Youth Nutrition for Athletes

dotFIT Masterclass

May 2020

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Kat Barefield, MS, RD, CPT

Nutrition Can Make a Good Athlete GREAT and a Great Athlete BETTER

Neal's Oldest Son

Nelson Spruce, Professional Football Player

University of Colorado

Los Angeles Rams

XFL Wildcats

Neal's Younger Son

Zane Spruce, International Brazilian Jiu Jitu

Trains Under Ramulo Barral

Abu Dhabi World Pro

Las Vegas Open Double Gold

LA Grand Slam

Kat’s Son

- Sedrick, Professional Basketball Player
- University of Utah
- Atlanta Hawks, NBA Summer League
- OKC Blue, NBA G League

Kat’s Daughter

Tia, High School Basketball Player

Content to Be Presented

Demonstrate how nutrition can help:

- Optimize growth and development
- Support cognitive and immune function
- Decrease risk for injury
- Maximize mental focus & energy levels
- Support training and recovery
- Maximize performance
- Increase strength
- Build muscle
- Manage weight & body composition

The Role of Nutrition & Athletics

Training hard and eating poorly is like filling up a luxury sports car with low-grade fuel

Role of Nutrition in Training & Athletics

- Exercise is a **Catabolic** Process
  - Stresses tissues to force adaptation
  - Results in tissue damage
  - Trigger event for the desired outcome
  - “Sets the Stage”
- Nutrition is an **Anabolic** Process
  - Fuels growth and development
  - Repairs tissue damage
  - Replenishes energy stores
  - Builds muscle, connective tissue, enzymes, etc.
  - Drives exercise-induced results
  - “It Makes the Movie”

Put Back Less Than the Body Can Use = You Get Less Than Optimal Results

Same Nutrition = Same Movie

Bad Nutrition = Bad Movie

6 Classes of Essential Nutrients Nourish the Body

Macronutrients:

- Carbohydrates
- Protein
- Fat

Micronutrients:

- Vitamins
- Minerals

Water

- Must be obtained through the diet
- The macronutrients provide energy = calories
- The micronutrients serve as cofactors in all bodily processes
- Water is the medium for all reactions

Optimizing each supports health, growth, development and the demands of physical activity

Basic Rules of Performance Nutrition

01

Rule #1 – Eat the Right Amount for YOU

- Determined by RMR, activity level, and goals

02

Rule #2 – Eat the Right Foods in the Right Ratios

- Makeup of calories influences energy levels, performance and recovery

03

Rule #3 – Time Meals and Fluids Properly

- Fill up fuel tanks, maintain hydration and fully replenish

04

Rule #4 – Supplement Wisely

- Deliver what traditional food can't to grow stronger, play longer and live better

Rule #1 – Eat the Right Amount

Energy Requirements for Active Youth:

- Dietary Guidelines for Americans 2015-2020
- https://health.gov/our-work/food-nutrition/2015-2020-dietary-guidelines/guidelines/appendix-2/
- Provides a starting point

MALES				FEMALES[d]			
AGE	Sedentary[a]	Moderately active[b]	Active[c]	AGE	Sedentary[a]	Moderately active[b]	Active[c]
4	1,200	1,400	1,600	4	1,200	1,400	1,400
5	1,200	1,400	1,600	5	1,200	1,400	1,600
6	1,400	1,600	1,800	6	1,200	1,400	1,600
7	1,400	1,600	1,800	7	1,200	1,600	1,800
8	1,400	1,600	2,000	8	1,400	1,600	1,800
9	1,600	1,800	2,000	9	1,400	1,600	1,800
10	1,600	1,800	2,200	10	1,400	1,800	2,000
11	1,800	2,000	2,200	11	1,600	1,800	2,000
12	1,800	2,200	2,400	12	1,600	2,000	2,200
13	2,000	2,200	2,600	13	1,600	2,000	2,200
14	2,000	2,400	2,800	14	1,800	2,000	2,400
15	2,200	2,600	3,000	15	1,800	2,000	2,400
16	2,400	2,800	3,200	16	1,800	2,000	2,400
17	2,400	2,800	3,200	17	1,800	2,000	2,400
18	2,400	2,800	3,200	18	1,800	2,000	2,400
19-20	2,600	2,800	3,000	19-20	2,000	2,200	2,400

Rule #1 – Eat the Right Amount

Weight Loss

- Pre-puberty: allow growth to normalize weight
- Avoid dieting; focus on improving food choices
- Too much, too fast may hinder performance
- In season weight loss generally indicates lack of calories in growing athletes

Muscle Gain + Performance

- Too much, too fast may slow speed and impair performance
- Must eat more to sustain a calorie surplus + resistance train regularly
- Individual response varies widely

Tips for Gaining Muscle

- Consistently eat throughout the day – 4 to 6 times
  - Aim is to maintain a calorie surplus
- Consume high quality protein at each meal/snack
- Eat larger portion sizes
  - Add a piece of toast, drink an extra milk/juice, have extra rice/pasta/veggies/fruit
- Drink extra calories
  - Chocolate milk, smoothies, protein rich meal replacements
- Choose more calorie dense foods
  - Whole milk vs. nonfat; Granola vs. cereal; dried fruit, nuts, trailmix
- Add fats to meals – avocado, olive oil, nuts and seeds

Tips for Weight Loss

- Avoid over-emphasizing body weight and weight loss
- Avoid dieting, fad diets, “fatburners,” cleanses, teas, etc.
- Avoid using junk food as a reward
- Avoid classifying foods as good or bad
- Focus on improving food choices
  - More fruits and veggies
  - Less packaged snack foods (chips, crackers, cookies, pastries)
  - More lean protein
  - Less high-fat protein (chicken nuggets, hot dogs, fried fish/chicken)
  - More water and calcium rich beverages
  - Less soda, juices, sports drinks (except during training)
- Make healthy options easily accessible and less healthy options unavailable at home
- Plan to enjoy treats and favorite foods

Macronutrients

carbs

proteins

fats

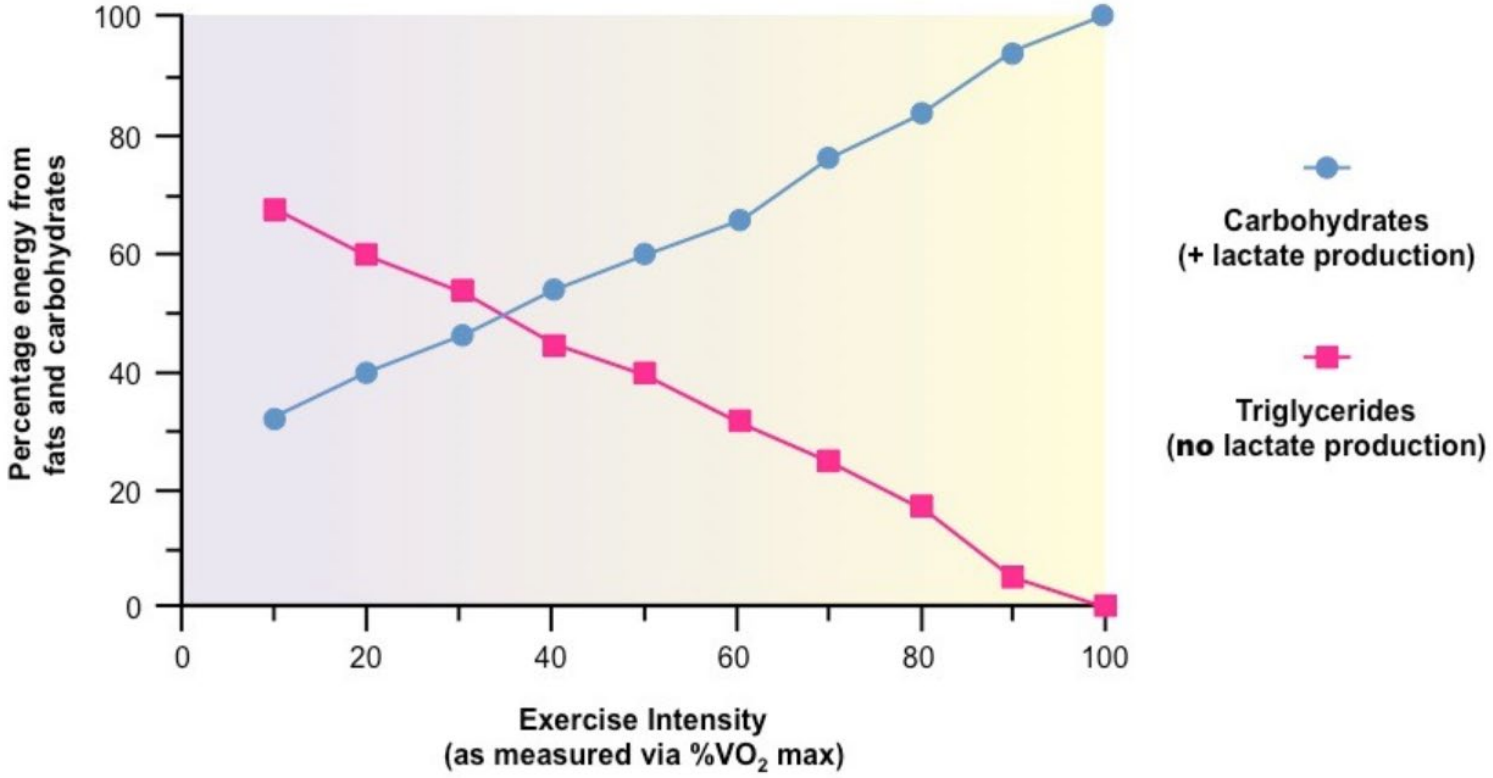
Rule #2 – Eat the Rights Foods in the Right Ratios

