MARYMOUNT

UNIVERSITY

PERFORMANCE NUTRITION

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SPORTS NUTRITION: WHY SHOULD I CARE?

- **Train longer**
- **Recover quicker**
- **Delay fatigue and soreness**
- **Reduce risk of injury or illness**
- **Improve body composition and strength**

WHAT UNDER-FUELING LOOKS LIKE

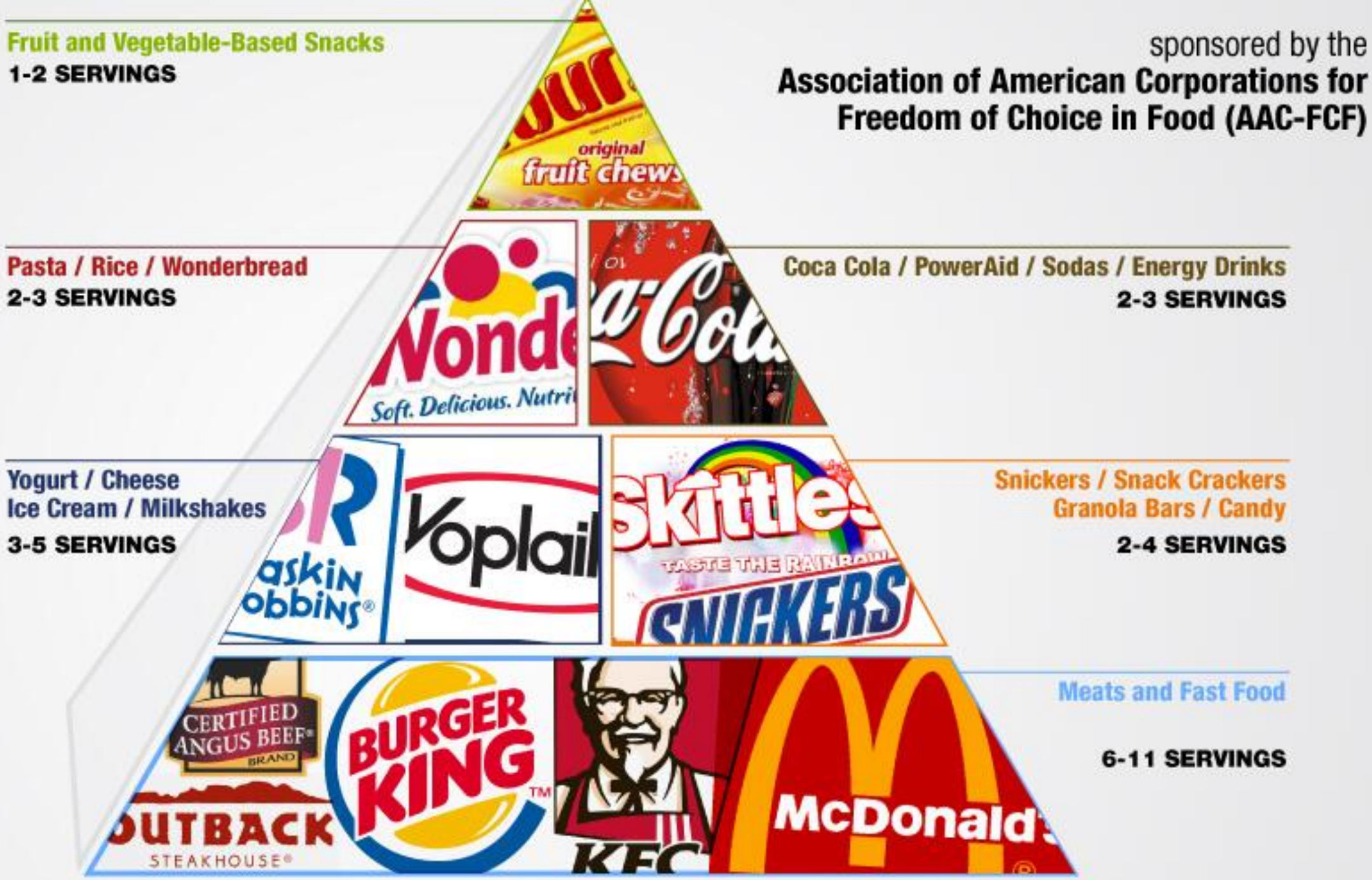
- https://www.youtube.com/watch?v=MTn1v5TGK_w

