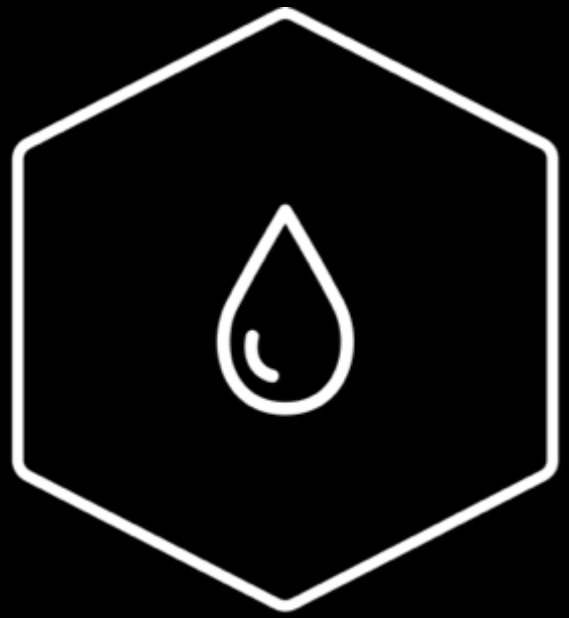
SPORTS NUTRITION FOR LAKELAND ATHLETES



ENERGY

HYDRATION

STRUCTURE

Carbohydrates and Sports

Field Sports
Intermittent energy demand, short distances covered, lots of short bursts

Field Sports
High overall energy demand, large distances covered

Mat Sports
High overall energy demand, short bursts

Batting Sports
Low overall energy demand, long duration

Court Sports
High overall energy demand, smaller area, shorter duration

CARBOHYDRATES ARE ESSENTIAL

- Maintain short energy bursts
- To maintain glycogen stores
- To maintain blood glucose for attention & decision making
- To maintain glycogen over time

Carbohydrates and Performance

- **Carbohydrates = Muscle Fuel**
  - Simple Carbs ("Fast Release") :
    fruit, candy, cake/pastries, white rice, white bread, soft drinks/juice, sugar, syrup/honey, etc.
  - Complex Carbs ("Slow Release):
    leafy vegetables (lettuce, spinach, kale), nuts (walnuts, brazil nuts, pecans), whole wheat pasta, whole grain bread, brown rice, sweet potatoes, etc.
- 3-4 Hour Prior to Exercise ("Pre-Game Meal")
  - Complex carb foods
  - Minimal fiber, fat, and protein
- <1 Hour Prior to Exercise
  - Same rules as above; however, may come in the form of gels, gummies, and/or sports drinks

Carbohydrate Recommendations for Sport Performance

1-4 Hours Before
.454 - 1.8 g/lb

1 Hour Before
~ 25 - 30g

During
30 - 60 g/h
≥ 60 min duration
Performance goal

After
.454 - .544 g/lb
< ~ 8 h until next training or competition

For Example: 260 lb Center on the Basketball Team

1-4 Hours Before
118 - 468 g

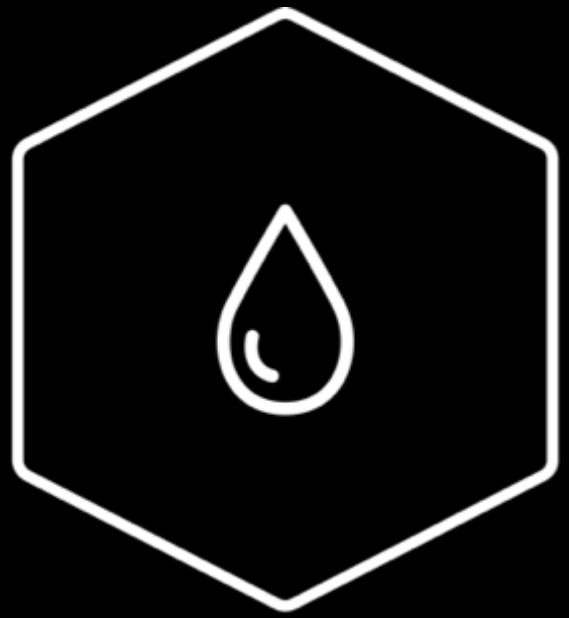
1 Hour Before
~ 25 - 30g

During
30 - 60 g/h
≥ 60 min duration
Performance goal

After
118 - 141 g
< ~ 8 h until next training or competition

Summary: Carbohydrate Energy

- Sports, although very diverse, have commonalities including:
  - a mixture of high and low intense activity
  - changes in pace/direction
  - rely on skill
  - can involve physical contests
- Daily requirement depends on the activity level and body size
- Carbs before and during can top off fuel supply and improve performance
- Types of carbs, in addition to amount and timing, are important
- It is imperative that the athlete personalizes their carb intake based on recommendations and tolerance



