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4-H 356 Nutrition, Fitness and Youth

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Nutrition, Fitness and Youth

by Linda Boeckner
Extension Nutrition Specialist

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TO: The Youth Educator

The Nutrition, Fitness and Youth series addresses the nutrition and fitness concerns of 6th through 8th graders. You may teach these units as a complete series, or single out units to be taught separately.

The information and activities in this series will help students in the 6th through 8th grades:

- explore the relationship between nutrition, fitness and mental well-being,
- select appropriate foods for physical growth and activity, and
- explore the impact of the world around them on food choices.

The curriculum is largely written in a technical orientation. At times the curriculum moves toward a cognitive processing orientation designed to enhance students' thinking skills. Questions are included in some activities to engage students in additional discussion and reasoning activities.

No curriculum is perfect, and a particular curriculum is rarely written in only one orientation form. It is the teacher's role to adapt and use the curriculum in a manner best suited to the needs of the students.

Good luck with your endeavors. Have fun with the lessons.

Linda Boeckner
Extension Nutrition Specialist

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Culture, 
Individuality 
And Food Choices

PURPOSE: To allow 6th through 8th grade students an opportunity to explore their cultural environment and its affect on food choices.

SUMMARY OF LEARNING ACTIVITIES: Five activities help students meet the objectives of this unit. They are:

1. Snacks I Eat - 20 minutes 
2. Baker's Dozen - 30 minutes 
3. Food Folkways - Yogurt - 30 minutes 
4. Family Food Tradition Interview - Home Activity 
5. Oral Report: Holiday Food Traditions - 60 minutes for student preparation (may be a Home Activity) 60 minutes for oral reports depending on number of students.

OBJECTIVES:

1. The students will explore factors that influence attitudes and values about food and nutrition.

2. The students will explore the origins of certain foods from other countries.

VOCABULARY:

Chic - stylish, popular

Cuisine - manner or type of cooking

Yogurt - cultured, fermented milk product
SUPPLIES/PREPARATION:

Begin unit with a presentation of background information. Continue with activities as you feel appropriate

Activity #1 - Snacks I Eat

Student Worksheet #1-1, “The Snacks I Eat”
Pencils

Activity #2 - Baker’s Dozen

Paper
Pencils

Activity #3 - Food Folkways

Recipe: Fruit Fantasy Yogurt
3 pints lowfat or nonfat plain yogurt
4 cups fresh or frozen fruit (students’ choice)
Mixing bowl
Measuring cups
Cutting knife, vegetable peeler
Cutting board
Mixing spoon
Paper cups
Teaspoons for tasting

Activity #4 - Family Food Traditions Interview

No materials or advance preparation necessary

Activity #5 - Oral Report: Holiday Food Traditions

No materials or advance preparation necessary

CREDITS:

BACKGROUND:

This first lesson in the "Nutrition, Fitness and YOUth" series allows students to explore their attitudes and beliefs about food and their relationships to food habits and choices. After this unit students will participate in several activities to explore their food world and the origins of familiar foods.

Understanding Your Eating Habits

Ever since the history of man has been recorded, people have been engaged in a struggle for food. Getting and eating food is never far from our thoughts. Throughout your own life food has played a major role in shaping your thoughts, actions and even personality. As infants we are coaxed, tempted, humored, bribed and sometimes disciplined for our food habits. Familiar phrases pop back into our memories:

"Drink your milk and you will grow big and strong."

"Candy will rot your teeth."

"You may go out and play when you have cleaned your plate."

"Take just one bite—you’ll like it."

"Stop talking with your mouth full."

"Sit up straight and eat."

"You can’t have a snack now. You’ll spoil your supper."

"There are a million starving children in the world who would love to eat your dinner."

Adults are often caught in a different kind of food battle. Certain foods are “out” while others are “in vogue.” Anyone who likes liver is odd. A few years ago, "real men" couldn’t eat quiche. Now they can. Ethnic foods used to be an embarrassment. Now it is chic and fashionable to indulge in Chinese, Mediterranean, Slavic, Indian or other native cuisine. Adolescents two generations ago rarely knew about the Americanized version of pizza, burritos and frozen yogurt. On a daily basis we hear about “good” foods and “bad” foods. It is not easy to sort it out.