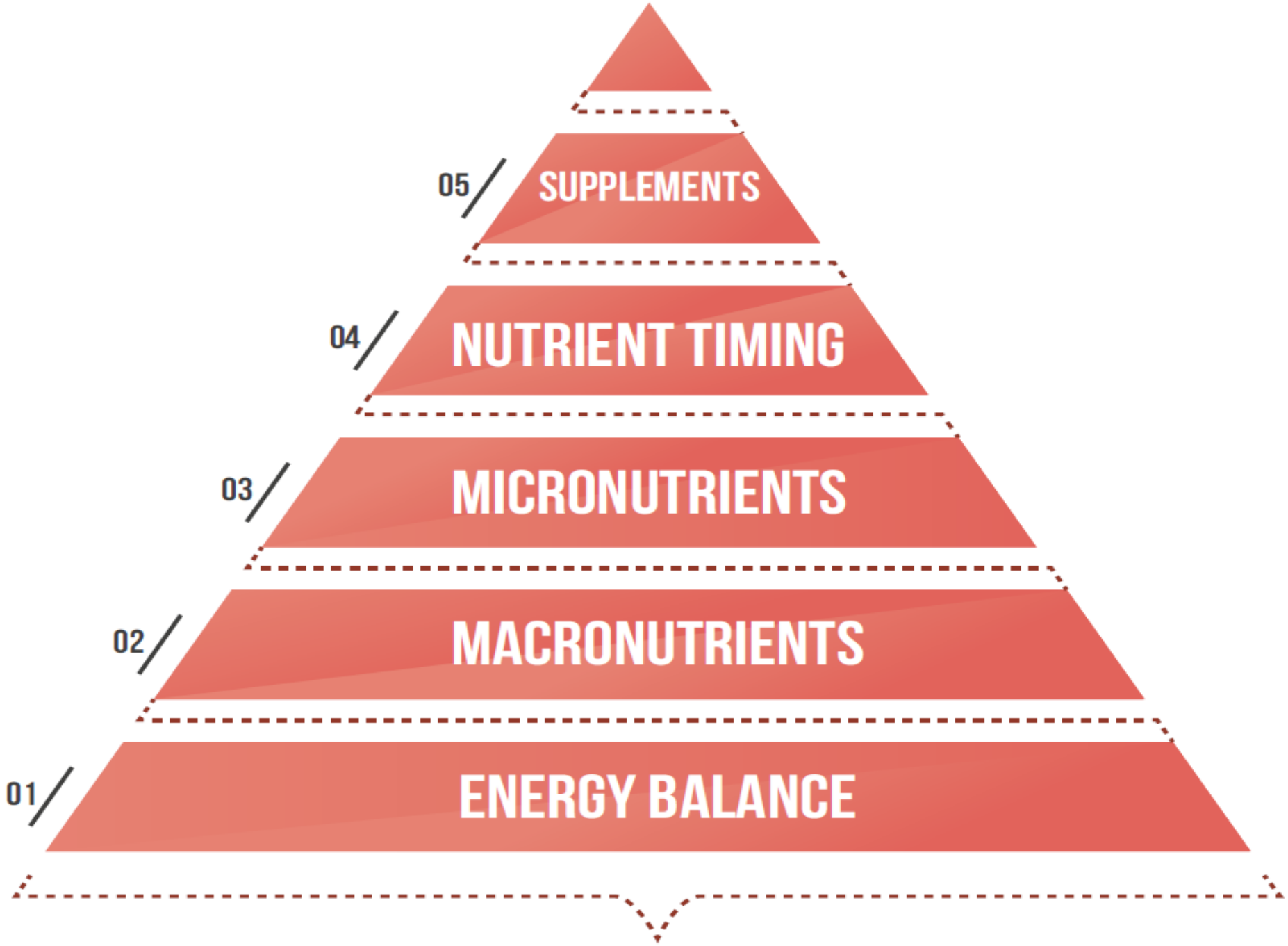
SPORTS NUTRITION: WHY SHOULD I CARE?

