



**DEPARTMENT OF THE ARMY**  
**HEADQUARTERS, 10TH MOUNTAIN DIVISION (LIGHT INFANTRY) AND FORT DRUM**  
**FORT DRUM, NEW YORK 13602-5000**

### **INSTRUCTION FOR LEADER**

Complete outlined tasks in preparation for training. During training, you will read the script directly and complete an AAR. The script includes optional check on learning activities to verify Soldiers understand the lesson.

### **PREPARATION**

1. Print and review this leader guide to ensure subject familiarity.
2. Print enough handouts for number of Soldiers in training.

### **OBJECTIVE**

1. Soldiers will be able to fuel appropriately to support sustained performance during a ruck march. They will be able to choose the appropriate nutrients at the right time to support the physical and mental demands.

### **SCRIPT TO BE READ DIRECTLY**

1. **Introduction to Nutrition for Ruck Marches** Just as the proper gear and training are critical for mission success, nutrition and its timing are key for completing grueling military events such as ruck marches. Nutrition can affect a Soldier's well-being, endurance, and ability to recovery. In addition, extreme environments, heavy clothes or equipment, and environmental terrain require Soldier's to adjust their energy and fluid intake for peak performance during the ruck.
2. **Fuel for the Ruck March** Your choice and timing of nutrition can optimize your performance during the ruck march. Performance during a ruck march refers to increased stamina, enhanced muscular strength, quicker speed, heightened agility, refined mental control, and reduced injury.
  - a. **Carbohydrates** are the preferred fuel for the brain and working muscles. Carbohydrate stores are limited, so providing sources of carbohydrates before and during endurance activities supports working muscles. Replenish carbohydrate stores after the event to aid recovery. Choose complex carbohydrates the night before and after the ruck march. Examples include whole grains, vegetables, and fruits. Focus on simple carbohydrates (see handout for examples) an hour before the ruck (30 to 60 grams) and 30 to 60 grams per hour during the ruck march. A nutrition plan with carb-rich meals and snacks before, during, and after a ruck march helps Soldiers perform at their best.
  - b. **Protein** supports muscle growth, recovery, and repair, making it an essential part of post-event recovery. Protein provides very little energy during endurance

events such as ruck marches and may cause stomach upset. Limit protein intake 60 minutes before and during the ruck march. Consume 15 to 30 grams of quality protein within 2 hours after the ruck march to aid in recovery. Continue to consume quality protein throughout the day to support recovery.

- c. Healthy **fats** are calorie-dense and add nutrients, taste, and a sense of satiety to well-balanced meals. It's important for Soldiers to include these in meals the evening before the ruck and during recovery. Soldiers should limit fat close to start time and during activity because this slower digesting nutrient can cause stomach upset.
  - d. Inadequate **fluid** intake can cause dehydration and negatively affect performance. When Soldiers are dehydrated their ability to cool off and move metabolic waste out of working muscles decreases causing performance to decline. Soldiers should aim to begin a ruck march well hydrated and continue drinking throughout the event to stay hydrated. Drink 16 oz before the ruck march, 16 - 32 ounces every hour during the ruck and 16 ounces for every pound lost in sweat after the ruck march. Some Soldiers may need more fluids to properly hydrate. Hydration needs vary among individuals and are affected by environmental factors (heat, cold, altitude), clothing, gear, intensity, and sweat rate. Keep in mind that thirst is a poor indicator of hydration.
  - e. **Electrolytes** are lost through sweat with exact amounts are dependent on sweat rate, intensity and duration of activity, environment, equipment, or clothing. Full rehydration can't occur without adequately replenishing electrolytes. Drinking beverages that contain electrolytes such as sports drinks and eating foods that naturally contain electrolytes (ie. potassium from dried fruit, sodium from pretzels) aid in replenishing losses. Soldiers shouldn't restrict sodium intake during or after endurance activities such as ruck marches.
3. **Caffeine:** Soldiers should avoid caffeine 4–6 hours before bed to limit interference with sleep, prior to a ruck march. Caffeine can boost performance when taken 30–60 minutes before a ruck march. Limit caffeine to less than 200mg, the amount found in a 16-oz coffee, two pieces of caffeinated gum or mints, or one energy drink (caffeine content varies by brand and size, so check amount on label if available).
4. **MREs** can provide carbohydrates, protein, and electrolytes to support performance. Some items will have carbohydrates and electrolytes in one serving. The following provides examples from MREs but is not all inclusive:
- a. **Simple Carbohydrates 30 g or more:** Dried cranberries, Enhanced applesauce, Beverage base, carb fortified, Cookie, Chocolate pudding, and Energy gel, mixed berry flavored
  - b. **Electrolytes (Sodium and Potassium):** Beverage powder with carbohydrates and electrolytes packet, Vegetable crackers, Recovery trail mix with pretzel, Pretzel nibs with honey mustard and onion, Toasted corn kernels, Dried cranberries, and Chocolate pudding
  - c. **Complex Carbohydrate 30 g or more:** Cheese tortellini, Elbow macaroni, Snack bread

