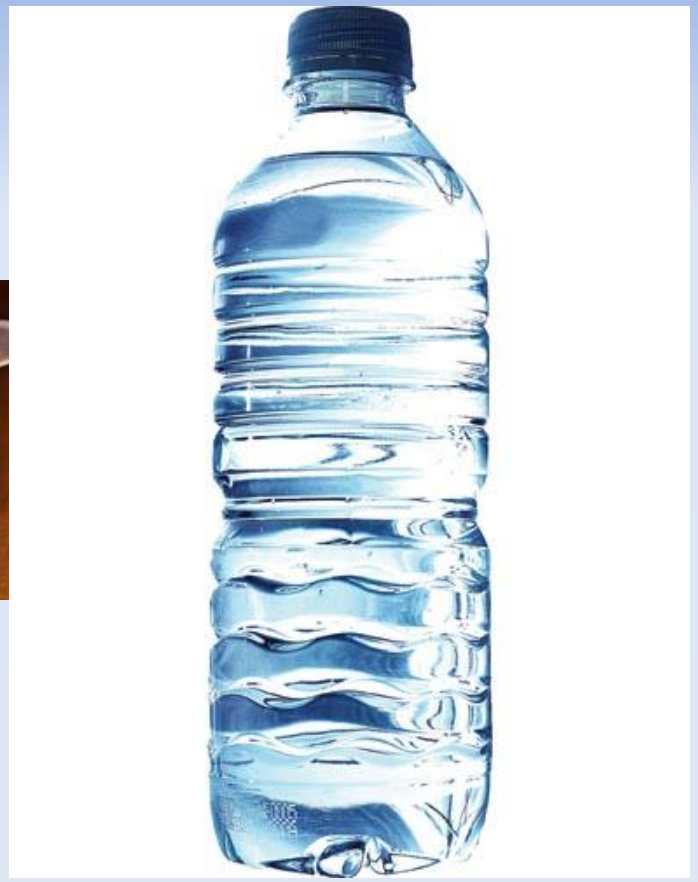
(training day for a 200 lb./ 91 kg Sprinter / Thrower)

- **CHO:** 728 g / day or 2912 calories/day
- **Protein**: 163 g/ day or 652 calories/day
- **Fat:** 21 g /day or 187 calories/day