NUTRITION

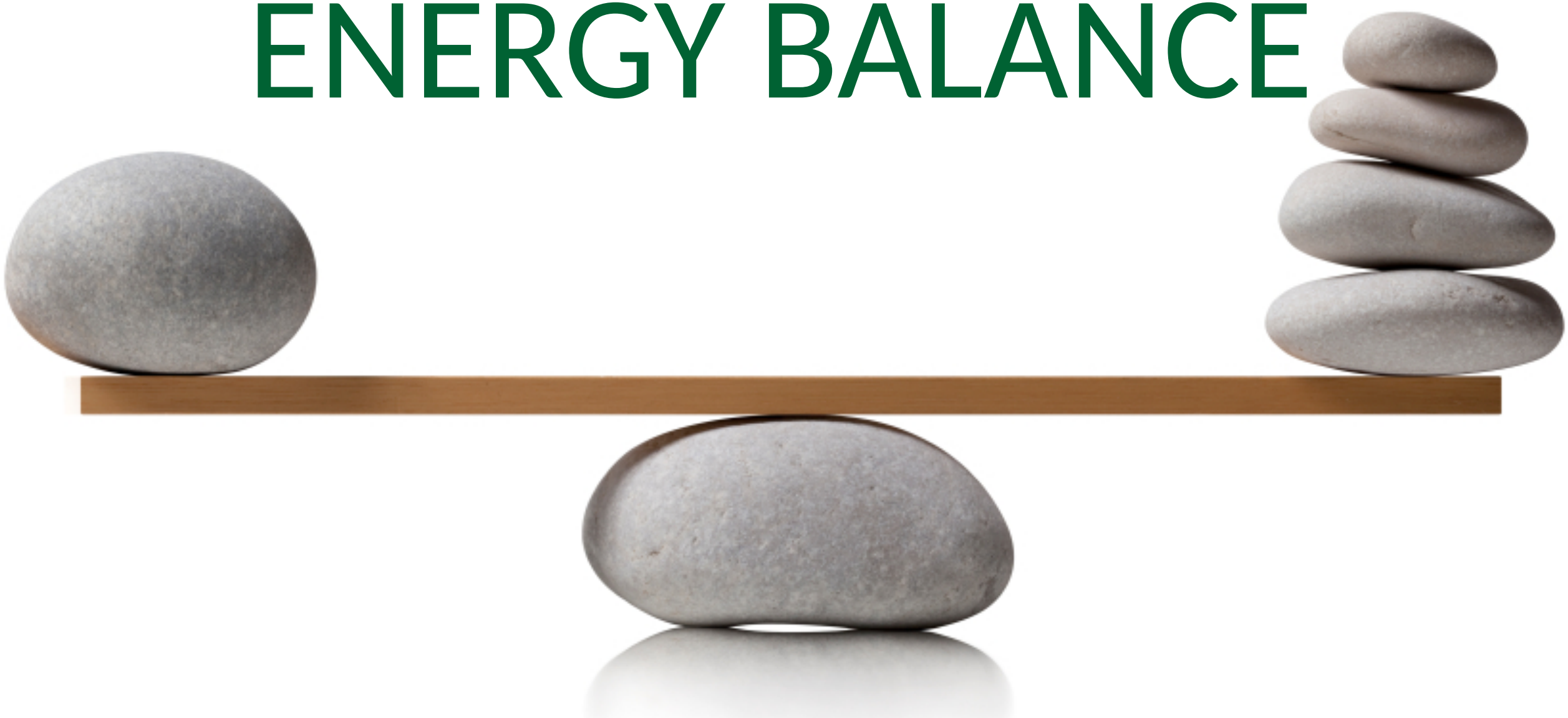
TRAINING

OPTIMAL PERFORMANCE


Fruit and Vegetable-Based Snacks
1-2 SERVINGS
sponsored by the
Association of American Corporations for
Freedom of Choice in Food (AAC-FCF)
original
fruit chews
Pasta / Rice / Wonderbread
2-3 SERVINGS
Soft. Delicious. Nutri
Coca Cola / PowerAid / Sodas / Energy Drinks
2-3 SERVINGS
Yogurt / Cheese
Ice Cream / Milkshakes
3-5 SERVINGS
askin
obbins®
Voplail
Skittles
TASTE THE RAINBOW
SNICKERS
Snickers / Snack Crackers
Granola Bars / Candy
2-4 SERVINGS
CERTIFIED
ANGUS BEEF®
BRAND
BURGER
KING
™
OUTBACK
STEAKHOUSE®
KFC
McDonald
Meats and Fast Food
6-11 SERVINGS


05
SUPPLEMENTS
04
NUTRIENT TIMING
03
MICRONUTRIENTS
02
MACRONUTRIENTS
01
ENERGY BALANCE
BEHAVIOR AND LIFESTYLE

PRIORITY #1 - ACHIEVE ENERGY BALANCE



SIGNS OF UNDER-FUELING

- Fatigue that doesn’t end with rest
- Inability to finish workouts
- Unexplained drop-off in performance
- Pre-occupation with food
- Mood changes such as irritability, anxiety, depression, and severe emotional ups and downs

PRIORITY #2 – EAT PROPER AMOUNTS OF MACRONUTRIENTS TO FIT YOUR ACTIVITY DEMANDS

FOOD AS FUEL FOR EXERCISE

- **Carbohydrates**
  - breads, pasta, rice, crackers, cereal, beans, fruit, some vegetables
- **Fat**
  - oils, butter, margarine, mayo, salad dressing, nuts, nut butters, seeds, avocado, olives
- **Protein**
  - meat, fish, pork, poultry, eggs, tofu, beans, dairy, soy

VERY IMPORTANT: CARBOHYDRATES

- Adequate stores are critical for optimal performance
  - muscle, liver glycogen, and blood glucose
- Stores are limited so athletes must consume them on a daily basis between daily training sessions or events
  - Before Exercise
    - tops off liver and muscle glycogen stores
  - During Exercise
    - improves performance by maintaining blood glucose and carb oxidation
  - After Exercise
    - facilitates rapid refilling of carbohydrate stores

THE CARBOHYDRATE EQUATION

+

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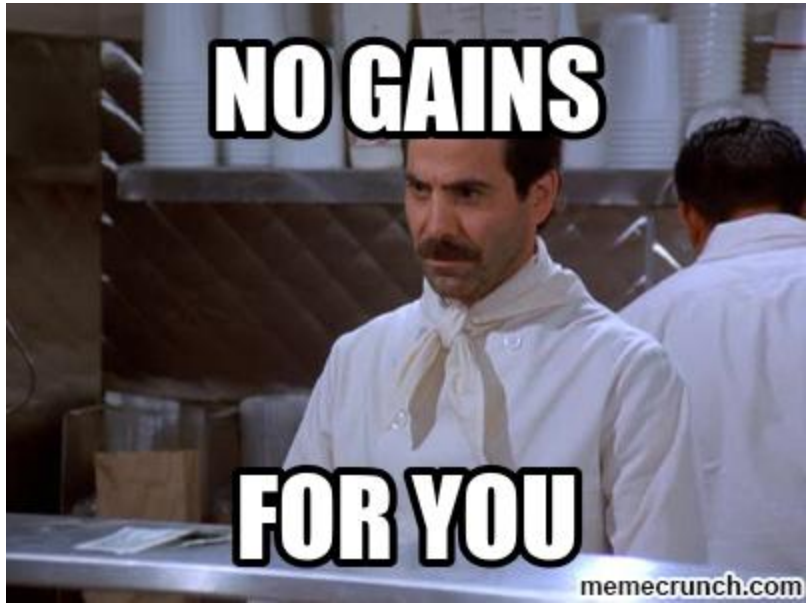


