Lesson 2 – Pre-Visit
Building and Maintaining the Athlete's Body

Objective: Students will be able to:
• Identify what a healthy athlete needs to eat to absorb the amount of energy needed to perform at the highest level.
• Determine which foods improve or worsen health conditions.
• Assess a day's meal and how it relates to "My Plate."
• Create a meal plan.

Time Required: One class period

Advance Preparation:
- In advance of this lesson, have students keep a food journal for 24 hours. In their journals, they should record everything they eat and drink, including snacks and glasses of water.
- Have students bring in clean food packaging or labels with nutrition information intact. Put a mixture of labels from different kinds of foods in plastic baggies.

Materials Needed:
- A variety of nutrition information labels (see above)
- Plastic baggies in a variety of sizes (see above)
- Copies of "My Plate" from (http://www.choosemyplate.gov/) for each student
- Internet access for student research in the classroom, library, or media center

Additional Resources:
- http://kidshealth.org/teen/food_fitness/fitness_nutrition_center.html
  This article provides a variety of food and fitness related articles, including Q&A, written in teen-appropriate language.
Vocabulary:

**Calorie** - A unit of measurement that defines the energy-producing value of food

**Carbohydrates** - The body’s major source of energy. There are two main types of carbohydrates - sugars and starches.

**Diet** - The food and drink that a person usually eats - *also* - a plan of eating and drinking so as to improve one’s health

**Fats** – A source of fuel in the human body, as well as the major form of energy storage in the body

**Nutrient** – An element of food that provides nourishment to the body

**Nutrition** – The science that studies how the body makes use of food

**Sodium** - A mineral used by the body to regulate blood pressure and blood volume. It is also needed for healthy muscle and nerve function.

Applicable Common Core State Standards:

**CCSS.ELA-Literacy.SL.9-10.1, SL.11-12.1** Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade-appropriate topics, texts, and issues, building on others’ ideas and expressing their own clearly and persuasively.

**CCSS.ELA-Literacy.W.9-10.4, W.11-12.4** Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

**CCSS.ELA-Literacy.W.9-10.7, W.11-12.7** Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
Additional Relevant National Learning Standards:
(Based on Mid-continent Research for Education and Learning)

Family/Consumer Sciences. Standard 12. Understands how knowledge and skills related to nutrition and food affect the well-being of individuals, families, and society

Health. Standard 1. Knows the availability and effective use of health services, products, and information


Health. Standard 6. Understands essential concepts about nutrition and diet

Health. Standard 7. Knows how to maintain and promote personal health

Health. Standard 10. Understands the fundamental concepts of growth and development

Physical Education. Standard 4. Understands how to monitor and maintain a health-enhancing level of physical fitness

Science. Standard 5. Understands the structure and function of cells and organisms
1. In advance of this lesson, have each student keep a food journal for 24 hours. In their journals, they should record everything they eat and drink, including snacks and glasses of water.

2. Begin the lesson by asking students, "What does it mean to have a healthy diet?"

3. Discuss that a healthy diet provides energy to the body for growth, maintenance, and activity. Food also provides the building blocks for bones, muscles, and other body tissues. Making the right food choices can promote and maintain good health throughout life. This is especially important for athletes who need their bodies to be at their best.


5. Ask students to review their food journals, and identify the food group category in which each item on their list belongs. Some items may fall into more than one food group. Students may quietly discuss these foods with a partner to decide where they belong. For example, a portion of lasagna might count as one serving from the grains group, one serving from the dairy group (cheese) and one serving from the protein group (ground beef or sausage).

6. Ask, “In 24 hours, how many of you ate something from all five food groups?” “Did you eat more or less of the different food groups as recommended on My Plate?”

7. Explain that food is important because it contains nutrients. Ask the class if they know the names of any nutrients found in food.

8. Review the parts of a healthy diet and the benefits provided:

   - **Carbohydrates:** (Bread, Pasta, Rice, Whole Grains) Carbohydrates provide the main source of energy for the body. Simple carbohydrates (those that break down quickly) include sugars; complex carbohydrates (those that break down more slowly) include starches.
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- **Minerals**: Minerals are important for building healthy muscles, nerves, and blood, and maintaining fluid balance. Important minerals include iron (Found in Meats, Beans, Leafy Green Vegetables, Tofu) and calcium (Found in Milk, Cheese, Yogurt, Leafy Green Vegetables).

  - **Potassium**: (Bananas, Avocados and Citrus Fruits) An important mineral that supports heart and muscle health. It can help prevent sports-related injuries and muscle cramps.

