

# Technical Rescuer

## Lesson Three

### Health and Wellness: Nutrition

**DOMAIN:** COGNITIVE

**LEVEL OF LEARNING:** COMPREHENSION

#### **MATERIALS**

IFSTA Essentials of Fire Fighting 6<sup>th</sup> Edition; Jones and Bartlett Fundamentals of Fire Fighter Skills, 3<sup>rd</sup> Edition; National Volunteer Fire Council: *Addressing the Epidemic of Obesity in the Fire Service*; United States Department of Agriculture: Dietary Guidelines for Americans, 2010.

#### **NFPA 1006, JPR 2013 Edition**

4.2.1 Technical rescuers should comply with minimum physical fitness requirements as required by the AHJ before beginning training activities or engaging in rescue operations.

#### **Junior Member Statement:**

Junior Member training activities should be supervised by qualified instructors to assure that the cognitive and psychomotor skills are completed in a safe and non-evasive manner. While it is critical that instructors be constantly aware of the capabilities of all students both mentally and physically to complete certain tasks safely and successfully, the instructor should take every opportunity to discuss with departmental leaders and students the maturity and job awareness each participant has for the hazards associated with fire and rescue training.

**TERMINAL OBJECTIVE**

The Technical Rescuer Candidate shall identify and describe in writing the impact nutrition has on job performance, and list strategies for adopting healthy eating habits.

**ENABLING OBJECTIVES**

1. The Technical Rescuer Candidate shall describe the importance of proper nutrition to the job performance of emergency responders.
2. The Technical Rescuer Candidate shall correctly identify components of proper nutrition for efficient job performance, enhanced quality of life and disease prevention.
3. The Technical Rescuer Candidate shall correctly list and describe methods of lifestyle and behavior modification conducive to a healthy and nutritious diet.
4. The Technical Rescuer Candidate shall correctly identify and describe methods of incorporating healthy nutrition and hydration into training and emergency scene rehabilitation efforts.

# Technical Rescuer

## Lesson Three

### Health and Wellness: Nutrition

#### MOTIVATION

Too often people believe that exercise enables them to eat whatever they want with no adverse affects. Although someone may effectively burn all the calories associated with consuming a high fat, high sugar meal, they have neglected to totally offset internal damage done to the body from ingesting those types of foods. Food provides our bodies with the fuel it needs to perform our jobs efficiently as well as to enjoy everyday life. The quality and quantities of the foods we select play a major role in our overall health status and our abilities to carry out duties of a technical rescuer.

#### PRESENTATION

#### ENABLING OBJECTIVE #1

The Technical Rescuer Candidate shall describe the importance of proper nutrition to the job performance of emergency responders.

1. Discuss the concept of how food serves as fuel for our body. The bodies of emergency responders are similar to those of professional athletes. At any moment's notice, we could be called upon to engage in our "sport." Without the proper fuel, our performance will be substantially hindered and inadequate.
2. Eating a variety of colorful fruits and vegetables provides phytonutrients that can help protect the bodies of firefighters against the effects of chronic stress and exposure to pollutants (smoke, exhaust, etc).

3. The typical American diet consists of foods high in fat, sugar, refined grains, sodium and other preservatives. These particular food sources prevent the body from performing at optimum levels.
4. If doctors and dieticians can prescribe food to combat certain diseases, this should indicate how powerful food can be to optimizing our health. (Food = medicine).
5. Explain how many health conditions common to emergency responders can be linked to poor dietary habits.
  - a) High blood pressure.
  - b) Cardiovascular disease.
  - c) High Cholesterol.
  - d) Diabetes.
  - e) Certain types of cancer.
  - f) Digestive problems.
  - g) Sleep problems.
6. Ask the group what types of foods are commonly found in the rescue agency at meetings, training events, rehabilitation areas, fundraisers, etc.
7. Ask the class what types of attitudes are common towards nutrition among fellow rescuers?
8. Make the point that criticizing others for trying to make positive changes in this area should not be tolerated. The firefighters who continue to berate others for trying to be healthy are the ones who can hold themselves responsible when the next heart attack line of duty death occurs.
9. Point out that exercise alone cannot overcome the results of a poor diet. Too many people mistakenly believe that if they exercise intensely, they can “afford” to have that extra piece of pizza, slice of cake, alcoholic beverage, etc.
10. The combination of exercise and a healthy diet is the best way to enhance and maintain optimal health.
11. Define and discuss the term “diet” and how society tends to misuse it with negative connotation.