No Carbs (Glycogen) + High Intensity Exercise = No Gainz

Setting **CARBOHYDRATES** intake targets for athletes

By Louise Burke and Inigo Mujika, IJSNEM 2014

Low

Light, Skills

DAILY COMPETITION / TRAINING VOLUME

INTENSITY OF SESSION

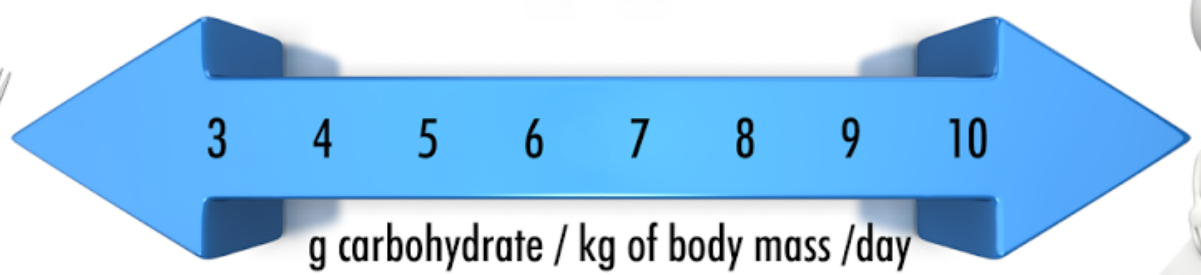
High

VO2max, Competition

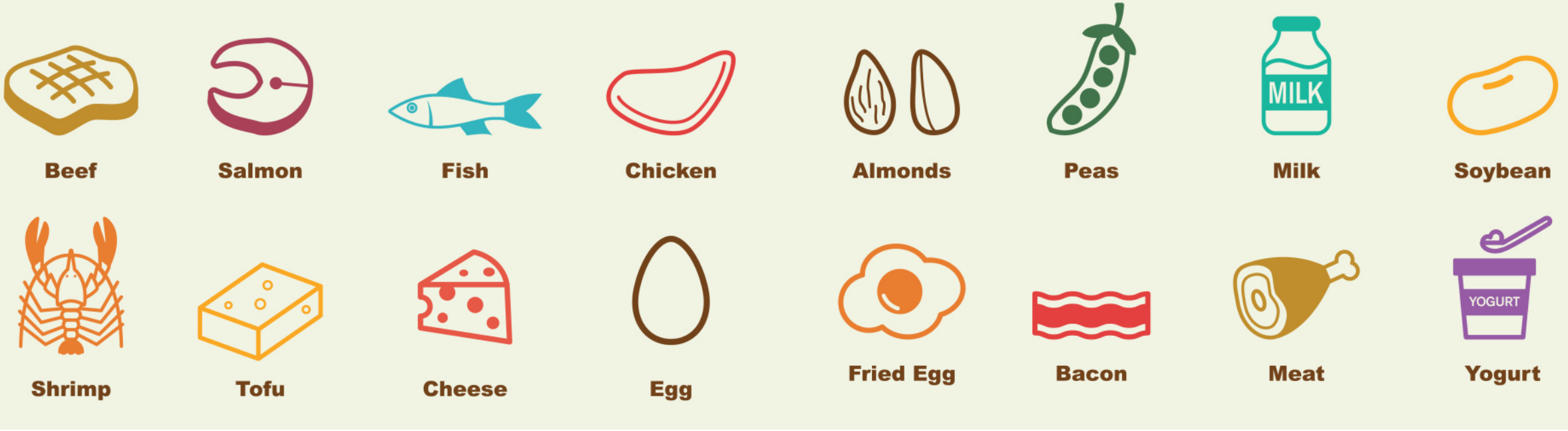
Prolonged metabolic stress to induce aerobic adaptation

GOAL OF SESSION

High quality training / optimal competition outcome



THE ROLE OF PROTEIN

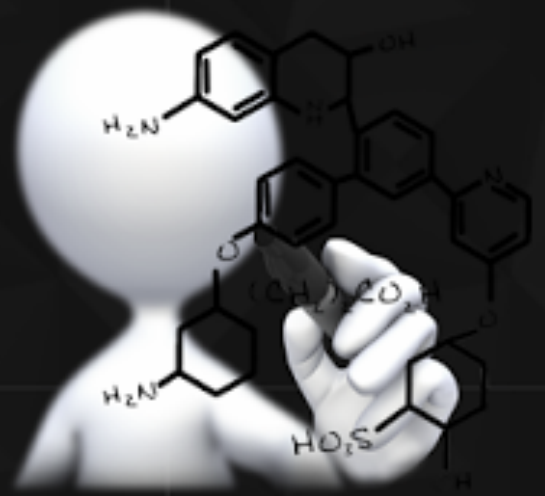


HOW TO BUILD MUSCLE

Positive muscle protein balance is achieved when the rate of new muscle protein synthesis exceeds that of muscle protein breakdown

Muscle mass gain is maximized through the synergistic effect of resistance training and adequate protein intake

HOW TO BUILD MUSCLE



25g

Leucine is a key amino acid in stimulating muscle protein synthesis. It is probably a primary reason why whey protein is so effective

Muscle protein synthesis is a saturable process at protein ingestion doses of approximately 20–25 g

Ingestion of proteins immediatley post-exercise promotes a marked rise in the rate of muscle protein synthesis