Carbohydrates = ENERGY

- Bread
- Pasta
- Cereal
- Bagels
- Rice
- Tortillas
- Fruit
- Veggies

Primary function: provides FUEL for muscles & nervous system

Effect of Exercise Intensity on Fuel Usage



Carbohydrates Are Stored in the Body as GLYCOGEN

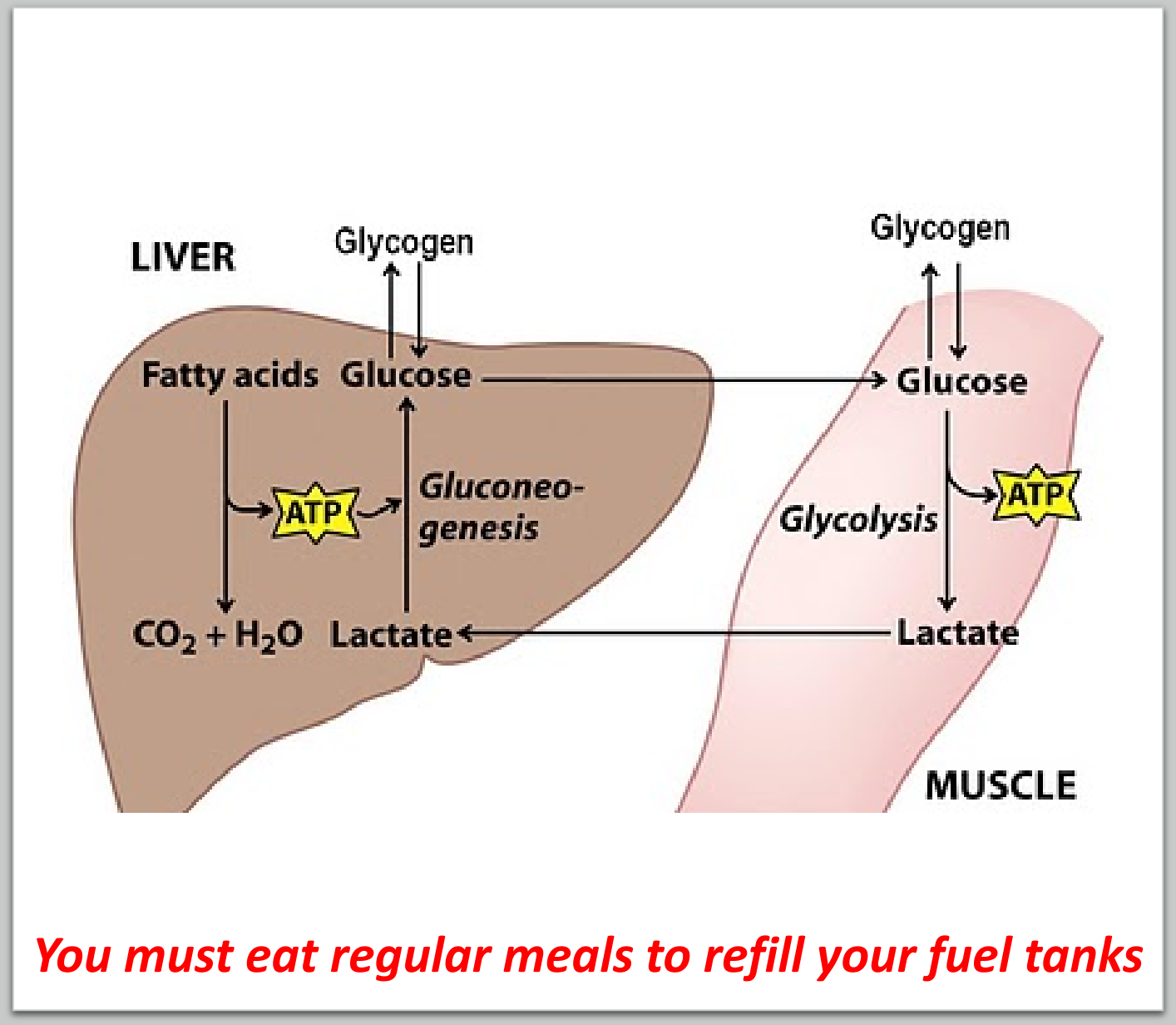
TWO FUEL TANKS:

Muscle (300-500 grams)

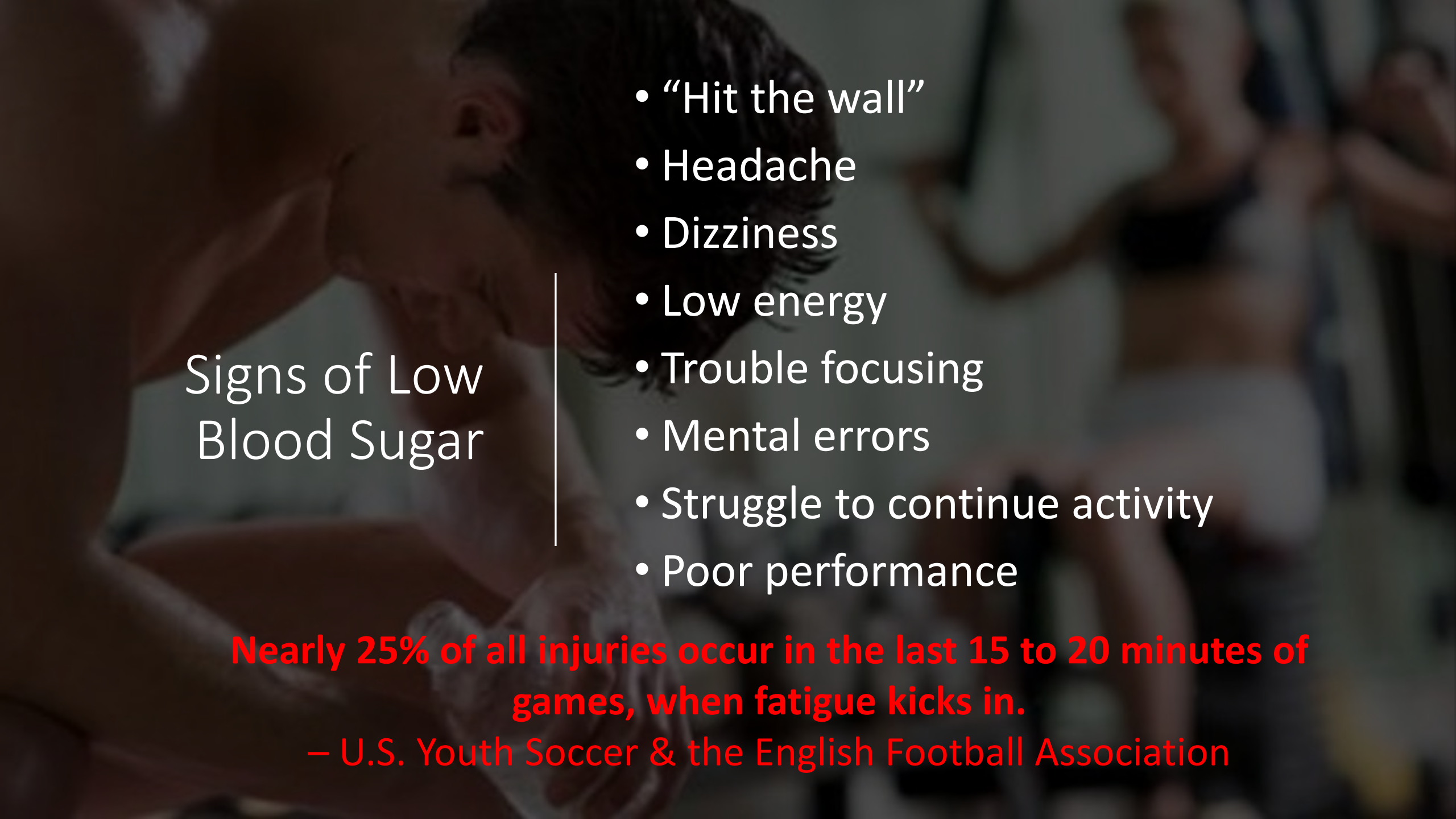
- ~2 hours of sustained or high intensity intermittent exercise

Liver (80-120 grams)

- 3-4 hours of wake time
- Break (the) fast
- Supplies the blood sugar (glucose)
  - Fasting levels maintained at <100 mg/dL



You must eat regular meals to refill your fuel tanks



Signs of Low Blood Sugar

- "Hit the wall"
- Headache
- Dizziness
- Low energy
- Trouble focusing
- Mental errors
- Struggle to continue activity
- Poor performance