- a) Diet- *“The kinds of food that a person, animal, or community habitually eats.”*
  - b) If someone says “I am going on a diet.” It automatically implies they are planning to go “off” of it at some point.
12. Explain how eating healthy should be viewed as a lifestyle change instead of a temporary action used for fast results.

References: IFSTA Essentials of Firefighting, 6<sup>th</sup> Edition: pages 52, 64 Jones and Bartlett Fundamentals of Fire Fighter Skills, 3<sup>rd</sup> Edition, page 28-29.

Reference: United States Department of Agriculture: Dietary Guidelines for Americans, 2010, pages xi, 11-13.

<http://health.gov/dietaryguidelines/dga2010/dietaryguidelines2010.pdf>

## **PRESENTATION**

### **ENABLING OBJECTIVE #2**

The Firefighter Candidate shall correctly identify components of proper nutrition for improved job performance and disease prevention.

1. Define and discuss the following terms:
  - a) Nutrient.
  - b) Macronutrient.
  - c) Micronutrient.
2. For optimum functioning the body needs each type of nutrient in certain ratios; very similar to how some small engines require very specific ratios of fuel to oil mixtures. If one component is too rich or too lean, the motor will perform poorly. The same can be said of our bodies. If we take in too many high-energy fats or insulin spiking simple carbohydrates our bodies will perform poorly during intense physical exertion (firefighting duties).
3. Explain how calories are energy for the body.
4. There are three macro nutrients from which the body receives energy (calories):
  - a) Carbohydrates – 4 calories per gram.

- b) Protein – 4 calories per gram.
  - c) Fat – 9 calories per gram.
5. The total number of calories (energy) needed each day varies according to an individual's age, gender, height, weight, level of physical activity, and fitness goals.
  6. The best way to assess daily calorie needs is to monitor body weight and adjust calorie intake and participation in physical activity based on changes in weight over time.
  7. Point out that it takes 3,500 calories to create 1 lb of fat. Knowing this, people can use a combination of methods to lose or gain weight.
    - a) Burning 250 calories per day with physical activity and eliminate 250 calories from diet adds up to a 3500 calorie deficit in one week.
    - b) Eliminating 500 calories per day from diet adds up to a 3500 calorie deficit in one week.
  8. Explain the current United States Department of Agriculture Recommended Macronutrient Proportions.
    - a) Adults 19 and older:
      - (1) Carbohydrate: 45 – 65%.
      - (2) Protein: 5 – 20%.
      - (3) Fat: 25 – 35%.
  9. Discuss carbohydrates and their role in a nutritious diet.
    - a) Simple carbohydrate.
    - b) Complex carbohydrate.
    - c) Dietary fiber:
      - (1) Men: at least 38 grams per day.
      - (2) Women: at least 25 grams per day.
    - d) Role in the body – fuel for brain and working muscles.
  10. Dietary fiber is a type of carbohydrate that cannot be digested by the body. Eating a diet rich in dietary fiber has been shown to increase satiety between meals, improve digestive functioning, lower cholesterol and assist in weight loss efforts.
  11. Discuss the role of protein as part of a nutritious diet and overall wellness.

- a) Active individuals should aim for 1 to 1.5 grams per pound of body weight each day.
  - b) Role in the body – repair and rebuild tissues.
12. List the three different types of fats found in food and explain the characteristics of each.
- a) Saturated Fats: no more than 10% of total fat intake should come from these.
  - b) Unsaturated Fats:
    - (1) Mono-unsaturated.
    - (2) Poly-unsaturated.
  - c) Trans Fats.
13. Emphasize that Trans Fats are so detrimental to health, the FDA recommends zero grams be ingested per day.
14. Even if a nutrition label lists Trans Fat content as “0 grams”, the product can legally still have .5 grams of trans fat in it per serving. The way to determine if a product contains trans fat is to check the ingredients list for the following terms:
- a) Hydrogenated oils.
  - b) Partially hydrogenated oils.
15. Discuss the health benefits of consuming more unsaturated fats as part of a nutritious diet.
16. Review an FDA nutrition label. Break down each component and explain how to interpret these labels. Be sure to point out that percentages of daily intake listed on these labels are based on a 2,000-calorie diet.
17. Discuss the daily recommendations for the following food groups, according to the United States Department of Agriculture:
- a) Vegetables.
  - b) Fruits.
  - c) Grains.
  - d) Lean proteins.
  - e) Dairy.
  - f) Oils.
18. Discuss the importance of reading ingredients lists on food packaging. Typically, less ingredients tend to indicate healthier food choices.