1 can white tuna

= **41g** protein
3.3g leucine

3 oz. chicken breast

= **25g** protein
1.8g leucine

1 scoop (28 g)
whey protein isolate

= **24g** protein
2.5g leucine

3 large eggs

= **19g** protein
1.5g leucine

1 single-serving
Greek yogurt

= **15g** protein
1.5g leucine

8 oz. chocolate
milk

= **8g** protein
0.8g leucine

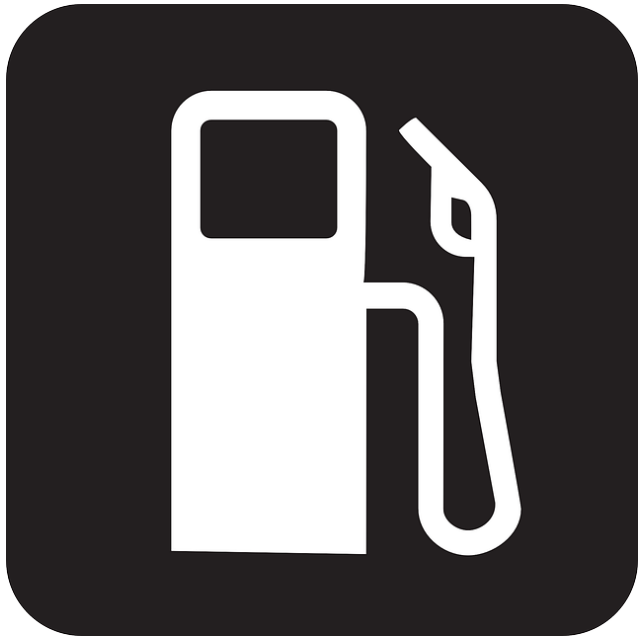
In between this range is a good starting point.
1.8 g/kg or 0.81 g/lb

Daily protein intake

Bodyweight	0.36 g/lb (0.8 g/kg)	0.54 g/lb (1.2 g/kg)	0.64 g/lb (1.4 g/kg)	0.91 g/lb (2.0 g/kg)
100 lb (45 kg)	36 g	54 g	64 g	91 g
150 lb (68 kg)	54 g	81 g	96 g	137 g
200 lb (91 kg)	72 g	108 g	128 g	182 g
250 lb (113 kg)	90 g	135 g	160 g	228 g

UNDER FUELED

- 2013 study of D1 Athletes to determine how the diets compared to current recommendations from Sports Nutrition Professionals



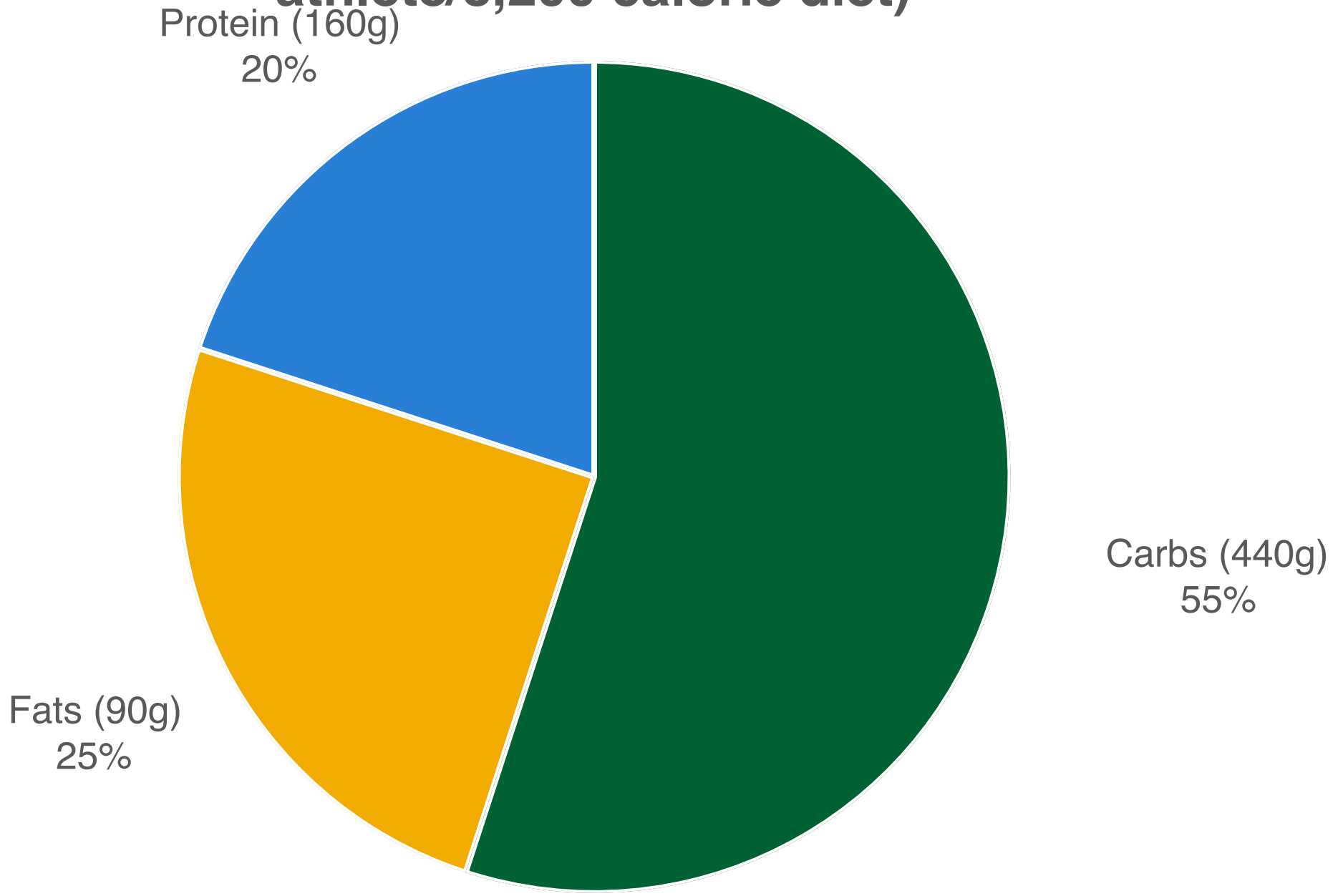
- Findings:
  - Daily energy intake (calories) was significantly below requirements
  - 74% did not meet the minimum requirements for Carbohydrates
  - **50% did not meet the minimum needs for protein**

