Sports Nutrition for Recreational Athletes

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Resting metabolic rate, body composition
Diet analysis
Ongoing programs
  ◦ Healthy You
  ◦ Dining with Diabetes
  ◦ Eating for a Healthy Pregnancy
  ◦ Diabetes Prevention Program

nutritioncenter.colostate.edu (970) 491-8615
Today’s Objective

Nutrition and hydration tips to fuel your body **before, during and after** activity for optimal physical performance and health.

- Nutrition 101
- What to eat **before** being active
- What to eat **while** being active
- What to eat **after** being active
- Popular in sports nutrition
- Questions

First...

• Nutrition **AND** physical activity

• Nutrition is **necessary** for active lifestyle
  ➢ Energy
  ➢ Performance
  ➢ Recovery
  ➢ Body composition

• General nutrition guidelines—no one size fits all recommendation

• What works best for you?

Key parts of a diet for the rec athlete
Carbohydrates

- Body’s best choice for energy
- #1 fuel during exercise
- Largest part of diet
- Improves endurance, stamina
- Delays fatigue
- Promotes mental clarity
- Low-carbohydrate diet not recommended
- Adequate carbs spares protein use as a fuel during exercise
Carbohydrates: Your Premium Fuel Source

Food

Glucose

Immediate Energy

Glycogen

Muscles

Liver

Adipose
Have you ever “hit the wall” or “bonked?”
## Not all carbs created equal

<table>
<thead>
<tr>
<th>Jelly</th>
<th>Whole grains</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cookies</td>
<td>Fruit</td>
</tr>
<tr>
<td>Candy</td>
<td>Vegetables</td>
</tr>
<tr>
<td>Juice</td>
<td>Pasta</td>
</tr>
<tr>
<td>White bread</td>
<td>Cereal</td>
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<tr>
<td>White rice</td>
<td>Breads</td>
</tr>
<tr>
<td></td>
<td>Oatmeal</td>
</tr>
<tr>
<td></td>
<td>Whole wheat products</td>
</tr>
<tr>
<td></td>
<td>Brown rice</td>
</tr>
<tr>
<td></td>
<td>Legumes—beans, lentils, peas</td>
</tr>
</tbody>
</table>

Protein—building blocks of life

• Repair, maintenance, and growth of body tissues, muscles
• Energy supply
• Boosts immunity
• Required for red blood cell production
• Need to eat adequate carbs and fat so less protein utilized for fuel
• Not enough protein—affects immune system, strength, mass

http://www.naturallyintense.net/blog/diet/you-dont-need-large-amounts-of-protein-to-build-muscle/
Protein foods

Eggs
Dairy
Poultry (chicken, turkey)
Meat (beef, pork, game)
Seafood (fish, tuna)

Beans
Nuts and nut butters
Soy (tempeh, tofu, edamame)
Whole grains
Seeds (hemp, chia, sesame)
Vegetables!

http://niemagazine.com/protein-demand/
Extra protein = extra muscle?

• Extra protein does not equate to muscle mass and strength
• Extra protein is not stored as protein
• Whatever your body doesn’t need → stored as fat
• When protein displaces carbs, not enough fuel for muscles
• Protein foods can be high in fat → heart health
• Too much protein is hard on kidneys

So how much do I need?

• Gender
• Weight
• Pregnancy
• Level of activity
• Intensity of activity
• Athlete’s protein needs greater than non-athlete
• Power athletes require more protein than endurance athletes
• See an RDN for a calculation specific for your needs

Protein recommendations

0.8-1.2 grams of protein/ kilogram of body weight

1. How much do you weigh (pounds)?
2. Divide your weight by 2.2 (2.2 kg/lb) = kg of body weight
3. Multiply that number by 0.8-1.2 = # grams of protein/day

Example: 175 pounds / 2.2 = 79.5 x 0.8-1.2 = 64-95 grams protein/day
What does that look like?

<table>
<thead>
<tr>
<th>7 gram protein choices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 glass of milk (8 g)</td>
</tr>
<tr>
<td>2/3 cup yogurt (8 g)</td>
</tr>
<tr>
<td>1 egg</td>
</tr>
<tr>
<td>1 oz meat/fish/poultry</td>
</tr>
<tr>
<td>1 oz cheese</td>
</tr>
<tr>
<td>½ cup cottage cheese</td>
</tr>
<tr>
<td>½ cup beans</td>
</tr>
<tr>
<td>½ cup edamame</td>
</tr>
<tr>
<td>1/3 cup hummus</td>
</tr>
<tr>
<td>2 tablespoons nut butter</td>
</tr>
<tr>
<td>½ cup peas</td>
</tr>
<tr>
<td>½ cup tofu</td>
</tr>
</tbody>
</table>
What does that look like?

1 ounce of meat = 7 grams protein
3 ounces of meat = 24 grams protein
3 ounces of fish = 24 grams protein
1 ounce of cheese = 7 grams protein
What does that look like?

- 2 tablespoons nut butter: 7 grams
- 1 cup Greek yogurt: 20 grams
- 1 tablespoon hemp seeds: 5 grams
What does that look like?