- a) Example: Regular peanut butter vs. natural peanut butter.
  - (1) Regular peanut butter: Roasted Peanuts, sugar, less than 2% of: hydrogenated vegetable oils, salt, partially hydrogenated cottonseed oil.
  - (2) Natural peanut butter: Peanuts, salt.
- 19. Define and discuss the concept of clean eating, and the importance of limiting processed and packaged foods in daily consumption.
- 20. Processed, refined and pre-packaged foods typically contain high amounts of sodium and sugar, both of which can cause health problems when consumed in excess.
- 21. Discuss how too much sodium in the diet can cause the body to retain excess fluid and increase blood pressure as a result.
- 22. The American Heart Association recommends a daily intake of 1,500 mg or less of sodium.
- 23. Sugars are listed on nutrition labels as well. Discuss the difference between naturally occurring sugars and added sugar.
  - a) Naturally occurring: Found naturally in foods such as fruit (fructose) and milk (lactose).
  - b) Added: Any sugar or caloric sweetener that has been added to foods or beverages during processing or preparation.
- 24. The American Heart Association recommends the following limits for daily added sugar intake:
  - a) Men – 36 grams.
  - b) Women – 24 grams.
- 25. Demonstrate how a person can identify if sugar or a sugar alias has been added to a food item.
  - a) Read the ingredients list and look for the following terms:
    - (1) Brown sugar.
    - (2) Corn syrup or sweetener.
    - (3) Fruit juice concentrates.
    - (4) High fructose corn syrup.



- (5) Honey.
  - (6) Invert sugar.
  - (7) Molasses.
  - (8) Raw sugar.
  - (9) Any ingredient ending in "ose"- dextrose, fructose, lactose, maltose, sucrose.
26. The average American consumes 100 lbs. of sugar each year. Compare this to the diets of Americans in the 1900s where around 45 lbs of sugar was consumed annually per person. Ask the class why they believe sugar consumption has risen so dramatically over the years.
27. Regularly consuming too much sugar can lead to a host of health problems such as diabetes, metabolic syndrome, chronic inflammation, and obesity.
28. List the common foods consumed with high amounts of added sugars:
- a) Soda.
  - b) Candy.
  - c) Cakes, cookies and pies.
  - d) Canned fruit in syrup.
  - e) Fruit juices.
  - f) Flavored yogurts.
  - g) Ice cream.
  - h) Cereals.
  - i) Granola and energy bars.
  - j) Flavored breads and bagels.
29. Provide examples to the class of how quickly a person's daily sugar intake can add up.
- a) Example: 1 oatmeal cream pie contains 12 grams of sugar.
  - b) Example: 1 20-ounce soda contains 75 grams of sugar.
  - c) Example: 1 medium sized "energy" bar can contain 22 grams of sugar.

**NOTE: Instructors are encouraged to visit [www.choosemyplate.gov](http://www.choosemyplate.gov) for resources related to daily dietary recommendations.**

Reference: Jones and Bartlett Fundamentals of Fire Fighter Skills, 3<sup>rd</sup> Edition, pages 28-29.

Reference: United States Department of Agriculture: Dietary Guidelines for Americans, 2010, pages 11-19, 22-29.

<http://health.gov/dietaryguidelines/dga2010/dietaryguidelines2010.pdf>

Reference: United States Department of Agriculture; ChooseMyPlate.gov,

<http://www.choosemyplate.gov/myplate/index.aspx>

## **PRESENTATION**

### **ENABLING OBJECTIVE #3**

The Technical Rescuer Candidate shall correctly list and describe strategies of lifestyle and behavior modification conducive to a healthy and nutritious diet.