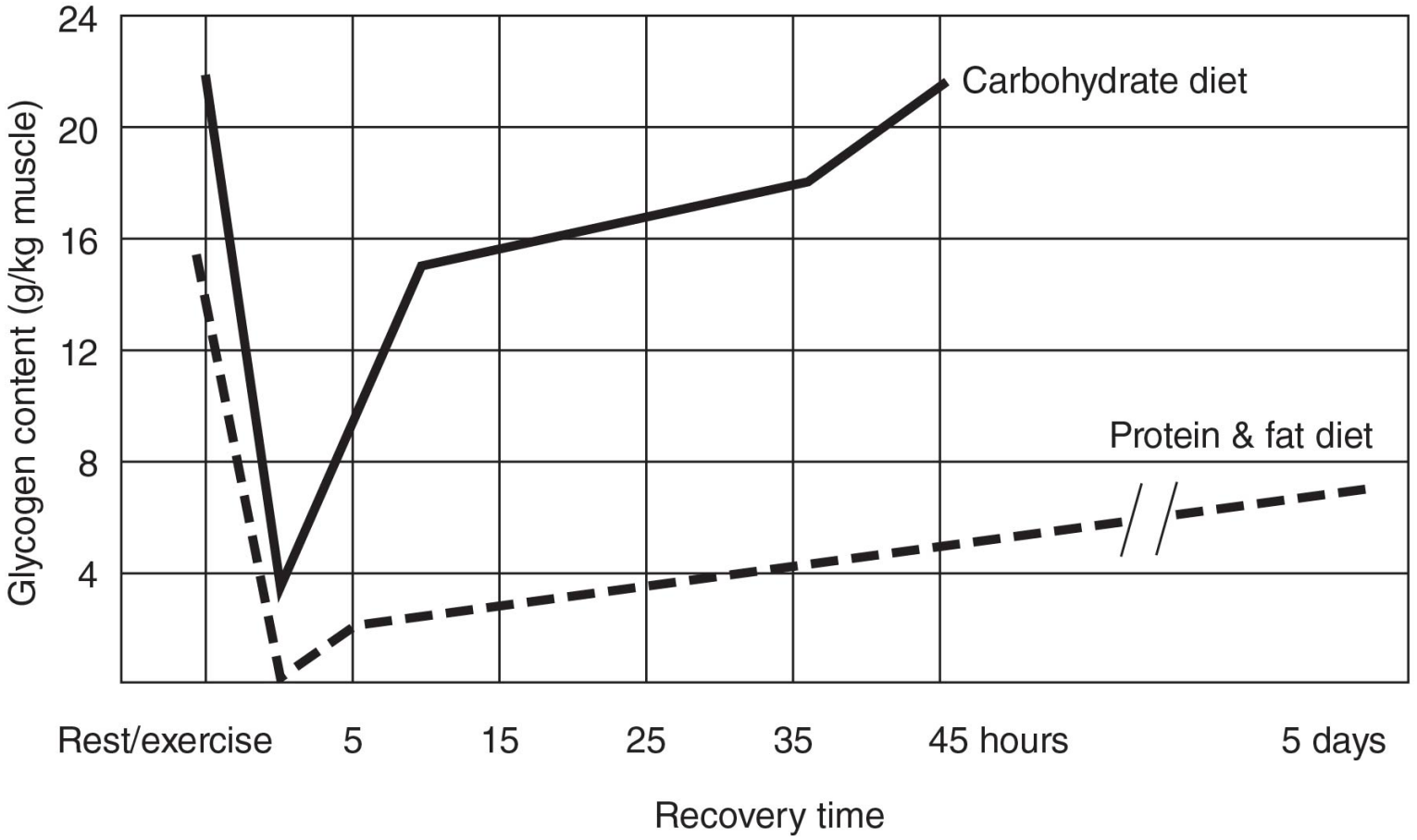
Nearly 25% of all injuries occur in the last 15 to 20 minutes of games, when fatigue kicks in.

– U.S. Youth Soccer & the English Football Association

Carbohydrates Are Needed for Recovery & Refueling

Glycogen

- Highest at rest, before exercise
- Depleted with exercise
- Fully replenished with carbohydrate rich diet
- Low replenishment with protein + fat rich diet



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Carbohydrates – Quality Matters

Nutrient dense – vitamins, minerals, etc.

Filling

Eat often

Lacking nutrients – added sugar and fats

Easy to overeat

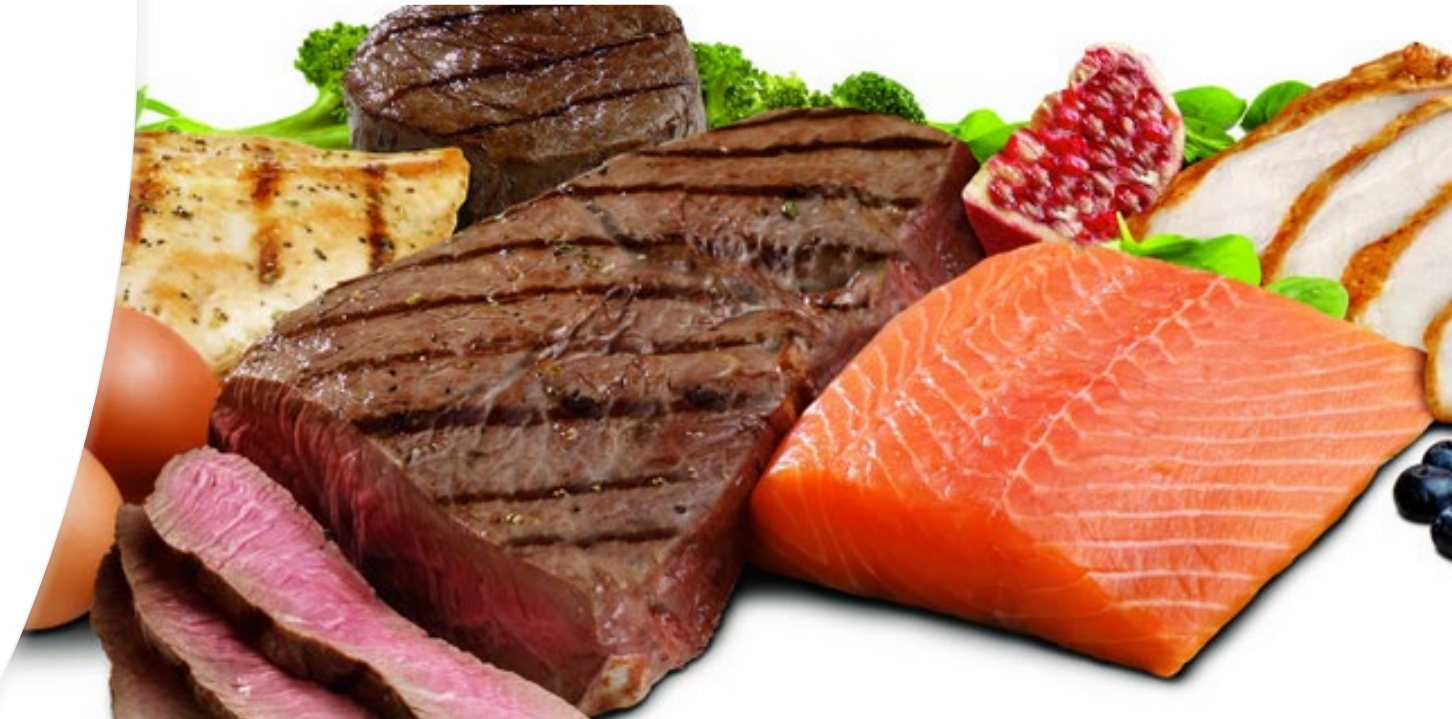
Enjoy occasionally

Simple Ways to Boost Fruit & Veggie Intake

- Make them easily accessible and include at each meal
- Add fruit to yogurt, cereal, oatmeal, pancakes, etc.
- Add veggies, beans and lentils to soups, sandwiches, casseroles, pasta, omelets, wraps
- Start meals with a green salad
- Choose fruit-based desserts

Protein

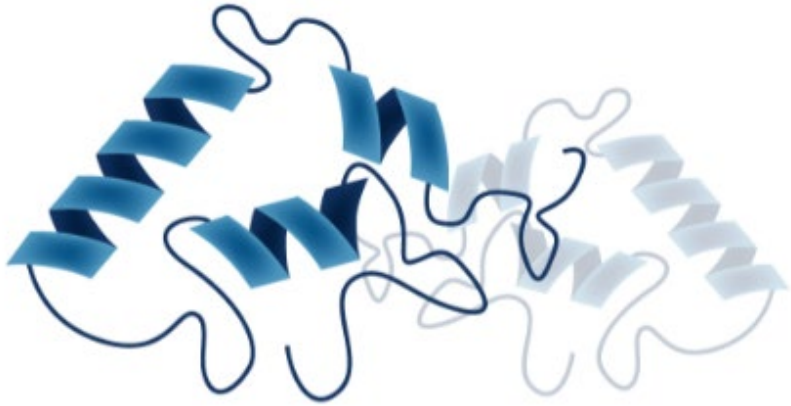
- Primary Functions
  - Builds and repairs muscle tissue
  - Supports immune system
  - Structural tissue of bone, organs, hair, skin, nails
  - Enzymes for all metabolic reactions



Essential	Conditionally Essential	Non-Essential
Histidine	Arginine	Alanine
Isoleucine	Cysteine	Asparagine
Leucine	Glutamine	Aspartic Acid
Lysine	Glycine	Citrulline
Methionine	Ornithine	Glutamic Acid
Phenylalanine	Proline	
Threonine	Serine	
Tryptophan	Tyrosine	
Valine		

Protein in the Body

- Building blocks = amino acids (22) sequenced together
- 9 Essential = must be obtained from the diet
- NOT stored and used for energy like carbohydrate + fat



Determining Protein Quality

- PDCAA – Protein Digestibility Corrected Amino Acid Score
  - Compares the amino acid profile of a protein to the EAA requirements of humans.
- PER – Protein Efficiency Ratio
  - Determines how efficiently the protein is incorporated into bodily tissues compared to a standard protein of egg whites

