

# **SPORT NUTRITION BASICS FUTURE STARS GYMNASTICS**

Rob Skinner, MS, RD, CSCS, CSSD  
Senior Sports Dietitian  
United States Olympic Training Center



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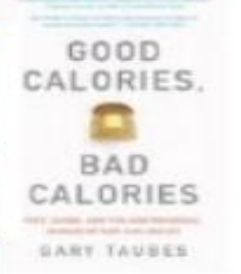
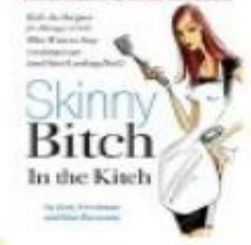
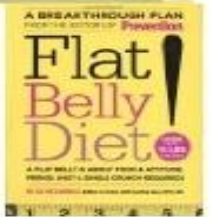
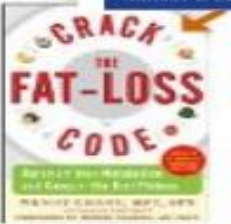
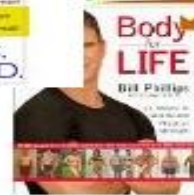
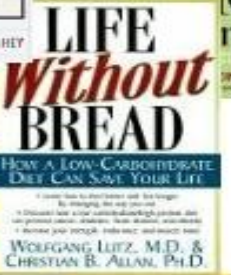
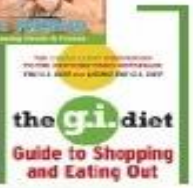
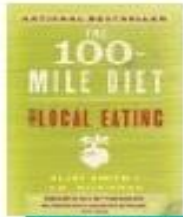
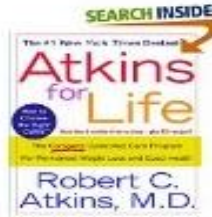
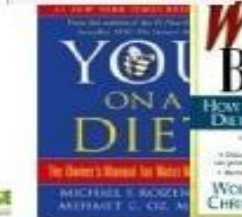
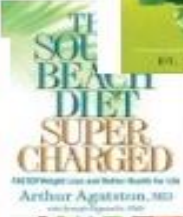
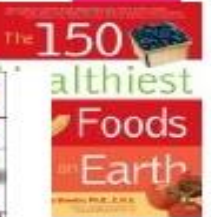
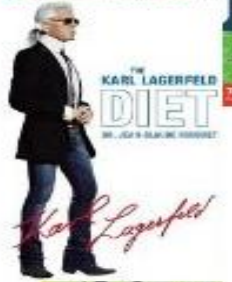
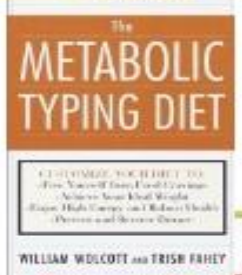
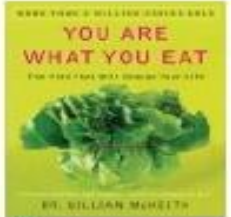
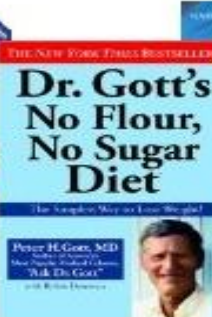
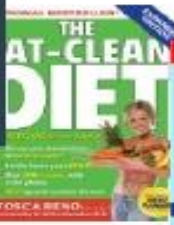
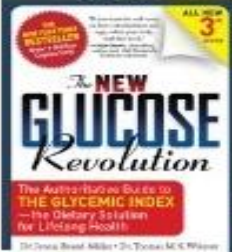
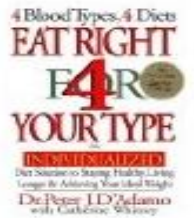
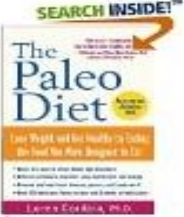
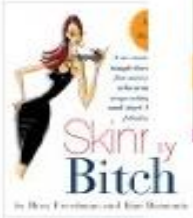
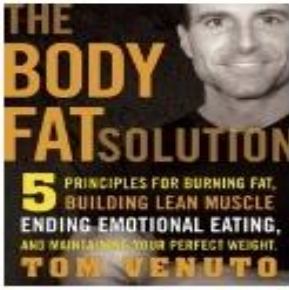
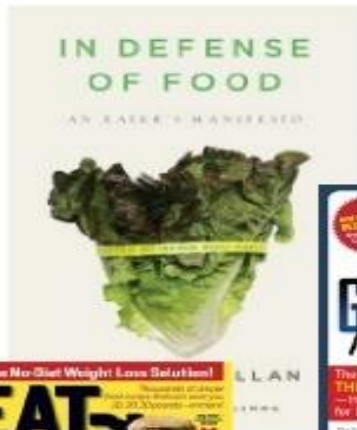
# *Rob Skinner, MS, RD, CSCS, CSSD*

- Bachelors of Education
- Bachelors of Science
  - Nutrition & Dietetics
- Masters Degree
  - Exercise Science
- Registered Dietitian
  - Certified Strength and Conditioning Specialist
  - Certified Specialist in Sports Dietetics
- College Athletics Experience
  - Created nutrition programs at Georgia Tech and the University of Virginia
- Military Experience
  - Infantry Officer / Paratrooper
  - Performance Dietitian for Naval Special Warfare (SEALs)
- Professional Experience
  - Team Dietitian for the Washington Redskins
- United States Olympic Committee
  - Acrobat and Combat Sports



