



Sports Nutrition For Swimmers

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Why is Nutrition
Important for
Performance?

Factors Affected by Nutrition



Energy levels



Athletic performance



Recovery



Injury



Illness, chronic disease, respiratory infection



Cognitive function



Body composition

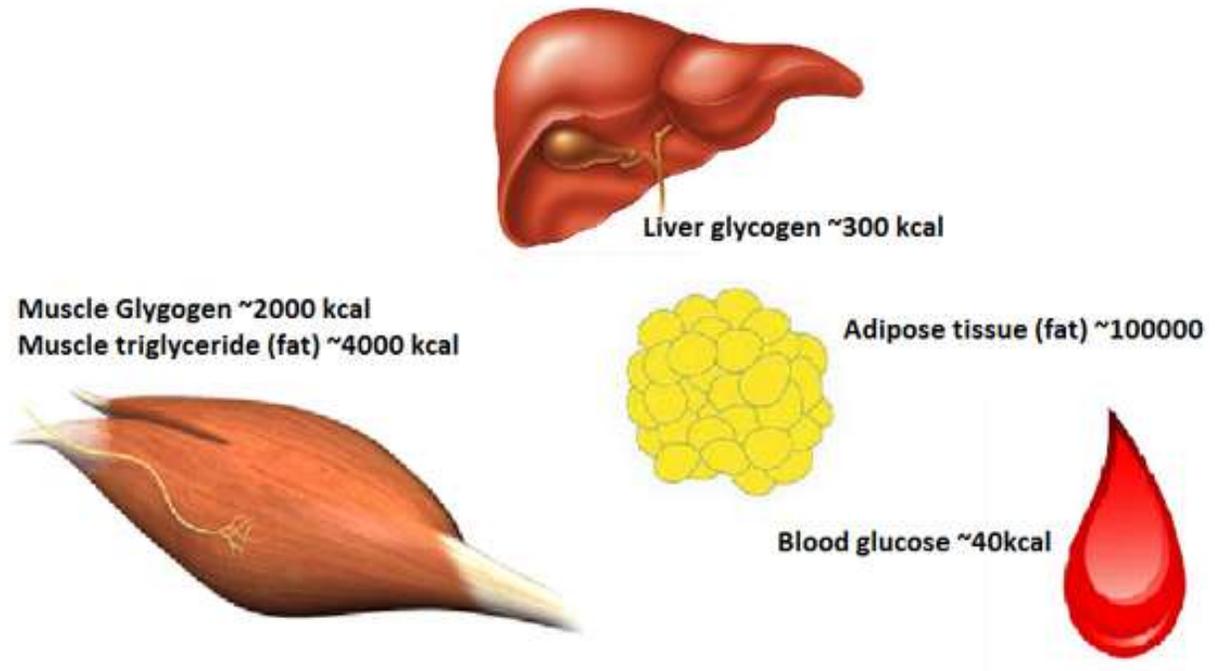


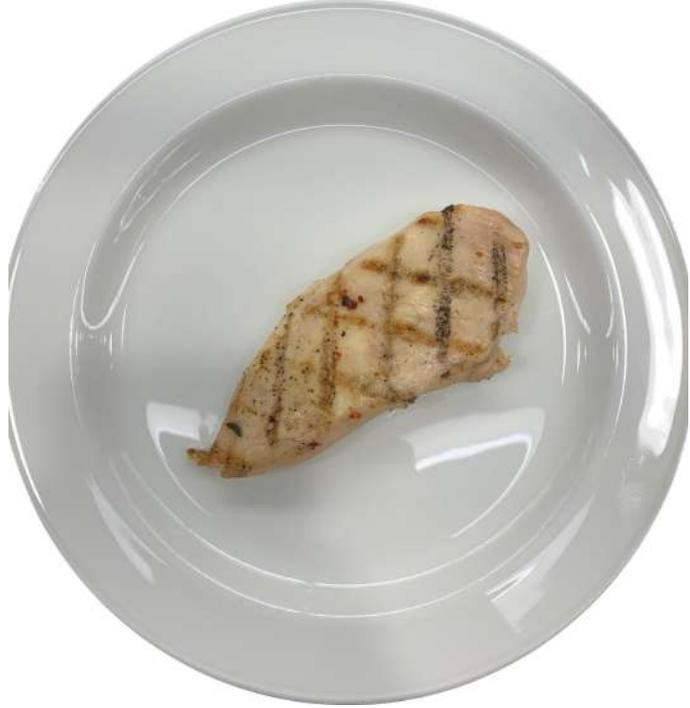
Fuel for
Performance

Sources of Fuel

- **Carbohydrate**
 - Found in blood, muscle and liver
 - Main source of fuel
 - Need: depends on weight and training intensity
 - 3-8g/kg/day. Ex: 60kg (132#) athletes
 - 180g/day = 3 CHO servings per meal (3) and 3 snacks
 - 1 cup pasta + 1 medium fruit/8 fl. oz milk
 - 480g/day = 6 CHO servings per meal (4) and 3 snacks
 - 2 cups pasta + 1 medium fruit + 8 fl. oz milk
 - Ex: **starches/grains**, fruits, vegetables, **dairy**
- **Protein**
 - Structural component for muscles
 - Small amount of fuel
 - Need: depends on weight
 - 1.5-2.0g/kg/day
 - 90g/day = 30 grams per meal (3)