Protein Source	PDCAA	PER
Whey	1.0	3.0-3.2
Casein	1.0	2.9
Milk	1.0	2.8
Egg	1.0	2.8
Soy	1.0	1.8-2.3
Beef, Poultry, Fish	0.8-0.92	2.0-2.3
Pea	0.8-0.9	1.5
Wheat	0.43	1.5
Gelatin (Collagen)	0.08	-

Protein Sources

High Quality Sources

- Whey and casein protein
- Milk and milk products
- Eggs
- Soy and soy products
- Lean meats*
  - Skinless chicken
  - Turkey
  - Beef (fillets, flank, loin round)
- Fish and seafood*
- Nuts and seeds
- Beans, lentils, whole grains

* *Richest sources of heme iron, a nutrient of concern for youth*

Lower Quality Sources

- Fatty meats
  - Bacon, sausage, ham
  - Salami, bologna, pepperoni
  - Untrimmed steaks
  - Most fast food burgers
- Fried meats
  - Chicken, nuggets, tenders, etc.
  - Fish and chips
- Average hot-dog, hot link

Protein Sources from Plants

"Incomplete"

- Lack one or more essential amino acids
- Foods must be paired to fill in the missing essential amino acids
- Must consume ~20-25% more calories to get the same amount of essential amino acids

Legumes	Grains	Nuts/Seeds
Low in methionine	**Low in lysine**	**Low in methionine**
Edamame	Whole wheat bread/buns/pita	Almonds
Chickpeas	Whole wheat pasta	Cashews
Black Beans	Brown Rice	Brazil Nuts
Pinto Beans	Wild Rice	Pistachios
Split Peas	Rye	Walnuts
Black Eyed Peas	Barley	Chia Seeds
Lentils	Oats	Pumpkin seeds
Lima Bean	Millet	Flaxseed

Protein Recommendations

High Quality Sources – Variety of Lean Animal Sources AND/OR Complimentary Plant Foods

0.6 to 1.0 gram per pound (high end for growing teens or if restricting for weight loss)

Equates to ~ 1-2 Palm Size Portions per Meal

Consume at Each Meal

Fats

Essential fats must be obtained from the diet since they are required for growth, development other physiological processes.

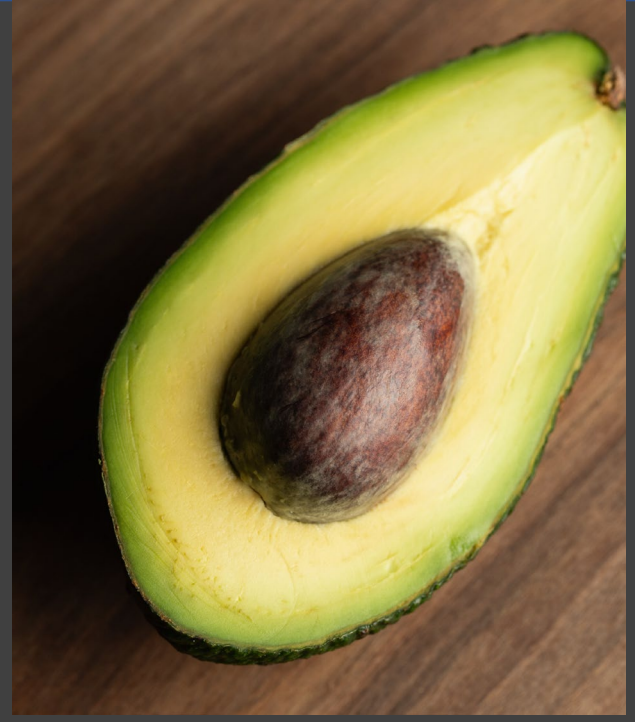
- Linoleic acid
- Linolenic acid (omega-3 fats)
- Arachidonic acid

Provides precursors for other fats, cholesterol, and components of cell membranes.

Needed to carry fat soluble vitamins.

Omega-3 fats are needed for heart and brain health

MONOUNSATURATED	POLYUNSATURATED	SATURATED
Plants + Animals	Plants, Seafood, Nuts, Seeds	Animal Fats + Some Plants
Olive Oil	Corn Oil Safflower Oil	More Solid Forms
Peanut Oil Canola Oil	Soybean Oil Cottonseed Oil	Butter Lard
Avocados	Sunflower Seed Oil Walnuts, Pine Nuts	Coconut Oil Palm Kernel Oil
Peanut Butter Most Nuts	Pumpkin, Sesame, Flax Seeds	Palm Oil Beef Fats
In Chicken, Pork, Beef, Wild Game	Salmon, Trout, Herring, Tuna, Mackerel	In Pork, Chicken, Nuts



Fats

- Recommendations:
  - No less than 20% of calories
  - No more than 30% pre exercise – slows digestion
  - Limit saturated fat to 10%
  - Focus on variety of plant sources from PUFAs
  - Incorporate oily fish with omega-3 fats
    - 2-3 fish/seafood meals weekly

Calcium Rich Foods

Functions:

- Muscle Contraction
- Bone Density & Growth

Requirements:

- 1,300 mg/day
- ~4 servings/day

Food	Serving Size	Calcium (mg)
Cow's milk	1 cup	300
Tofu	1/2 cup	275
Cheddar cheese	1 oz	204
Frozen waffle, whole grain	1	196
Fortified orange juice	4 oz	175
Greek yogurt, nonfat	5.2 oz	160
White beans, canned	1/2 cup	96
Kale, cooked	1/2 cup	90
Soybeans, cooked	1/2 cup	88
Bok choy	1 cup	65
Broccoli	1 cup	62

Vitamin D – The Sunshine Vitamin

Functions:

- Immune system
- Inflammation
- Bone health
- Many more

Typical Intake

- 90% from Sunshine
- 10% from Diet

Daily Requirements:

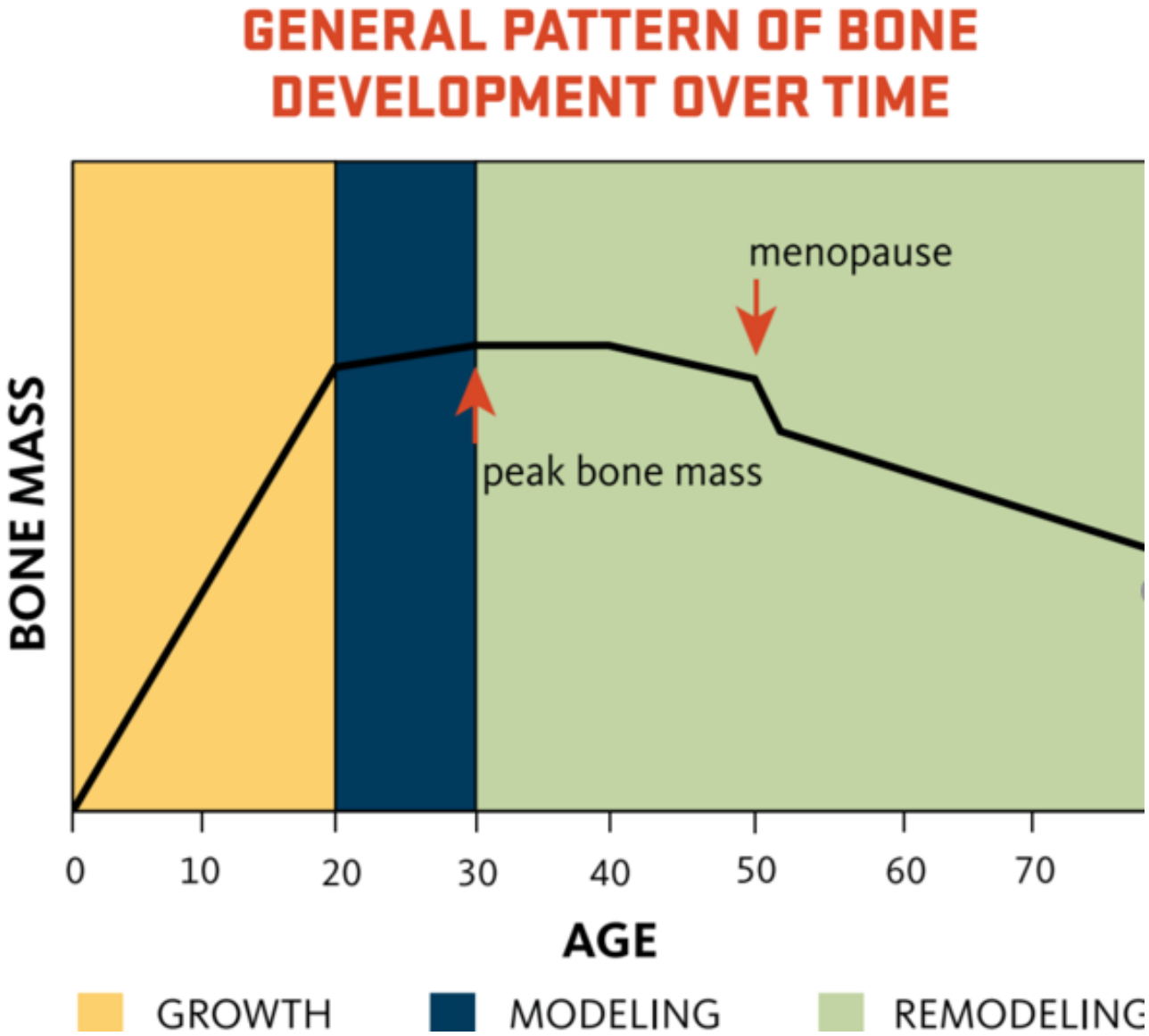
- 600 IU (15 mcg)
- Few natural food sources