**Breakfast:** 2 egg veggie scramble + 1 glass milk = 22 grams

**Snack:** Apple + 2 tablespoons peanut butter = 7 grams

**Lunch:** Bean + cheese + rice burrito = 15 grams

**Post work out snack:** carrots + hummus + chocolate milk = 14 grams

**Dinner:** 3 oz salmon stir fry w/ rice and peas = 30 grams

__________________________

Sample menu = 88 grams protein
Spread out your protein!

• Protein several times throughout the day
• Make sure protein is available when your body needs it
• Not just at dinner
• Not just meat
• Small protein pool, once we meet this threshold, we don’t store more, we convert protein to fat
• Getting protein doses throughout the day meets needs without “overflowing” your pool
Food vs. Powders/Supplements

Protein shakes/powders
- Will not bulk up muscles without exercise
- Do not replace meals
- Good if trying to gain weight

Sports bars
- Appropriate for a snack, not a meal

Amino acid supplements
- Food provides safer variety of amino acids at a lower cost

Whole foods are always best

Fat

• Major energy storage/source
• Cushions body
• Regulates body temperature
• Required to absorb fat-soluble vitamins
• Used with carbohydrates to fuel aerobic exercise
• Fat contains more calories than carbohydrates and protein
Good

- Monounsaturated
- Polyunsaturated

Bad

- Saturated fats

Ugly

- Trans fats

http://eatingacademy.com/tag/saturated-fat
Putting it all together.

- **20-30% fat**
- **15-20% protein**
- **55-65% carbohydrates**
Pie chart → My Plate

- Carbohydrates
- Protein
- Fat
What about water?
Water

• ~ 70% of body weight
• All body processes
• Optimal performance
• Sweat dissipates heat
• Urine eliminates waste
• Transports nutrients
• Controls blood pressure
• Helps with digestion
• Drink all day, not just for exercise!
Dehydration

• Loss of fluids from the body
• Affects strength, speed, stamina, energy, and cognitive skills
• Increases risk of injury and perceived effort of exertion
• Performance declines with 1% loss of body weight

• Signs:
  • Headache
  • Fatigue
  • Dizziness
  • Dark urine
  • Nausea/vomiting
Not just a summer thing

• Recreational skiing is demanding
• Cold/dry air, sweat turns to vapor instead of staying on skin
• Higher rate of water vapor lost from lungs at high altitude—can you see your breath?
• Cold and altitude suppresses thirst
• Dehydration vs. altitude sickness
• Need to replace electrolytes
• Drink before you are thirsty

http://polarbottle.com/hydration-and-winter-sports/
Thirst = poor hydration indicator

Hydration Urine Chart

1 • 1-3 = Hydrated
2
3 • 4-6 = Dehydrated
4
5
6
7 • 7-8 = Severe Dehydration
8
Water & Fluids

*Fluid needs are individual—see professional to calculate sweat rate*

**Goal:** 10-12 cups of fluid daily

- 2 cups 2 hours before exercise
- 1 cup 15 minutes before exercise
- 4-8 ounces every 15-30 minutes during exercise
- 2-3 cups after exercise
- Sports drinks AFTER exercise, especially if intense and >90 min

*Did you know? Roughly 20% of our fluid comes from our food—especially fruits and vegetables!*
What to eat before exercise
The Pre-workout Meal

High in carbohydrates
- Tops off muscle glycogen
- Prevents hunger
- Gives a psychological boost

Moderate in protein

Low in fat

Low in fiber

Familiar

Find what works for you during training

http://shapingupwithmelissa.blogspot.com/2012/03/quick-and-easy-pre-workout-snacks.html
Timing your meal and exercise

• Allow 3-4 hours to digest a large meal
• Allow 2-3 hours to digest a smaller meal
• Allow 1-2 hours to digest smoothie/shake
• Eat a carbohydrate-rich snack 30 minutes before exercise
  • Low-to-moderate amounts of protein

https://bambootelegraph.com/2015/05/04/the-7-best-snacks-to-study-with/
http://www.stylemotivation.com/18-healthy-smoothie-recipes-for-winter/
Early morning workout

Carbohydrates!
Shake
Energy bar
Granola bar
Fruit (not acidic)
Bagel
Dry cereal/granola
Oatmeal
Water!

http://weknowyourdreams.com/banana.html
Nutrition During Exercise
How long/intense is your workout?

• If < 1 hour, not needed
• If > 1 hour, carbohydrates are essential
• 100-300 calories of carbohydrates per hour
  • ~30-60 grams of carbohydrate/hour

• **Great choices:** energy bar, granola bar, dried fruit, plain bagel, crackers, pretzels, dry cereal, sports drink, gels, etc.

• **Poor choices:** foods high in fat, fiber and protein
• What can you tolerate?
• “Nothing new on game day”
If Your Workout is > 1 hour...