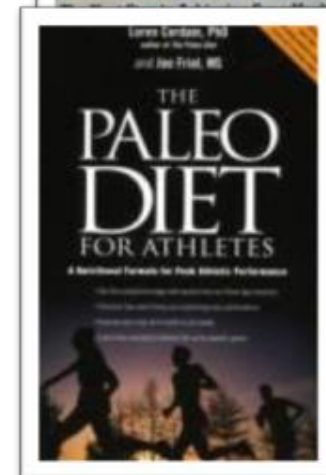
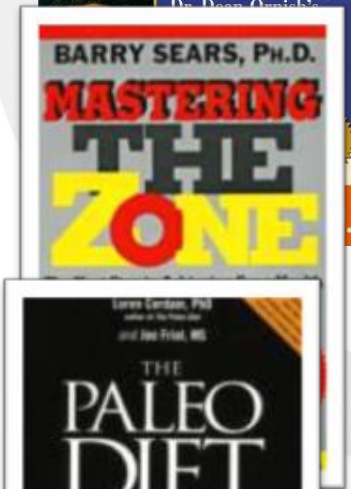
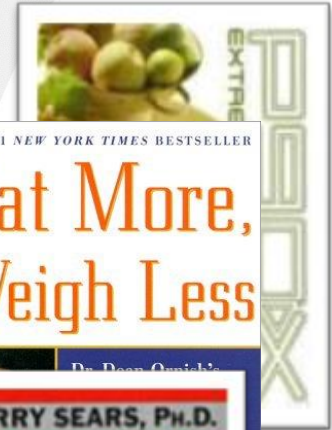
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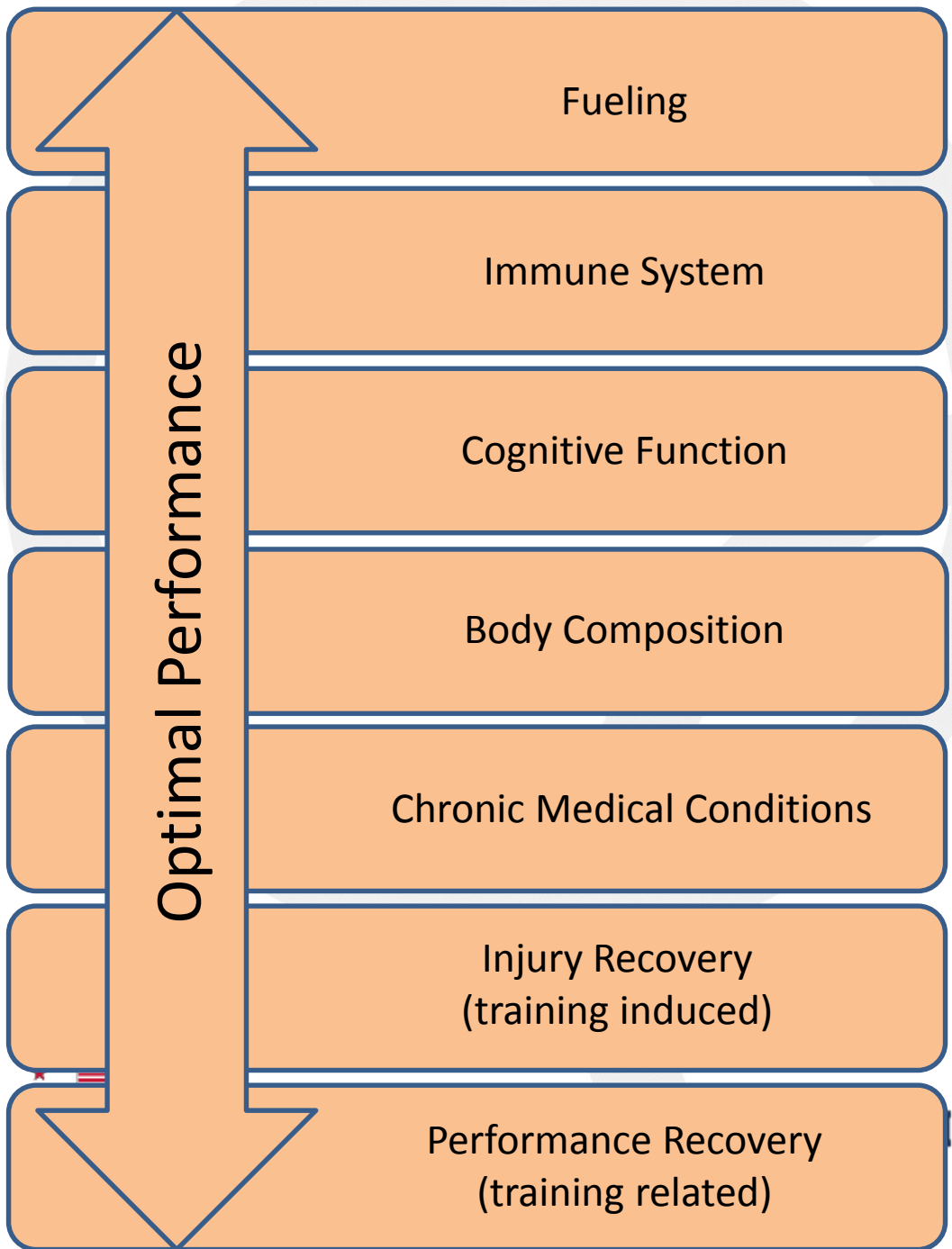
# *The BEST Plan*

- Many *Experts* but no *Authorities*
  - Focus on the similarities
    - Whole fruits and vegetables
    - Lean proteins
    - Healthy fats
    - Frequent eating
    - Adequate hydration
- Any “Diet” Plan is just a food strategy and all can “Work”
- The key is developing a strategy to achieve your individual goals



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## *Performance Factors Affected by Nutrition*

Optimal nutrition can impact all of these factors and affect every stage of the athlete's career

