

CROSS COUNTRY NUTRITION HANDOUT



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Cross Country Running is a physically and mentally demanding endurance sport that requires athletes to train for long periods across varied terrain. Because of the high energy demands of the sport, proper nutrition is essential to support performance, recovery, and overall health. When runners consistently fuel their bodies with adequate nutrients, they are better able to sustain energy during long runs, build strength for challenging courses, and recover effectively between workouts and competitions.

A well-rounded nutrition approach includes balanced meals with carbohydrates, protein, and heart-healthy fats, regular hydration, and snacks that help maintain energy throughout the day. Post-run recovery foods are also important for restoring energy and repairing muscles. It is also important for runners to avoid chronic under-fueling, which can contribute to Relative Energy Deficiency in Sport and increase the risk of disordered eating. Maintaining healthy fueling habits helps runners support their bodies, protect their health, and perform at their best throughout the season.

FUELING FOCUS BY THE SEASON

In-Season	• Runners often race in the fall for cross country and the winter and spring for track, resulting in a long competitive season. • High training demands require a high-calorie, high-carbohydrate diet. Consistent fueling and hydration are essential for daily performance and recovery.
Off-Season	• Off-season typically occurs in the summer, focusing on building aerobic base and increasing strength training. • Screen for nutrient deficiencies during this time. • Consistent protein intake supports muscle repair and growth. • Early morning training makes practicing pre-run fueling (gut training) important. • Hydration with electrolytes helps prevent dehydration and heat illness.
Post-Season	• Short rest periods between seasons are critical for recovery and repair. • Emphasize anti-inflammatory, nutrient-dense foods (e.g., fruits, vegetables, whole grains, healthy fats) to support healing. • Do not significantly reduce food intake, as energy needs remain elevated for recovery. • Post-season is another key time to assess for nutrient deficiencies.

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ENERGY NEEDS

Distance running places **high energy demands** on the body. Adequate energy intake is essential to:

- Restore muscle glycogen stores
- Maintain hormonal balance
- Support muscle repair and adaptations during heavy training blocks

KEY POINTS:

- Fueling appropriately is the most important determinant of performance and recovery for endurance athletes.
- Cross country runners should eat every 3-4 hours. Most runners need 3 meals and 2-4+ snacks to meet energy needs.
- Underfueling leads to symptoms of Relative Energy Deficiency in Sport:
 - Fatigue and reduced endurance
 - Increased injury risk
 - Anemia
 - Low bone density
 - Hormonal and reproductive deficiencies (low testosterone, menstrual irregularities)
 - Gastrointestinal issues
 - Plateaued performance
 - Reduced immune function



IMPORTANT REMINDERS REGARDING ENERGY INTAKE:

Lighter does not equal faster. Chasing low body weight at the expense of fueling increases the risk of injury, illness, and poor performance. A well-fueled athlete is more resilient and better able to handle high training demands. Performance gains come from consistent training over any weight or body size.

Nutrient composition of foods matters, but flexibility with eating and the ability to enjoy a variety of foods beyond their nutritional value are important for a healthy relationship with food. Eat foods for both physical and emotional nourishment!

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MACRONUTRIENTS

	Recommended intake	Details
Carbohydrates	6–10 g/kg body weight/day for 1–3 hours of moderate-to-heavy training 	- Carbohydrates are the primary energy source for endurance and higher intensity exercise. - Adequate carbohydrate intake maintains appropriate hormone levels to support bone health maintenance, regular reproductive function, and muscle and tissue growth. Complex carbohydrates (whole grains, starchy vegetables, whole fruits and vegetables) provide sustained energy throughout the day. Complex carbohydrates are higher in fiber, which is important for gut health. Excessive fiber intake, however, can interfere with a cross country runner's ability to eat enough food to sustain their training. Simple carbohydrates (white grains, juice, fruit chews, honey, sports drinks) provide quick energy before and during workouts.
Protein	1.4–1.8 g/kg body weight/day 	- Protein supports muscle recovery and repair. - Optimal protein distribution may include 20–30 g every 3–4 hours for muscle protein synthesis. - Examples of protein sources include meat, poultry, seafood, eggs, dairy, soy, beans, nuts.
Fats	Minimum intake: 1 g/kg body weight 	- Fat is a fuel source for lower-intensity, longer-duration exercise. - Fats support vitamin absorption, hormone health, and may reduce inflammation. - Examples of fat sources include nuts and nut butter, seeds, avocado, olive oil, salmon.
Performance Plates		- Fueling should match training intensity: - Moderate training: Easy/recovery days, lower mileage weeks - Hard training: Long runs, double workouts, high mileage weeks, race days

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HYDRATION

Proper hydration supports performance, recovery, and injury prevention.

RISKS OF DEHYDRATION:

- Heat illness
- Increased fatigue
- Decreased endurance and slower recovery
- Impaired reaction time and higher injury risk
- Headaches, reduced focus

GUIDELINES:

- Minimum daily: $\frac{1}{2}$ body weight (lb) in ounces outside of training
- **Before training (1–2 hrs):** 16–20 oz fluid
- **During training:** 2–3 large gulps every 15–20 min
- **After training:** 20–24 oz per pound lost (or roughly per hour of exercise)
- Include electrolytes for workouts >1 hour or in hot/humid conditions



PRE-PRACTICE AND RACE FUELING

- **Timing:** 1–4 g carbohydrate/kg body weight, 1–4 hours before exercise
- **Tips:** Avoid high-fat and high-fiber foods close to activity. On race day, ensure all foods chosen are familiar and easy to digest – no new foods!
- **Meal examples (3–4 hours prior):**
 - Bagel with nut butter and banana
 - Rice with sautéed meat and vegetables
 - Sandwich with baked chips and fruit
- **Top-off snack (~60 min before):** 30–60 g carbohydrate
 - Useful for early morning sessions without a full meal. It is not recommended to train fasted to allow for adequate energy availability during these workouts.
 - Options: Energy gel, 1 banana, 16 oz sports drink, 1-2 oz pretzels, 1 package fig bars, 1-2 oz fruit snacks, 2-3 sheets graham crackers
- **For Long Runs or workouts (>90 minutes):** Fuel with 30-60 g carbohydrate per hour. This looks like 1-2 energy gels during a 2-hour run or 20 oz of sports drink during a 2-hour workout.