Most of us spend a couple hours a day in eating or getting ready to eat. If hunger doesn’t tell us to eat, habits do. Other factors in your environment also trigger your eating. Magazine, newspaper, radio and television advertisements tell us what to eat and not eat to make us look good, feel good and live well. Your family heritage is another player in developing your food dictionary.

Food is both on the offensive and defensive teams. It is used to reward good behavior. It is often withheld when behavior is bad. Early in your life your parents controlled your food choices. As you learned to talk and express your needs you became more independent from your parents. You recognized that you were a separate person with your own needs, wishes—and food likes and dislikes. As you grow you are able to explore your food world more fully. You can reshape your habits to meet your needs and get ready for a lifetime of healthy living.

Thinking about food is something few of us do. But recognizing our food values, attitudes and family food heritage helps each of us understand why we eat certain foods.

ACTIVITIES

Activity #1 - The Snacks I Eat

Give each student a copy of Student Worksheet #1-1 and ask them to complete it. Break the class into small groups to discuss the following questions:

• Which foods are checked “never”? Why do you never eat them?

• Which foods are checked “every day”?

• Why do you eat them every day?

• What are some of your reasons for snacking?

• Do you think snacking is a part of other cultures? How? Why or why not?

Have each group share their responses with the entire class. For further exploration, study the meal patterns of foreign countries. Invite a speaker from another country to talk about the meaning of food in his/her country.

Activity #2 - Baker’s Dozen

This is a simulation exercise that will help students narrow their food choices by considering their values and attitudes about food. The students will need paper and pencil to begin.

Read the following situation to the students:

...
and ask the students to respond as you read:

"You live in an area that is very hard to reach by truck, train or airplane. There is a natural disaster in your area that prevents any outside transportation from reaching you. The only food available is from your local grocery store. Because of the demand for food the store must limit your food purchases. You may buy only 13 different foods. What 13 foods will you choose?" (Allow time for student responses.)

"It takes longer than expected to clear roads and airports. The food shortage gets worse. You must now decide what three foods from your list you could do without. Draw a line through the three foods that you will do without." (Student response.)

"As the shortage worsens, you learn that you can only keep three foods from your list of foods. Circle three foods that you would most want to keep." (Student response.)

After reading the situation, break the class into groups of three students. In their groups each member should discuss the answers to the following questions. Allow about 10 minutes for their discussion.

• Why did you decide to do without the three foods you crossed out?
• Why did you decide to keep the three foods you circled?
• What kinds of foods would you normally eat that you think you can do without? Why?

Ask for a report from each group when the groups come back together. Ask what they learned about others and themselves from this activity. Were there any heated debates? If so, why do the students think that happened? How do students think the meaning of food would change if the supply was limited? How might other people in the world who face food shortages feel about food?

Activity #3 - Food Folkways

Yogurt is a milk product that has its roots in Turkey, a country at the eastern end of the Mediterranean Sea. Throughout the Middle East and Europe, yogurt is made daily.

Yogurt became popular in the United States during the 1970s. It was called a "health food." Many thought it was a good "diet food." The truth is that yogurt is no more nutritious than the milk from which it is made. The major difference between milk and plain yogurt is that a special bacteria has been added to break down lactose, the milk sugar, into lactic acid. The result is a pleasant, sour flavor. Like other milk products yogurt may be high or low in calories, depending on the fat and sugar content. Lowfat yogurt is lower in calories than whole-milk yogurt. Plain yogurt is lower in calories than yogurt that has added preservatives or sweeteners. Stirring pieces of fresh fruit into plain lowfat yogurt gives a sweet flavor without a lot of extra calories. Frozen yogurt is more like a soft-serve ice cream. It may or may not be low in fat. It usually has a high sugar content and added color.

Students can make "Fruit Fantasy Yogurt" with this recipe:

Fruit Fantasy Yogurt
Serves 10 - 15

Ingredients
6 cups plain lowfat yogurt
4 cups fresh or frozen unsweetened fruit

Equipment
large bowl
measuring cups
sharp knife and peeler, if needed
cutting board, if needed
large spoon
desks

Directions
1. Wash your hands before beginning.
2. Wash and prepare fruit as necessary. Fruit should be cut into small, bite size pieces. Put into large bowl.
3. Mix in yogurt thoroughly. Spoon into paper cups to serve.