# Optimal Fueling

## Sources of Fuel

- **Carbohydrate**
  - In blood (Glucose)
  - In muscle & liver (Glycogen)
- **Fat**
  - In blood (Free Fatty Acids)
  - In muscle (Triglycerides)
  - In body fat (Triglycerides & FFA)
- **Protein**
  - In muscle tissue (Amino acids)

**Energy source is dependent upon duration and intensity of event**



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# Food for Energy

- Carbohydrate Needs:

- IOM recommends 130g per day for normal brain function
- We only store about 300-400g in our muscles (1200-1600 kcal)
- We must re-fuel daily
  - 2.3 g/lb (at least)
  - 3.2-3.6 g/lb as intensity increases (3-4 hours/d for several consecutive days)
  - 3.6-5.5 g/lb depending on individual needs and phase of training



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# Nutrient Dense Carbohydrates



## Examples:

- Whole Grains
- Low-fat Dairy
- Berries
- Melons
- Green Veggies
- Kiwi Fruit
- Carrots
- Tomatoes
- Potatoes
- Prunes
- Dates
- Red Grapes
- Garlic
- Mushrooms
- Pomegranates
- Dry Beans/Lentils



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# *Maintaining Energy*

- Fats - Energy dense source of fuel
  - Prolonged exercise may exceed estimated carbohydrate stores by 100%
  - Other sources of fuel have to be oxidized
  - Recommendations:
    - 0.23-0.45 g/lb
    - 15-30% of total caloric intake
  - Increased capacity to oxidize fat?



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**HOW MANY GRAMS OF PROTEIN SHOULD YOU EAT?**



**ALL OF THEM**




# *Maintaining Energy - Training*

- Protein – More than for muscles

- Does not significantly contribute to energy unless carbohydrate are low
- Increased availability of essential amino acids may contribute to faster tissue growth and repair
- Recommendations:
  - 0.5-1.0 g/lb



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68kg (150lb)	CHO	Pro	Fat	TKcal
<p>Low Intensity Training for Athlete</p>  <p>High Intensity Training for Athlete</p>	<p>5 g/kg</p> <p>340 g</p> <p>1363.6 kcal</p> <p>68%</p>	<p>1.2 g/kg</p> <p>81.8 g</p> <p>327.3 kcal</p> <p>16%</p>	<p>0.5 g/kg</p> <p>34.1 g</p> <p>306.8 kcal</p> <p>15%</p>	<p>1997.7 kcal</p> <p>(29 kcal/kg)</p>
	<p>7 g/kg</p> <p>477.3 g</p> <p>1909.1 kcal</p> <p>69%</p>	<p>1.5 g/kg</p> <p>102.3 g</p> <p>409.1 kcal</p> <p>15%</p>	<p>.75 g/kg</p> <p>51.1 g</p> <p>460.2 kcal</p> <p>17%</p>	<p>2778.4 kcal</p> <p>(40 kcal/kg)</p>
	<p>12 g/kg</p> <p>818.2 g</p> <p>3272.7 kcal</p> <p>75%</p>	<p>1.7 g/kg</p> <p>115.9 g</p> <p>463.6 kcal</p> <p>11%</p>	<p>1 g/kg</p> <p>68.2 g</p> <p>613.6</p> <p>14%</p>	<p>4350 kcal</p> <p>(63.8 kcal/kg)</p>

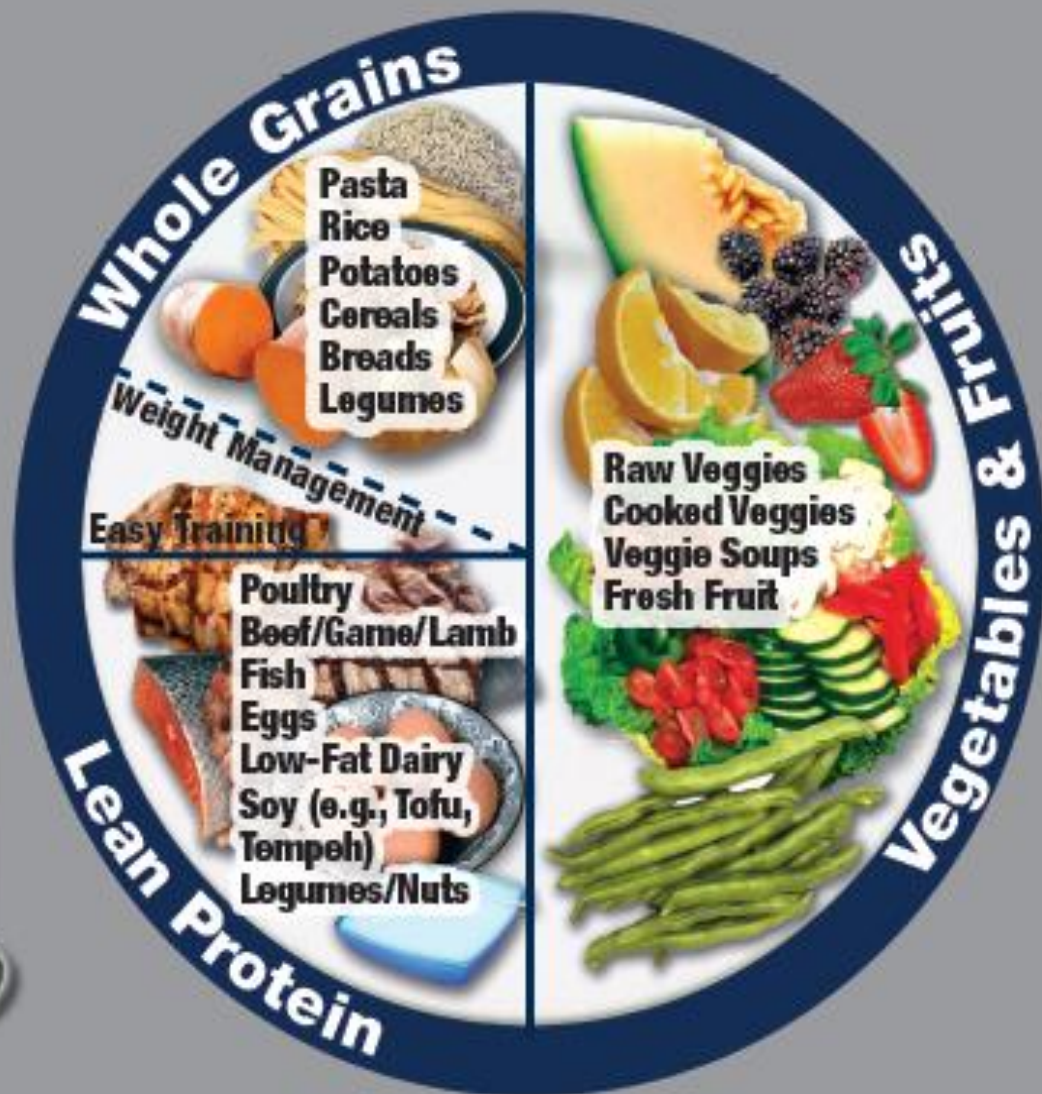
# EASY TRAINING / WEIGHT MANAGEMENT:

## FATS

1 Teaspoon



Avocado  
Oils  
Nuts  
Seeds  
Cheese  
Butter



Water  
Dairy/Nondairy  
Beverages  
Diluted Juice  
Flavored  
Beverages

Coffee  
Tea



## FLAVORS

Salt/Pepper  
Herbs  
Spices  
Vinegar  
Salsa  
Mustard  
Ketchup





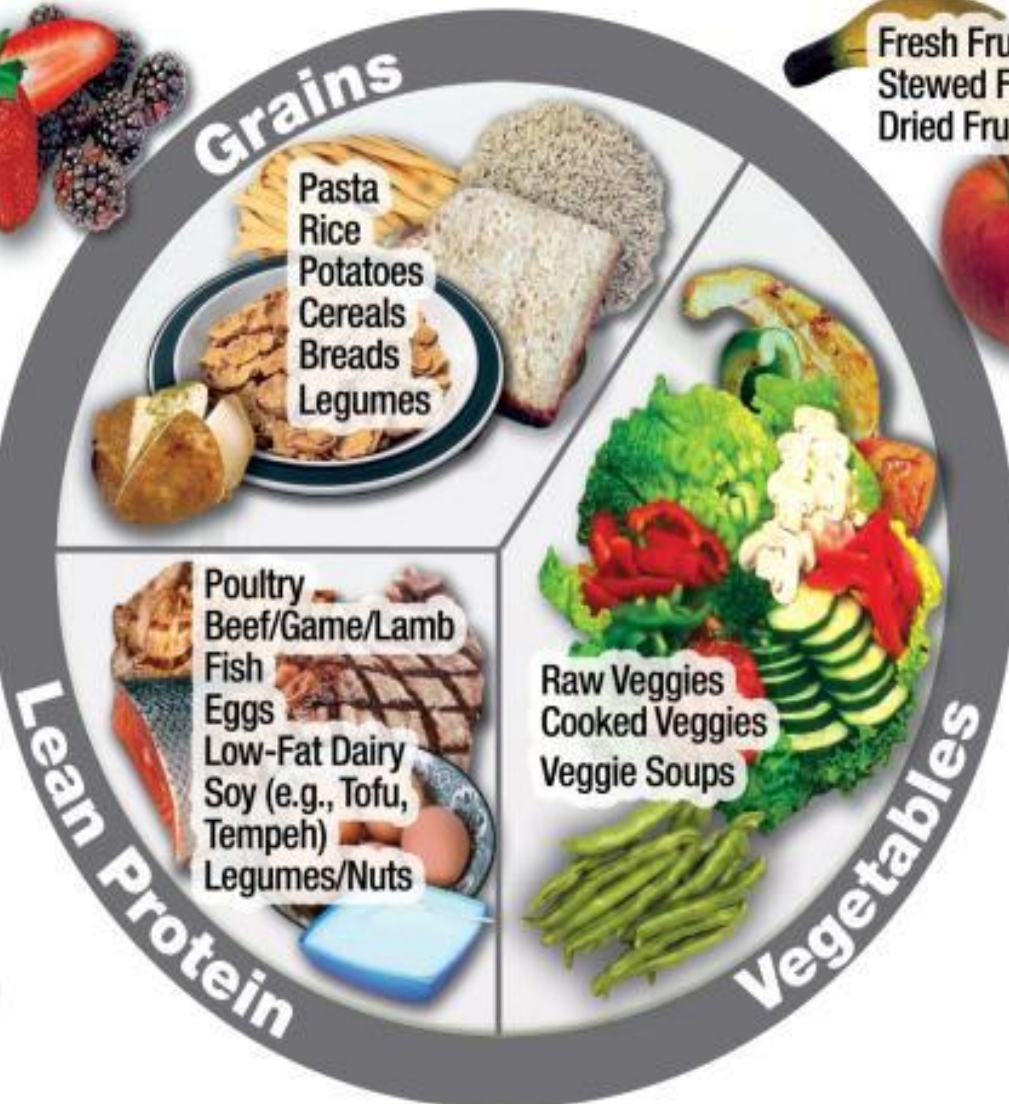
# MODERATE TRAINING:

## FATS

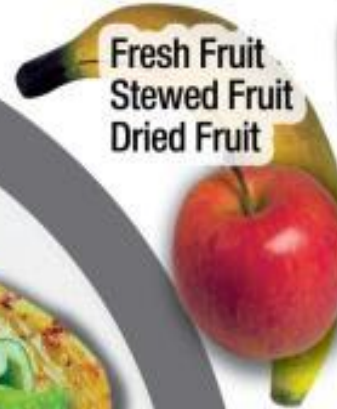
1 Tablespoon



Avocado  
Oils  
Nuts  
Seeds  
Cheese  
Butter



Fresh Fruit  
Stewed Fruit  
Dried Fruit



Water  
Dairy/Nondairy  
Beverages  
Diluted Juice  
Flavored  
Beverages

Coffee  
Tea



## FLAVORS

Salt/Pepper  
Herbs  
Spices  
Vinegar  
Salsa  
Mustard  
Ketchup





# HARD TRAINING / RACE DAY:

## FATS

2 Tablespoons



Avocado  
Oils  
Nuts  
Seeds  
Cheese  
Butter



## Grains

Pasta  
Rice  
Potatoes  
Cereals  
Breads



Fresh Fruit  
Stewed Fruit  
Dried Fruit



Water  
Dairy/Nondairy  
Beverages  
Diluted Juice  
Flavored  
Beverages

Coffee  
Tea

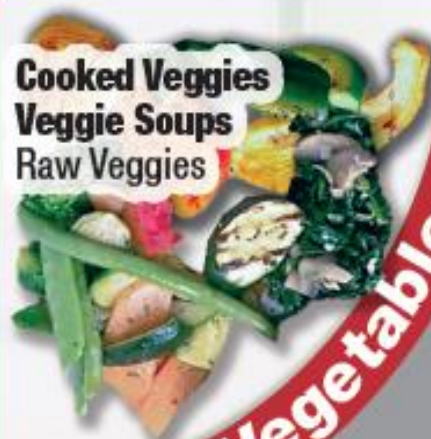


## Lean Protein

Poultry  
Beef/Game/Lamb  
Fish  
Eggs  
Low-Fat Dairy  
Soy (e.g., Tofu,  
Tempeh)  
Legumes/Nuts



Cooked Veggies  
Veggie Soups  
Raw Veggies



## Vegetables

## FLAVORS

Salt/Pepper  
Herbs  
Spices  
Vinegar  
Salsa  
Mustard  
Ketchup



# *Maintaining Energy - Training*



- Hydrate
  - Goal is to maintain fluid balance
  - Considerations:
    - Body size
    - Physical activity
    - Environmental conditions
  - Adequate Intake (Adults)
    - 2.7 liters / day – females
    - 3.7 liters / day – males



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# *Second Group Gets More Info*

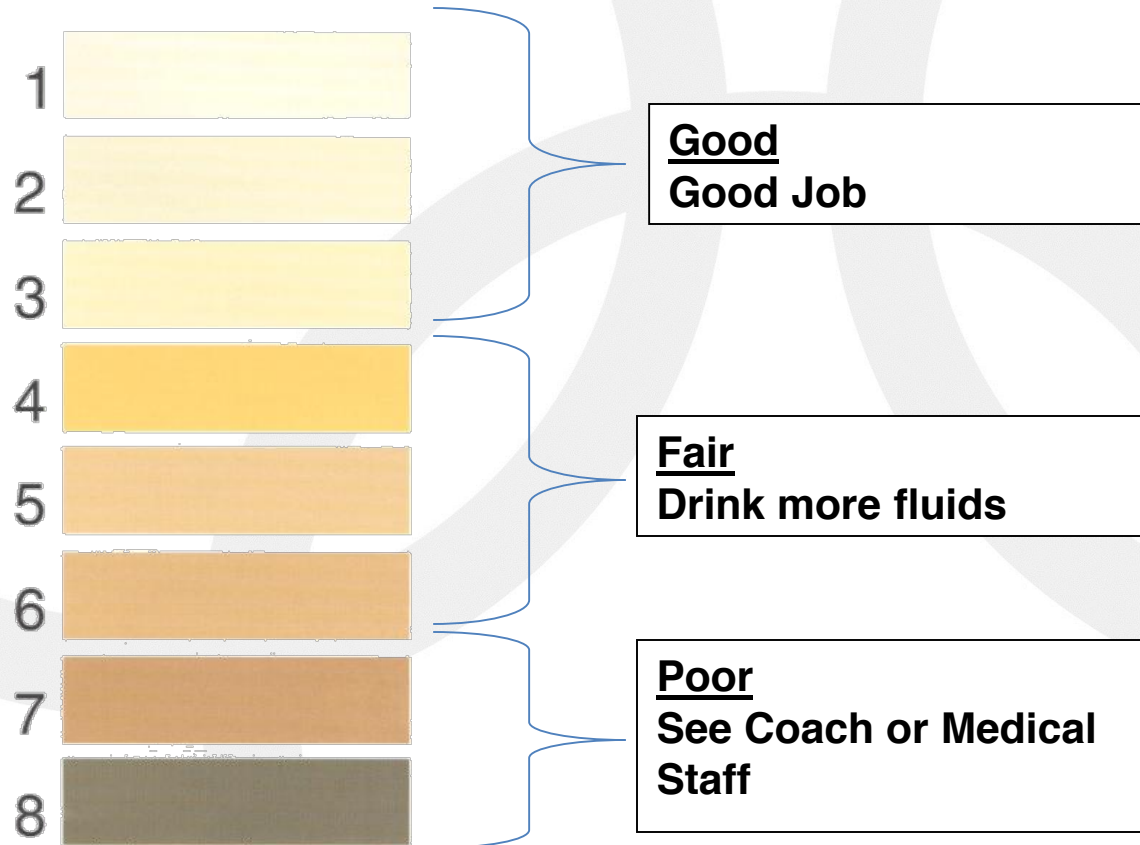
- American Academy of Pediatrics (AAP)
- Negative effects of fluid loss begin to occur at a 1% decrease in body weight
- Generally, 100 to 250 mL (3 to 8 oz) every 20 minutes for 9- to 12-year-olds
- they can tolerate and adapt to exercise in heat as well as adults of similar fitness level as long as adequate hydration is maintained.
- Electrolyte-supplemented beverages that emphasize sodium may be warranted during long-duration ( $\geq 1$  hour), repeated same-day sessions of strenuous exercise, sports participation, and hot weather



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# The Easy Test

Take  
a  
Look!



