Food is Fuel
Sports nutrition for the recreational athlete

KALYN GARCIA, MS, RDN
KENDALL REAGAN NUTRITION CENTER
KALYN.GARCIA@COLOSTATE.EDU
Brought to you by KRNC

Kendall Reagan Nutrition Center
Registered Dietitian Nutritionists
Individual nutrition appointments
Cooking classes
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
- Questions

General Nutrition Recs

- Nutrition is personal, unique
- No one-size-fits-all way to approach eating
- No perfect eating plan
- Find what works best for you
- “Nothing new on race day”
First...Food is Fuel
Nutrition is necessary

• Nutrition **AND** physical activity
• Active lifestyle is **necessary** for health
• Nutrition is **necessary** for active lifestyle
  ➢ Energy
  ➢ Performance
  ➢ Recovery
  ➢ Body composition
Nutrition 101
Nutrition to Fuel Fitness
Carbohydrates

- Body’s best choice for energy
- #1 fuel during exercise (esp. high intensity)
- Largest part of diet
- Improve endurance, stamina
- Delay fatigue
- Promote mental clarity
- Needed to burn fat
- Nervous system
- Low-carbohydrate diet not recommended
- Adequate carbs spares protein use as a fuel during exercise
Carbohydrates: Premium Fuel

- Glucose
- Immediate Energy
- Glycogen
- Adipose

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

Jelly
Cookies
Candy
Juice
White bread
White rice

Whole grains
Fruit
Vegetables
Pasta
Cereal
Breads
Oatmeal
Whole wheat products
Brown rice
Legumes—beans, lentils, peas

## Simple vs. Complex

<table>
<thead>
<tr>
<th>Simple</th>
<th>Complex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugars</td>
<td>Starches and fibers</td>
</tr>
<tr>
<td>Fast burning</td>
<td>Slower burning</td>
</tr>
<tr>
<td>Raise blood sugar quick</td>
<td>Slower absorption</td>
</tr>
<tr>
<td>Quick fuel</td>
<td>Can be processed</td>
</tr>
<tr>
<td>Can be natural sugars</td>
<td>Polysaccharides</td>
</tr>
<tr>
<td>Glucose, fructose, sucrose, sucrose, lactose, maltose, galactose</td>
<td></td>
</tr>
</tbody>
</table>
Protein—building blocks of life

• Repair, maintenance, and growth of body tissues, muscles
• Energy supply
• Boosts immunity
• Enzymes and hormones
• 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
• Affects satiety and appetite

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

- Eggs
- Dairy
- Poultry
- Meat
- Seafood

- Beans
- Lentils
- Nuts and nut butters
- Soy (tempeh, tofu, edamame)
- Whole grains
- Seeds
- Vegetables!
Extra protein = extra muscle?

• Extra protein does not equate to muscle mass and strength
• Extra protein is used for energy or stored as fat
• 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
• High protein diet can be expensive

So how much do I need?

- Gender
- Weight
- Pregnancy
- Chronic conditions/disease
- Intensity of activity
- Athlete’s protein needs greater than non-athlete
- Power athletes require more protein than endurance athletes
- Generally 5-7 ounces of protein/day + 3 servings dairy

Protein recommendations

0.8-1.2 grams of protein/ kilogram of body weight

General healthy adults 0.8-1 gram/kg body weight
Could be as high as 2 grams/kg 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?

7 gram protein choices

1 glass of milk (8 g)
1 cup yogurt (8 g)
1 egg
1 oz meat/fish/poultry
1 oz cheese
½ cup cottage cheese
½ cup beans or lentils
½ cup edamame
1/3 cup hummus
2 tablespoons nut butter
½ cup peas
½ cup tofu
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 burrito + whole wheat tortilla = 20 grams

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

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

---

Sample menu = 93 grams protein
Spread out your protein!