J Am Coll Health. 2013;61(1):10-6. doi: 10.1080/07448481.2012.747526.

THE CONSEQUENCES

Without enough protein, muscles cannot adapt properly to training, even if athletes are getting enough overall energy

athlete/3,200 calorie diet)



PRIORITY #3 – EAT A VARIED DIET

PRIORITY #4 – NUTRIENT TIMING

DAY BEFORE COMPETITION

Start with Hydration
Promote energy efficiency; prevent fatigue and dizziness

Athlete's Plate, Every Meal
Focus is on quality carbs, lean protein, fruits and vegetables

Snack Smart
Antioxidant filled fruits and vegetables, energy boosting trail mix or low sugar cereal

MORNING OF COMPETITION

During 1hr Before Race

Just Before Comp
Sips of water / sports drink for hydration, carb and electrolytes

>1 hr Before Race

Between Warm Up & Comp
Prep muscle glycogen for competition with a carb boost

1-2 hrs Before Warm Up

Before Warm Up
Light breakfast, but enough to hold you over through the competition

RECOVEY AFTER COMPETITION

Immediately Post

Rehydrate, carb recovery, protein protection

Athlete's Plate Meal

ASAP: replenish and rebuild with a balanced plate

TAKES A TEAM TO WIN

Hold yourself and your teammates accountable. Will you do what it takes?

BUILD A PERFORMANCE-ENHANCING PLATE

Properly fueling can provide an edge over other athletes who don't focus on their nutrition.

- **Calorie and nutrient needs vary depending upon intensity and phase of training.**
- This plate represents a hard training day. On light training days, substitute 1/4 plate of whole grains with 1/4 plate of fruits and vegetables.

WHOLE GRAINS

Carbohydrates fuel muscles and are the quickest source of **energy** for athletes.

HEALTHY FATS

Moderate amounts of healthy fats provide a concentrated **energy** source and **essential fatty acids.**

[nuts, seeds, oil and fatty fish]

FLUIDS

Stay **hydrated** by drinking fluids at mealtime and throughout the day.

[milk, water, 100% fruit juice]

Protein foods are essential for **building/repairing muscle** and helping to support **immune** function.

Many fruits and vegetables provide **nutrients** that have been linked to **reduced oxidative damage** from hard training.

·C·P·S·D·A·
FUELING VICTORY

NDC
NATIONAL DAIRY COUNCIL™

For advice on customizing a nutrition plan, consult a sports dietitian.

PRE-WORKOUT NUTRITION

- Eat a combination of foods high in carbs and moderate in protein.
- Focus on foods low in fat and fiber.
- Length and intensity of workouts matter.
- 6 a.m. workout? Fuel well the night before and eat something small in the morning.
- Experiment in practices to figure out what works best.

·C·P·S·D·A· FUELING VICTORY

NDC NATIONAL DAIRY COUNCIL®

For advice on customizing a nutrition plan, consult a sports dietitian.

3-4 HOURS BEFORE EXERCISE

- Turkey and Swiss sandwich, apple and low-fat chocolate milk
- Peanut butter and jelly sandwich with banana slices and low-fat milk
- Low-fat Greek yogurt with berries and small salad with chicken
- Always remember to hydrate with at least 16-20 oz. of fluid

30-60 MINUTES BEFORE EXERCISE

- Sports drink
- Fruit, apple sauce, or fruit snacks
- Small granola bar, pretzels, or graham crackers

FUELING
DURING EXERCISE

- Stay well-fueled during workouts with the right mix and timing of **carbohydrates**, **fluids** and **electrolytes** to replace what's lost during exercise.
- Take small, frequent bites during exercise and always with fluids.
- Experiment with new foods and drinks during training to find what works best for competition.

·C·P·S·D·A· FUELING VICTORY NDC NATIONAL DAIRY COUNCIL®

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EXERCISE TIME	TYPE OF EXERCISE	HOW TO FUEL
BRIEF EXERCISE		
<45 MINUTES	• Batting practice • Shoot around (basketball) • Lifting	Focus on water for hydration 
SUSTAINED HIGH-ENERGY EXERCISE		
45-75 MINUTES	• Cross country workout • Stop-and-start sports (soccer, football, field hockey)	Small amounts of carbs throughout activity (i.e., 2-3 gulps of sports fluid or 1/2 serving of applesauce every 15-20 min.) 
ENDURANCE EXERCISE		
1-2.5 HOURS	• Long distance cross country race • Stop-and-start sports (soccer, football, field hockey) • Rowing workouts	30-60 g carbs/hour (i.e., 1-2 handfuls of raisins or 1-2 med banana) 

FUELING FOR RECOVERY

REFUEL muscles with carbohydrates (body weight/2 = grams of carbs).
REPAIR and rebuild muscles with 20-30 grams of high-quality protein.
REHYDRATE with fluids and electrolytes lost during working out.