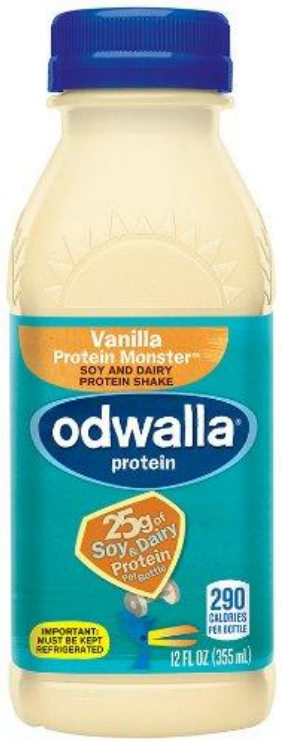
Breakfast

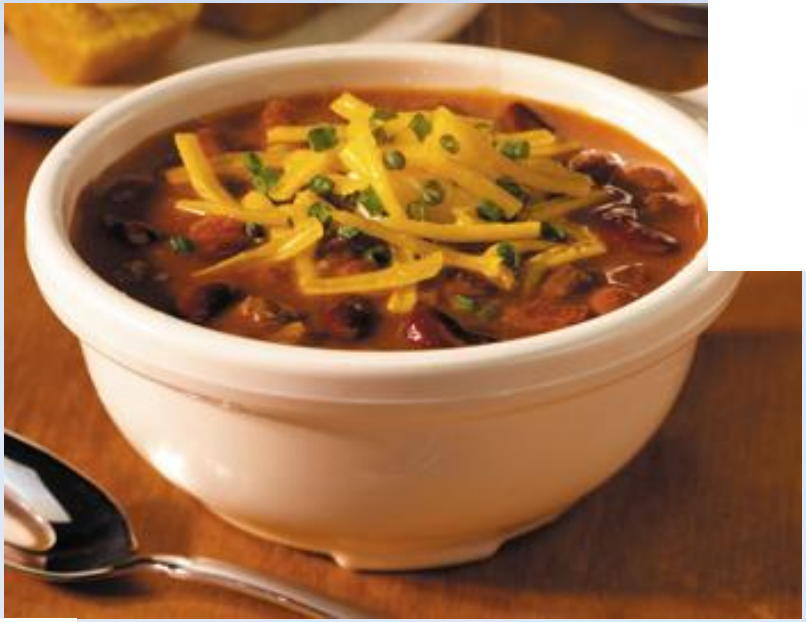


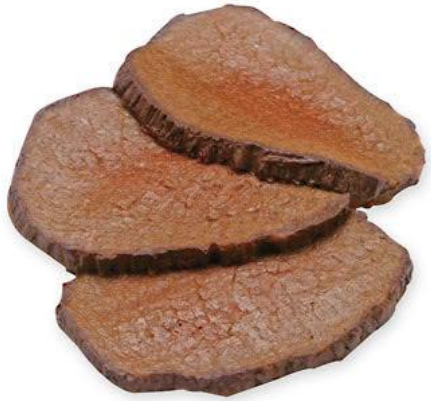
Snack



Lunch


Vanilla
Protein Monster™
SOY AND DAIRY
PROTEIN SHAKE
odwalla
protein
25g of
Soy & Dairy
Protein
Per Bottle
290
CALORIES
PER BOTTLE
IMPORTANT:
MUST BE KEPT
REFRIGERATED
12 FL OZ (355 mL)



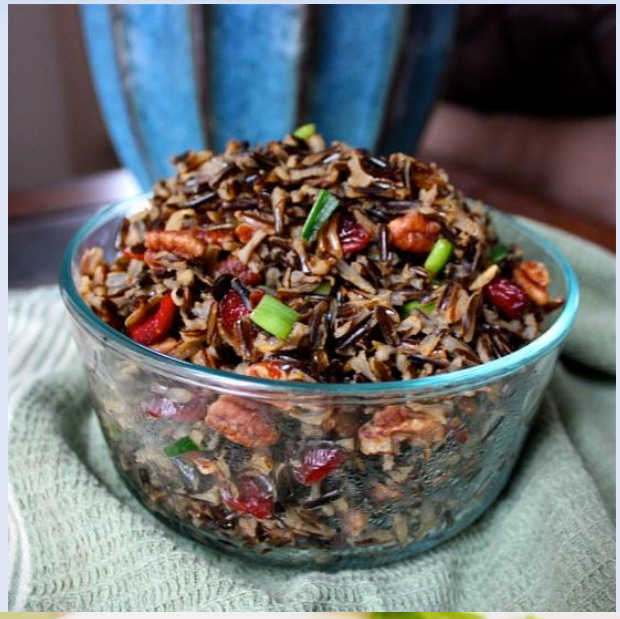


Snack


Yoplait
Light
Fat Free
STRAWBERRY


PERFORM
PERFORM
POWERADE
POWERADE

Dinner



Snack

Healthy Snack Ideas

Try to aim for 100-300 calorie snacks:

- Low-fat yogurt
- Fresh Veggies w/ Hummus
- String Cheese
- Fig Newtons
- Whole grain pretzels/crackers
- Fruit/Dried fruit
- Apple/Banana w/ Peanut Butter
- Low-fat granola bars
- Cereal and milk topped with banana
- Oatmeal
- Trail mix (in moderation)
- Air-popped popcorn (sprinkle with cinnamon or parmesan cheese)

WHEN TO EAT & DRINK:

(Nutrient Timing)

Daily Nutrient Timing:

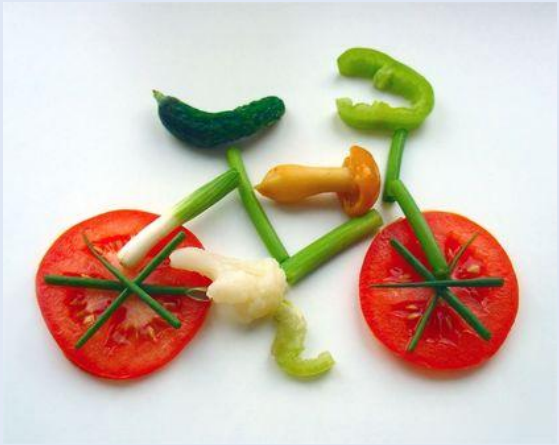
Breakfast= 70 % CHO = High
20% PRO = Low

Lunch= 60 % CHO = Medium
30 % PRO = Medium

Dinner= 30 % CHO = Low
60 % PRO = High

Carbohydrates

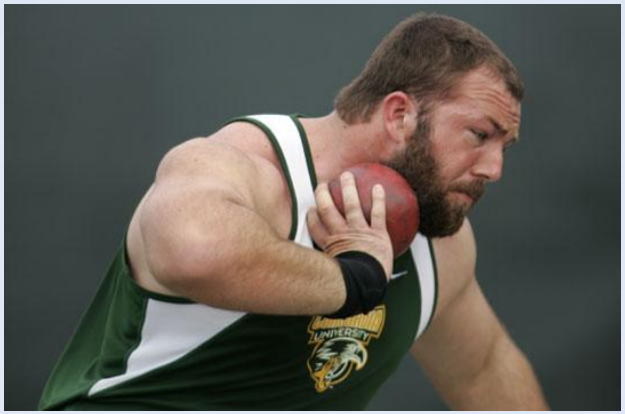
Proteins



Intuitive Eating:

Belly Hunger vs Head Hunger

- **Belly Hunger= true hunger, your stomach is grumbling, this is when your body truly needs nourishment (biological hunger).**
- **Head Hunger= when you see, smell or think about food, a craving for food/drink when you are not truly hungry (emotional & habitual hunger).**



Before an Intense Workout or Competition:

- 3 – 4 hours before = CHO: 1-2 g / kg
  PRO: 0.15 – 0.25 g / kg
- 2 hours before = Water and /or Sports Drink
  17 – 20 ounces
- 10 to 20 minutes before = 10 ounces of water

“THE WINDOW OF OPPORTUNITY”

(Recovery: Within 30 Minutes Post Workout or Competition)

“Although many factors have an impact on performance, an athlete’s ability to **recover** and **adapt** to training and competition represents a defining predictive factor of success.”

“**Recovery** needs to be integrated on a daily basis & thought of as equally important as the training itself.”

“In the period immediately following exercise, a substantial increase in rates of muscle **PRO synthesis** occurs in trained athlete.”

“If delayed by 2 hours, there is a **decrease of 50% in production of glycogen.”**

Research Says:

1) **CHO only**

2) **CHO and PRO** (4 to 1 ratio)

(38 % greater rate of Glycogen Synthesis than CHO only)

* 35 – 50 grams of CHO and 6 – 15 grams of PRO *

NEWEST SECRET WEAPON:

3) **CHO and CAFFEINE**

CHO = 1 gram / kg of body weight

CAFFEINE = 4 mg / kg of body weight

The Body's Capacity For Fatigue

ERGOGENIC AIDS:

Definition = substances, devices, or practices that enhance an individual's energy use, production, or recovery.
(45% of collegiate athletes consume one or more dietary supplements**.)**