- d. **Protein 20 grams or more:** Meat entrée such as Chicken chunks, Spaghetti with beef and sauce, and BBQ Beef
- 5. **Summary**
  - a. The evening before a ruck march, have a well-balanced meal with carbohydrates, protein, healthy fats, and fluids. Replenish with the same nutrients to aid in recovery after the ruck march.
  - b. During the ruck march focus on simple carbohydrates and hydration needs to perform at your best.

#### **OPTIONAL CHECK ON LEARNING**

- 1. **Group Discussion:** Discuss examples of foods and beverages to use before, during, and after the ruck march.
- 2. **Practical Exercise:** Have Soldiers create their fueling timeline to prepare for an actual ruck march. Follow the example in the handout. Include fluids as well as food.

#### **AAR**

- 1. What were the pros and cons of this training?
- 2. How did they feel? (if they applied this training to a ruck march)
- 3. What, if any, barriers were there?

#### **SUPPORTING RESOURCES**

- 1. Warfighter Nutrition Guide Chapter 9 [Warfighter Nutrition Guide | HPRC \(hprc-online.org\)](https://www.hprc-online.org/)
- 2. FM 7-22 Chapter 8, 8-31 through 8-34
- 3. H2F Nutrition Team or Guthrie Dietitians

# Fueling for road or foot marches: The basics

Gear packed? Check. Training completed? Check. So, how does your fueling plan for food and drinks stack up? Nutrition is critical for warriors, especially before, during, and after physically and mentally intense training such as road or foot marches. Providing your body with the right amount of fuel at the right time might be the difference between success and failure on your ruck march.

## Carbohydrates

Carbs are preferred fuel for your brain and muscles. Focus on simple carbs—which are the fastest and most readily available form of energy—right before and during the ruck march. Fuel your performance with the following carb options.

### ⚡ Performance boosters (about 25 g carb):

- 18 gummy bears
- 25 jelly beans
- 1 pouch fruit snacks
- ¼ cup (4 Tbsp) raisins
- 3 Tbsp dried cranberries
- 2 squeezable fruit pouches
- 1 sports gel
- 3 sports chews
- 16 fl oz sports drink

## Protein

Protein supports muscle growth, recovery, and repair. Although protein is an important part of your daily food plan, it won't offer much energy to support your performance during a ruck march. Skip the beef or turkey jerky on the trail and include protein in your recovery meal instead.

## Fluid

Fluid keeps you hydrated. Dehydration negatively affects performance, so start off well hydrated and drink regularly. Use the urine color chart to quickly [check your hydration status](#): Look for pale yellow urine. And adjust how much you drink based on how

much you sweat, your intensity or effort, weather (heat, humidity, altitude, or cold), clothing, equipment, and your opportunities to drink. Keep in mind the longer the march, the higher your risk for dehydration because the times you drink less—or not at all—can really add up. Stay hydrated and fuel your performance with the following options.

### ⚡ Performance boosters:

- 16 fl oz water bottle
- ½ 1-quart canteen
- 100-oz hydration pack (finish in 4–5 hours)

## Electrolytes

Electrolytes are lost in urine and sweat, and replacing them is critical to hydration. These minerals—such as sodium, potassium, calcium, and magnesium—help balance the amount of water in your body. Excess sweat loss on hot and humid days, or when you're wearing heavy equipment or clothing, means you're losing important electrolytes. Consuming balanced meals, nutritious snacks, and sports drinks can help provide enough electrolytes to replace losses. Fuel your performance with the following tips.

