DEPARTMENT OF THE ARMY

HEADQUARTERS, 10th MOUNTAIN DIVISION, (LIGHT INFANTRY) AND FORT DRUM

FORT DRUM, NEW YORK 13602-5000

INSTRUCTION FOR LEADER

During training, you will read the script directly and complete an AAR. The script includes learning activities to help Soldiers understand and retain information from 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 verbalize what fuels for energy are (carbohydrate, protein, and fat) and food sources for each one.

SCRIPT TO BE READ DIRECTLY

1. **Introduction to Fuel for Energy:** The unique demands of military service, training, and missions require us to be both physically and mentally sharp to succeed. How you fuel your body plays a role in both your mental and physical performance driving mission success. Can anyone name for me what the 3 main sources of fuel for our body are? (Pause, choose 1-3 Soldiers to answer) (correct answer: Carbohydrates, Protein, and Fat)
2. **Carbohydrates** are your body's primary fuel source for resistance training and endurance activities, assist in maintaining hydration, and prevents muscle breakdown. It also supports mental agility, which is why you need a minimum of 130 grams a day for brain function. Carbs can be found in many foods from fruits, vegetables, beans, dairy, and grains. They also exist in many forms. Can anyone tell me the two primary classifications of carbs? (Pause, see if 1-2 Soldiers can answer) (correct answer: Simple and Complex)
    a. **Simple or Fast acting carbs:**
        i. Are digested quickly.
        ii. Replenish lost glucose (i.e. sugar) stores in the body during exercise.
        iii. Can someone give me an example of a simple/fast carbs they consume before or during exercise? (Pause, see if 1-2 Soldiers can answer) (correct answers: Gatorade, honey, apple sauce, fruit juice, gummy bears)
    b. **Complex or Slow carbs:**
        i. Are higher in fiber and digest slower.

ii. Complex carbs are great to consume 3-4 hours pre and post workout to build muscle sugar stores which help support and recover from hard training sessions.
iii. Can anyone give me an example of a complex/slow carbs they consume? (Pause, see if 1-2 Soldiers can answer) (correct answers: sweet potatoes, brown rice, potatoes, pasta, beans, fruits, seeds, whole grain bread)

c. While carbs are very important for energy, but they also spare the use of protein, which is needed for many other functions.
d. **BLUF:** When carbs are consumed regularly with each meal your body has the energy to support daily functions plus the demands of Army training.

3. **Fats** are an important part of your eating plan. They make food taste good, satisfy your hunger, and are essential for normal body function like:
    a. Insulates the body.
    b. Transports Fat Soluble Vits A, D, E, and K
    c. Structural support of cells
    d. Needed for hormone production.
    e. Primary fuel source at rest

    Fats are classified into two types. Can anyone tell me what the two types are? (Pause, see if 1-2 Soldiers can answer) (correct answers: saturated and unsaturated fats).

    f. **Saturated Fats** are usually solid at room temperature and are mainly found in animal products (ex. Ribeye, chicken skin), baked goods (ex: baked pastries and pies), fried fast food, and some tropical oils (ex**.** Coconut oil).
    g. **Unsaturated Fats** are liquid at room temperature and are considered beneficial to your health. They come in two forms, mono and polyunsaturated fats and are found predominantly in plant oils (ex: olive, canola, avocado oils), seeds/nuts (ex: peanuts, almonds, cashews) and fish (ex: salmon, trout). These two fats are considered healthy due to helping to lower high cholesterol and having antioxidants.
    h. **Here are a few simple suggestions to ensure you are incorporating healthy fats into your diet:**
        i. When cooking using plant oil instead of butter
        ii. Consume lean sources of protein (fish, chicken, turkey, 93-96% lean ground beef, cut off excess fat on meat)
        iii. Instead of deep-frying food try air frying, grilling, roasting, or baking.
    i. **BLUF:** Make sure to include more sources of unsaturated fats in your diet and limit the amount of saturated fats sources. While fats make food taste great you still need to watch portions sizes to help maintain a healthy weight.

4. **Protein,** while important for building muscle it also performs many other functions in the body like:
    a. Formation of hair, nail, skin, and organs

b. Protects from infections.
c. Helps transports fats, vitamins, and minerals throughout body.
d. Body structure
e. Are hormones.

As a tactical athlete, to get the most out of protein to support these functions and build/maintain muscle you should spread your intake out over 4-5 meals each day. This means consuming around 0.25 grams per kilogram of your body weight per each meal.

To help you better understand let's calculate your protein needs together.