1. Discuss the concept and popularity of current “fad diets.” Many of these diets are effective for initial and fast weight loss; however, the styles of eating and food choices are not typically sustainable long term. Point out that in order to truly improve health through nutrition, one must view healthy eating as part of a progressive series of lifestyle changes towards health and wellness.
2. In order to facilitate healthful lifestyle changes, it is important to understand that change is a process that takes time. When people “fall off the wagon”, they shouldn’t berate themselves harshly for it. Instead, they should make note of how the setback makes them feel and resolve to make a better choice at the next available opportunity.
3. Great ways of improving health through nutrition is to pre-plan weekly meals and prepare meals in advance. Pack meals to go when traveling or for workdays. This will eliminate temptation to eat unhealthful fast foods, reduce the amount of decisions one must make in a day (less stress!), and save money!
4. Read nutrition labels and ingredient lists. Take control of the types of fuel you put into your body. Typically, the more ingredients a food product contains, the less healthy that product is.

5. Shop the perimeter areas of grocery stores. These areas are usually where the majority of whole food items are located. The middle aisles typically contain heavily processed items with long ingredient lists, lots of sodium, saturated fats and added sugars.
6. In our fast paced lifestyle, dining out is sometimes the easiest option for meals. Use a smart phone or computer to research various menu items of your favorite restaurant before going and pre-plan your meal!
7. Reduce intake of refined grains. These are typically products that were once whole grains but have been stripped of vitamins, minerals and dietary fiber through the refining process. Major sources of refined grains in the U.S. include:
  - a) Yeast breads.
  - b) Pizza.
  - c) Grain based desserts.
  - d) Tortillas, tacos, burritos.
  - e) Pasta dishes.
  - f) Potato chips.
  - g) Ready to eat cereals.
  - h) Pancakes, waffles, pretzels.
8. Make at least half of your grain intake come from whole grains.
  - a) Evidence shows that adults who consume more whole grains (due to high fiber content) instead of refined grains, tend to have lower body weights.
  - b) Read the ingredient label on grain products to determine if it is in fact a “whole grain”. The first ingredient listed should be a whole grain product such as:
    - (1) Whole wheat.
    - (2) Whole rye.
    - (3) Buckwheat.
    - (4) Bulgur.
    - (5) Millet.
    - (6) Oatmeal.
    - (7) Quinoa.
    - (8) Rolled oats.
    - (9) Brown rice.
    - (10) Wild rice.

9. Increase consumption of vegetables and fruits.
  - a) Evidence shows that consuming at least 2½ cups of vegetables and fruits per day is associated with reduced risk of cardiovascular disease.
  - b) Consuming a variety of colorful vegetables and fruits provides phytonutrients that have been shown to protect against certain types of cancer.
  
10. Discuss methods of reducing sodium in the diet.
  - a) Read nutrition facts labels and look for a sodium content of 10% or less per serving.
  - b) Choose fresh or frozen fruits and vegetables over canned, and avoid items that are “pre-seasoned” or contain “sauces.”
  - c) Limit the amounts of processed foods eaten.
  - d) Add fresh lemon juice or garlic powder to meat instead of salty seasonings.
  - e) Use seasoning mixes that contain no salt or msg.
  - f) If cooking with canned beans or vegetables, rinse them in a colander before cooking.
  - g) When dining out, ask for your meal to be prepared with no seasoning.
  
11. Discuss methods of reducing added sugar in the diet.
  - a) Read nutrition and ingredient labels.
  - b) Do not choose items that have sugar or a sugar alias as one of the first three ingredients.
  
12. Reduce intake of sugar-sweetened drinks and cereals.
  - a) Drinks sweetened with sugar typically provide excessive calories with few essential nutrients. In other words these are “empty calories”.
  - b) Many ready to eat cereals list sugar as one of the first three ingredients, even the ones labeled as “healthy.”
  
13. Emphasize how eliminating soda from daily intake can drastically improve health.
  - a) Drinking two 12 ounce sodas every day for 30 days will contribute the following:
    - (1) 5 lbs of sugar consumed.
    - (2) over 8,000 empty calories (the average person would have to walk 100 miles to burn that many calories).
    - (3) That could add 2.3 lbs of weight gained per month and 27 lbs in one year!

14. Reduce intake of solid (saturated) fats, and replace them with oils (unsaturated fats). Foods high in solid fats that should be limited include:
  - a) Grain based desserts (cakes, cheesecakes, donuts, etc.).
  - b) Pizza.
  - c) Regular cheeses.
  - d) Sausage, hotdogs, bacon.
  - e) Ribs.
  - f) Fried white potatoes.
  
15. Point out that moderate evidence suggests an association between the increased intake of processed meats (bacon, hotdogs, etc.) with an increased risk of colorectal cancer and cardiovascular disease.
  