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# *Nutrient Frequency*

- Consume calories every 3-4 hours or 4-5/day
  - Improves body composition
  - Improves blood glucose
    - Mental focus & mood
    - Blood chemistry
  - Improves intensity of workouts
  - Enhances recovery



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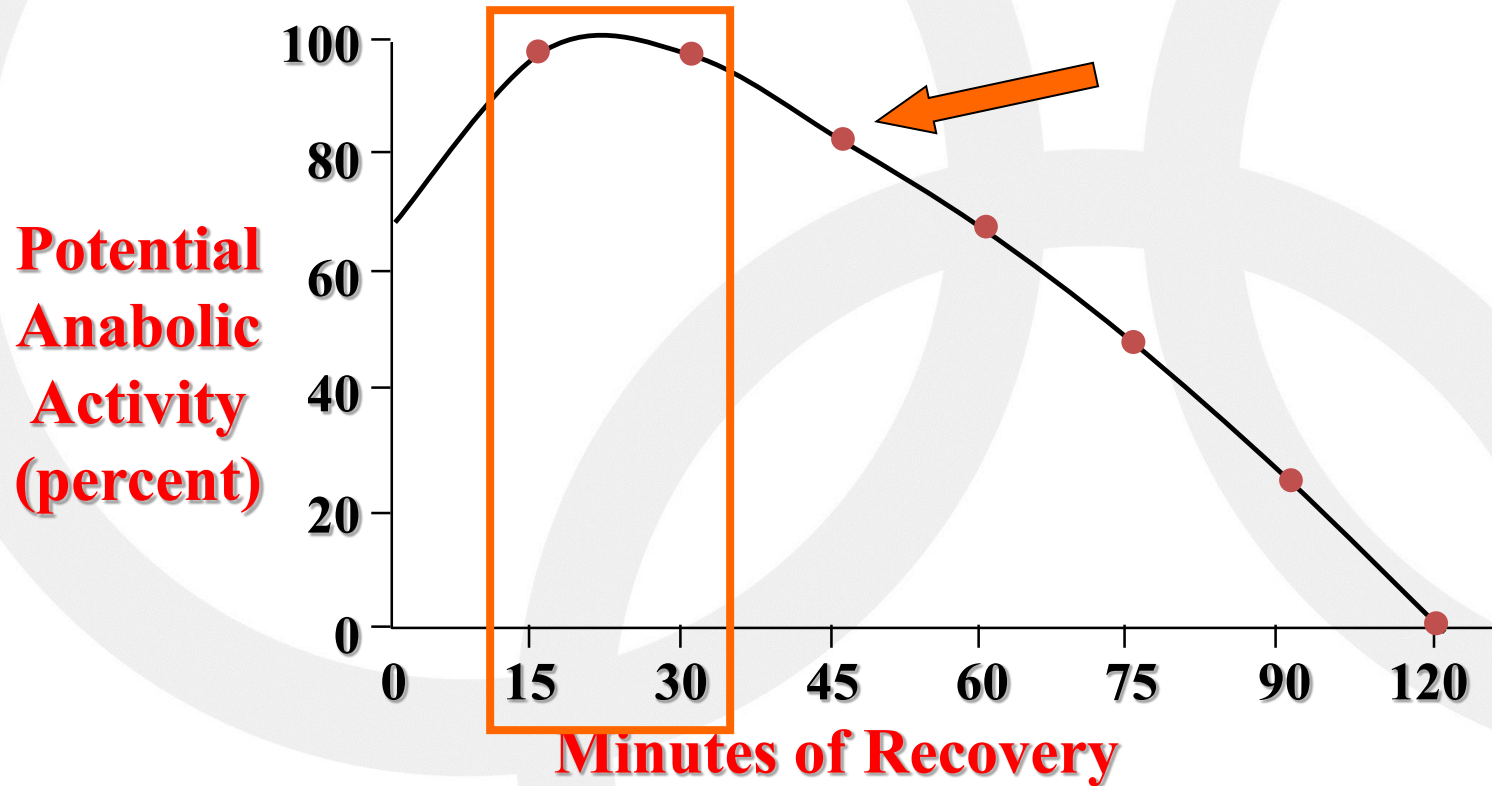
# *Fast Recovery*

- Post training
  - Hormones put the body in a breakdown state (catabolic)
  - Switch to build-up (anabolic) state faster with proper nutrition
- When is Nutrition Recovery Needed
  - >60 min training per day
  - Two-a-days
  - <12 hrs between training sessions
  - Multiple days of high intensity training
- Requires immediate carbohydrate AND protein intake within 45 minutes