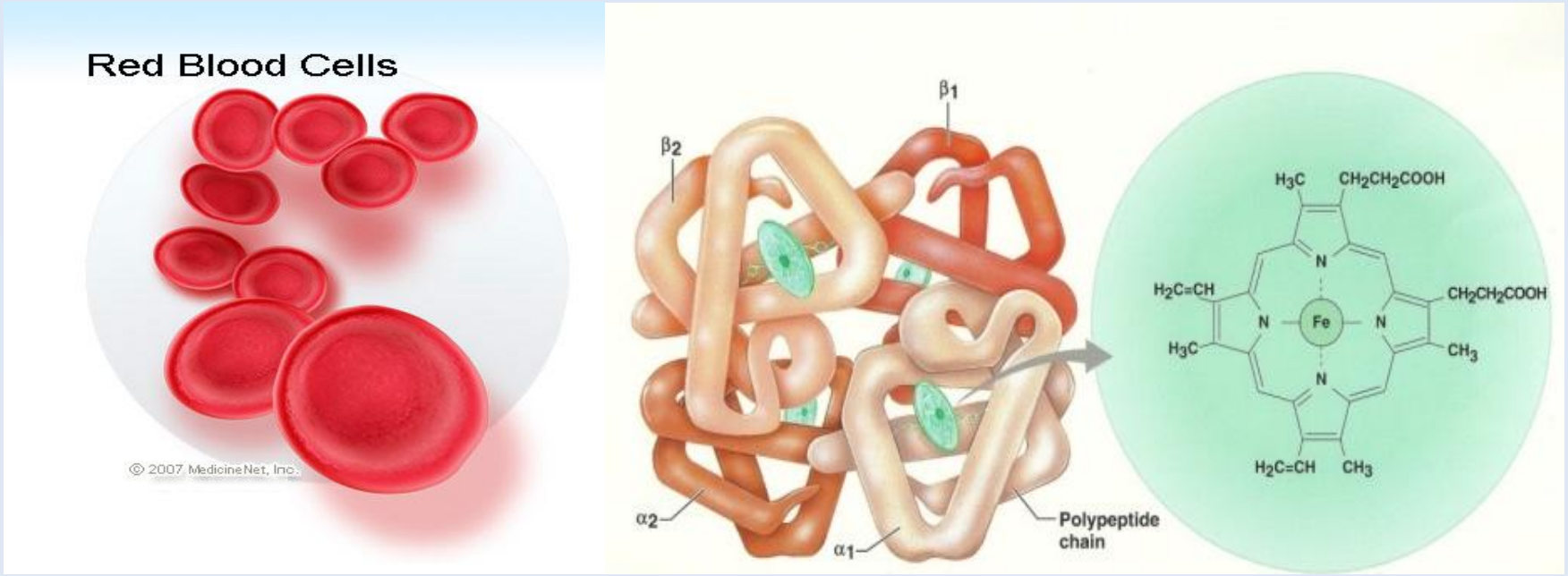
1.) **Mechanical Aids:** equipment, spikes, racing suits, nasal strips
2.) **Pharmacological Aids:** steroid hormones
3.) **Physiological Aids:** blood doping, massage, physiotheraphy
4.) **Psychological Aids:** hypnosis, visualization, imagery
5.) **Nutritional Aids:** dietary supplements

Should Athletes Supplement Their Diet?

- **60 % of all Endurance Athletes are deficient in this mineral _____.**

Answer = IRON

IRON and BLOOD:



- **So what if I'm low?**

  Examples: **5:00 Miler will run a 5:09.9**

  (3% decrease) **4:20 Miler will run a 4:27**

  19:00 5K = 19:34.2

Got Iron?

- **Chances are good that you're low in iron if you are:**
  - A female, teenager, an athlete (esp. those who strike the foot and jar organs of the body repeatedly) live at moderate to high altitude or a vegetarian.

- **CBC (Complete Blood Count):**
  - **Hemoglobin- (amount of RBC in a blood sample) = 11.0 – 16.0 gm/dL.**
  - **Hematocrit Levels- (% of RBC in a blood sample) = 38% - 46%.**
  - **Serum Ferritin Levels- (a protein marker in blood) = >50 ng/ml.**

Should Athletes Supplement Their Diet?

- **This mineral is needed in every nerve cell transmission, every muscle contraction and for bone and teeth formation**

Answer = CALCIUM

Calcium needs for Athletes:

(1300 mg/day)

Selected Food Sources of Calcium

Food	Milligrams/serving
Broccoli, 1 cup	91 mg
Mozzarella, part skim, 1.5 ounces	333 mg
Yogurt, fruit, low fat, 8 ounces	384 mg
Cheddar cheese, 1.5 ounces	307 mg
Dark Leafy Greens	100 mg
Soymilk or Almond Milk, calcium-fortified, 8 ounces	299 mg
Milk, reduced-fat (2% milk fat), 8 ounces	293 mg
Calcium Supplement	630 mg

Which one has more Calcium?