Options
Berries, unsweetened applesauce, and diced peaches are possible fruit choices. If using banana, apples or peaches, dip them in orange juice to keep them from turning brown. Experiment with cinnamon, nutmeg or flavorings like vanilla, grated lemon peel or orange peel, if desired.
Activity #4

Ask students to interview an older person in their family about a special family food tradition or habit. The students should try to identify the origin of the tradition. Students will use the information for a creative writing project that can be turned in or displayed on a bulletin board with the title, "Our Family Food Traditions." What food myths may be present? If the food tradition has ever been broken, what was the response by family? Why do students think food traditions are or are not important? What role do food traditions have in families?

As appropriate, students may share some of their stories with other classmates when their assignment is completed.

Activity #5

Depending on the time of year, ask students to research information pertaining to foods and food traditions for the holidays. For example:

- Halloween - Have treats always been a part of Halloween?
- Thanksgiving - Corn bread, pumpkin, turkey. What foods were really present at the first Thanksgiving?
- Hanukkah - What are the meanings behind foods served during this celebration?
- Christmas - Eggnog, Christmas breads. What are special Christmas foods that are celebrated in other countries?
- New Year - Are there foods that bring good luck for the year?
- Valentine's Day - Is there a story behind the candy hearts?
- Passover - What are the Passover foods?
- Easter - What is the origin of the Easter egg?
- Fourth of July - Are there favorite foods eaten on this holiday?

There are many ideas and traditions that can be explored. Ask the students to organize their information for an oral report. They should focus on particular meanings of foods and influence of people from other cultures. What would happen if traditional foods were not served at holidays? What are some reasons that other countries might celebrate these holidays with different foods? Encourage creativity.
# The Snacks I Eat

<table>
<thead>
<tr>
<th></th>
<th>Every Day</th>
<th>Once or Twice A Week</th>
<th>Once or Twice A Month</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Potato chips, corn chips, pretzels</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Popcorn</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Seeds or nuts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Apples, oranges or bananas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Doughnuts, pies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Yogurt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Ice cream or milk shake</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Cheese or milk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Fruit juice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Soda or fruit punch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Raw vegetables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Candy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Cookies, cake</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Cereal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Crackers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>Pudding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>French fries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>Pizza</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Recipe

Fruit Fantasy Yogurt
Serves 10 - 15

Ingredients
6 cups plain lowfat yogurt
4 cups fresh or frozen unsweetened fruit

Equipment
large bowl
measuring cups
sharp knife and peeler, if needed
cutting board, if needed
large spoon
paper cups
teaspoons

Directions
1. Wash your hands before beginning.
2. Wash and prepare fruit as necessary. Fruit should be cut into small, bite size pieces. Put into large bowl.
3. Mix in yogurt thoroughly. Spoon into paper cups to serve.

Options
Berries, unsweetened applesauce, and diced peaches are possible fruit choices. Experiment with cinnamon, nutmeg or flavorings like vanilla, grated lemon peel or orange peel, if desired.
Nutrition and Self-image

PURPOSE: To help 6th through 8th grade students identify individual and normal differences in growth patterns and explore the relationship of nutrition, growth and self-image.

SUMMARY OF LEARNING ACTIVITIES: Four learning activities are included in this unit. They are:

1. Height and Weight Graphs - 30 minutes
2. Food Diary - Home Activity; Class Discussion - 10-15 minutes
3. Snacks—Fresh Fruit Kabobs and Friends - 45 minutes

OBJECTIVES:

1. The students will explore individual growth patterns.
2. The students will explore the role of nutrition in shaping their self-images.

VOCABULARY:

Adolescent growth spurt - periods of rapid growth, usually occurring between ages 10 and 16

Chronologic - pertaining to time

Eating disorders - inappropriate psychological disorders involving food and eating behavior

Nutrient-dense - having an appropriate amount of vitamins, minerals and protein for the amount of calories in the food

Obesity - overfatness

Sedentary - characterized by quiet activity such as sitting
SUPPLIES/PREPARATION:

Begin unit with a presentation of background information. Continue with activities as you feel appropriate.

