

name _____

Time Frame

2-3 class periods

Overview

Students will analyze the nutrients on food labels, gain awareness of the nutrients that provide calories and how those nutrients help athletes and design a pre-game diet for an imaginary athlete.

Objectives

- Make predictions about the caloric value of select foods and beverages.
- Analyze the nutrients of several foods based on their Nutrition Facts panels.
- Research the role of fat, protein and carbohydrates in our diet as well as their impact on athletes.
- Create a PowerPoint presentation to present nutrient research.
- Identify recommended protein and carbohydrate choices for an imaginary athlete.

Materials

- Nutrition Facts panels (Each student must bring one Nutrition Facts panel to class)
- Access to Internet
- Access to PowerPoint
- Calculators
- “Winning One Day Diet” student handout (one per student)



Lesson Background

Balance, variety and moderation are important concepts that can help kids lead a healthy lifestyle.

A **balanced** diet incorporates appropriate amounts of foods from all five food groups every day, providing needed calories and nutrients. Age, gender and physical activity level make a difference in the number of servings needed to maintain a well-balanced diet. The United States Department of Agriculture's (USDA) MyPlate food guidance system (www.myplate.gov) illustrates the five food groups that are the building blocks for a healthy diet using a familiar image—a place setting for a meal. Before students eat, they should think about what goes on their plate or in their cup or bowl. To build a healthy plate, children need to eat a balanced diet from the following food groups: fruits, vegetables, protein, grains and dairy. Specific recommended serving sizes by age group can be found under each food group at www.myplate.gov.

Variety: No single food supplies all the nutrients we need. A varied diet includes many different foods from the five major food groups: fruits, vegetables, grains, protein and dairy, which together meet nutritional recommendations.

Moderation: Moderation is all about limiting rather than eliminating certain foods and paying attention to serving sizes. Children, in particular, should know that their diet can include all the foods that they like. Those that are not as nutrient-rich or that are higher in nutrients that should be limited should simply be eaten less frequently or in a lower quantity. This is called moderation. Moderation also relates to portion control. Portion sizes for many foods have increased over the years and many Americans tend to eat the amount that is placed onto their plate or poured into their cups! The recommended amounts for each food group from the Dietary Guidelines and information about serving sizes on the Nutrition Facts Panel can help guide how much we should be eating each day.

An Athlete's Diet

To help athletes reach peak performance, they must train hard, stay hydrated and eat a balanced diet. Athletes get their energy from calories in the foods and beverages they consume. The three nutrients that provide energy (calories) are protein, carbohydrates and fat.

Protein

Our bodies need a steady supply of protein to build and repair muscles, nerves, bones and blood. But protein can't be stored as protein. Whenever we eat more protein than our body



needs for tissue building, it will be either used for energy or stored as fat. Exercise can increase an athlete's need for protein. On average, athletes in heavy training and very physically active people need up to 50% more protein than casual athletes. The exact amount depends on how intensely, how long and how often we exercise, the quality of protein we eat and other factors. If we don't eat enough energy-supplying carbohydrates and fats, our body will burn protein for energy. Tissue building and repair will be delayed until more protein is available. An athlete trying to lose weight by eating less fat especially needs to eat enough protein to prevent muscle wasting.

If you're just beginning to train, you need more protein than an athlete who's already highly trained because a trained body burns more fat as fuel and reserves more protein for muscle growth and repair. Although athletes need more protein, not all very active people need to eat more. Some Americans may already eat more protein than they need. But, athletes who get most or all of their protein from vegetable sources and eat few animal foods may need to consume more—especially higher-quality protein foods.

Animal proteins such as eggs, meat, seafood, and dairy are high-quality protein foods that contain all of the essential amino acids which are the building blocks to form protein. Vegetarian or vegan athletes should try to get protein from a variety of plant-based proteins including beans, lentils, nuts, seeds, or soy to ensure they get all of the essential amino acids in their diet. Plus, pairing plant foods with high-quality protein foods – like eggs – can help meet daily protein needs to support healthy muscles and strong bones and help achieve optimal consumption of vitamins and minerals.