FUELING STATION: 15-60 MIN. AFTER TRAINING

Chocolate Milk and Almond Refuel

20g Protein • 53g Carbs

1 ½ cups low-fat chocolate milk

1/4 cup almonds

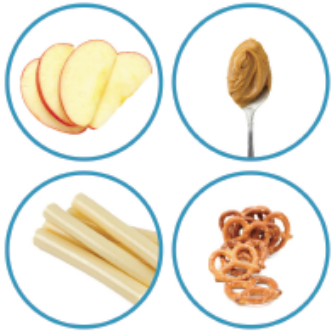
Blueberry Yogurt Parfait

22g Protein • 41g Carbs

6 oz. Greek yogurt topped with:

1/4 cup granola

1 cup blueberries



Snack Extravaganza

20g Protein • 70g Carbs

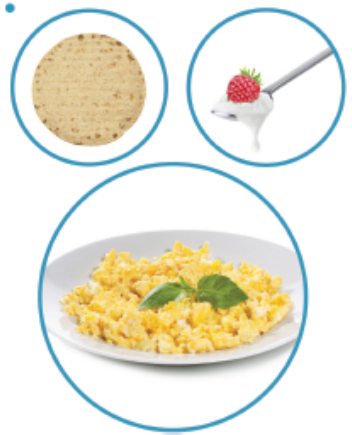
1 string cheese

1 cup apple slices

1/4 cup pretzels

2 tbsp. peanut buttter

TRAINING TABLE MEAL: 3-4 HOURS AFTER TRAINING



Egg Wrap with Yogurt Parfait

28g Protein • 40g Carbs

2 scrambled eggs with 1/4 cup Cheddar cheese

1 whole wheat tortilla

1/2 cup plain yogurt with 1 cup raspberries

Fuel Up Stir Fry

33g Protein • 59g Carbs

3 oz. chicken breast with 1/8 cup teriyaki sauce

1 cup brown rice

1½ cups stir fry vegetables

Chicken Fiesta Bowl

40g Protein • 68g Carbs

1 cup brown rice topped with:

1/2 cup black beans

3 oz. chicken breast

1/8 cup salsa

1/2 cup lettuce

1/8 cup shredded Mexican blend cheese

For advice on customizing a nutrition plan, consult a sports dietitian.

- **For 2-a-day workouts, this recovery window is even more important.**
- **If you have a low appetite after exercising, a liquid food option may be the best place to start.**
- **Within two hours of working out drink 16-24 oz. of fluid for every pound lost during exercise.**

ROLE OF SUGAR IN ATHLETES DIET

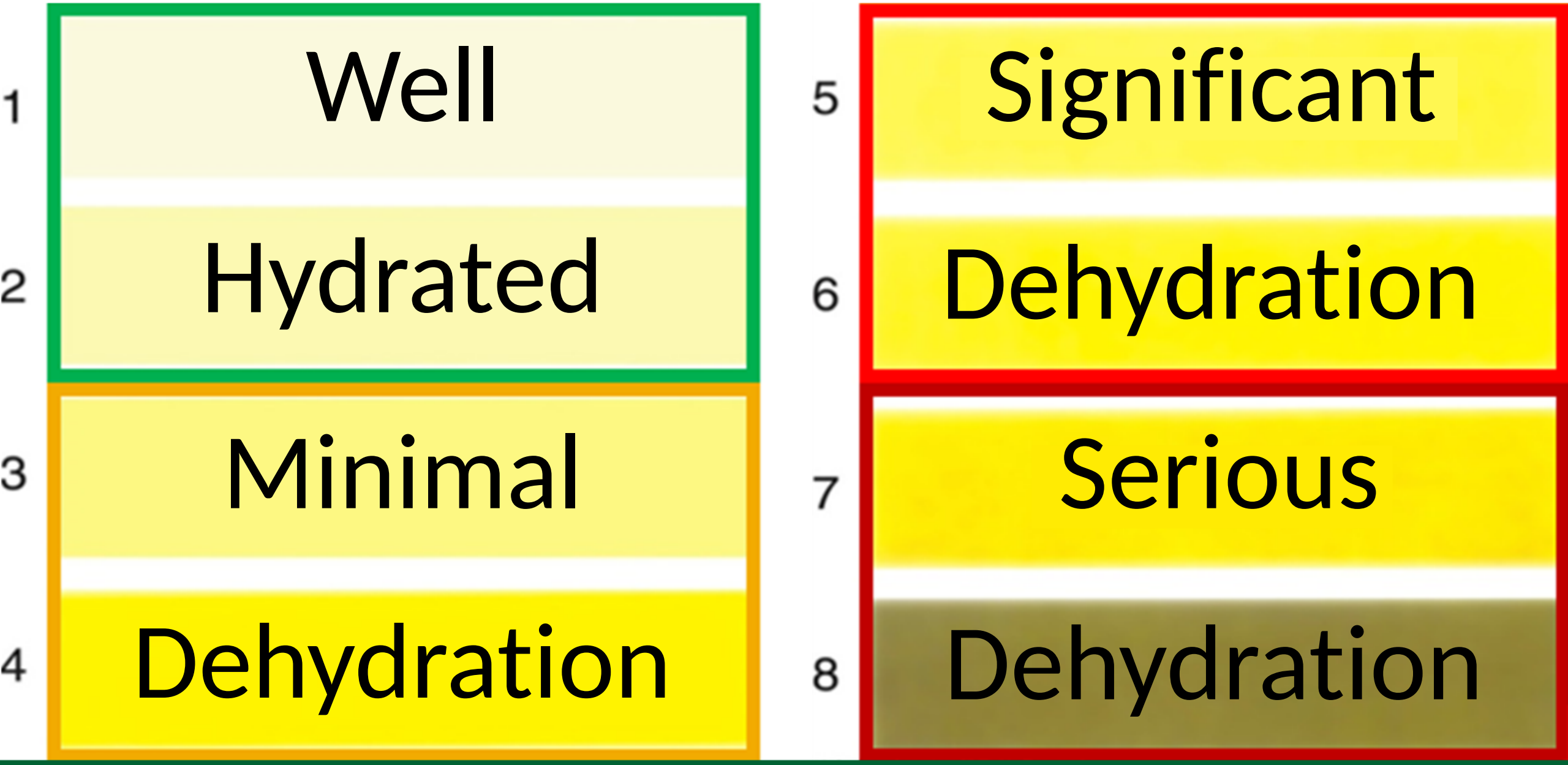
- **Fist and foremost**: get *at least* 80% of diet from whole foods
- Used properly, sugars and simple carbohydrates (juice, sports drinks) can increase performance
  - Prioritize them around your workout period (1 hr. pre/during/1 hr. post)
- "Junk food" is best consumed as part of your post-workout meal
  - Body is primed to use those nutrients for repair/replenishment
  - Don't get crazy – this is not permission to binge on fried foods every day post-workout