Activity #1 - Height and Weight Graphs

Student Worksheet #2-1, “Height and Weight Graphs”
Pencils
Height and weight data from students for previous two or three years if available

Activity #2 - Food Diary

Student Worksheet #2-2, “Food Diary”

Activity #3 - Snacks—Fresh Fruit Kabobs and Friends

Recipes: Fresh Fruit Kabobs, Cheese Spread, and Orange Froth

Ingredients:
Bananas
Peaches
Apples
Grapes
Small container lowfat cottage cheese
Small onion
Small green pepper
Small carrot
Black pepper
Whole wheat or rye crackers
12-ounce can frozen orange juice
Dry milk powder

CREDITS:

Seals, S. *Breakthrough*. Louisiana Cooperative Extension Service.
BACKGROUND:

After this unit, students will explore growth patterns as they relate to self-image. Students will participate in activities that will help them look at individual differences in growth patterns and develop an acceptance of their own personal growth patterns. Nutritional problems that result from inappropriate approaches to food and self-image are also presented.

Growing Up — Your Way

All of us have inherited certain physical traits from our parents. Body build and frame size may be some of them. Some people have inherited a medium build. Others have a thin, willowy appearance. You may be tall and slender or short and stocky. Each person is different and that makes us unique. It really doesn't help to compare yourself to friends because they have their own set of inherited traits that are likely to be different from your own.

Even though you have grown from infancy on you will reach a period of accelerated growth change during the pre-teen and teen years. This adolescent growth spurt doesn't happen the same way for everyone. Not everyone starts their growth spurt at the same time. Girls enter their growth years between ages 8 and 12. Peak growth typically occurs around ages 12 or 13. Female growth may stop at ages 14 to 16.

During their growth phase, boys gain more weight at a faster rate and their growth in height lasts for a longer time than girls. Boys enter their accelerated growth phase about two years after girls, from ages 10 to 14. Their peak growth is around ages 14 and 15. Some teenage males continue to grow into their early 20s.

For a while, shortly before adolescence, girls will be slightly taller than boys. At age 13, however, many boys will pass the girls in height. At the end of their growth phase boys will have more muscle mass than girls and, overall, they will weigh more.

Age is definitely a poor index with which to monitor growth. Three males or females at the same chronologic age can be at three different phases of adolescent growth and development. One may just be entering his/her growth phase, another is in the middle and the third has completed growth.

The bottom line is that it is okay to be who you are. Keep track of your own growth. Don't be too concerned about how you compare to your friends and schoolmates.

But I Don't Like The Shape I'm In

Sometimes many of us just don't feel good about ourselves. During the time when you are going through many growth changes you might be a little dissatisfied with how things are going. Teenage girls worry about getting too fat while teenage boys worry about not growing tall enough and developing muscles. Hold on! Give yourself time. It's not unusual for teenaged youths to see themselves differently from what they actually are. Sometimes we get "tunnel vision" or "faulty focus." We forget to look at the big picture. Just remember that many changes are occurring. If you pay attention to some good habits and make wise food decisions your growth will be fine! It takes energy and many nutrients to grow into the person you were meant to be. Don't leave anything out! (Teachers, you may briefly review some of the nutrients and their uses here. If needed, the following table about "Nutrients for Growth and Health" may be copied for a handout.)
# NUTRIENTS FOR GROWTH AND HEALTH

<table>
<thead>
<tr>
<th>Nutrients</th>
<th>...and What They Do</th>
<th>...and Food Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein</td>
<td>Builds and repairs muscles. Helps fight disease and infections. Supplies energy.</td>
<td>Meat, poultry, fish, legumes, milk, cheese, eggs, grains, nuts</td>
</tr>
<tr>
<td>Carbohydrates</td>
<td>Provide energy for muscle function. Spare protein for nonenergy functions by helping the body use fats effectively.</td>
<td>Cereal, grains, vegetables, fruit, candy, sugar, syrup, jam</td>
</tr>
<tr>
<td>Fats</td>
<td>Supply concentrated energy. Help the body use vitamins A &amp; D.</td>
<td>Margarine, oil, butter, meat fat, cream, mayonnaise, nuts, (eat fats in moderation)</td>
</tr>
<tr>
<td>Water</td>
<td>Helps in digestion and elimination. Regulates the body temperature.</td>
<td>Water, beverages, soup, vegetables, fruit</td>
</tr>
<tr>
<td>Calcium</td>
<td>Combines with other minerals and protein to build and maintain bones and teeth. Contributes to blood clotting.</td>
<td>Milk and milk products, dark green, leafy vegetables, dried beans and peas</td>
</tr>
<tr>
<td>Iron</td>
<td>Helps carry oxygen throughout the body. Helps cells use oxygen.</td>
<td>Liver and other organ meats, lean meat, egg yolks, dry beans and peas, dark green leafy vegetables, whole grain and enriched breads and cereals</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>Helps maintain healthy eyes, hair, skin. Helps the growth process.</td>
<td>Dark green and deep yellow vegetables, deep yellow fruits, whole milk and fortified lowfat milk products</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>Maintains strong blood vessels, bones, teeth and skin.</td>
<td>Citrus fruits, berries, broccoli, tomatoes, cabbage, potatoes</td>
</tr>
<tr>
<td>B Vitamins</td>
<td>Help the body utilize energy from carbohydrates. Help maintain healthy skin, digestive and nervous systems.</td>
<td>Cereal, grains, meat, poultry, fish, legumes, milk, and milk products</td>
</tr>
</tbody>
</table>