 - 1 average size chicken breast = 30g/meal
 - 120g/day = 40 grams per meal (3)
 - 1 average size chicken breast + 8 fl. oz milk
 - Ex: poultry, fish, beef, eggs, tofu, nuts/seeds, dairy
- **Fat**
 - Found in blood, muscle, organs
 - Secondary source of fuel
 - Need: 1 tsp. – 2 tbsp. ~ 25% of total calories
 - Ex: oils, nuts/seeds, avocado, fish

The body's 'fuel tanks'

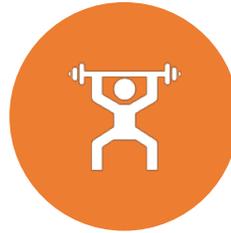






Performance Plates

Depends
on:



TRAINING
INTENSITY



DURATION



WEIGHT
MANAGEMENT



GOALS



TIME OF TRAINING
SEASON

ATHLETE'S PLATE

EASY TRAINING / WEIGHT MANAGEMENT:

FATS
1 Teaspoon

- Avocado
- Oils
- Nuts
- Seeds
- Cheese
- Butter

Whole Grains

- Pasta
- Rice
- Potatoes
- Cereals
- Breads
- Legumes

Vegetables & Fruits

- Raw Veggies
- Cooked Veggies
- Veggie Soups
- Fresh Fruit

Lean Protein

- Poultry
- Beef/Game/Lamb
- Fish
- Eggs
- Low-Fat Dairy
- Soy (e.g., Tofu, Tempeh)
- Legumes/Nuts

FLAVORS

- Salt/Pepper
- Herbs
- Spices
- Vinegar
- Salsa
- Mustard
- Ketchup

Drinks:

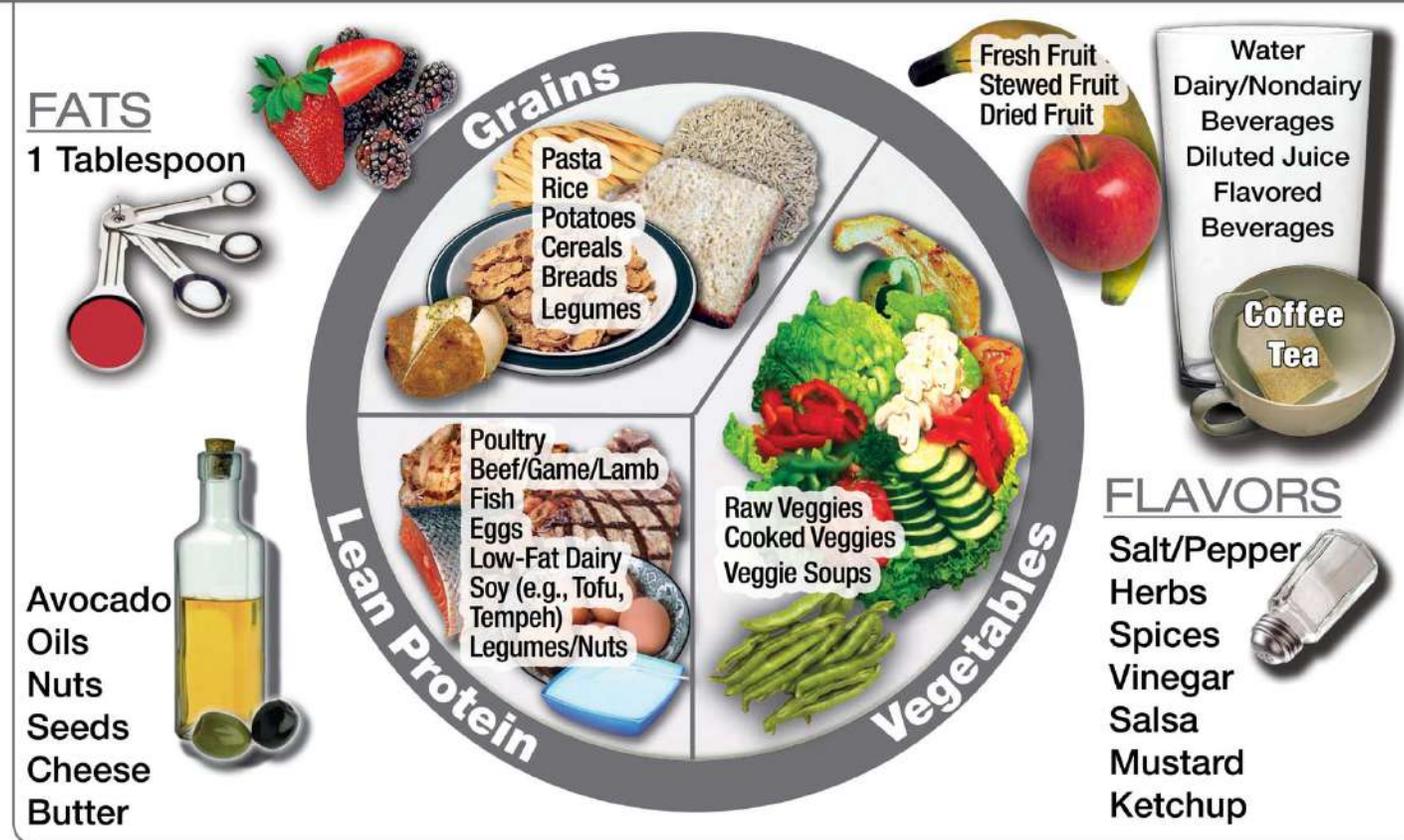
- Water
- Dairy/Nondairy Beverages
- Diluted Juice
- Flavored Beverages
- Coffee
- Tea

The Athlete's Plates are a collaboration between the United States Olympic Committee Sport Dietitians and the University of Colorado (UCCS) Sport Nutrition Graduate Program.

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ATHLETE'S PLATE

MODERATE TRAINING:



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ATHLETE'S PLATE

HARD TRAINING / RACE DAY:

FATS

2 Tablespoons



Avocado
Oils
Nuts
Seeds
Cheese
Butter

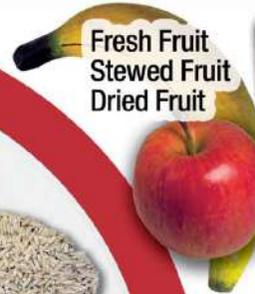


Grains

Pasta
Rice
Potatoes
Cereals
Breads



Fresh Fruit
Stewed Fruit
Dried Fruit



Water
Dairy/Nondairy
Beverages
Diluted Juice
Flavored
Beverages



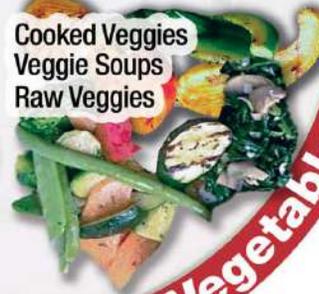
Coffee
Tea

Lean Protein

Poultry
Beef/Game/Lamb
Fish
Eggs
Low-Fat Dairy
Soy (e.g., Tofu,
Tempeh)
Legumes/Nuts



