

Nutrition Periodization Synthesis

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INTRODUCTION

NUTRIENTS

Nutrition is one of the most limiting factors in training for competitive athletes. Fueling the body for competition should be emphasized as much as an athlete's physical training to reap maximum performance benefits.

NUNTRIENTS

6 Essential Nutrients

- Carbohydrates
- Protein
- Fat
- Water
- Vitamins
- Minerals

CARBOHYDRATES

- Ultimate source of fuel to maintain energy levels and high mental functioning
- Play a protein sparing role
- 2 types of carbohydrates
 - Simple Carbohydrates (simple sugars) → quick digestion
 - Complex Carbohydrates (starch & fiber) → longer digestion

Food Sources of Carbohydrates

Rice	Brown Rice, White Rice
Oats	
Wheat	
Barely	
Cornmeal	
Cereal Grain	
Fruits	
Vegetables	
Dairy Products (choose lower fat options)	
Soy Products	Soy Milk, Tofu, Edamame, and Hummus
Nuts (high fat →monitor intake)	
Legumes	

FIBER

Daily Recommendation = 20-35 grams per day

Fiber is very healthy component of an athlete's normal eating plan.

Before major competitive events (especially weight-class

athletes) athletes may introduce a “fiber taper” to decrease gastrointestinal troubles and to improve performance. Slowly decrease fiber consumption the week of a competition, and reintroduce it into the normal eating plan the following week after.

Soluble Fiber: gums, mucilage, pectin, psyllium, and some hemicelluloses

Insoluble Fiber: cellulose, lignin, and some

Food Sources of Soluble Fiber

Barely & Rye	
Legumes	
Fruits	Banana (1 medium = 2.4 grams) Apple (1 medium = 3.6 grams)
Vegetables	Carrots (6 medium = 8.0 grams) Spinach (1/2 cup = 2.1 grams)
Oats	Oatmeal (1/3 cup = 2.8 grams)
Seeds	
Oat Bran	

Food Sources of Insoluble Fiber

Brown Rice	1/2 cup = 5.3 grams
Legumes	
Fruits	Banana (1 medium = 2.4 grams) Apple (1 medium = 3.6 grams)
Vegetables	Carrots (6 medium = 8.0 grams) Spinach (1/2 cup = 2.1 grams)
Oats	Oatmeal (1/3 cup = 2.8 grams)

Seeds	
Whole Grains	Whole-Wheat Flour Whole Cornmeal Bulgur
Wheat Bran	

PROTEIN

Is stored in muscles and provides muscles with the amino acids required to resynthesize and rebuild new muscles cells

Two types of protein

Essential: provide all amino acids that are *not* produced in the body

Non-Essential: provide amino acids that are produced in the body

Food Sources of Essential Amino Acids

Amino Acid	Food Sources
Histidine	Dairy, poultry, fish, meat, rye, rice, and wheat
Lysine	Ground beef, salmon, tofu, black beans, nonfat milk
Threonine	Meat, eggs, dairy, wheat germ, beans, and nuts
Isoleucine	Eggs, meat, poultry, fish, dairy, oatmeal, legumes
Methionine	Meat fish, garlic, beans, eggs, onions, lentils, seeds, yogurt
Tryptophan	Cottage cheese, soy protein, meat, peanuts
Leucine	Eggs, meat, poultry, fish, dairy products, oatmeal, legumes
Phenylalanine	Almonds, dairy, avocado, peanuts, lima beans, seeds

Valine	Eggs, meat, poultry, fish, dairy products, oatmeal, legumes
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FAT

Fat is essential for body processes such as body insulation, internal organ protection, nerve transmission, and metabolizing fat-soluble vitamins (A, D, E, and K).

2 Types of Fat

- Saturated Fat → Typically solid at room temperature (5-10 % of daily calorie intake)
- Unsaturated Fat → Typically liquid at room temperature, more healthy
 - Monounsaturated Fats → found in some oils, olives, and nuts (10-15% of daily calorie intake)
 - Polyunsaturated Fats → found in fish, walnuts, and flax products (~10% of daily calorie intake)
 - Trans fats → **UNHEALTHY** (look for “partially hydrogenated oils” on the food label)

Essential Fatty Acids

Omega-6 and *omega-3* fatty acids are essential polyunsaturated fatty acids, or essential fatty acids (EFA), which cannot be made by the body's cells.

Essential Fatty Acid Health Functions

- Regulating blood pressure
- Forming blood clots
- Regulating blood lipids

- Acting like hormones
- Assisting in immune response
- Decreasing the inflammation response to injury and infection

The goal is to decrease the omega-6 to omega-3 ratio so that you eat more omega-3 fats, which leads to a better metabolic conversion to beneficial compounds

Food Sources for Common Omega-6 and Omega-3 Fat

Food Source	Serving Size	Omega-6:3 Ratio
Salmon	3 ounces	1:1.5
Ground Flax	1 tablespoon	1:3
Trout	3 ounces	2:1
Walnuts	1 cup	4.5:1
Halibut	3 ounces	1:2
Sardines	1 ounce	1:2
Tuna Fish	3 ounces	1:1

WATER

Water makes up 60-70% of total body weight. Drinking too little or losing too much water through sweating can inhibit an athlete's ability to exercise and perform at optimal levels.

Most athletes enter training in a dehydrated state. If possible, high intensity training should be scheduled later in the day after the athlete has had time to fuel their body and hydrate.

How to Monitor Your Hydration Level

- Check your urine color

- Monitor your frequency of urination
 - Urinating every 2-3 hours is a good sign of fluid balance
- % Body weight change on a scale

VITAMINS & Minerals

Vitamins and minerals are extremely important for sustaining optimal health and can play a significant role in athletic performance. Both contain antioxidants, but there is no scientific evidence that supplemental vitamins provide a competitive edge.

NUTRITION PERIODIZATION

Guidelines to Follow Regardless of Sport

- **Reduce Oxidative Stress**
 - Consume foods rich in phytochemicals-plant compounds, beta-carotene, vitamin C, vitamin E, selenium, and zinc

Vitamin/Mineral	Food Source
Beta Carotene	Carrots Sweet Potatoes
Vitamin C	Oranges Kiwis Strawberries Grapefruit
Vitamin E	Nuts Green, Leafy Vegetables
Selenium	Brazil Nuts Tuna

	Beef
Zinc	Oysters Red Meat Poultry Beans

- **Decrease Saturated and Trans Fats (Processed Foods)**
 - Limit intake to less than 10% of total calories
- **Take a Multi-Vitamin**
- **Increase the Variety of Foods Consumed to Increase the Number of Nutrients Delivered to the Body**
- **Do NOT Share Nutrition Plans**
 - Each athlete is unique to his or her own way of fueling their body. Nutritional needs are highly individualized

Fueling Station Suggestions

- Multi-Vitamins
- Vitamin-C Supplements
- Vitamin-B Supplements
- Protein Bars
- Electrolyte Sports Drinks
- Yogurt
- Fruit
- Protein Shakes
- Fruit Juices
- Smoothies
- Nuts

Allow athletes to request 1-2 items before a training, and 2-3 items after training. Vitamins and supplements should be taken once daily.

Work Cited

Seebohar, Bob. *Nutrition Periodization for Athletes Taking Traditional Sports Nutrition to the Next Level*. Bull Publishing Company, 2011.