ELECTROLYTE LOSS

SWEAT RATES

- Range from 0.5 L to 2.0 L/hr
- Makes is difficult to provide a uniform recom ns
- All influence sweat rate for given activity
  - Body weight
  - Genetic predisposition
  - Heat acclimatization state
  - Metabolic efficiency (economy at undertaking a specific task)

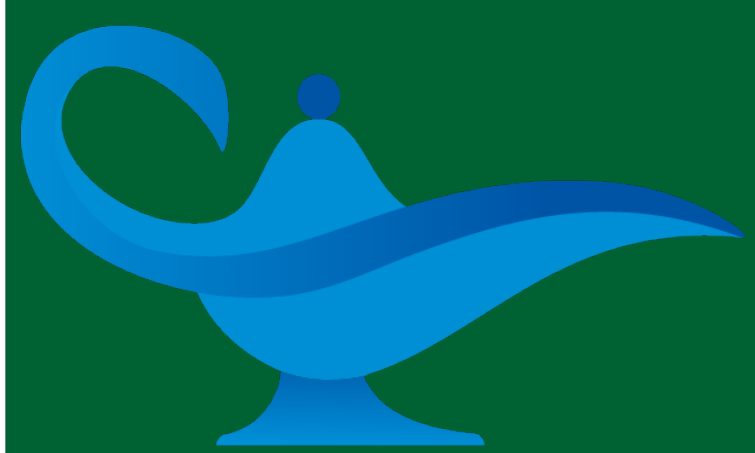
HYDRATION STATUS CAN BE MONITORED VIA URINE COLOR



CONSISTENCY IS KING

- **Case Study: Early morning lifting sessions**
  - Eating something is better than nothing
- **Currently eating nothing:**
  - Try a tall glass of milk, protein shake, apple sauce, 8-12 oz. of a sports drink or juice, sports bar of some sort, whole grain toast, etc.
- **Currently eating something:**
  - Try to get a more robust meal in. Oatmeal, whole grain cereals with milk, eggs, whole fruit/milk/protein smoothie etc.
- Can’t eat before/during a lift? ASAP after. Prioritize carbs and protein.

RESOURCES



FITGENIE

App Currently on Apple devices only.
When taking the apps initial survey, preferably select “low fat diet” and the highest available activity option. Selecting the “low fat diet” option will ensure that your allotment of carbs is high.

Precision Nutrition

Body Weight Planner

STARTING INFORMATION

Advanced Controls: **OFF**

Weight	180				lb
Sex	Male				
Age	48				
Height	5	ft.	11	in.	ft


NutriSearch.info
A search engine for trustworthy nutrition & health information

SPORTS PERFORMANCE NUTRITION CHECK LIST

1	Eat a balanced breakfast every day (to fuel your muscles and your brain)	✓
2	Eat every 3 hours during the day (to maintain energy to the body and brain)	✓
3	Eat 2-3 pieces of fruit each day (to obtain vital essential nutrients & energy for performance)	✓
4	Eat 3-4 servings of vegetables each day (to obtain essential nutrients for performance)	✓
5	Choose “quality” carbohydrates (for sustained energy and more nutrients)	✓
6	Limit fried foods (with excess fat and poor nutritional quality)	✓
7	Refuel within 30-60 minutes after training session, practice, and/or game? (to refill gas tank, repair muscles and build lean body mass)	✓
8	Consume a high quality, balanced dinner every day (to refuel & repair muscles)	✓
9	Consume a small nutrient dense snack before bed (to top of muscles and brain)	✓
10	Drink *at least* 3-4 L (100-135 oz or 13- 17 cups) of water each day (to replace loses and prevent dehydration)	✓
	Consume at least 2 sources of omega 3s each week (tuna, salmon, walnuts, chia or flax seeds) to	

CONTACT INFO

Questions/Comments/Concerns:

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Complaints:

Direct to Matthew Hull