Cooked Veggies
Veggie Soups
Raw Veggies



Vegetables

FLAVORS

Salt/Pepper
Herbs
Spices
Vinegar
Salsa
Mustard
Ketchup



Easy Training Plate Examples

	Breakfast/Snack	Lunch
Meal 1:	3 egg omelet + 1 banana + 1 slice toast	Turkey sandwich + 1 cup salad
Meal 2:	6 oz. Greek yogurt + ½ cup fruit + ¼ cup granola	¾ cup pesto pasta + mixed vegetables + 3-4 oz. grilled chicken

Example of Easy Training Plate

- This will vary depending on the number of carbohydrates or protein needed based on their weight



Moderate Training Plate Examples

	Breakfast	Lunch
Meal 1:	<i>½ cup oatmeal + 1 cup berries + ¼ cup granola + 2 cup milk</i>	<i>Large turkey sandwich + granola bar + carrot sticks</i>
Meal 2:	<i>3 scrambled eggs + 2 slices sourdough toast + 1 fruit</i>	<i>3-4oz. Teriyaki chicken + 1 cup steamed carrots + 1 cup rice</i>

Example of Moderate Training Plate

- This will vary depending on the number of carbohydrates or protein needed based on their weight



Hard Training Plate Examples

	Breakfast	Lunch
Meal 1:	1 cup oatmeal + banana 3 Scrambled Eggs + mixed veggies + 2 slices of toast	1½ cups pasta with ground beef + tomato sauce + ½ cup roasted veggies
Meal 2:	3 medium pancakes + syrup + 3 hard boiled eggs + 12 oz. milk	1 Baked potato + 3-4oz. meat/fish + ½ cup baked beans + salad

Example of Hard Training Plate

- This will vary depending on the number of carbohydrates or protein needed based on their weight





Important
Vitamins and
Minerals to
Consider

Iron

70% of iron is found in:

- hemoglobin or red blood cells and myoglobin or muscle cells

Risk for Deficiency:

- Vegans, vegetarians, heavy menses, increased demand for iron, blood disorder, interference with iron absorption

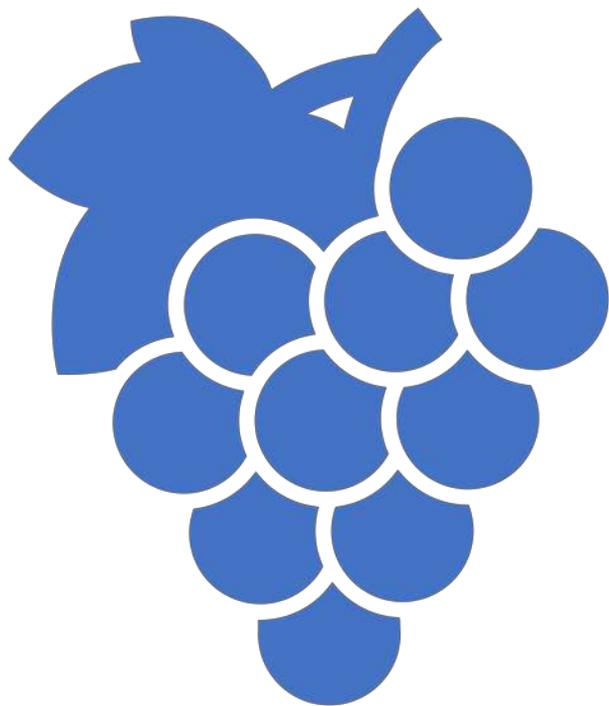
Performance

- Tired, shortness of breath, poor endurance, cold, pale skin, high heart rate, frequent injury, recurring illness and irritability