### ⚡ Performance boosters:

- Fuel regularly with whole foods and/or sports foods (gels, chews, bars) during the march and afterwards to replenish electrolytes.
- Don't restrict sodium (salt). Include salty snacks (nuts, pretzels, crackers) or drinks that contain sodium (sports drinks, vegetable or tomato juice) in your nutrition plan.
- Sports drinks are specially formulated for hydration (fluid) and replacement of important nutrients (carbs and electrolytes) in a convenient and portable package. Consume sports drinks when you're active for over 60 minutes and especially when it's hot and humid.  
**Tip:** Count sports drinks as part of your “carb option” and “fluid option” when planning your nutrition strategy.

## Caffeine

Use caffeine strategically. Avoid caffeine 4–6 hours before bedtime the night before a ruck march for optimal rest. However, consuming 200 mg of caffeine 30–60 minutes before an event can enhance performance. Re-dose every 3–4 hours as needed. In general, limit caffeine to 600 mg and no more than 800 mg for sustained operations. Choose sources such as coffee, tea, or caffeinated gum or mints over [energy](#)





[drinks](#) that might contain too much caffeine and other ingredients. Avoid carbonated soft drinks to prevent stomach upset too. Visit the Operation Supplement Safety website at [OPSS.org](https://www.opss.org) for more information on caffeine for performance. Fuel your performance with the following caffeine options.

### ⚡ Performance boosters:

- 16 fl oz coffee
- 2 pieces of caffeinated gum or mints

## Fueling timeline

Be prepared. Pack carb-rich snacks and plenty of fluid for a successful ruck march. Use the timeline below to plan ahead.

TIME	FUEL & FLUID	EXAMPLE for a 185-lb Warfighter on a 16-mile ruck march
<b>Night before event</b> 	<ul style="list-style-type: none"> <li>• Eat a <a href="#">power plate</a> that's high in carbs with lean protein and healthy fats.</li> <li>• Drink water, milk, or milk alternatives.</li> </ul>	<b>(1800)</b> <ul style="list-style-type: none"> <li>• Grilled chicken breast (5 oz), roasted garlic potato wedges (2 cups), roasted broccoli with olive oil (2 cups), mixed fruit salad (1 cup), and chocolate chip cookies (3 small)</li> <li>• Water</li> </ul>
<b>1 hour before boots on the ground</b> 	<ul style="list-style-type: none"> <li>• Eat 1–2 g carb/kg (adjust to your preference). Limit foods high in fiber and fat to avoid stomach upset too.</li> <li>• Drink 16 fl oz water.</li> </ul>	<b>(0500)</b> <ul style="list-style-type: none"> <li>• Single-serving cup of oat ring cereal (2), low-fat milk (8 oz), and a medium apple</li> <li>• 16 fl oz water</li> </ul>
<b>During (every hour)</b> 	<ul style="list-style-type: none"> <li>• Eat 30–60 g carb (at least 1–2 carb options) every hour. If longer than 3 hours, eat up to 90 g carb.</li> <li>• Sip 16–32 fl oz water and/or sports drink every hour. Don't gulp and don't exceed 48 fl oz in an hour.</li> </ul>	<b>(0700)</b> <ul style="list-style-type: none"> <li>• 18 gummy bears</li> <li>• 16–32 fl oz water</li> </ul> <b>(0800)</b> <ul style="list-style-type: none"> <li>• 2 squeezable fruit pouches</li> <li>• 16 fl oz water and 16 fl oz sports drink</li> </ul> <b>(0900)</b> <ul style="list-style-type: none"> <li>• ¼ cup raisins and 2 squeezable fruit pouches</li> <li>• 16 fl oz water and 16 fl oz sports drink</li> </ul>
<b>After (within 2 hours)</b> 	<ul style="list-style-type: none"> <li>• Eat a carb-rich meal with 15–30 g lean protein and healthy fats.</li> <li>• Drink 16 fl oz water and/or sports drink <i>per lb lost</i> during ruck march.</li> <li>• Rehydrate with electrolytes from food, drinks, or both.</li> </ul>	<b>(1100)</b> <ul style="list-style-type: none"> <li>• MRE or peanut butter (2 Tbsp) and jelly (1 Tbsp) on whole-wheat bread (2 slices) and trail mix (½ cup)</li> <li>• 16 fl oz water and/or sports drink <i>per lb lost</i> or drink regularly until urine is pale yellow</li> </ul>

For more information: Visit a Registered Dietitian for personalized recommendations or read HPRC's [in-depth guide](#) to fueling for a ruck march.