1. Pull out your phone and open your calculator.
2. Put your weight in lbs. (pounds) and divide by 2.2. This will give you your weight in kilograms. (ex. 185/2.2 = 84 kg)
3. Now multiply your weight in kilograms by 0.25 (ex: 84 kg x 0.25 g = 21 g protein per each meal). This will give you how many grams of protein you should take in each meal for 4-5 meals.

BLUF: Protein has many functions and is effectively used when spread throughout the day. Having a source of protein with each meal or snack can help you feel fuller longer, which may also assist in weight loss.

5. **Summary**
    a. Make sure you are including Carbs, Fat, and Protein with each meal.
        i. When you exclude or severely limit one macronutrient it means the others are not able to perform all their duties. Over time this will affect your mental and physical ability to function.
    b. Of each macro nutrient you should make sure your diet has…
        i. Ask class "Mainly what type of carbs?" (Answer: complex, sweet potatoes, brown rice, whole grain breads
        ii. Ask class "What type of fats?" (Answer: unsaturated, mono/poly, fish, plant oils, lean meats)
        iii. Ask class "Over how many meals should you be consuming protein?" (Answer: 4-5)
    c. If you want to know more about fueling for everyday you can read the Warfighter Nutrition Guide Ch 3. provided at hprc-online.org. The nutrition handout macronutrient foundations provides additional information from the lesson today. You can also reach out to one of your 10th MTN dietitians for more one-on-one support.
    d. Remember it is up to you to be proactive with your nutrition to ensure you are ready to support the climb.

AAR

1. What were the pros and cons of this training?
2. Did they like the interactive components of the training?
3. What, if any, barriers are there to consuming carbs, fats, and proteins? How can they be overcome?

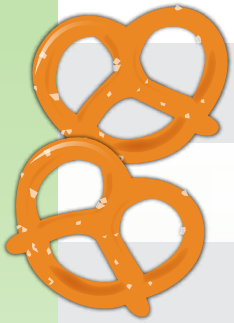
SUPPORTING RESOURCES

1. Warfighter Nutrition Guide Chapter 3. Warfighter Nutrition Guide | HPRC (hprc-online.org)
2. Karpinski C and Rosenbloom C. *Sports Nutrition: A Handbook for Professionals.* 6th ed. Chicago, IL: Academy of Nutrition and Dietetics; 2017
3. FM 7-22 Chapter 8, 8-6 through 8-14, 8-32 through 8-36
4. 10th MTN dietitians

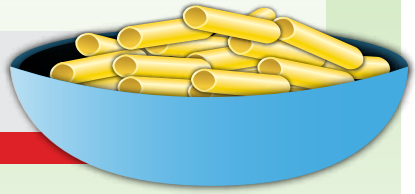
MACRONUTRIENT FOUNDATIONS

by Lisa Chan, MS, RD, CSSD, LD

Carbohydrates are FUEL

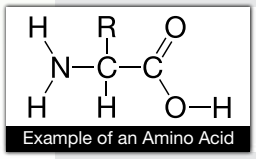


- Carbohydrates are the main source of energy for an athlete's body & brain.
- Carbohydrates help athletes maintain intensity, prevent muscle breakdown, and assist in maintaining hydration.
- Some carbohydrates provide a quick source of fuel (white bread/rice/pasta, pretzels, sports drinks, applesauce).
- Other carbohydrates fill your fuel stores for later use (oats, whole grain bread/rice/pasta, low-fat granola).
- When carbohydrate intake is too low, energy levels, strength, stamina, and decision-making may suffer during workouts. This may lead to poor performance and increased injury risk.
- As an athlete, consuming adequate carbohydrates at appropriate times can make a big difference in training, performance, and overall athletic success.



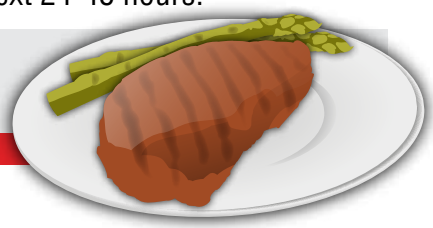
Protein is STRUCTURE

- Protein plays a big role in keeping the body functioning properly, and a healthy, nourished body is one that can perform at the highest levels.
- In our bodies, protein makes up tissues (including muscle), enzymes (which help facilitate reactions in the body, e.g., metabolism of food into usable energy), hormones (your body's messengers), antibodies (for proper immune function), and much more.