Adapted from *Food, Fitness and Fun*, University of Maine Cooperative Extension Service.
Is My Weight Okay?

During the adolescent growth spurt it is normal to almost double body weight. This is alarming to some young girls who live in a society with its eyes on the bathroom scales. Unfortunately too many young people get into trouble with their eating habits because of unrealistic expectations about their weight.

Growth does bring changes. After they complete their growth phase girls will have slightly more body fat than boys. This is normal. Overly cautious girls can get into trouble if they try to manipulate their eating habits to avoid this natural phase of growth. Eating disorders, or inappropriate behaviors toward food, can be a special problem during this time. Untreated eating disorders lead to illness, depression and even death.

Two common eating disorders are anorexia nervosa and bulimia. These are psychological disorders dealing with food and food behavior. Persons with anorexia nervosa voluntarily starve themselves. Bulimics binge excessively on foods then often seek ways to rid themselves of the foods they have eaten. They may use laxatives, enemas or self-induced vomiting. Eating disorders require medical and psychiatric help. Sudden and continued weight loss, obsession with food, guilt feelings about food, and secretiveness are among the signs of eating disorders.

For some youths obesity is a problem. It can affect how you think and feel about yourself. One thing is certain. The standards for judging obesity in adults should not be the same standards for adolescents. Height and weight tables are usually designed for adults who have reached full growth and maturation. They are inappropriate for preteens and teens who may be at various growth stages. The best indicator may be to compare your present height and weight to your growth at younger ages to check for deviations from your own normal growth pattern.

In addition, standard growth charts for preteens and teens can reveal when your weight does not match your height. But very muscular children will weigh more than those with less muscle because muscle weighs more than fat. So even growth charts geared for adolescents have to be carefully evaluated.

If obesity is present and moderate, the best approach for treatment is to follow a sensible eating plan that includes a variety of foods from the basic food groups. Adolescents should eat foods to allow for height growth but leave out many of the “extra” foods that only provide calories from fat and simple sugars. As you grow taller, you will also slim down.

Physical activity also is an important part of preventing and treating obesity. It uses extra energy and it builds muscle tissue. For preteens and teens, physical activity should be a regular, fun and accepted part of the daily routine. Sedentary activity such as watching television can be a particular hazard at this age. In the mid '80s researchers found a direct relationship between body weight and the number of hours spent watching television.

Severely overweight adolescents may be reluctant to be physically active. They may be uncomfortable in situations where they have to wear fewer clothes or undress in front of others. It is important to match physical activity with the adolescent’s needs and desires.

If obesity is severe, adolescents may seek out a team approach to help them with weight control. Family members should be a part of the team. Children and youths are more successful with weight control when they are in a supportive family environment. Health professionals on the team, such as medical doctors, nurses, registered dietitians and others, will provide medical, nutritional, social and emotional support. The program will help the teen examine self-worth, develop decision making skills, select proper food choices, and understand the relationship between weight and physical health.

ACTIVITIES

Activity #1 - Height and Weight Graphs

Background: Growth charts are tools to compare height and weight with the average for a given age. Because young people grow and develop at many different rates and times, determining appropriate heights and weights can be difficult. Generally, youths of average heights would be expected to have average weights. Youths of above-average heights would be expected to have above-average weights, and so on.