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Hydration and Performance

- Water ~ 60% of body weight
- Roles in numerous physiological processes
- Evaporation of sweat cools the body
- Performance *suffers* with fluid/sweat losses > 2% body weight

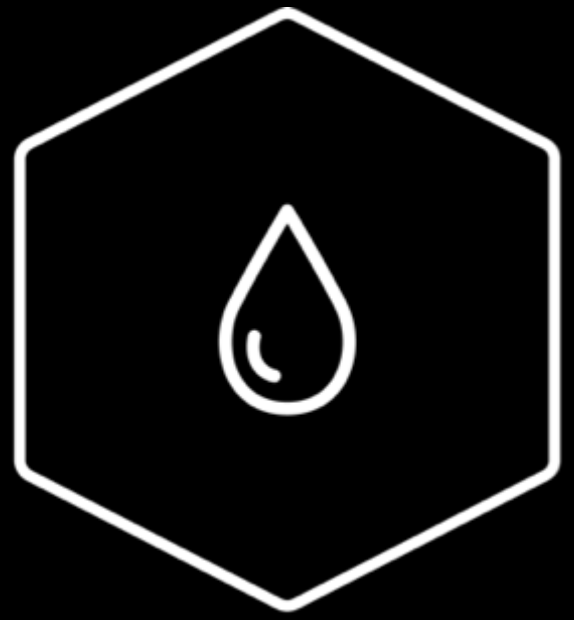
Dehydration and Performance

- 2% dehydration = decreases in endurance performance

- Performance decrements also seen in:
  - Anaerobic/high intensity performance
  - Muscle strength
  - Muscle power
  - Cognition

Summary: Hydration

- Dehydration can decrease performance within the team sport setting
- Efforts to hydrate should be made to avoid fluid losses of ≥ 2% of body mass
- Fluid imbalances vary among sports because of differences in fluid availability or opportunity for hydration breaks
- Sweat rates and sodium losses vary between sports
- Drink 16-20 fl oz (1 x “bottled water”) for every pound lost after activity
- Include sodium with fluids to improve palatability, stimulate drinking, and retain fluid



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Protein Amount - Daily

Recommended Dietary Allowance: *0.363 g/lb/day*

TEAM SPORTS	STRENGTH	POWER	ENDURANCE
.544 - .771 g/lb/day	.726 - .771 g/lb/day	.68 - .771 g/lb/day	.544 - .953 g/lb/day

For Example: 260 lb Athlete in Various Sports

141 – 200 g/day	189 – 200 g/day	177 – 200 g/day	141 – 248 g/day

Protein Amount - Recovery

~ 0.113 - 0.136
g/lb

260 LBS
X 0.113 (g/lb)
30G PROTEIN

185 LBS
X 0.113 (g/lb)
21G PROTEIN

Protein Timing- Amount and Timing

What about if we combine dosage and timing?

Athletes Should:

- Consume 0.113 g/lb body mass protein
- Immediately after training
- Spread evenly every 3-4 hours = more positive protein balance

Protein and Sleep

- Protein intake right before bed can boost muscle repair
- Casein (slow digesting protein)
  - Higher amount (30-40g; 0.223 g/lb)
  - Found in cows milk and goat's milk
- Could be beneficial, especially as an in-season protocol
  - Frequent games (baseball, basketball)
  - High muscle damage (football, rugby, hockey)

Protein Type- How does this translate to food?

Leucine-Rich Foods	
Egg, white, raw, fresh	4.23
Whey, protein dried	4.00
Seaweed, spirulina, raw	3.92
Chicken, broilers or fryers, breast, meat only, cooked, rotisserie	3.84
Fish, tuna, light, canned in water, drained solids	3.57
Turkey, fryer-roasters, light meat, meat only, raw	3.57
Fish, cod, Pacific, cooked, dry heat	3.55
Greek yogurt	3.50
Pork, fesh, loin, boneless	3.38
Chicken breast, oven roasted	3.04
Beef, round, top round, lean only	3.00
Cheese, cottage, nonfat, uncreamed, dry, large or small curd	2.88
Cheese, low fat, cheddar or colby	2.48
Tofu, silken, extra firm	2.32
Milk, reduced fat (2%)	1.33