Widespread Insufficiencies

Food	Serving Size	Vitamin D (IU)
Cod liver oil	1 tbsp	1360
Rainbow Trout, cooked	3 oz	645
Salmon Sockeye, cooked	3 oz	570
White Mushrooms exposed to UV light	1/2 cup	366
Milk, 2% and foritified	1 cup	120
Soy/Almond/Oatmilk, fortified	1 cup	100-144
Cereal, fortified	1 serving	80
Sardines, canned in oil	2 each	46
Egg, large with yolk	1 each	44
Tuna fish, light, canned in water	3 oz	40
Cheddar cheese	1 oz	12

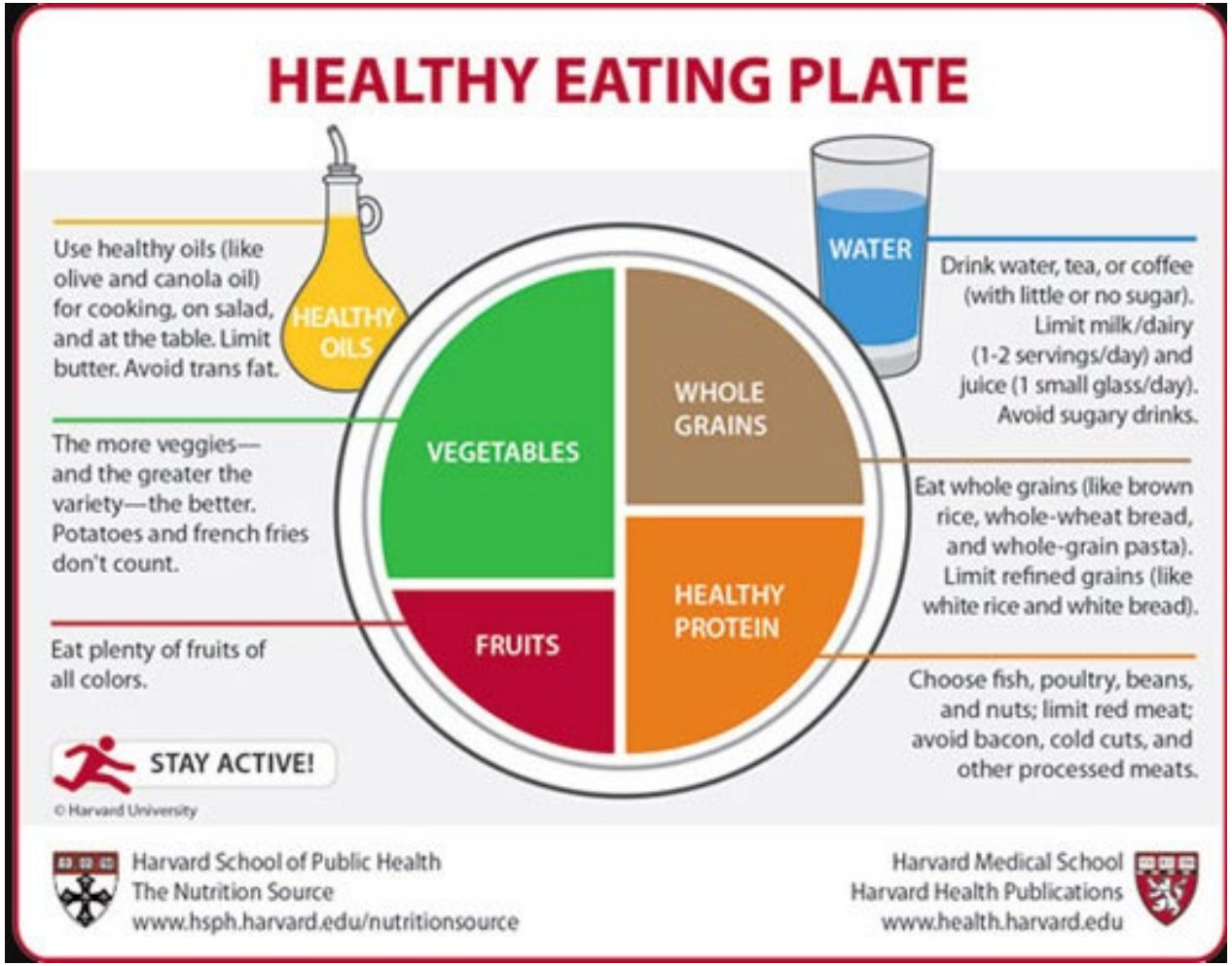
Bone Mass

- Increases rapidly in childhood and adolescence
- Peak bone mass reached by age ~30
- Key bone building nutrients:
  - Calcium + Vitamin D
  - Magnesium
  - Vitamin K
  - Boron



Putting it All into Practice:

Guidelines for Building a Meal



+Milk or Fortified Alternative

+Extra portion of quality carbs

Pre-Exercise Guidelines

- High carbohydrate + low fiber
- Low-fat
- Moderate protein
- Liquid meal replacement for rapid digestion
  - First String 2:1 carbs to protein + 21 grams of whey protein
- Appropriate portions (from trial and error)
- Tried and true
  - Avoid “new” foods, spicy foods, beans

Rule #3 – Time Meals Properly

PRE-EXERCISE GUIDELINES

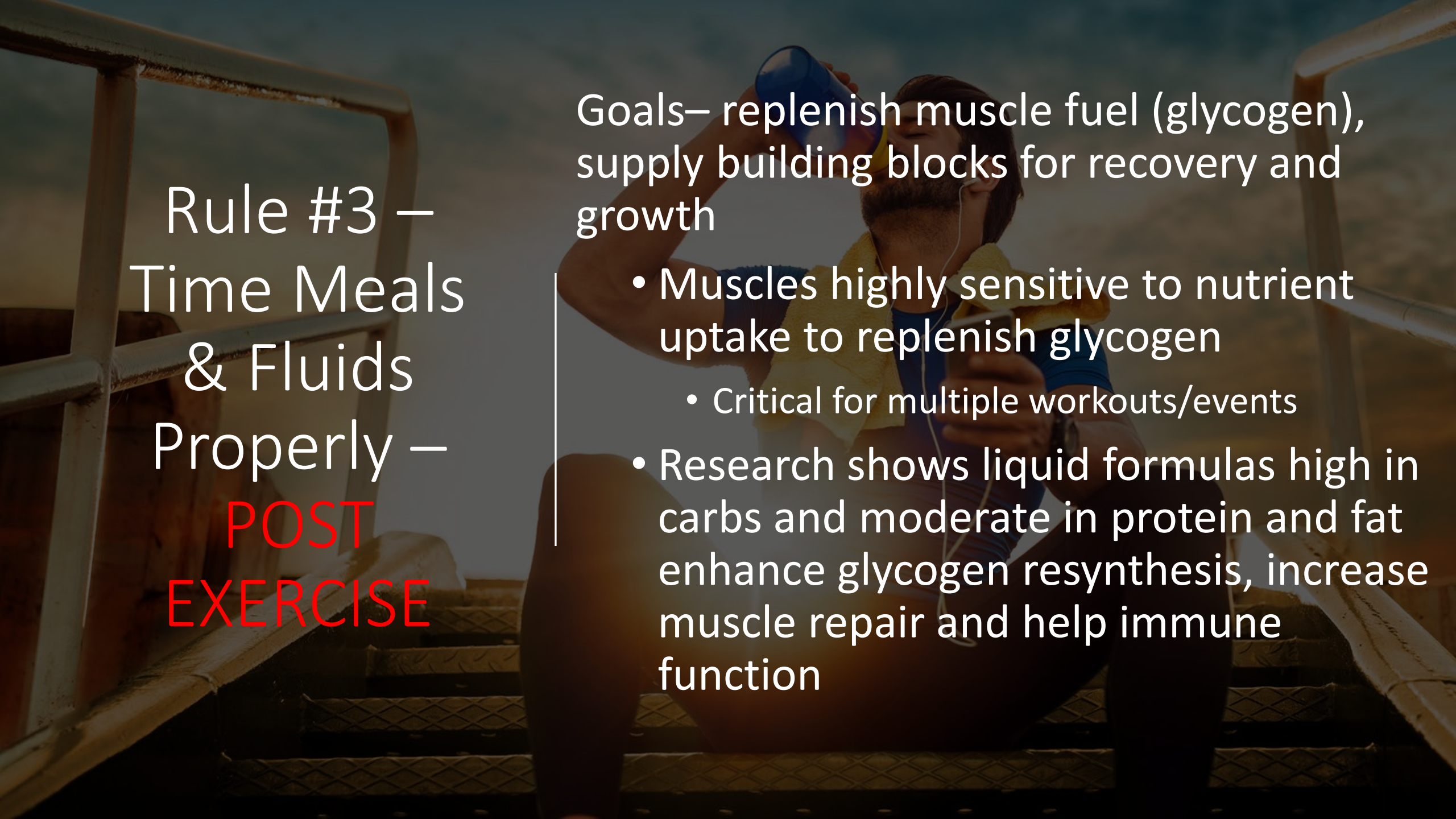
Goals: Stomach empty, fuel tanks are topped off, fully hydrated