Yogurt vs Almonds

Amount of Calcium= **384 mg** **vs** **378 mg**

Total # of Calories= **230 cal.** **vs** **529 cal**

Osteoporosis (porous bones)

CAFFEINE - Central nervous system stimulant, makes you feel more energetic, opens the vessels for better circulation.

- **Pros =** Helps you burn fat and protect carbohydrate stores, makes you feel energized, helps with mental sharpness, decreases perceived exertion.

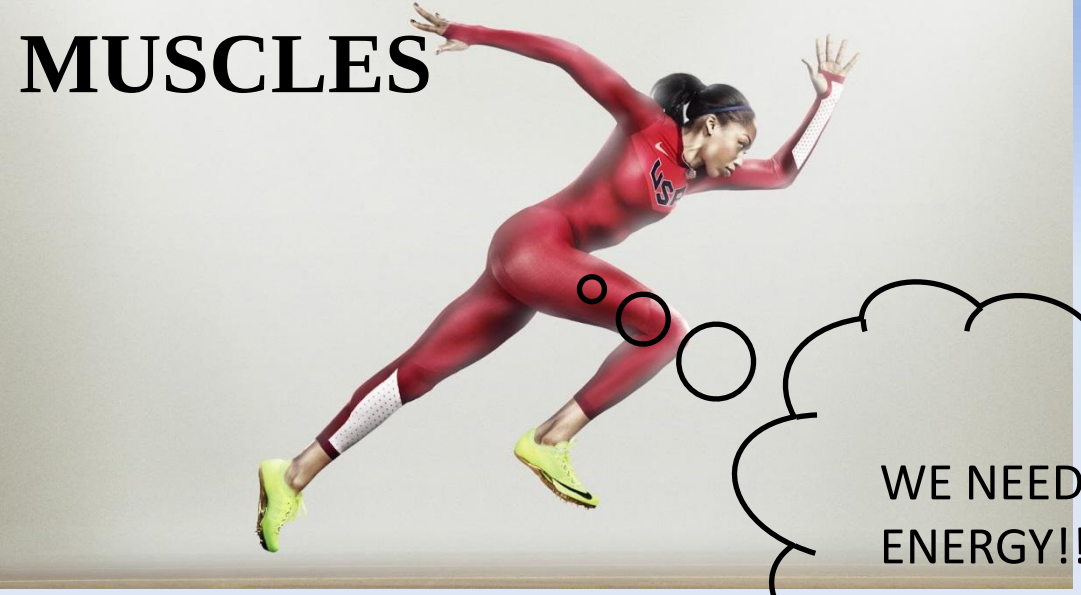
- **Cons =** Diuretic effects. A banned substance by the NCAA if amount too high in urine.

- **Dosage** = 3-9 mg/kg of body weight, or 1-3 mugs of coffee one hour prior to work out or competition.

CREATINE - Found in muscles and used for short term (30 to 90 seconds) of energy production.

- **Pros =** Improve high-intensity exercise performance, increases strength, increases lean body mass, and aids with recovery.
- **Cons =** Some athletes are non-responders. Side effects are weight gain, diarrhea, muscle cramps, and dehydration. Can damage kidneys.
- **Dosage** = Take 5 grams 4 times per day for 6 days followed by 3 grams per day.

ATP-PCr System!



ADP

ATP

HAVE ENERGY!