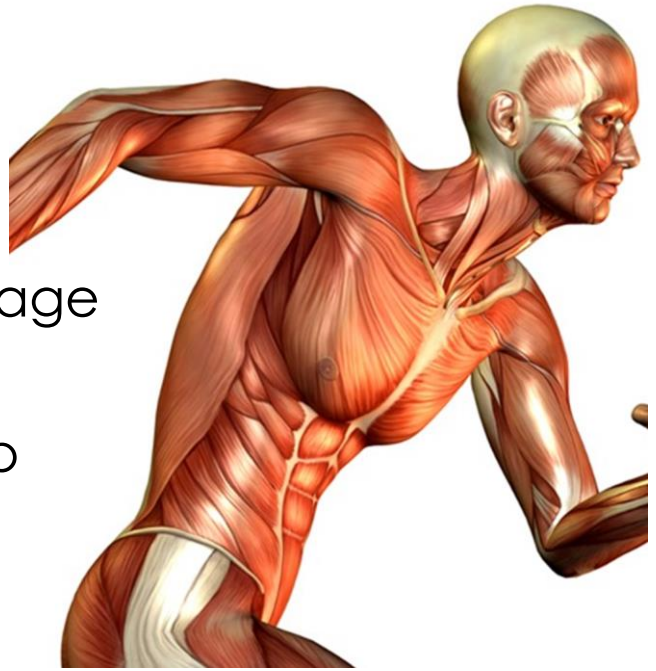
The best protein for recovery will have these three critical components to drive muscle protein synthesis:

1. **A complete protein**
2. **Rapidly digested & absorbed**
3. **Rich in leucine**

While egg and whey have the highest leucine values, from a practical standpoint all foods on this list are appropriate.

For vegetarian and vegan athletes, blend foods for complete amino acids.

Summary: Protein



- Protein is a critical nutrient for muscle repair and recovery, especially for athletes who sustain high amounts of muscle damage
- Daily amounts vary between athletes; however, 0.113 - 0.136g/lb has been found to be an optimal per meal dose
- Timing is crucial as well– but more so as it relates to spreading protein intake every 3-4 hours throughout the day and before sleep
- Types of protein should include foods that contain complete protein sources that are quickly digested/absorbed and rich in leucine (whey and animal products)
- If an athlete consistently eats the correct amounts, at the right time of complete proteins– he/she/they may be able to achieve optimal recovery

Sample Menu: 140 lb Athlete

- **Breakfast**: 2 cups Life Cereal, 10 oz Skim Milk, Banana, 10 oz Orange Juice
- **Snack**: Apple, 2 TBS Peanut Butter, 1 oz Pretzels
- **Lunch**: Turkey Sandwich (Wheat Bread), 10 Baby Carrots, Chocolate Pudding Cup
- **Snack** (Pre-Practice): 20 oz Gatorade, Granola Bar
- **Dinner**: 1.5 cups Spaghetti with Marinara Sauce, Tossed Salad with Dressing, 3 pieces Garlic Toast, 8 oz Skim Milk

2557 kcal (Carbohydrate: 2.948 g/lb, Protein: 0.635 g/lb)

Sample Menu: 180 lb Athlete

- **Breakfast**: 2 cups Life Cereal, 12 oz Skim Milk, Banana, 12 oz Orange Juice
- **Snack**: Apple, 2 TBS Peanut Butter, 2 oz Pretzels
- **Lunch**: 2 Turkey Sandwiches (Wheat Bread), 10 Baby Carrots, Chocolate Pudding Cup
- **Snack** (Pre-Practice): 20 oz Gatorade, Granola Bar
- **Dinner**: 3 cups Spaghetti with Marinara Sauce, Tossed Salad with Dressing, 3 pieces Garlic Toast, 12 oz Skim Milk
- **Evening Snack**: 12 oz Blueberry Banana Smoothie

3262 kcal (Carbohydrate: 2.948 g/lb, Protein: 0.726 g/lb)

Putting It All Together

- Daily carbohydrate intake = 2.268 - 3.175 g/lb
- Daily protein intake = 0.544 - 0.771 g/lb
- Carbohydrates from fruits, vegetables, and whole grains for fuel.
- Protein from high quality source animal products for recovery.
- Meals/snacks spread throughout the day and evening for optimal energy and recovery