Growth charts do not indicate developmental stages or the relationship between lean and fat body tissue. Because of these faults do not allow students to be preoccupied by comparing their height and weight information to others. The best use of a growth chart is to allow individuals to chart their own growth path and compare their current growth with past growth. Help stu-
dents feel good about themselves regardless of height or weight.

Ask students to bring height and weight growth data from home, if available. Height and weight measurements from the last two or three years would be appropriate. Using the height and weight graphs (Student Worksheet #2-1) for pre-adolescent and adolescent males and females, ask students to plot their own growth data. They should observe the percentiles in which their heights and weights fall. If possible, have students keep track of their height and weight changes over the remainder of the school year. Ask students to look for deviations from their usual growth patterns. Are there some growth spurts? Does height or weight change most during growth spurts? At what ages are some of the growth spurts?

Activity #2 - Food Diary

Students will keep a diary of their food intake for at least three days—two weekdays and one weekend day. The diary will be a record of the foods and drinks consumed and the feelings, attitudes and moods associated with the meals and snacks. Students should use Student Worksheet #2-2.

As diaries are returned, discuss the kinds of foods eaten and the feelings, attitudes or moods that may have affected eating. Do eating habits fit a time pattern? Are eating times regular or irregular? Do students eat more meals or snacks? What are the predominant moods associated with eating? How do students classify their moods? If moods are classified as positive or negative, how does that affect behavior? If “negative” moods result in eating, what are some possible reasons? What are other ways that students handle their moods? Are they helpful or not?

Activity #3 - Snacks — Fresh Fruit Kabobs and Friends. (Adapted from Food, Fitness, and Fun. University of Maine Cooperative Extension Service.)

Snacking is a common American food practice. It has been estimated that as much as one-fifth of a child’s caloric intake comes in the form of snacks, not meals. Snacks can be an important source of nutrients, especially for preteens and teens.

Snacks may have few calories, a moderate number of calories, or a lot of calories. The nutrient content may be low, medium, or high. A food that has a high concentration of nutrients and relatively few calories is called a nutrient-dense food. Nutrient-dense snacks are low in calories but have loads of nutritional value—especially vitamins and minerals.

Prepare Fresh Fruit Kabobs, Munchy Crunchy Cheese Spread and Orange Froth for snacks. These nutrient-dense snacks are from the fruit and vegetable group, the milk and cheese group, and the bread and cereal group.

While eating the snacks, discuss how snacking can help or hurt a daily food plan and what role, if any, it might play in image building.

Ask students if snacking is appropriate for them. What are some benefits of snacks? What are some disadvantages of snacks? Based on the list of benefits/disadvantages ask students to write a position statement about whether or not snacking should be a part of their meal plan.
Girls from 2 to 18 Years
Stature for Age

Age (years)

U.S. Department Health and Human Services, National Center for Health Statistics
Girls from 2 to 18 Years
Weight for Age

U.S. Department Health and Human Services, National Center for Health Statistics
Boys from 2 to 18 Years

Stature for Age

U.S. Department Health and Human Services, National Center for Health Statistics
Boys from 2 to 18 Years

Weight for Age

U.S. Department Health and Human Services, National Center for Health Statistics
# Food Diary

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<th>Food and Drinks</th>
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Recipes

Fresh Fruit Kabobs

**Ingredients**
- 2 bananas
- 2 peaches
- 3 apples
- 1/2 pound seedless grapes
- 1 cup orange juice

Or use fruits in season

**Equipment**
- toothpicks
- slicing knife
- paring knife
- mixing bowl
- cutting board
- slotted spoon
- colander

**Directions**
1. Wash fruits under cool running water and set aside to drain in colander.
2. Pour orange juice in bowl.
3. Peel and slice bananas into half-inch slices. Put in bowl with orange juice.
4. Cut peaches in half and remove pits. Cut each half into 4 to 6 slices and then each slice in half crosswise. Put in bowl with bananas.
5. Cut each apple into 8 to 12 slices. Remove all bits of core and seeds. Put in bowl with other fruit.
6. String 2 or 3 different pieces of fruit together on each toothpick.

