

Nutrition & Hydration for AIDS/LifeCycle Training

Presented by Raymond Palko, MS,

PhD



Goals for today:

- Calculate your energy needs (CHO, pro, fat) for endurance cycling
- Vitamin and mineral needs
- Guidelines for hydration
- Timing your fueling on training days
- Keep an open mind!
 - The following information is based on research guidelines for endurance cycling and presented from the perspective of an ALC cyclist and Registered Dietitian.
 - As you train you will be working hard. As a result you may benefit from modifying your normal diet.
 - If anything doesn't make sense just ask!

Carbohydrates

- Predominant fuel source - include in all meals and snacks
- Sources: Grains, starches, fruit, dairy, beans
- Needs: based on your weight and hours of training per day

Hours of training	Total carbohydrates per day
1	5-7 grams/kg
1-3	6-10 grams/kg
4-5	8-12 grams/kg

Carbohydrates - Example

- First things first: $1 \text{ kg} = 2.2 \text{ pounds}$
- $160 \text{ pounds} / 2.2 = 72.7 \text{ kg}$
- Example: a 160 pound cyclist that is training an average of 2 hours per day
- $72.7 \times 6 = 436 \text{ grams of carbohydrates/day}$

MMM Carbs!



Protein

- For muscle growth and repair
- Sources: meat, eggs, dairy, beans, nuts, seeds
- Needs: based on your weight, 1.2 - 1.7 grams of protein/kg of body weight

Protein - Example

- Example: a 160 pound person
- $72.7 \times 1.2 = 87$ grams of protein/day

MMM Protein!



Fat

- Secondary energy source
- Sources: nuts, seeds, oils, meat, dairy
- Needs: based on your weight, 0.8-2.0 grams of fat/kg of body weight to match energy expenditure, with an emphasis on heart healthy choices

Fat - Example

- Example: a 160 pound person
- $72.7 \times 0.8 = 58$ grams of fat/day

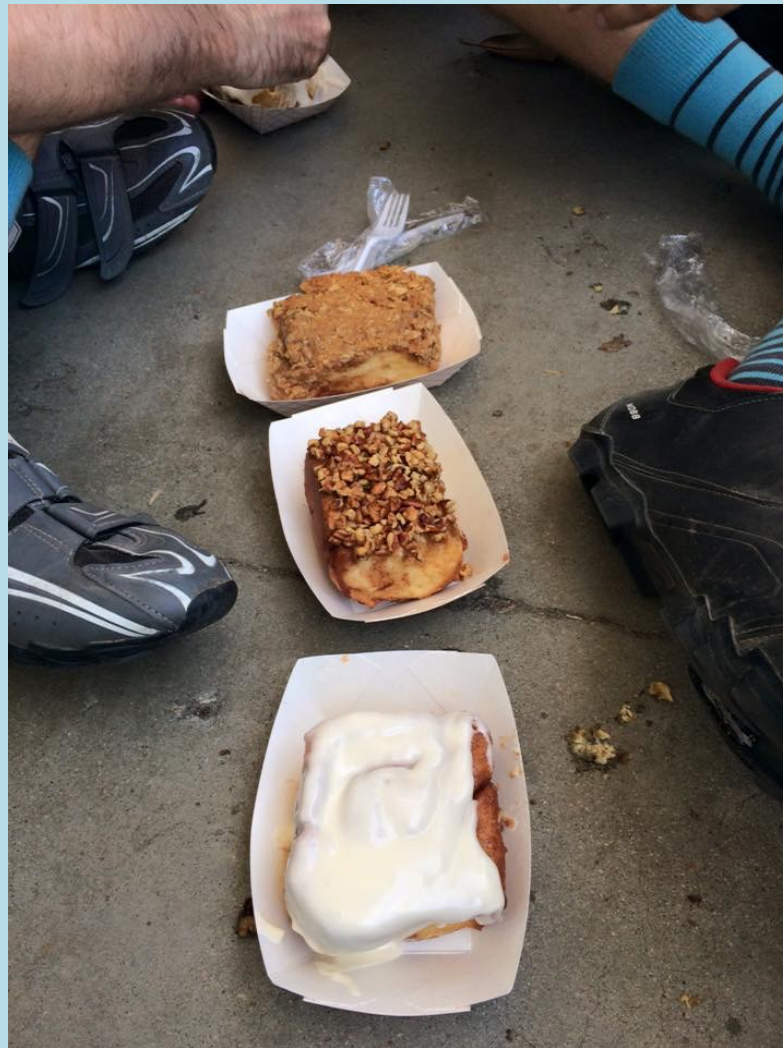
MMM Fat!



Wait, I can eat Carbs AND Fat?



More Fat and Carbs!



Even More!



Vitamins and Minerals

- Enough calories to meet total energy needs from a varied, balanced diet will likely provide adequate vitamins and minerals (exception: sodium).
- Diets based on highly refined carbohydrates and refined sugars (gels, sports drinks, bars, etc.) run the risk of being deficient in essential vitamins and minerals.