But it is limited…

PCr

Effects of Sodium Bicarbonate

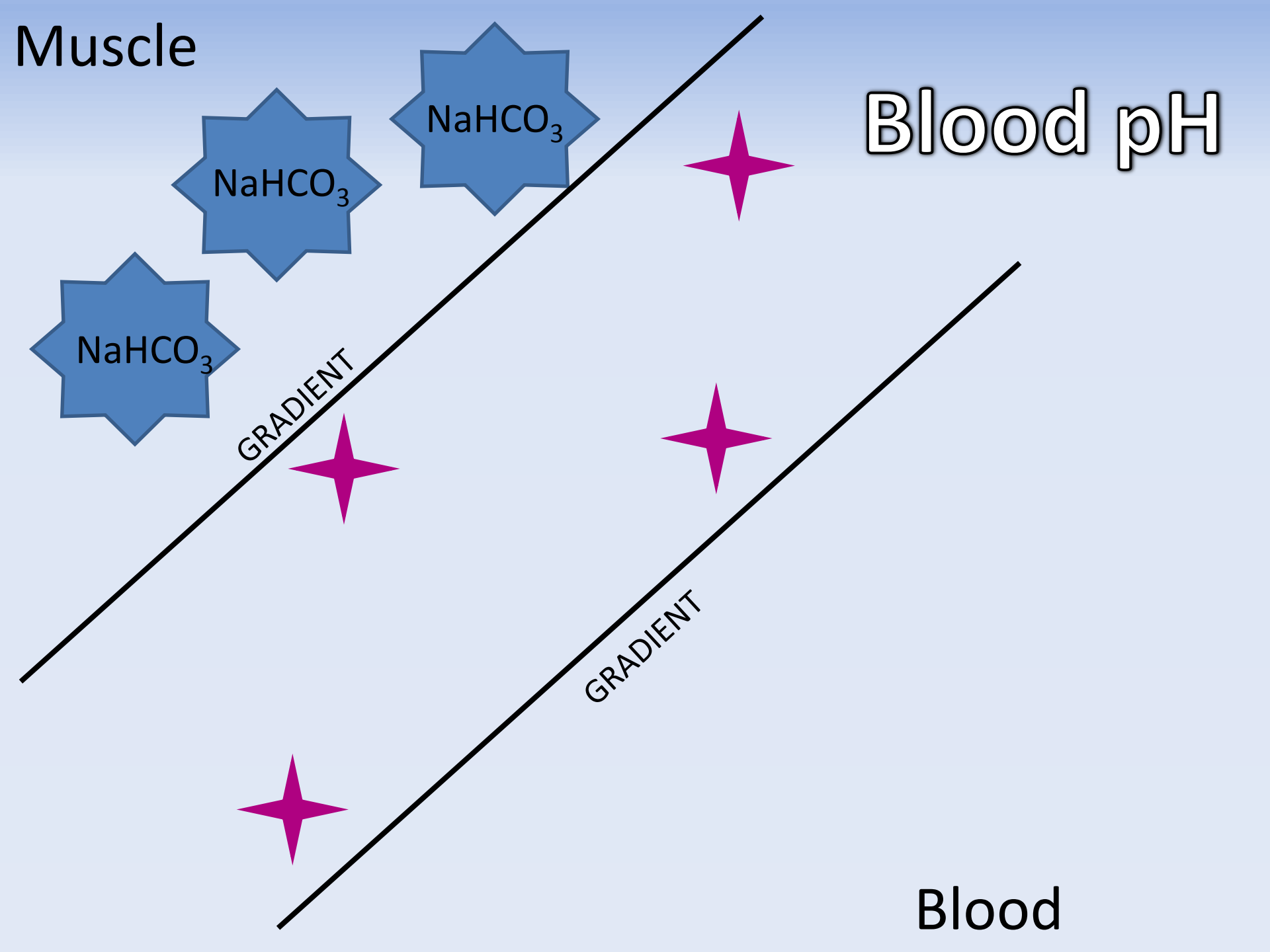
Pros

- Delays fatigue
- Maintain level of performance
- Improve time to exhaustion by 42%

800m sprint time improved by 3 seconds!