- Regular meal: ~4 hours before
  OR
- Lighter meal: 2-3 hours before
  - Avoid having food sit in your stomach
- Snack: 30 min – 1 hour before
  - High carb (30-50g), moderate protein, easy to digest
- Timing varies with intensity of exercise and personal tolerance
  - Trial and error is required

Rule #3 – Time Meals Properly

Options for Early Morning Exercise:

- Eat a large pre-exercise type meal the night before
  - Spaghetti dinner; chicken, potatoes + veggies + milk
- Consume only the pre-workout snack before
  - Bagel with peanut butter
  - Fruit and yogurt
  - Shake for rapid digestion



Rule #3 – Time Meals & Fluids Properly – POST EXERCISE

Goals– replenish muscle fuel (glycogen), supply building blocks for recovery and growth

- Muscles highly sensitive to nutrient uptake to replenish glycogen
  - Critical for multiple workouts/events
- Research shows liquid formulas high in carbs and moderate in protein and fat enhance glycogen resynthesis, increase muscle repair and help immune function

Rule #3 – Time Meals Properly POST EXERCISE

- After Intense Exercise > 60 minutes or for multiple games/sessions per day:
  - Snack immediately after
  - Eat 2-3 times more carbs than protein to replenish glycogen stores immediately
  - Meal 1-2 hours after exercise
- After resistance training to build muscle:
  - Shake to help meet daily protein and calorie targets
- Regular meal within 3-4 hours of previous meal

Post Exercise – High Carb to Protein (2-3:1)

	Carb (g)	***Pro (g)***	***Calories***
Yogurt, flavored, 6 oz	26	8	160
Cheerios w/ milk	32	11	200
Subway turkey 6”	46	18	280
Pasta + meat sauce	80	20	450
Chicken Bowl (Waba)	81	42	630

Rule #3 – Time Meals & Fluids Properly

Event	***Fluid Guidelines***
• 2 hours pre-exercise	16 - 24 ounces
• 15 min pre-exercise	8 - 16 ounces
• Every 15 min during	6 - 12 ounces
• After exercise	16 oz for every lb lost & until urine is pale
• Daily	Enough to urinate every 2 - 4 hours + pale yellow

1-3 = adequately hydrated

Symptoms of Dehydration

- Dark urine (color of apple juice)
- Small volume of urine
- Elevated heart rate
- Headache
- Thirst

Key Considerations for Hydration in Youth

- Tolerate heat less efficiently
- Thirst mechanisms may be underdeveloped
- Providing regular water breaks results in better hydration
- Make fluid easily accessible during practices and competitions
- Heavy sweaters, exercise in the heat or humidity need to replace electrolytes

Water

The Most Important Essential Nutrient

Sources

- Food
- Beverages
  - Milk
  - Coffee
  - Tea
  - Juices
  - Sweetened Drinks
  - Sports Drinks
- Drinking water

Requirements

- AI: 2.1 – 3.7 L per day (8-15 cups)
- More if active
- More if hot or humid
- Tip: 2 glasses with every meal and snack

Sports Drinks

- Use for exercise bouts longer than 60 minutes, multiple same day sessions, and in hot/humid environments
  - 6-8 oz every 10-15 minutes
  - Helps maintain blood glucose
  - Helps minimize dehydration
- Glucose electrolyte solutions (Gatorade, Powerade)
  - Carbs provide energy – no more than 6-8%
    - Greater concentrations induce GI distress
  - Electrolytes sodium, potassium help regulate fluid balance + replace those lost in sweat

Rule #4 – Supplement Wisely

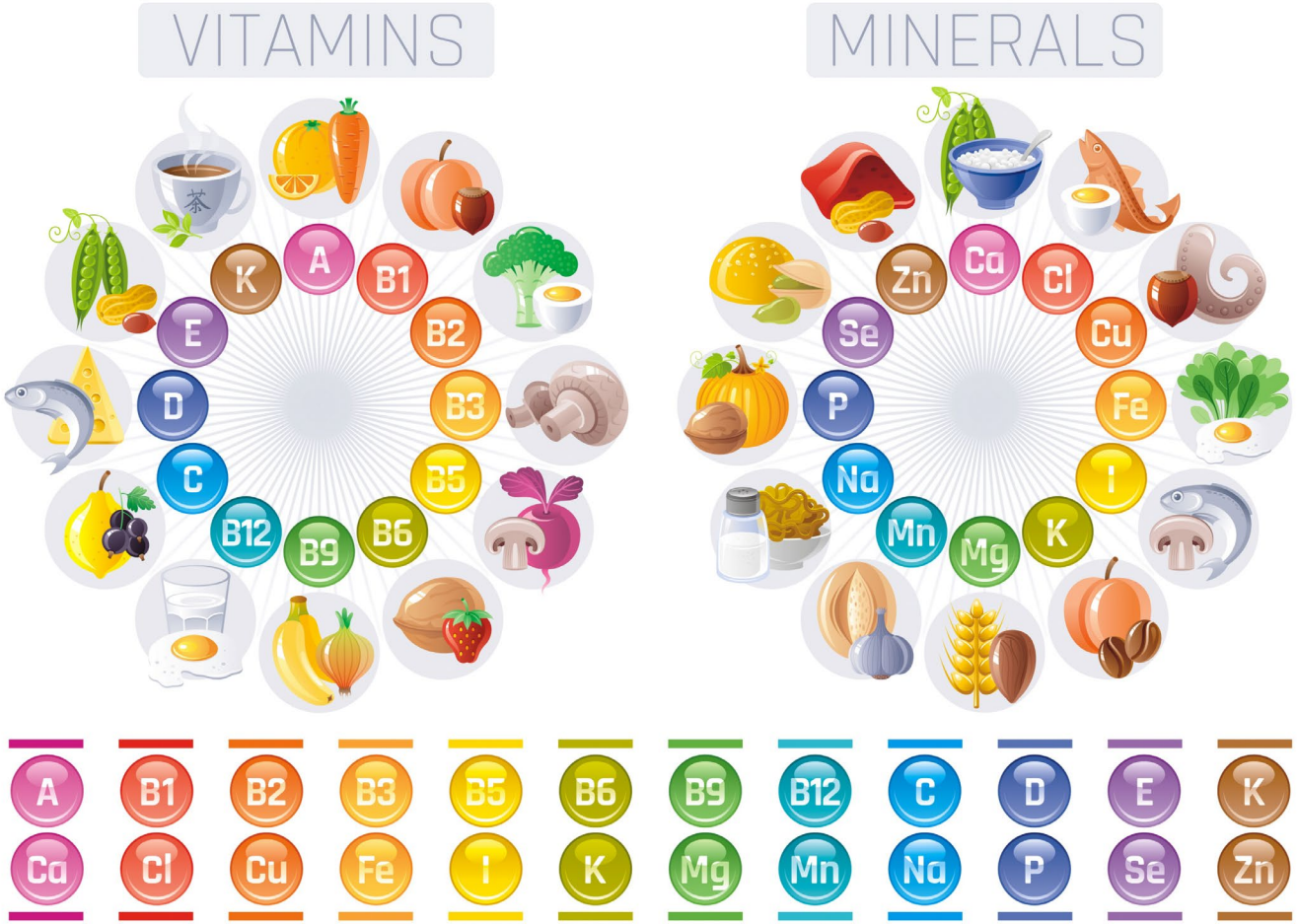
Key Questions to Answer:

- Are Supplements Needed?
- Are they Safe?
- Are they Effective?

Micronutrients

Required in smaller amounts for normal function, growth, development and optimal health.

- Not made in the body and must be obtained daily through the diet
- Cofactors in metabolism
- 20 minerals
- 12 vitamins