ID & IDNA :

- ID = Iron deficiency &
- IDNA = Iron deficiency not anemic

Iron – Food Sources and Meal/Snack Ideas



- Sources of Iron:
 - Lean red meat, poultry or fish, Iron-fortified breakfast cereals, nuts, and legumes
- Combine with citrus fruits (contain Vitamin c) to enhance iron absorption
- Meal and snack options:
 - Include iron rich foods like meat, fish, poultry, tofu in 2 meals per day
 - Boost iron at breakfast by topping oatmeal with 1/3 cup of raisins
 - Make a vegetarian iron rich brown rice bowl by combining black beans, tofu and veggies
 - Whip up a batch of tuna salad for sandwiches
 - Choose the highest % iron fortified cereal (most Kellogg brands)

Specimen ID:
Control ID:

Acct #: 17452095
Walk-In Lab, LLC
VART verified
169 W Augusta Lane
SLIDELL LA 70458

Phone: (800) 539-6119

Rte: 00

Patient Details

DOB:
Age(y/m/d):
Gender: SSN:
Patient ID:

Specimen Details

Date collected:
Date entered:
Date reported:

Physician Details

Ordering:
Referring:
ID:
NPI:

General Comments & Additional Information

Alternate Control Number:
Total Volume:

Alternate Patient ID:
Fasting:

Ordered Items

Ferritin, Serum; Venipuncture

TESTS	RESULT	FLAG	UNITS	REFERENCE INTERVAL	LAB
Ferritin, Serum	28	Low	ng/mL	30 - 400	01

Vitamin D

Fat-soluble vitamin

- Need to eat fat to absorb it

Risk factors for deficiency:

- Indoor sport, winter sport, dark/extremely fair skin, living in north latitudes, sunscreen use, limited sun exposure, and low dietary vitamin D intake

Performance

- Maintaining strong bones and assist with injury repair
- Optimize the muscles ability for quick, explosive movements
- Fight common upper respiratory infections

Vitamin D - Sources and Meal/Snack Options

- Food Sources:
 - Wild salmon, sun dried mushrooms, cod liver oil, mackerel, ahi tuna, fortified milk, soy milk, orange juice, cod, fortified cereals, and egg yolk
- Ways to improve Vitamin D status:
 - Include vitamin D – rich fish in 2-3 meals per week
 - Pair 1-2 hard-boiled eggs with fortified cereal and orange juice for a vitamin D-rich breakfast
 - Top your pasta, rice or quinoa with some sun-dried mushrooms
 - Grill up salmon burgers for a dinner and add leftovers to salads and tacos throughout the week
 - 30 minutes of sun exposure at or around 12:00pm everyday to help build vitamin D stores



Patient: DOB:

Patient ID:

Control ID:

Specimen ID:
Date collected:

TESTS	RESULT	FLAG	UNITS	REFERENCE INTERVAL	LAB
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Vitamin D, 25-Hydroxy	29.1	Low	ng/mL	30.0 - 100.0	01
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Vitamin D deficiency has been defined by the Institute of Medicine and an Endocrine Society practice guideline as a level of serum 25-OH vitamin D less than 20 ng/mL (1,2). The Endocrine Society went on to further define vitamin D insufficiency as a level between 21 and 29 ng/mL (2).

1. IOM (Institute of Medicine). 2010. Dietary reference intakes for calcium and D. Washington DC: The National Academies Press.
2. Holick MF, Binkley NC, Bischoff-Ferrari HA, et al. Evaluation, treatment, and prevention of vitamin D deficiency: an Endocrine Society clinical practice guideline. JCEM. 2011 Jul; 96(7):1911-30.