Athletes should aim to get protein from a variety of sources – this ensures they will get the wide variety of nutrients that these foods offer, like iron, EPA/DHA, calcium, vitamin D, choline, fiber and omega-3 fatty acids.

Carbohydrates

Carbohydrates are an important source of energy for athletes. They are vital for muscular energy and brain function. Carbohydrates can be stored in our muscles as glycogen and used for quick energy, like the kind we use when we perform in athletic events. In the early stages of moderate exercise, carbohydrates provide 40 to 50 percent of the energy requirement.

Complex carbohydrates come from foods like pasta, beans, cereals and other grain products. Simple carbohydrates can be found in fruits, milk and sugar. As it is digested, the body breaks down carbohydrates to glucose and stores it in the muscles as glycogen. Then glycogen is converted during exercise back to glucose and used for energy.

If an athletic event lasts for less than 90 minutes, the glycogen can supply the needed energy. For events that are more than 90 minutes, athletes often eat a high-carbohydrate diet for two-to-three days before the event so they can store more glycogen. A high carbohydrate diet constantly is not advised.

Fats

Fat also provides body fuel to an athlete. Using fat as fuel depends on an event's duration and the athlete's condition. Trained athletes use fat for energy more quickly than untrained athletes. Consumption of fat should not fall below 15 percent of total energy intake because it may limit performance.





Winning Dietary Choices

Standards

CCSS ELA Standards

- **CCSS.ELA-Literacy.CCRA.W.9-12.4** - Produce clear and coherent writing in which the development organization and style are appropriate to task, purpose and audience.
- **CCSS.ELA-Literacy.CCRA.W.9-12.7** - Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
- **CCSS.ELA-Literacy.CCRA.W.9-12.8** - Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source and integrate the information while avoiding plagiarism.
- **CCSS.ELA-Literacy.CCRA.W.9-12.9** - Draw evidence from literary or informational texts to support analysis, reflection and research.
- **CCSS.ELA-Literacy.CCRA.SL4-6.1** - Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.
- **CCSS.ELA-Literacy.CCRA.SL4-6.4** - Present information, findings and supporting evidence such that listeners can follow the line of reasoning and the organization, development and style are appropriate to task, purpose and audience.

CCSS ELA Standards Science & Technical Subjects

- **CCSS.ELA-Literacy.RST.9-10.7** - Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.
- **CCSS.ELA-Literacy.RST.11-12.7** - Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

National Science Education Standards

- **4FSPSPS.2** - Individuals have some responsibility for their own health.
- **4FSPSPS.3** - Nutrition is essential to health.





Winning Dietary Choices

A Winning One Day Diet

Athletes get energy from the calories they consume through food and beverages. The three nutrients that provide calories are carbohydrates, fats and proteins. The number of calories and balance of nutrients for athletes depends on many things: their age, gender, sport, training level and the day (a different balance of carbohydrates, fats and proteins is often needed a week before an event vs. the day before an event vs. the day after). For this activity, you will recommend specific foods and beverages to help an imaginary athlete meet his or her calorie requirements the day before an event.

Athlete Profile

Name of athlete: _____

Gender: _____

Age: _____

Weight: _____

Sport: _____

Competitive Level _____

(Olympic, professional, college, high school, competitive, amateur, recreational)

Information About Nutritional Requirements for Specific Sport

Information About Nutritional Requirements Day Before Event

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Winning Dietary Choices

Recommendations**

Use the following formulas as a guide to calculate an athlete's recommended daily intake:

First divide your body weight in pounds by 2.2 to get your weight in kilograms.

Daily Carbohydrate Intake: Depending upon the length of training sessions, an athlete's kilogram of body weight, carbohydrate intake should be between 3-12 grams per with longer training times reflecting the higher number of grams needed.

Athlete's weight in kilograms x 3-12 grams = Daily carbohydrate Intake

Daily Protein Intake: Endurance athletes should consume between 1.2-1.4 grams per kilogram of body weight

Athlete's weight in kilograms x 1.2-1.4 grams = Daily protein intake

** Formulas taken from Nutrition Guide: Fueling for Performance

<https://www.usada.org/wp-content/uploads/Nutrition-Guide.pdf>

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Grades 9-12

9

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