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POST-EXERCISE / RECOVERY

Recovery nutrition is critical for glycogen replenishment and muscle repair, especially with multiple daily sessions.

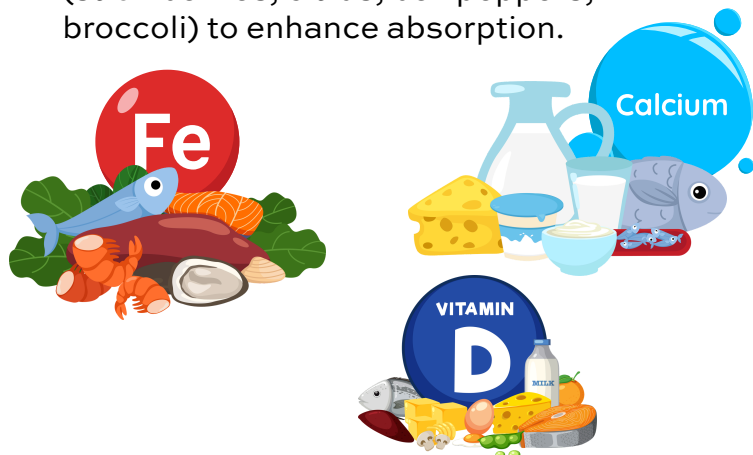
- **Snack (within 30 min if not eating a meal):** Combine carbohydrate and protein
 - Examples: Chocolate milk, yogurt with fruit and granola, protein bar with carbs, tuna with crackers and banana
- **Performance plate meal (within 2 hours):**
 - Pasta with chicken and vegetables
 - Tofu stir fry with rice and vegetables



MICRONUTRIENTS

IRON

- Supports red blood cell production and oxygen transport, improving VO_2 max and aerobic capacity
- Serum ferritin (iron storage) levels below 40 ng/mL may result in performance declines for cross country athletes
- **RDA:**
 - Adults: Males 8 mg/day, Females 18 mg/day
 - Adolescents: Males 11 mg/day, Females 15 mg/day
- **Iron-rich foods:** Liver, shellfish, beef, sardines, chicken, turkey, fortified cereals, beans, spinach, dried apricots, pumpkin seeds
- **Tip:** Pair with vitamin C-rich foods (strawberries, citrus, bell peppers, broccoli) to enhance absorption.



CALCIUM

- Essential for bone density and reducing risk of bone stress injuries
- **RDA:**
 - Adults 1,000 mg/day
 - Adolescents 1,300 mg/day
- **Aim for 3–4 high-calcium foods** (≈ 250 –300 mg each) daily:
 - 1 cup dairy or fortified non-dairy milk
 - 1 cup yogurt
 - 1.5 oz cheese
 - 1 cup fortified orange juice
 - 1 cup cooked leafy greens
 - $\frac{1}{2}$ cup fortified tofu

VITAMIN D

- Essential for calcium absorption and immune health.
- Most cross-country runners do not get enough Vitamin D in their diets.
- Individuals competing in less sunny climates are at a higher risk for a deficiency.
- **RDA:** 600–800 IU/day
- **Vitamin D rich foods:** Fortified dairy milk, fortified plant milks, fortified orange juice, fatty fish, egg yolks, mushrooms
- If needed, discuss supplementation with a performance dietitian.

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SAMPLE MEAL SCHEDULES

AFTERNOON WORKOUT

Time	Meal/Snack
7:30 AM	Scrambled eggs + wheat toast with nut butter + 8 oz calcium-fortified orange juice
10:00 AM	Trail mix
12:00 PM	Turkey & cheese sandwich + pretzels + apple slices
2:30 PM	Fruit snacks
3:30 PM	Practice
5:30 PM	12 oz chocolate milk
6:00 PM	Chicken & vegetable stir fry over rice
8:30 PM	Smoothie with fruit, milk, yogurt, chia seeds

MORNING LONG RUN

Time	Meal/Snack
6:00 AM	Bagel with butter & jam
8:00 AM	Run (1.5–2 hr); 30 g CHO/hr (2 energy gels)
10:30 AM	8 oz chocolate milk + 1/2 PB+J sandwich
11:30 AM	Burrito bowl with chicken, beans, vegetables, avocado, cheese over rice/quinoa
3:00 PM	Whole wheat pita with hummus
6:00 PM	Pesto pasta with salmon & side salad
9:00 PM	Greek yogurt with granola, berries, pumpkin seeds, dark chocolate chips

DOUBLES TRAINING

Time	Meal/Snack
5:30 AM	Granola bar + 8 oz sports drink
6:00 AM	Morning session
7:30 AM	Oatmeal with banana, nut butter, maple syrup, dried fruit + 8 oz milk
10:00 AM	Protein bar with carbohydrate
12:00 PM	Whole wheat wrap w/ chicken, cheese, vegetables, fruit + 8 oz calcium orange juice
3:00 PM	Applesauce pouches
4:00 PM	Afternoon session
5:30 PM	Roasted potatoes, broccoli, roast beef
8:30 PM	2 protein waffles + syrup

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