01 PDLCA LabCorp Phoenix
5005 S 40th Street Ste 1200, Phoenix, AZ 85040-2969

Dir: Brian Poirier, MD

For inquiries, the physician may contact **Branch: 504-828-2666 Lab: 800-788-9743**

Sports Physical + Blood Work

- It is very common for athletes to have low Iron and Vitamin D levels.
- When the athletes/parents are making the appointment for a physical:
 - Ask for blood work
 - Add iron, ferritin, and vitamin D labs
- Complete Blood Count (CBC) – does not include a ferritin/Vitamin D labs!
- **VERY IMPORTANT:**
 - If parents *SAY, “CAN I REQUEST THESE LABS”*, they will be charged \$500
 - If parents *SAY, “MY CHILD FEELS FATIGUE/UNABLE TO RECOVER, CAN WE ALSO CHECK THESE LABS”*, it will be coded and the family will NOT to be charged.
 - MAKE SURE THE MD DOESN'T ADD ANYMORE LABS UNLESS THEY ARE COVERED BY INSURANCE!



Pre-Training Fueling

Pre-Training Snack



Why:

Optimize performance and minimize the use of muscle as an energy source



Types of macronutrients:

Easy to digest
carbohydrate – broken
down to basic structures

Low fat/low fiber

Some salt



Timing:

30 minutes to 1 hour
before training



Examples:

½ of a medium Banana,
Clif Shot/Bloks, salted
pretzels, applesauce,
granola bar, ½ a bagel, or
fruit snacks/leather



Post-Training Fueling

Post-Training Snack



Why:

Replace the depleted energy stores found in the muscles (AKA Glycogen) and speed up the muscle recovery/regeneration process



Types of macronutrients:

Easy to digest carbohydrates
Protein (ideally 15-20g)



Timing:

Within 30 minutes to an hour after completion of training



Examples:

2-3 cups of Chocolate milk, protein bar, trail mix, beef jerky + applesauce, 1 whole PB&J sandwich (Harder days), protein energy bite



Fueling on
Competition
Day

Encourage the athlete to eat/drink something small in the morning

- 30 minutes – 1 hour before competition
- Bar, banana + 1tbsp peanut butter, bagel, Gatorade, vanilla yogurt, etc.

Between swims/race

- If >3-4 hours: turkey sandwich or chicken + rice & starchy vegetable, or PB&J sandwich
- If ~ 30min-1hr: see left box

After competition:

- If multiple races or long duration race = $\frac{1}{2}$ plate starches/grains
- If moderate day = $\frac{1}{3}$ plate
- If easy = $\frac{1}{4}$ plate

Fueling on Competition Day



Hydration

Well Hydrated

Great job!

Hydrated

Continue drinking water throughout the day.

Minimal Dehydration

Drink a glass of water.

Significant Dehydration

Performance may be affected. Drink a few glasses of water as soon as possible.

Severe Dehydration

Seek hydration immediately.

Hydration

- Impacts performance
 - Dehydration
 - Cause of fatigue and poor performance
- Water:
 - Without it we start to cramp/seize up
 - Needed in order to transport nutrients to muscles
 - Helps with removing waste/toxins from the body through the urine

Hydration Between Sets at Practice

- You are sweating, so you need to replenish the electrolytes and fluids lost
- Rehydrate with:
 - Water
 - Sports drink
 - Pedialyte
 - Drip-drop
 - Coconut water
- 16 – 24 fluid ounces (depends on intensity/duration)
 - 1 normal size Gatorade bottle (taking sips throughout practice)





Travel Nutrition

Travel Food Options

Carbohydrate	Protein
Pre-cooked/instant oatmeal/rice	Tuna pouch
Granola	Jerky
Bread	Roasted Edamame
Sports bars, gels, gummies	Peanut/nut butter
Crackers	Dried hummus mix
Trail mix/dried vegetables	Nuts & Seeds
	Protein powder (NSF certified) /bars

Immune System Strengthening Foods

- Immune Boosting:
 - Vitamin C
 - Citrus, bell peppers and tomatoes
 - Probiotics & Prebiotics
 - Yogurt, kefir, sauerkraut, kombucha, fruits and vegetables
- Gut Supporting
 - Fiber & Antioxidants
 - Fruits and Vegetables
- Hydration!
 - Excrete by-products and toxins