Vitamins and Minerals - Supplementation

- With appropriate food choices and quantities supplementation is not needed or advised
- With poor diet quality and/or variety a general multivitamin/mineral may be of benefit
- Mega-dose supplementation (especially above UL) and single nutrient supplementation (unless for a medical purpose or deficiency) is not advised

Hydration Guidelines

- Two things to avoid:
 - Dehydration
 - Water losses exceeding intake
 - More common, less dangerous
 - Hyponatremia
 - Dangerously low blood levels of sodium
 - Less common, more dangerous
 - Symptoms: confusion, convulsions, fatigue, headache, irritability, loss of appetite, muscle spasms or cramps, muscle weakness, nausea, restlessness, vomiting

Hydration and Sodium

- Q: Salt is bad for you, right?
- A: It's not that simple.
 - Sodium consumed in excess by sedentary people may cause/worsen high blood pressure and heart failure.
 - Athletes sweating heavily require additional sodium to maintain fluid balance and prevent cramping.

Hydration Guidelines

- Timing
 - Before: leave with a stomach comfortably full with fluid
 - During: ideally intake will match sweat and urine output
 - How will you know? What your urine frequency, volume, and color.
 - After: One hour sweat test
 - Drink at least 16-24 ounces for every pound lost

Hydration Choices

- No sodium or carbohydrates
 - water
- Sodium with no carbohydrates
 - Nuun
- Sodium with low carbohydrates
 - Drip Drop, Osmo
- Sodium with high carbohydrates
 - Gatorade, Powerade, Skratch
- High carbohydrates with no sodium
 - Juice, soda

Every Chance, Hydrate!



Otter Pops are Hydration, Right?



Timing is Key: Before

- 1 to 4 hours before your ride consume 1 to 4 grams carbohydrate/kg body weight
- Example: a 160 pound person
- $72.7 \times 1 = 73$ grams of carbohydrates
 - Avoid high fiber carbohydrates to avoid abdominal bloating, cramping, and diarrhea

Timing is Key: During

- For shorter rides (1-2.5 hours) consume 30 to 60 grams of carbohydrates per hour
- For longer rides (2.5-3 hours), 80-90 grams per hour
 - Bars, sports drinks, and gels are very valuable during cycling carbohydrate sources
 - Always wash gels down with plenty of fluid

Ultimate Crack Bar Fail...



Timing is Key: After

- Sooner is better.
- 1-1.2 grams of carbohydrates/kg/hour for 4 hours
- Example: a 160 pound person
- $72.7 \times 1 = 73$ grams of carbohydrates and hour for 4 hours
- Include 15 to 25 grams protein in initial recovery snack

Quick Recovery Snacks



My Needs

- $\text{Weight in pounds} / 2.2 = \text{weight in kg}$

Length of Training	Grams	My Specific Needs
1 hour	5-7/kg	
1-3 hours	6-10/kg	
4-5 hours	8-12/kg	
Timing		
Before	1-4/kg	
During (shorter rides)	30-60 total/hr	
During (longer rides)	80-90 total/hr	
After	1-1.2/kg/hr x 4 hours	

My Needs

Length of Training	My Specific Needs	Ideas
1 hour		
1-3 hours		
4-5 hours		
Timing		
Before		
During (shorter rides)		
During (longer rides)		
After		

Carbohydrate Sources

Grains & Starches	Serving Size	Grams of Carbohydrate
Bread	1 slice or 1 oz	15 grams
Rice, pasta, beans, potatoes, peas, corn, oatmeal and any other grain	½ cup cooked	15-20 grams
Bagel	¼ of bagel	15 grams
Cereal	¾ cup	15 grams

Carbohydrate Sources

Milk or Soy	Serving Size	Grams of Carbohydrate
Milk non-fat or 1 %	8 oz or 1 cup	15 grams
Milk with flavor added (sugar)	8 oz or 1 cup	30 grams
Yogurt, non-fat, low-fat plain	6 oz	15 grams
Yogurt, flavor added (sugar)	6 oz	30 grams
Soy milk flavor added	8 oz	15 grams

Carbohydrate Sources

Fruits	Serving Size	Grams of Carbohydrate
Any Fruit	1 medium size	15 grams
Fruit salad	1/2 cup	15 grams
Berries	3/4 cup	15 grams
Dried fruit	1/4 cup	15 grams
100% Juice	4 oz	15 grams

Carbohydrate Sources

Sugars	Serving Size	Grams of Carbohydrate
Package foods (Cliff bars, Luna bars, Lara bars, etc)	Varies (read label)	Varies (read label)
Table sugar	1 Tbsp	15 grams
Honey	1 Tbsp	15 grams
Syrup	1 Tbsp	15 grams
Jam/jelly	1 Tbsp	15 grams
Sports drinks	8 oz	15 grams (may vary, read label)
Gels	1 packet	30 grams (may vary, read label)

Protein Sources

Food	Serving Size	Grams of Protein
Poultry, beef, pork	1 oz	7 grams
Egg white	1 egg	7 grams
Cheese	1 oz	7 grams
Milk	8 oz	8 grams
Tofu, beans	½ cup or 4 oz	7 grams

Fat Sources

Fat	Serving Size	Grams of Fat
Almonds, cashews	6 nuts	5 grams
Olive, canola or any oil	1 tsp	5 grams
Flax seed meal	2 Tbsp	5 grams
Avocado	2 Tbsp	5 grams
Salad dressing	1 Tbsp	5 grams

Questions?



References

- Sports Nutrition: A Practice Manual for Professionals, 5th Edition. Christine A. Rosenbloom, PhD, RD, CSSD and Ellen Coleman, MA, MPH, RD, CSSD
- Eating for Endurance. Ellen Coleman, MA, MPH, RD, CSSD
- Fueling Nutrition for ALC. Manuel Villacorta, MS, RD, CSSD

R. Palko Nutrition



rpalkonutrition@gmail.com