Munch Crunchy Cheese Spread

**Ingredients**
- 1 cup lowfat cottage cheese
- 1 small onion, peeled and finely chopped
- 1 small green pepper, finely chopped
- 1 small carrot, peeled and finely chopped
- 1/4 teaspoon pepper
- whole wheat or rye crackers

**Equipment**
- paring knife
- slicing knife
- vegetable peeler
- cutting board
- mixing bowl
- large spoon
- blender
- table knife

**Directions:**
1. Wash, peel, and chop vegetables into very small pieces.
2. Place cottage cheese in blender and whip until smooth. Some milk may need to be added to blend smoothly.
3. Stir vegetables and pepper into cottage cheese.
4. Spread on crackers and enjoy!
Recipes, continued

Orange froth

**Ingredients**
- 6 cups water
- 1 12-ounce can frozen orange juice concentrate, partially thawed
- 2 cups nonfat dry milk powder

**Equipment**
- measuring cup for dry ingredients
- measuring cup for liquids
- blender
- drinking cups

**Directions:**
1. Pour ingredients into blender. Whip until frothy.
2. Pour into cups and serve
Increments in Height

Age in years

CM per 6 mo.

Early maturing boy
Late maturing boy

Male

Age 14

Age 12

Differences in Size and Stature for Pre-teens and Teens of the Same Age
Exercise and Self-image

PURPOSE: To help 6th through 8th grade students explore personal physical fitness.

SUMMARY OF LEARNING ACTIVITIES: The four activities that help students meet the objectives of this unit are:

1. Moving On - 10 minutes
2. Pulse Jump - 10-15 minutes
3. Assessing Fitness - 30 minutes
4. My Fitness Goals - 30 minutes

OBJECTIVES:

1. The students will identify the three types of exercise that are needed for physical fitness.

2. The students will assess their own levels of physical fitness.

3. The students will develop a plan to reach an appropriate fitness level using practical activities.

VOCABULARY:

Aerobic - requiring oxygen
Cardiorespiratory - pertaining to heart and lungs
Endurance - ability to perform work over time
Flexibility - ability to move, bend and stretch
Strength - ability to apply force; to push and pull
SUPPLIES/PREPARATION:
BEGIN UNIT WITH PRESENTATION OF BACKGROUND INFORMATION. CONTINUE WITH ACTIVITIES AS YOU FEEL APPROPRIATE.

ACTIVITY #1 - MOVING ON

STUDENT WORKSHEET #3-1 "MOVING ON"
PENCILS

ACTIVITY #2 - PULSE JUMP

STOP WATCH OR CLOCK WITH A SECOND HAND

ACTIVITY #3 - ASSESSING FITNESS

STUDENT WORKSHEET #3-2 "TESTING FITNESS"
STOP WATCH OR CLOCK
AREA FOR RUNNING SUCH AS GYMNASIUM OR OUTDOORS - THE AREA FOR THE ENDURANCE TEST WILL NEED TO BE PRE-MEASURED.

ACTIVITY #4 - MY FITNESS GOALS

STUDENT WORKSHEET #3-3 "MY FITNESS GOALS"
STUDENT HANDOUT #3-1 "TAKING EXCERCISE TO HEART"
STOP WATCH OR CLOCK WITH SECOND HAND

CREDITS:

GENTRY, P. FITTING IN FITNESS. LOUISIANA COOPERATIVE EXTENSION SERVICE. 1987.
SPRUILL-POLLOCK, M.A., MOCK, J., HAWKINS, L. AND McKINNEY, T. MOTION FOR LIFE. NORTH CAROLINA AGRICULTURAL EXTENSION SERVICE.
HENDRON, R. EXERCISE FOR A HEALTHY YOU. UNIVERSITY OF TENNESSEE, AGRICULTURAL EXTENSION SERVICE.

THE DIET-EXERCISE CONNECTION. TEXAS AGRICULTURAL EXTENSION SERVICE.
In this unit students will explore their own levels of physical fitness according to the three components of fitness: strength, flexibility and endurance. Students will be encouraged to identify activities that they can use on a regular basis to maintain or improve fitness. This unit addresses all students regardless of desire to participate in organized sports programs. It encourages the concept of lifetime activity.

National norms for physical fitness are available. This unit may be taught by a physical education teacher who has the information or write:

President's Council on Physical Fitness and Sports
400 Sixth Street SW
Washington, D.C. 20201

Additional information may be obtained from the:

American Alliance for Health, Physical Education, Recreation and Dance
1900 Association Drive
Reston, VA 22091

Is Feeling Fit Really Fine?