16. Discuss the health benefits of replacing saturated fats with unsaturated fats.
  
17. Provide examples of various healthy food/ingredient replacement options.
  - a) Replace mayonnaise with mashed avocado.
  - b) Replace sugar in recipes with applesauce.
  - c) Replace flour in baking with pureed black beans.
  - d) Replace butter in baking recipes with avocado.
  - e) Eat salmon or tuna for dinner instead of steak.
  - f) Use 0% Greek yogurt in place of sour cream.
  - g) Drink skim milk, almond, soy or coconut milk instead of whole milk.
  - h) Cook with extra virgin olive oil or safflower oil instead of shortening or butter.
  - i) Use whole wheat flour for baking instead of white flour.
  - j) Grind up oatmeal and use as flour for baking instead of white flour.
  
18. Discuss proper portion sizes and discuss how common portion sizes have changed dramatically over the years.
  
19. Provide examples of proper portion sizes to the class and discuss the importance of portion control to weight management.

Reference: IFSTA Essentials of Firefighting, 6<sup>th</sup> Edition:  
pages 61, 64, and 66.

Reference: Jones and Bartlett Fire Officer Principles and Practice, 2<sup>nd</sup> Edition, Pages 26-30.

Reference: United States Department of Agriculture: Dietary Guidelines for Americans, 2010, pages 11-19, 20-29, and 35-40.

<http://health.gov/dietaryguidelines/dga2010/dietaryguidelines2010.pdf>

## **PRESENTATION**

### **ENABLING OBJECTIVE #4**

The Technical Rescuer Candidate shall correctly identify and describe methods of incorporating healthy nutrition and hydration into training and emergency scene rehabilitation efforts.

1. Technical rescuers don't always have the luxury of knowing when their next bout of heavy physical exertion will be. For this reason, it is important to remain adequately hydrated all day.
2. Water is essential to every biological process. Our bodies are comprised of 60% water!
  - a) Water makes up 75% of muscles.
  - b) Water makes up 25% of bone mass.
  - c) Lubricates joints.
  - d) Regulates body temperature.
  - e) Carries nutrients and oxygen to cells.
  - d) Assists kidneys and liver with waster removal.
3. List the daily recommendations for adequate water intake.
  - a) Men – 3.7 liters (125 ounces).
  - b) Women – 2.7 liters (91 ounces).
4. Discuss the importance of hydration to the safe and effective job performance of technical rescuers.
5. For known upcoming training events, rescuers should aim to drink 16 ounces of water 2 hours prior to the event, and 8 ounces every 15 minutes during the training event.
6. For training events or emergency incidents lasting longer than 1 hour, responders should alternate water

with sports drinks. It is good practice to alternate between water and sports drinks. Aim for drinking 12 ounces of sport beverage for every 64 – 96 ounces of water consumed.

7. Read nutritional and ingredient labels on sports drinks. Avoid any containing high fructose corn syrup. The optimum nutrient content for sports beverages per 8 ounces is:
  - a) 60 – 100 calories.
  - b) 15 grams carbohydrate.
  - c) 50 – 100mg sodium.
  - d) 30 – 50mg potassium.
8. Educate individuals (such as ladies auxiliary members) responsible for providing refreshments during incidents and training events on the proper types of nutrition needed to refuel participants.
9. Just like you don't see professional football players eating pizza, burgers, or donuts on the sidelines of a game, firefighters shouldn't be eating high fatty, high sugar or fried foods during training or emergency incidents.
10. List and discuss healthy options for emergency responders to consume during long duration incidents and training events.
  - a) Deli meats on whole grain bread.
  - b) Fruit (bananas, pineapple, oranges, apples).
  - c) Nuts and dried fruit.
  - d) Natural peanut butter.
  - e) High energy trail mixes.
  - f) Whole wheat or whole grain crackers.

References: National Volunteer Fire Council: Addressing the Epidemic of Obesity in the United States Fire Service, pages 23-28, 30-31, 49-51.

[http://www.nvfc.org/files/documents/Obesity\\_Study.pdf](http://www.nvfc.org/files/documents/Obesity_Study.pdf)

## **SUMMARY**

This lesson plan introduces the student to basic concepts of healthy nutrition and how food fuels the bodies of technical rescuers in daily life and job functions. The food choices made by rescuers can have a significant impact on job performance and overall quality of life.