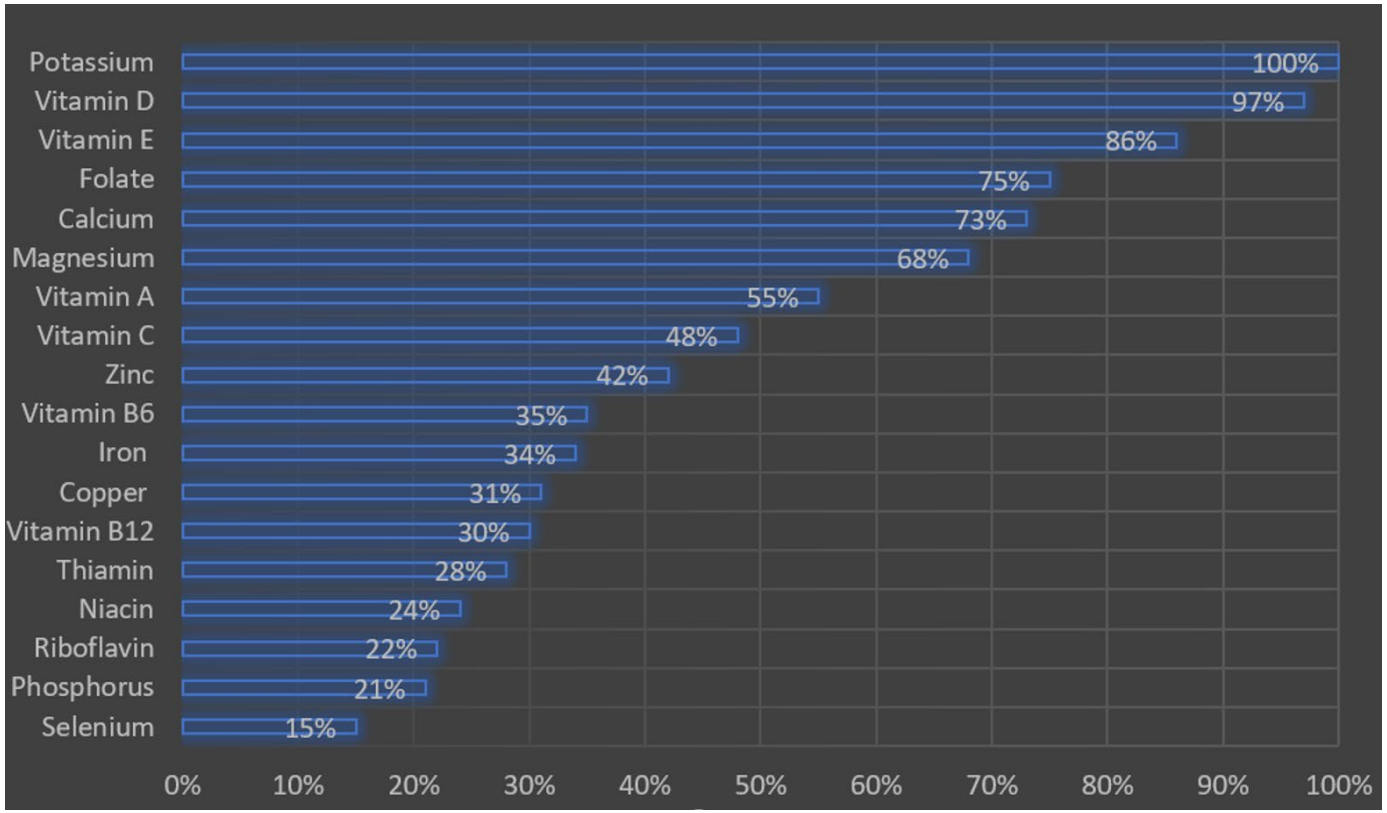
Can You Get All Your Nutrients From Food?

Calorie Level of Pattern[a]	1,200	1,400	1,600	1,800	2,000	2,200	2,400
Food Group[b]							
Vegetables	**1½ c-eq**	**1½ c-eq**	**2 c-eq**	**2½ c-eq**	**2½ c-eq**	**3 c-eq**	**3 c-eq**
Dark-green vegetables (c-eq/wk)	1	1	1½	1½	1½	2	2
Red and orange vegetables (c-eq/wk)	3	3	4	5½	5½	6	6
Legumes (beans and peas) (c-eq/wk)	½	½	1	1½	1½	2	2
Starchy vegetables (c-eq/wk)	3½	3½	4	5	5	6	6
Other vegetables (c-eq/wk)	2½	2½	3½	4	4	5	5
Fruits	**1 c-eq**	**1½ c-eq**	**1½ c-eq**	**1½ c-eq**	**2 c-eq**	**2 c-eq**	**2 c-eq**

Can You Get All Your Nutrients From Food?

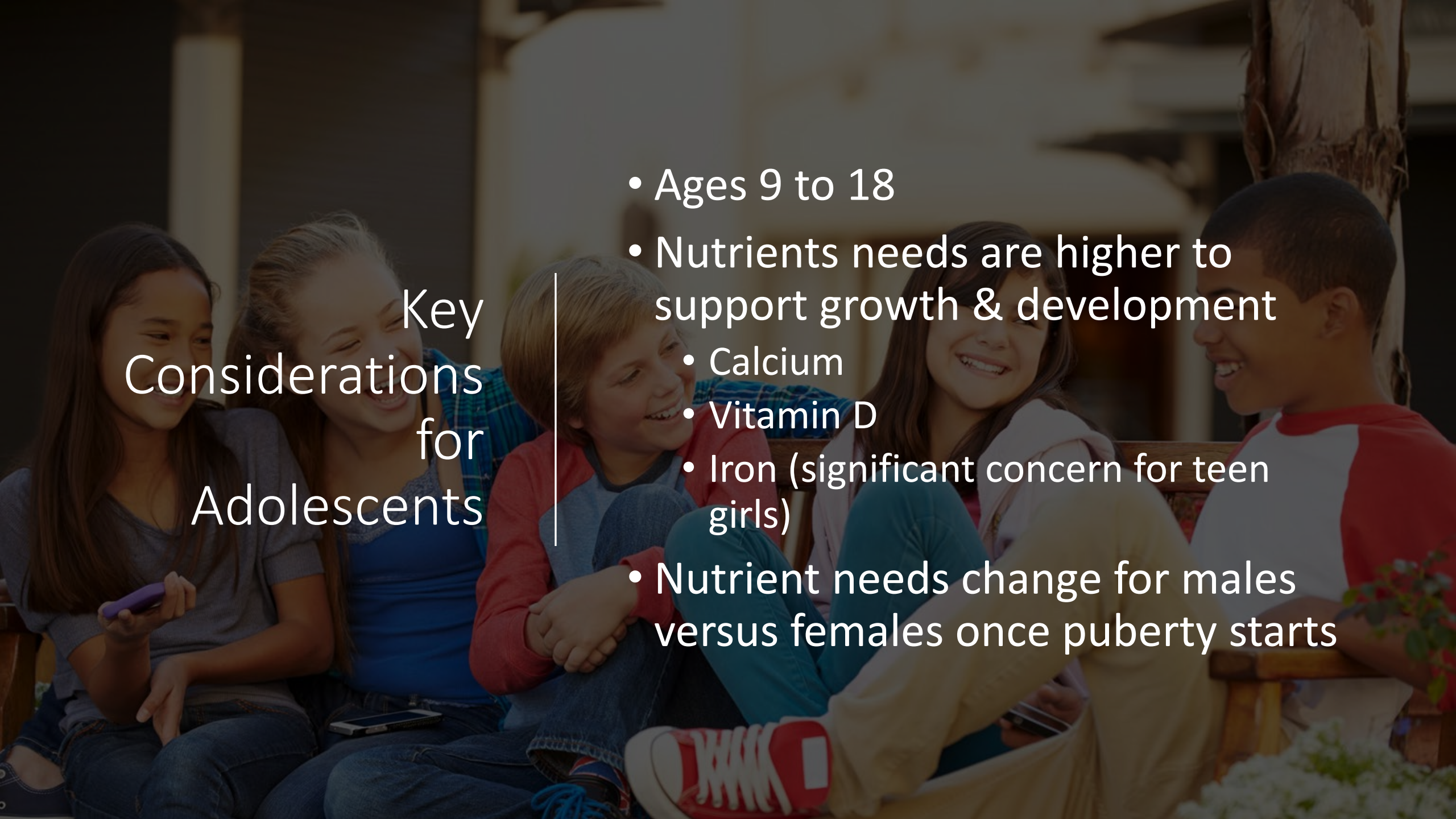
Calorie Level of Pattern[a]	1,200	1,400	1,600	1,800	2,000	2,200	2,400
Food Group[b]							
Grains	**4 oz-eq**	**5 oz-eq**	**5 oz-eq**	**6 oz-eq**	**6 oz-eq**	**7 oz-eq**	**8 oz-eq**
Whole grains[d] (oz-eq/day)	2	2½	3	3	3	3½	4
Refined grains (oz-eq/day)	2	2½	2	3	3	3½	4
Dairy	**2½ c-eq**	**2½ c-eq**	**3 c-eq**	**3 c-eq**	**3 c-eq**	**3 c-eq**	**3 c-eq**
Protein Foods	**3 oz-eq**	**4 oz-eq**	**5 oz-eq**	**5 oz-eq**	**5½ oz-eq**	**6 oz-eq**	**6½ oz-eq**
Seafood (oz-eq/wk)	4	6	8	8	8	9	10
Meats, poultry, eggs (oz-eq/wk)	14	19	23	23	26	28	31
Nuts seeds, soy products (oz-eq/wk)	2	3	4	4	5	5	5
Oils	**17 g**	**17 g**	**22 g**	**24 g**	**27 g**	**29 g**	**31 g**
Limit on Calories for Other Uses, calories (% of calories)[e,f]	100 (8%)	110 (8%)	130 (8%)	170 (9%)	270 (14%)	280 (13%)	350 (15%)

Vitamin and Mineral Shortages in the U.S.