Cons

- Can cause harm to the stomach when taken in large amounts
- Nausea
- Stomach cramping
- Diarrhea


Muscle
$NaHCO_3$
$NaHCO_3$
$NaHCO_3$
Blood pH
GRADIENT
GRADIENT
Blood

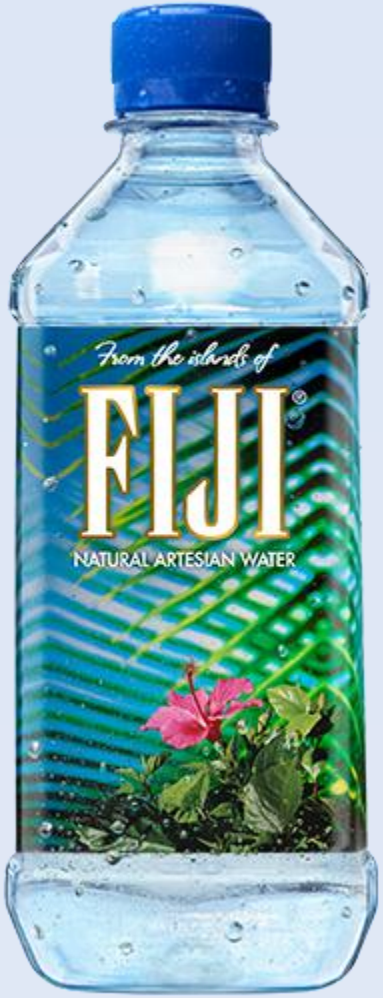
How Much?

- 300mg sodium bicarbonate per kg of body weight with 500ml of water.

How much for a 130lb (59kg) athlete?

17,700mg

60-90 minutes prior



BEET ROOT JUICE-

- **Pros =** Increases nitrate levels, can run faster, perceived exertion is lower.
  - Increased levels of nitric oxide (NO). Increases blood flow & vasodilator to allow more oxygen flow.
  - Overall times that were 3% faster, and 5% faster during the last mile.
- **Cons =** Be prepared for red urine and stools as well as possible gastrointestinal distress.
- **Dosage** = 500 ml or 2 cups of beet juice (~3-5 beets), or 300 ml of concentrated beet juice each day may lead to a 15% increase in the time taken to exhaustion. Drink it 2--3 hours before the gun goes off.
- **70 ml (2 ounces) concentrated shot (400 mg of beet juice) ($3.50)**

RITALIN (aka; methylphenidate)-

Stimulates the central nervous system. Used for weight loss, can be ingested via tablet, or crushed into powder and snorted and injected.

- **Pros =** your metabolic rate is increased, your body burns more calories and you lose your appetite.
- **Cons =** illegal substance without an Rx. Side effects: nervousness, vomiting, nausea, increased heart rate & blood pressure & body temperature, psychotic episodes, skin rash and digestive problems. Gateway drug, as seen with Kurt Cobain.

“IF YOU CAN MEASURE IT, YOU CAN MANAGE IT.”

* Height (inches to cm)
* Weight (pounds to kg)
* Body Composition and Bone Mineral Density
* Resting Metabolic Rate (RMR)
* Dietary Analysis (www.nutritiondata.com, www.myfitnesspal.com)
* Urine Color Test (daily)
* Blood Work for Iron & Calcium Levels
* Eating Disorder Questionnaire (www.femaleathletetriad.org) The Female Athlete Triad Coalition

SUMMARY
(The Take Away)

- When they know better, they'll do better.
- When they don't use it, they'll lose it.
- If you can measure it you can manage it.
- Empower your Athletes with:
  - What to Eat/Drink
  - How Much to Eat/Drink
  - Show them what their food looks like
  - When to Eat/Drink
  - Which Ergogenic Aids are worth it.

SUMMARY (The Take Away)

"Small changes can add up to big improvements."

1.) Calculate your own personal amounts of CHO and PRO & match needs with activity levels.

2.) Eat Breakfast EVERYDAY!

3.) Get 8 to 10 hours of sleep every night.

4.) Give up Fast Food, eat Real Food.

5.) Give up Alcohol.

6.) Get a Recovery Drink within 30 minutes.

7.) Have blood work done and fix the deficiencies.

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Thank You

Contact Information:

Dr. Brenda C. Buffington

bebuff@hotmail.com

www.coachbuffington.com

(614) 441-5952