Example of an Amino Acid

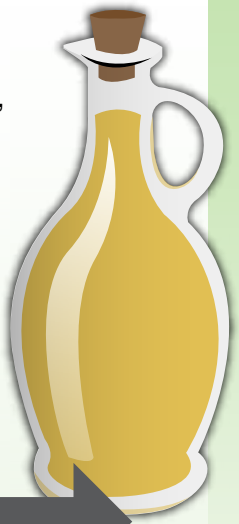
- Proteins are made up of building blocks called **amino acids.**
  - There are 20 amino acids; 9 are essential, meaning you need to get them from your diet.
    - Essential amino acids are critical in athletic recovery and muscle building.
- Protein is most effectively used when spread throughout the day, rather than in 1 or 2 large meals.
  - Give your body 4-5 separate doses of protein throughout the day. Have a source of protein (meat, poultry, seafood, dairy, eggs, tofu, nuts, etc.) with every meal or snack.
- Post-exercise is an important time for protein. **Recovery nutrition** is important within 45-60 minutes after a workout, but also throughout the next 24-48 hours.
- Protein takes a bit longer than carbohydrates to digest and can help one feel full longer, which may assist in weight loss.



MACRONUTRIENT FOUNDATIONS

Fat is ESSENTIAL

- Fat is an essential component for athletes striving for a quality performance diet.
- **The many functions of fat:** maintain body temperature, support immune function, cushion and protect organs, facilitate nerve transmission, assist in vitamin absorption, and provide a source of energy for long-term, low intensity aerobic activities.



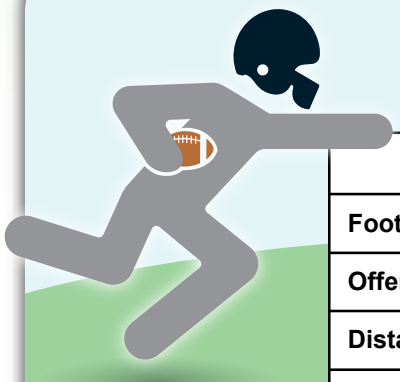
TYPES OF FATS:

- **Unsaturated fats**—found in foods like olive/canola/peanut oils, nuts, avocados, fatty fish, eggs, seeds.
  - May help keep cholesterol and blood pressure low.
  - Omega-3 fatty acids—unsaturated fats linked to reducing inflammation and supporting brain health (and potentially decreasing concussion risk and/or symptoms).
- **Saturated fats**—found in foods such as dairy foods, fatty cuts of meat, chicken skin, margarine, deep fried fast foods, commercially baked pastries/pies, biscuits.
  - Increased intake of saturated fats may contribute to: elevated cholesterol, risk of heart disease/stroke, and inflammation in the body.

CHOOSE UNSATURATED FATS MORE OFTEN THAN SATURATED FATS

When fitting foods into your performance diet, remember:

- Too little fat may contribute to low energy levels during aerobic exercise, compromised immune function, inconsistent menstrual cycles in women, and inefficient digestion of certain nutrients.
- Too much fat can contribute to inadequate intakes of the other macronutrients, undesirable weight gain, and health issues such as heart disease.



SPORT-SPECIFIC MACRONUTRIENT NEEDS

Macronutrient needs vary depending on the sport, position, season of competition, and intensity and length of exercise, as well as the athlete's height, weight, sex, age, and body composition goals. Below are some examples of how macronutrient needs differ between sports:

	CHO	PRO	FAT
Football Wideout	6-10g/kg BW	1.4-2.0g/kg BW	Balance to meet remaining energy needs after CHO + protein needs are met
Offensive Lineman	4-8g/kg BW	1.4-2.0g/kg BW	Balance to meet remaining energy needs after CHO + protein needs are met
Distance Runner	6-12g/kg BW	1.2-2.0g/kg BW	Balance to meet remaining energy needs after CHO + protein needs are met
Wrestler	5-8g/kg BW	1.2-2.0g/kg BW	Balance to meet remaining energy needs after CHO + protein needs are met

Note: Football players' needs will vary depending on the season – training camp, in-season, off-season. Distance runners' needs will vary during a taper, heavy training or shorter vs longer distances. Wrestlers' needs will vary depending on where they are in their season, how far above their weight class they are, and how close they are to the minimal allowed body fat before certifications.

Reference:
1. Stuart M. Phillips & Luc J.C. Van Loon (2011) Dietary protein for athletes: From requirements to optimum adaptation, *Journal of Sports Sciences*, 29:sup1, S29-S38