• Protein doses several times throughout the day
• Your body can use about 20-25 grams protein at a time
• Athletes= 20 grams every 3-4 hours
• Available when your body needs it
• Not just at dinner
• Not just meat
• Rather than focus on eating large amounts of protein, pay attention to *when* you eat protein
Food vs. Powders/Supplements

Protein shakes/powders
- Focus on overall diet first
- Will not bulk up muscles without exercise
- Do not replace meals
- Good if trying to gain weight, hard meeting needs
- Convenient
- Expensive (Met-Rx: 7.8 cents per gram vs. Milk: 3.1 cents per gram)

Sports bars
- Appropriate for a snack, not a meal

Amino acid supplements
- Food provides safer variety of amino acids at a lower cost
- Use caution with individual amino acids

Whole foods are always best
Fat

• Protection
• Regulates body temperature-insulation
• Required to absorb fat-soluble vitamins
• Fat contains more calories than carbohydrates and protein
• Major fuel/energy source for low-moderate intensity activity
• Satiety
• Cardiovascular health

http://www.seahiker.com/courses/open-water-swimming/
• Monounsaturated
• Polyunsaturated

• Saturated fats

• Trans fats

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

- 20-30% fat
- 15-20% protein
- 45-65% carbohydrates

Carbohydrates
Protein
Fat
Pie chart ➔ My Plate

ChooseMyPlate.gov
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

• Snow sports are 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 and appetite
• 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

- 1-3 = Hydrated
- 4-6 = Dehydrated
- 7-8 = Severe Dehydration

http://www.gridgit.com/post_military-urine-color-chart_508694/
Water & Fluids

Fluid needs are individual—see professional to calculate sweat rate

Goal: 10-16 cups of fluid daily
- About 1 ml/fluid per total daily kcal expended (2-5 L/day)
- Eat hydrating foods
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
• Sugar= carbohydrates needed for muscle recovery
• Look for 14-19 grams carbohydrate per 8 ounces
What to eat before exercise
The Pre-workout Meal

**High in carbohydrates** (>30 gm carbohydrates-banana)
- Fuels muscles
- Prevents hunger, settles stomach
- Psychological boost, exercise harder

**Moderate in protein**
- 15 gm for resistance exercise, 7+ gm for endurance
- Maximize anabolic response, prevents muscle breakdown
- Delay hunger

**Low in fat**

**Low in fiber**

**Familiar**

Find what works for you during training
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
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
• ~30-90 grams of carbohydrate/hour (depends on activity)

• 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...

- 30-60 g/hr
- 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
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
- Eat a full, balanced mix-meal within 2 hours of exercise
Recovery Snack

• **4:1** carbohydrate-protein ratio
• **Carbohydrates**- replace energy stores
• **Protein**- repair muscles (10-30 grams)
• Synergistic affects of carbohydrates + protein
• Carbohydrates “help” protein

Recovery snack examples

- Yogurt 16-20 ounces
- Cereal + milk
- Smoothie with yogurt/milk + fruit
- Oatmeal + fruit + milk
- 2 pieces toast + egg
- Peanut butter & jelly sandwich
- Cheese and crackers
- Bean and cheese burrito
- Chocolate milk! (lactose, sucrose, whey, potassium, water, B vitamins, vitamin D, calcium....)
Do I need supplements to maximize my workout?

• Little evidence supporting creatine and antioxidants
• **Excessive** vitamins & minerals do NOT enhance performance
• Banned in sanctioned competition
• Expensive
• Not well regulated, not always 100% “pure”
• Effectiveness and safety do not have to be confirmed
• Best supplement is a quality, balanced, varied diet
Want to learn more?

Reputable resources:
- www.eatright.org
- www.nutrition.gov
- www.consumerlab.com
- www.mayoclinic.com

Schedule an appointment with a KRNC registered dietitian
(970) 491-8615
In Summary

• Food is fuel
• Emphasize: Enough, Balance, Variety
• Focus on diet quality vs. supplements
• Experiment with training
• Change only 1 thing at a time
• No “one size fits all” plan, sports nutrition is individualized
• Stay hydrated!
Questions?
Thank you!