- 24 oz. sports drink: 45 g
- Banana: 30 g
- 2 Gu’s: 50 g
- 6 Cliff Blocks: 50 g
- Larabar: 30 g
- Cliff bar: 45 g

30-60 g/hr
Post-exercise Nutrition
Post-workout recovery

1. **Replenish** carbohydrate burned during exercise
2. **Repair** damage done to lean muscle mass
3. **Rehydrate** your body
4. **Reduce** muscle soreness
5. **Refuel** for next workout
Recovery window

• Exercise-induced glucose uptake
• Attenuate muscle protein breakdown

• Eat a snack within 30 minutes of exercise
  ◦ PBJ sandwich
  ◦ ½ bagel with low-fat cheese
  ◦ Granola bar
  ◦ Trail mix

• Eat a full, balanced mix-meal within 2 hours of exercise

http://www.milkmeansmore.org/athletes/sports-nutrition/
What should I eat after exercise?

- **4:1** carbohydrate-protein ratio
- **Carbohydrates**-replace energy stores
- **Protein**- repair muscles
- Synergistic affects of carbohydrates + protein post workout

**Examples:**
- Yogurt (40 grams of carbohydrate + 10 grams of protein)
- 16-20 ounces low-fat chocolate milk
- Granola bar + 1 cup milk
- Smoothie with yogurt/milk + fruit
- Oatmeal + fruit + milk
- 2 pieces toast + egg
- Peanut butter & jelly sandwich
Chocolate milk!

4:1 ratio of carbohydrates : protein
Milk = carbohydrate to repair glycogen
Protein = whey to repair muscle breakdown
90% water to rehydrate
Potassium to help with fluid/mineral balance, muscle contraction
B vitamins to help convert food to energy
Calcium, phosphorous, and vitamin D to promote strong bones

Popular in sports nutrition...
Does coffee boost performance?

Mobilizes fat
- May benefit longer duration endurance activities

Diuretic
- Stay hydrated

Recommendation
- 2 cups of coffee 1-1 ½ hours before exercise

Individual response
- Experiment with what works for you

http://theselby.com/galleries/coffee-supreme/
Do I need supplements to maximize my workout?

- Little evidence that creatine and megadose antioxidants enhance performance
- Excessive vitamins & minerals do NOT enhance performance—eat from every food group
- Many supplements are banned in sanctioned competition
- Expensive and not always 100% “pure”
- Effectiveness and safety do not have to be confirmed before supplements hit store shelves
- Best to spend money on quality whole foods
Does skipping breakfast help burn more fat in the AM?

What is your goal?

• **Performance and training**
  • You need to be optimally fueled!

• **General wellness and weight loss**
  • *Some* evidence that coming off an overnight fast and working out will help to burn more fat
  • Must eat right after workout!
  • But if you don’t have energy to workout fasted....

Think about your goals and let your body be your guide
Are sports drinks just sugar?

• Many are water + sugar + electrolytes
• Lose salt and other electrolytes when you sweat
• Electrolytes necessary for muscle contraction and body function
• Electrolytes + sugar help absorption of water so it does not sit in your belly and give you that “sloshing” feeling
• Sugar counts for carbohydrates that you need to fuel your muscles
Should I carb load the night before a big event/race?

• Research shows that < 90 minute events, carb loading has no affect on performance

• Carb loading has minimal affect on longer endurance events

• True carb loading is more than just eating pounds of pasta

• What matters more is your overall pattern of intakes leading up the event, and adequate intake while being active
Are bananas good for cramping?

• Stay hydrated!

• Bananas help with cramping, but so do other high potassium foods:
  • Strawberries, cantaloupe, raisins
  • Avocados, potatoes, broccoli, spinach
  • Beans, soy beans
  • Yogurt, milk
  • Sports drinks

• Excessive problems, may need salt tablets or potassium supplement
High fat, low carb or high carb low fat?

• No conclusions that extremely high-fat, ketogenic diets actually enhance sports performance

• Some evidence this type of diet helps athletes better use fat

• Most studies are done with ultra athletes

• High-fat diets blunt performance during high-intensity sprints because fast-burning sugar stores are necessary

• Ketogenic diets are very hard to follow—restrictions, deficiencies, quality of life
How do vegan/vegetarian athletes meet needs?

• **Protein**
  • plant sources have protein

• **B12**
  • affects red blood cell production
  • many foods are fortified like cereals and soy milks

• **Branch chain amino acids (BCAA)**
  • BCAA found in greater amounts in animal products than plant foods
  • milk proteins, beef, chicken, fish, egg
  • whole grains, nuts, soy proteins, whole wheat, brown rice, almonds, brazil nuts, pumpkin seeds, lima beans, chick peas, cashew nuts, lentils and corn
Want to learn more?

Reputable resources:
- [www.eatright.org](http://www.eatright.org)
- [www.nutrition.gov](http://www.nutrition.gov)
- [www.consumerlab.com](http://www.consumerlab.com)
- [www.mayoclinic.com](http://www.mayoclinic.com)

Schedule an appointment with a KRNC registered dietitian

Or we can present to your group

(970) 491-8615
Questions?
Thank you!