Food Safety and Regulations



Check flight arrival and departure times as well as layovers in order to plan meal times



Order any in-flight special meals at least 48 hours in advance



Be sure all food packed is still in its sealed package with a label



Dietary Supplements

Dietary Supplements

- Pill, capsule, tablet, powder, liquid or other food form intended to provide any of the following:
 - vitamins, minerals, amino acids, herbs and botanicals.
- Dietary supplements do have a purpose:
 - Help improve nutrient deficiencies
 - Increase intakes of essential nutrients
 - May offer necessary or efficient nutrient delivery when foods are limited
- Dietary supplements are not regulated by the FDA and may contain banned substances
- Third party testing groups (NSF-certified for sport or Informed choice for sport) test supplement batches for prohibited banned substances.
- It doesn't mean it is appropriate for use in all circumstances.
- Must be in close communication with MD and Sports RD.

Nutrition Resources Available to You

Splash Magazine – Monthly Articles and Recipes

Team USA website – Nutrition Resources and Fact Sheets

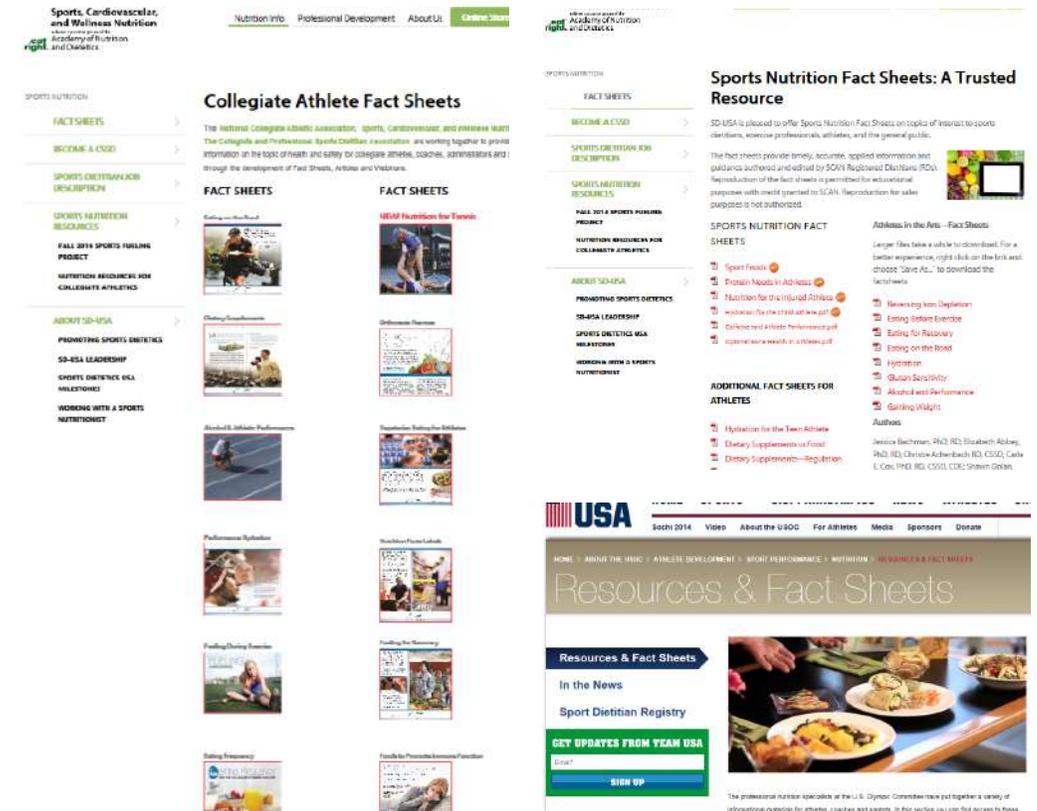
- Athlete Plates
- Sport Nutrition Fact Sheets for the Elite athlete

SCAN website – Sports, Cardiovascular and Wellness Nutrition Practice Group

- Nutrition Resources for the Collegiate Athlete
- Sport Nutrition Fact Sheets

NCAA Sport Nutrition website:

- Position Papers
- Fact Sheets



USOPC Sport
Nutrition:
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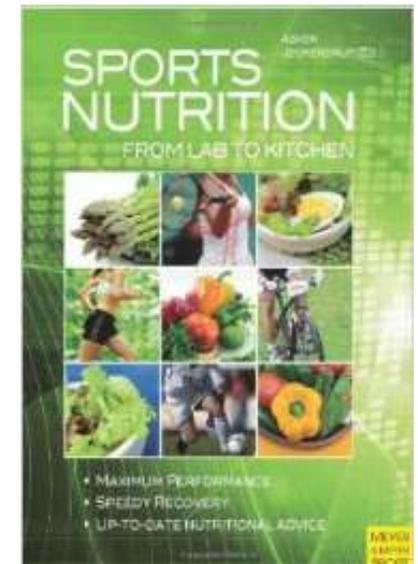
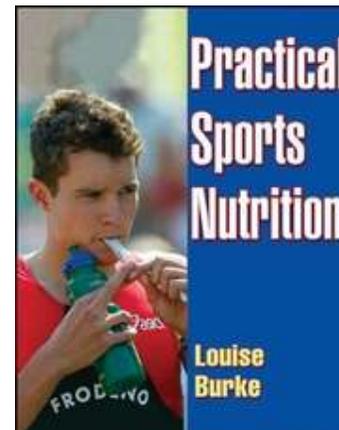
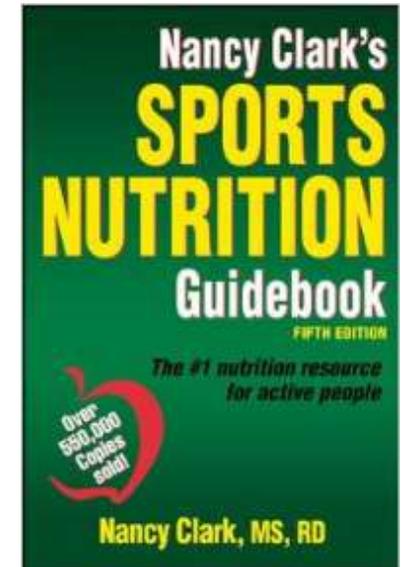
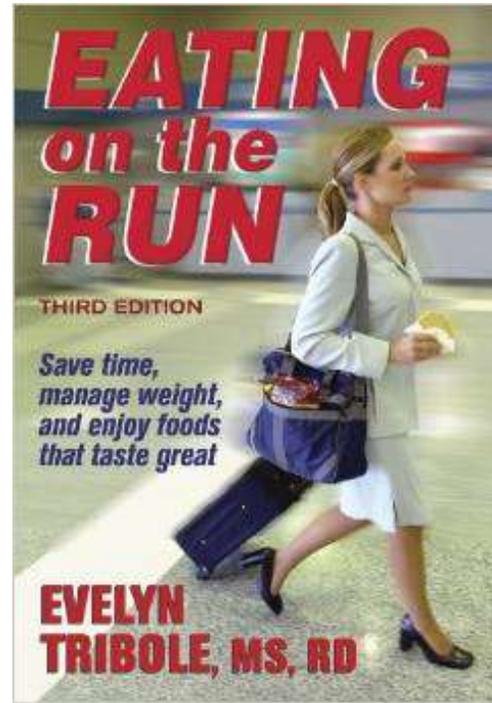
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Interested in becoming ISAK certified? We are hosting a level 1 & 2 course in Colorado Springs October 24-27th. Link below has additional information.

 2019 Level 1 ISAK Accreditation Course 
cvent.com

Other Sport Nutrition Resources: Good Reads

- Sports Nutrition Guidebook (5th Edition), by Nancy Clark, 2013
- Sport Nutrition from Lab to Kitchen, by Asker Juekendrup, 2010
- Eating on the Run, by Evelyn Tribole, 2003
- Practical Sport Nutrition, by Louise Burke, 2010



Questions