2015-2020 Dietary Guidelines:

Americans are consistently below the adequate intake of 9 different nutrients: potassium, fiber, choline, magnesium, calcium, and vitamins A, D, E, C



Key Considerations for Adolescents

- Ages 9 to 18
- Nutrients needs are higher to support growth & development
  - Calcium
  - Vitamin D
  - Iron (significant concern for teen girls)
- Nutrient needs change for males versus females once puberty starts

NSF CERTIFIED SPORT

Daily Multivitamin & Mineral

- Daily Nutritional Insurance From Womb to Tomb
  - High-Quality Low Dose Multivitamin + Mineral Formula to Fill Nutrient Gaps
  - Kid'sMV – Up to age 11
  - ActiveMV – 12 and up
  - 3rd party tested for quality assurance

Protein Shakes

- Effective way to obtain high-quality protein from plants and animals
  - Whey, casein, soy, egg, pea, etc
- Convenient method of meeting daily targets
  - Shakes/smoothies for on the go
  - Added to foods – yogurt, oatmeal, pancakes
  - Snacking in between meals
- Rapid digestion for before and after workouts

Nutrition Facts

Serving Size:	2 Scoops (73.5g)
Servings Per Container:	About 32
Calories 290	Fat Cal. 30
Amount Per Serving	**% Daily Value**
Total Fat 2.5 g	4%
Saturated Fat 0.75 g	4%
Trans Fat 0 g	**
Cholesterol 63 mg	21%
Sodium 125 mg	5%
Total Carbohydrate 44.5 g	15%
Dietary Fiber 0 g	0%
Sugars 3 g	**
Protein 21 g	42%

NSF CERTIFIED SPORT

Muscle Gain + Performance

- 2:1 ratio of carbs to protein
- 290 calories in 2 scoops
- 21 g of whey concentrate, isolate, casein
- Fast acting carbs for rapid digestion to:
  - top of fuel tanks before exercise
  - replenish glycogen stores and repair muscle after exercise

Protein Powders

Nutrition Facts

Serving Size: 1 Scoop (40g)
Servings Per Container: approximately 28.5 servings

Amount Per Serving		
Calories 160		Calories from Fat 25
		% Daily Value*
Total Fat	2.5g	4%
Saturated Fat	1g	5%
Trans Fat	0g	
Cholesterol	75mg	25%
Sodium	125mg	5%
Total Carbohydrate	8g	3%
Dietary Fiber	1g	4%
Sugars	2g	
Protein	25g	
Vitamin A 0%	•	Vitamin C 0%
Calcium 15%	•	Iron 8%

NSF CERTIFIED SPORT

- 160 calories + 25 g protein
- NSF Certified for Sport

Flavor Options

- Vanilla and Chocolate
- Unflavored with flavor packets
  - Orange Cream
  - Cookie Dough
  - Birthday Cake
  - Strawberry
  - Peanut Butter

- All-Natural Version
  - 140 calories + 25 g protein
  - Grass fed, non-GMO, rBGH free, gluten free, Stevia sweetened
  - No artificial flavors or colors

SUPPLEMENT FACTS

Serving Size: 1 Scoop (34 g)
Servings Per Container: 30

	Amount Per Serving	% Daily Value*
Calories	130	
Calories from Fat	20	
Total Fat	3 g	5%
Saturated Fat	0,5 g	3%
Sodium	270 mg	11%
Potassium	160 mg	5%
Total Carbohydrate	7 g	2%
Dietary Fiber	1 g	<1%
Sugars	<1 g	**
Protein	21 g	42%
Calcium	65 mg	6%
Iron	7 mg	38%
Magnesium	40 mg	10%

Protein Powders

- Vegan Option – Best Plant Protein
  - 140 calories + 21 g protein
  - Pea protein isolate, chia, cranberry and inchi seeds
  - 6.2 g of BCAAs to match essential amino acid profile in whey protein
  - Gluten free
  - No dairy or soy

Supplements for Recovery

Essential Amino Acids (EAAs)

- 10-12 grams maximizes muscle protein synthesis
- Activates new muscle growth
- Decreases soreness and markers of muscle damage
- Maintenance of high-quality training bouts

- Proper Use
  - Before or during workout

NSF CERTIFIED SPORT

Supplement Facts

Serving Size: 1 Scoop (16 g)
Servings Per Container: 37

	Amount Per Serving	% Daily Value
Calories	5	
Total Carbohydrate	2 g	<1%*
Sodium (as Sodium Chloride)	90 mg	4%
AminoBoost XXL Complex	11.9g	**
L-Leucine	4g	**
L-Phenylalanine	1.67 g	**
L-Lysine HCl	1.67 g	**
L-Threonine	1.3 g	**
L-Valine	1.1 g	**
L-Histidine Base	900 mg	**
L-Isoleucine	900 mg	**
L-Methionine	360 mg	**

Supplements for Recovery

Vegan Option: Essential Amino Acids

- 70 calories per scoop
- 11.9 g of EAAs
- No artificial sweeteners, flavors or colors

Supplement Facts

Serving Size: 1 Scoop (23 g)
Servings Per Container: 37

	Amount Per Serving	% Daily Value
Calories	70	
Total Carbohydrate	7 g	0%
Total Sugars	5 g	*
AminoBoost XXL Complex	11.9 g	*
L-Leucine	4 g	*
L-Phenylalanine	1.67 g	*
L-Lysine HCl	1.67 g	*
L-Threonine	1.3 g	*
L-Valine	1.1 g	*
L-Histidine Base	900 mg	*
L-Isoleucine	900 mg	*
L-Methionine	360 mg	*

Issues with Mass Market Supplements

Underformulated Protein Powders

Several protein manufacturers allegedly engage in a practice known as "protein spiking." This occurs when a protein powder maker includes additives such as amino acids to a protein supplement so that it registers higher in proteins than it actually contains.

Product	LABEL CLAIM OF PROTEIN IN GRAMS	PROTEIN TEST RESULTS
Biohealth Precision Blend - 2lb Caramel Cookie Swirl	32g	17.1
Biohealth Precision Blend - 2lb Milk Chocolate	32g	24.7
Biohealth Precision Blend -2lb Milk Chocolate	32g	24.5
Biohealth Precision Blend - 2lb White Chocolate Respberry	38g	
Biohealth Precision Iso - 2lb Chocolate	27g	2.79
Biohealth Precision Iso - 2lb Chocolate	27g	17.2
Biohealth Precision Iso - 2lb Cookies and Cream	27g	21.1
Biohealth Precision Iso - 2lb Cookies and Cream	27g	3.36
Core Formulations Core 8 - 2 lbs Caramel Cookie Dough	31g	27.1
Core Formulations Core 8 - 2lbs Caramel Cookie Dough	31g	20.4
Core Formulations Core 8 - 5 lbs Chocolate Brownie	30	21
Core Formulations Core 8 - 5 lbs Vanilla bean	31g	22.9
Core Formulations Isocore - 2lb Cookies and Cream	30	23.9
Core Formulations Isocore - 2lb Cookies and Cream	30g	23.9
Core Formulations Isocore - 2lb Cookies and Cream	30g	24.2
Rogue Nutrition - Rogue Whey - 2lb Chocolate Milk	28g	
Rogue Nutrition- Rogue Whey - 2lb Chocolate Milk	28g	19.7

The prices for Core Formulations, BioHealth, and Rogue Nutrition protein powders range from $49.99 to $59.99 for a 2 lb. container of protein powder and $89.99 to $109.99 for a 5 lb. container.

Issues with Mass Market Supplements

Underformulated Products

COSTCO CLASS ACTION SAYS KIRKLAND FISH OIL DOESN'T CONTAIN OMEGA FATTY ACIDS

By Christina Davis
March 2, 2017

95

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Costco and Trident Seafoods Corporation are facing a class action lawsu
alleging the food manufacturer and the wholesale retailer deceptively
market Kirkland Signature Wild Alaskan Fish Oil supplements.

Lead plaintiff Ricarlos Guzman alleges in his class action lawsuit that he
purchased the Kirkland fish oil under the impression that the supplement
contained omega 3 fatty acids, omega fatty acids 5, 6, 7, 9 and 11 and
other fatty acids.

However, lab tests show that Kirkland Signature Wild Alaskan Fish
Oil does not contain those fatty acids, the plaintiff claims.

"Fish oil is the fat or oil that's extracted from fish tissue. It is one of the
most commonly consumed dietary supplements," the class action states

s many health benefits, according to the Costco class action lawsuit, including reducing blood pressure
nsulin resistance, reducing chronic inflammation, fighting autoimmune diseases, and potentially
g the risk of some types of cancer. These health benefits have sparked consumer interest in fish oil and
t is projected to reach $1.7 billion in sales next year, Guzman claims.

Refunds issued: Kids' vitamins aren't as healthy as advertised

By **Todd Sperry**, CNN
updated 11:56 AM EDT, Wed August 15, 2012

Parents who purchased NBTY children's vitamins have until October 12 to file a claim.

STORY HIGHLIGHTS

- NBTY said the Disney- and Marvel-themed vitamins held a full daily dose of DHA

Washington (CNN) -- The marketer of a popular children's vitamin is refunding nearly $2.1 million to customers after acknowledging its pills contained only a fraction of a nutritional substance the packaging claimed.

Issues with Mass Market Supplements

Tainted Products

The FDA has amassed a database of over 900+ tainted products marketed as dietary supplements with hidden ingredients such as:

- sibutramine – a weight loss drug which was taken off the market
- phenolphthalein - an unapproved laxative
- sildenafil – the generic form of Viagra
- fluoxetine – the generic version of Prozac well as steroids

dotFIT Solves These Issues with a Multipronged Approach

- All products are 3rd party tested
- NSF Certified for Sport products are tested for banned substances
- Product formulas are a result of an extensive written review of the current scientific literature by the research team


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Summary

- High quality nutrition provides the necessary top-grade fuel to support growth, development, immunity, and the demands of training and competition
- This can be accomplished by following these four rules:
  - Eat the Right Amount for Your Body and Goals
  - Eat the Right Foods in the Right Ratios
  - Time Your Meals Properly Based on Activity
  - Use Evidence-Based and Third Party Tested Supplements to Fill Nutrient Gaps and Reach Calorie and Protein Targets

Nutrition Makes a Good Athlete GREAT and a Great Athlete BETTER

Special Offer and More Resources

- Online Discount at 20%. New members sign up:
  - https://www.dotfit.com/new-user-register/
- Coupon Code for ADDITIONAL 20% OFF - Expires July 1st

May2020Masterclass

- NSF Certified for Sport Products
  - www.dotFIT.com/NSF
- Articles & FAQs on Youth Sports, Including Creatine
  - https://www.dotfit.com/learn/youth