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# Post Work Out Recovery

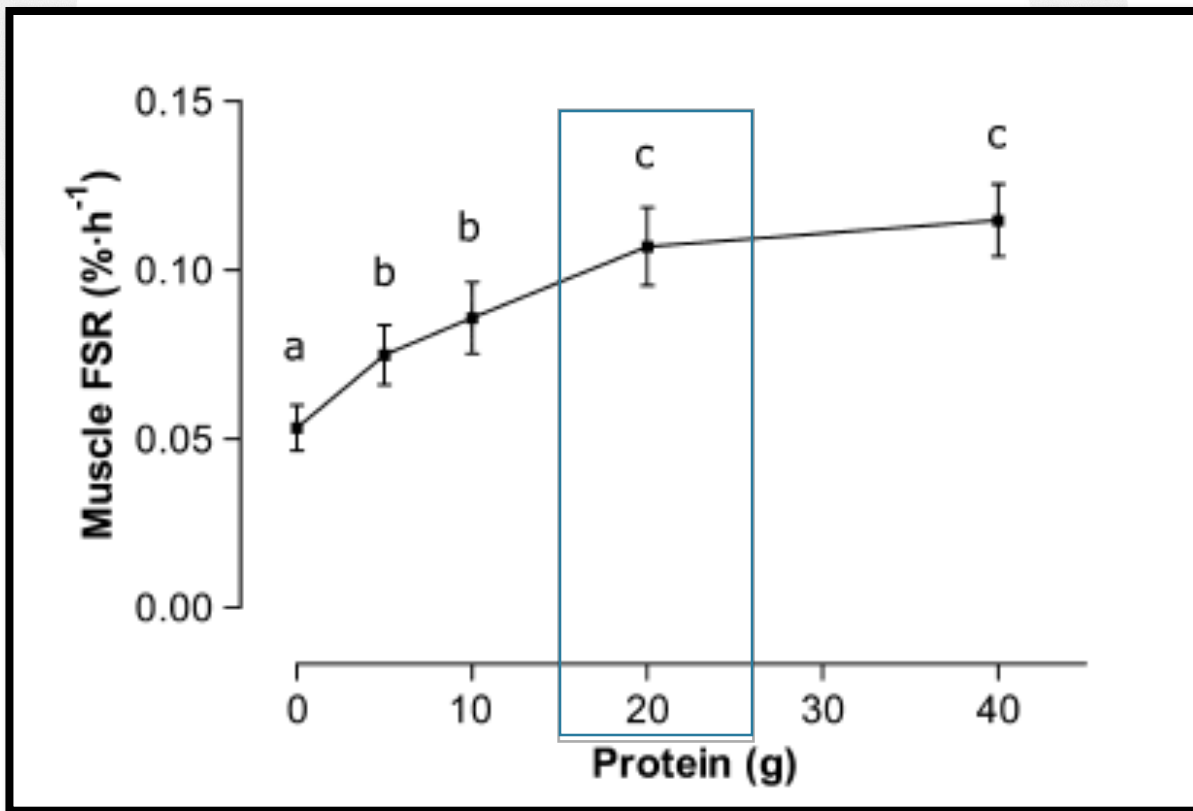


**Without nutrient intervention, the metabolic window begins to close within forty-five minutes following exercise.**



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*Protein synthesis after resistance training in response to varying doses of dietary protein intake*



**Fractional Protein Synthesis (FSR) illustrates muscle protein synthesis**

**Egg protein used**





# Post-Training Recovery

- Carbohydrates
  - Optimally = 1-1.5 g/kg bodyweight immediately after training
    - Repeat after one hour
  - Practically =  $\geq 40$ -50g carbs
- Protein
  - 10-20 grams within 60 min
- Fat
  - $\leq 10$ -20% saturated and trans fat
    - Sat & trans fats added for shelf stability-*CHECK LABELS!*
- Hydration
  - Replace 150% weight loss
  - Practically = 24oz for every 1lb lost during training



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# Recovery Nutrition

It is dependent on body composition and total energy needs

- **Want to maintain or lose weight?**
  - Post-workout/mission recovery calories are shifted from a meal
- **Want to gain weight?**
  - Post-workout/mission recovery calories are extra
- **Have high energy needs?**
  - Post workout/mission recovery calories are extra



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# *Dietary Supplements?*

- FDA reports most tainted dietary supplements are:
  - Weight loss
  - Sports performance enhancement
- Most weight loss supplements are combinations of stimulants



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# *The Supplement shell game*

## **SUPPLEMENT SHELL GAME**



- The "Supplement Shell Game" series, reported by Alison Young, won first place in business reporting and second place in investigative reporting among large news organizations.
- Young investigated the people behind more than 100 companies caught selling supposedly all-natural dietary supplements that were secretly spiked with pharmaceuticals.

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# *Dietary Supplements?*

- Caffeine Warnings
- Recent death from overdose of caffeine
- 1 serving of 3 grams = 25 cups of coffee
- Average American Caffeine Consumption is around 300-400 mg



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# *Some of the Offenders*

- Stimulants not recommended in warm conditions
- Stimulants not recommended when the user is very active physically
- Stimulants not recommended when the user sweats heavily and does not drink enough water to restore lost fluids, resulting in dehydration



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[Supplement 411](#) > [Get Involved](#) > [High Risk List](#)

## High Risk Dietary Supplement List

### Terms and Conditions

By completing the form below, I understand and accept that:

- The purpose of this section is to provide information about relative risk for a limited number of products marketed as dietary supplements. The content here represents examples of products that pose an increased risk of containing prohibited substances. Unless specifically noted, this list does not claim the products actually contain prohibited substances. The information here should be considered in combination with all of the other educational materials on Supplement 411 so that I may learn to identify those features of products that may indicate an anti-doping risk.
- By publishing this list, USADA does not make any claim about whether these products will or will not cause a positive anti-doping test.
- By publishing this list, I understand that USADA does not make any statement about whether an athlete should or should not take these products.
- By publishing this list, I understand that USADA does not make any claim about whether these products are or are not appropriately marketed as dietary supplements.
- I understand that manufacturers change the formulations of their products extremely rapidly and, at the time of listing, a particular brand name or product may have had a different formulation than that currently on the market. Similarly, a particular formulation of a product listed here may currently be marketed under a new name.
- This list may contain discontinued products.
- For tested products, the product, batch, and lot that was tested may not be a representative example of the entire product run, batch run, or lot of this product.
- If a product is NOT listed here, that does NOT mean it is safe to take, or is devoid of prohibited substances.