- **Protein**: (Meats, Nuts, Beans, Low-Fat Dairy Foods) Protein builds and repairs muscles and helps to prevent fatigue. It is also important for the maintenance of body tissues, skin, hair, and blood.

- **Vitamins**: These are important for everyday body functions. The body can store some types of vitamins (such as A, D, E, and K). Other vitamins need to be replaced every day (such as B and C).

- **Fluids**: (Water) Water helps regulate body temperature and helps the body to eliminate waste. Water makes up about 60% of an adult's body weight. When exercising, the body loses fluids through sweat. It can be easy for an athlete to become dehydrated. It is essential for athletes to drink water during activity and throughout the day to replenish their bodies.

9. Ask students, "Does an athlete need a different diet than a person who doesn’t exercise at all? Why? What needs to be different?"

10. Discuss that an inactive person will not require as much energy as a person who is more active. Because exercise depletes the body's supply of nutrients, fluids, and vitamins, it is especially important that athletes maintain a healthy diet to replenish their bodies, and provide them with energy to perform at their best.

11. Most athletes go through strenuous exercise routines on a regular basis. As a result, they may modify or change their diet as needed in order to reach their peak performance. They generally need extra **calories** to fuel both their sports performance and their growth.
12. Stress that calories aren't bad for you. Your body needs calories for energy. A calorie is simply a unit of energy. However, eating too many calories, and getting them from nutrient-poor foods like junk food, can cause a person to gain weight. Depending on how active they are, athletes may need anywhere from 2,000 to 5,000 total calories per day to meet their energy needs. Their calories should always come from nutrient-rich foods.

13. Ask students, "What happens if athletes don't eat enough calories, or get their calories from poor sources like junk food?"

14. Discuss that without a healthy diet, the athlete's body is less likely to achieve peak performance and may even break down rather than build up muscles. Athletes who don't take in enough calories every day won't be as fast and as strong as they could be and may not be able to maintain their weight. Extreme calorie restriction could lead to growth problems and other serious health risks.

15. Introduce the activity.
1. Divide students into groups of 3-4.

2. Give each group a bag of food packaging and labels with the nutrition information intact.

3. Explain that nutrition information labels on packaged food products let a consumer know how the product will contribute to their recommended daily intake of certain vitamins, minerals, and nutrients.

4. Demonstrate how to read a nutrition label. Point out the various nutrients listed and define **fats**, **sodium**, **carbohydrates**, **protein**, and **vitamins** with students.

5. Discuss that on labels, nutrients are measured in two ways. In weight and in percentages. Most often, the weight measurements will be grams (g) or milligrams (mg).

6. Point out the % Daily Value listed on the far right of the nutrition label. The % values are listed to show how one serving of a food product contributes to a 2,000 calorie diet. Use the % daily values to see if a food has a little or a lot of a particular nutrient.

7. Have each group read through their food labels and rank the foods from best to worst in terms of the nutrients needed for a healthy diet (fats, sodium, carbohydrates, calcium, protein, iron, potassium). Then have groups share their lists with the rest of the class.

8. Discuss that fresh fruits and vegetables don’t come with packaging labels, but they are also important sources of vitamins, minerals, and nutrients.

9. Divide students into pairs or into small groups, depending on how many computers you have access to.
10. Direct students to the following website:
   - [http://kidshealth.org/teen/food_fitness/nutrition/vitamins_minerals.html](http://kidshealth.org/teen/food_fitness/nutrition/vitamins_minerals.html)

11. Allow students to explore this website, and take notes on 5 vitamins and minerals. Students should list fruits and vegetables that are good sources of each vitamin or mineral they research.

12. Finally, using what they have learned about nutrition, have each student create a 1-week meal plan for himself or herself. The meal plan should include 3 full meals a day, as well appropriate snack foods. Challenge students to include at least 5 fruits and vegetables per day in their meal plans.

13. Have students carry out their meal plans for one week and report on their experiences in journal entries.

**Conclusion:**
To complete this lesson and check for understanding, invite a nutritionist (school nutritionist or hospital nutritionist) to talk with students. Before the day the nutritionist will talk, have students work as a group to come up with a list of questions about food, diet, and nutrition that they would like to have answered.

Engage students in a discussion about health in your school. What nutrition-related information would be most important for other students to know? What are some nutrition-related things that could be improved at your school? (i.e. healthier food options in vending machines, better cafeteria food, etc.) Have students brainstorm some ideas, create a presentation, and meet with school administrators to share their ideas.