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Product	Company	Product Label or Advertising	Prohibited List Classification	Notes/Comments
3 Test OXO (Lot # PB0079712)	Complete Nutrition	Label lists a variety of herbals including tribulus terrestris, maca extract, saw palmetto berry, and others.	S1. Anabolic Agents and S6. Stimulants	Contains dehydroepiandrosterone, progesterone, cathine, ephedrine, methylhexaneamine, octopamine, pseudoephedrine
Absolute Fuel Extreme	Bioscience Insitute Inc.	Label lists citrus aurantium, and other herbals	S6. Stimulants	Lot 13338007 contains methylsynephrine (oxilofrine)
Adipo-x	Axis Labs	USADA has found evidence of online advertising listing DMAA as an ingredient.	S6. Stimulants	Lot 50003615 contains octopamine
Alphamine (purchased Feb 2013)	Physique Enhancing Science	Label lists multiple ingredients but does not list methylhexaneamine.	S6. Stimulants, Methylhexaneamine	Contains methylhexaneamine
Amphetalean (2013) Lot 112632 045.	Beast Sports	In 2012 this product listed 1,3-Dimethylamylamine HCL. In July 2013 advertising listed beta-methylphenethylamine, a prohibited stimulant (DMAA removed from label). It also appears the company has changed it's name to Beast Sports. In 2013 we purchased lot # 112632 045	S6. Stimulants	Lot 112632 045 contains amphetamine, N-Methylphenethylamine, beta-Methylphenethylamine
Anabolic Elite (purchased Feb 2013)	BPI	Label lists herbals including genetiana lutea, blepharis edulis, cestrus nocturnum, ficus hispida, coffee arabica	S1. Anabolic Agents	Contains methylclostebol
Andro-XS (Lot not specified)	Sports One Nutrition	4-chloro-17 $\alpha$ -methyl-andro-4-ene-3 $\beta$ ,17 $\beta$ -diol	S1. Anabolic Agents	Contains turinabol
Craze	Driven Sports	N,N-Dimethyl- B-Phenylethylamine	S6. Stimulants	Lot 1202487 Contains amphetamine; N-methylphenethylamine, beta-methylphenethylamine, ethylamphetamine



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# *Novel approaches*



## *Novel approaches*



- Beetroot powder (juice) can increase serum nitrates
- Causes vasodilation improving blood flow
- Studies suggest increase can reduce time to fatigue and VO<sub>2</sub>
- One study suggests 1 dose prior to exercise at altitude can improve performance



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## *Novel approaches*

- Study in 2012 reported that a group of professional football players Vitamin D status mid-winter
- 64% were vitamin D insufficient
- 1 tsp of Portobello mushroom powder has 600 IU

**NEW!**  
**Vitamin D**  
**Mushroom**  
**Powder**



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## *Novel approaches*



- Tart Cherry Juice
- Reports of having properties of anti-oxidant and anti-inflammatory
- 3 days of repeated cycling
- Tart Cherry Juice reduced C-reactive protein and creatine kinase compared to placebo



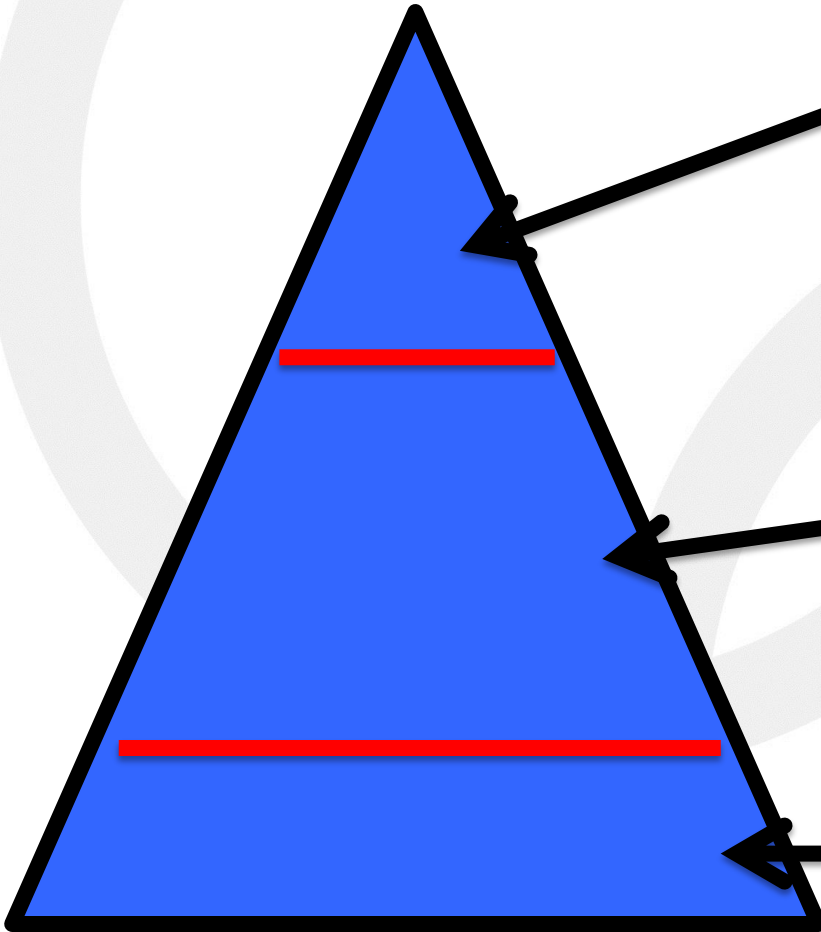
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# *Change has to be Individualized*

- Nutrition Vigilant

- Nutrition Pre-Disposed

- Nutrition Disinterested



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# *Good Nutrition May Be Common Sense But It Is Not Common Practice*

You have to practice good  
nutrition skills



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# Thank You!



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