If you haven't checked yourself out lately maybe it is time you did. Physical fitness is more than going to gym class or playing in a competitive game. Your physical fitness affects the way you look and move. Your response in an emergency depends on your level of fitness. Imagine for a minute that you are in danger. Will you be able to get away? Will you have the strength or endurance to move away from the situation?

Competitive sports offer one way to become physically fit but they are not the only road to fitness. Lifetime sports, such as walking, hiking, biking, dancing, swimming, cross country skiing, roller skating, tennis and racquetball are other activities that can be enjoyed now and as you grow older. Only two out of one hundred kids who are now involved in competitive sports will still be involved in that sport by the time they reach age 21.

What will happen as you grow older? Too often adults in their 20s, 30s, 40s or older slip into a very inactive lifestyle. Weight can become a problem. Muscle tone decreases. It becomes difficult to climb to the top row of seats in a gymnasium. Too often adults are spectators rather than participants in active and fun-filled events. Is this the life for you?

Your body is designed to run and move. There are many physical skills that you can learn now to use throughout your lifetime. Perhaps it's time to develop some activities that you like and enjoy.

There are many benefits to physical activity. Exercise can help keep weight under control. It helps to improve muscle tone and firmness so that clothes fit better. Many people who are physically active say that exercise helps them to get out of emotional slumps. When things aren't quite right sometimes it helps to go out for a walk or a quick game of shooting baskets on the basketball courts. Some people use gardening as their physical activity. Exercise often helps to build a "can do" attitude. Once you have learned the skills to tackle a certain activity you feel good sharing and showing that activity to others.

Stepping Into Exercise

Here are some key steps to help you work into a successful fitness program. First, choose activities that you enjoy. If you select an activity that makes you grumble you won't stick with it very long. Second, ease into your physical activities. Assess your current level of fitness and then build from there. If you start "full speed ahead" you will probably experience some sore muscles that will keep you from continuing your plans.

Next, include a sampling of well-rounded activities to fully develop your fitness level. Some physical activities are better for building strength while others work on your endurance. Finally, learn to pace yourself and keep your activities sensible.

To develop a well-rounded fitness program select activities that will increase your flexibility, improve your strength, and lengthen your endurance. Flexibility is your ability to move your muscles to their fullest extent. With flexibility you will be able to move, bend and stretch easily. As you grow older muscles may tighten up if you don't pay attention to activities that will increase your flexibility. Stretching and holding the stretch of your muscles is one way to increase flexibility.
Before and after a strenuous workout session or activity, it's a good idea to prepare your muscles by taking them through some basic stretching exercises. Shoulder shrugs, shoulder touches, sustained upper body twist, arm reaches, and leg or hurdler's stretches are examples of stretching activities. (See Student Handout #3-1.) Sometimes when you have been studying hard or working at a desk you can energize yourself by taking time out to stretch.

Strength is your ability to apply force — to push and pull with force. Building strength adds muscle tone to your body. There are over 600 muscles in your body. If you plan to build strength in some of them you will need to go to work. Some people have trouble with their backs. Did you know that building strength in your abdominal muscles actually helps to keep the back in order? It's important to keep legs and arm muscles strong so they can perform the daily tasks that are before you. Sit-ups, push-ups and pull-ups plus several leg activities are all examples for strength building exercise.

Endurance is your ability to keep performing work without getting tired or running out of breath. Endurance (or aerobic) activities help to develop the cardiorespiratory (heart and lungs) system. Your body becomes more efficient in its heart work and in using oxygen in your lungs and muscles. Your heart beats about 100,000 times each day. Anything you can do to help your heart will certainly be appreciated!

Usually endurance activities will be those that move you through space. Running, jogging, swimming, walking, bicycling, and rope jumping are endurance type activities. As you perform endurance activities your pulse rate is likely to increase. The idea is to exercise your heart at a rate that is approximately double your resting heart rate. This helps to strengthen and improve it.

**Planning for Activity**

To be sure of your activity, plan to build it into your day. An exercise period should begin with a stretching and warm-up period. When you stretch, hold the muscles that you will soon be working in the more strenuous period for 30-60 seconds at a time. To warm-up, gradually ease into the activity. For example, if you plan to bicycle, begin at a slow steady pace and then gradually increase speed or intensity. Following your strenuous activity give your muscles a chance to cool down. If you are running, slow down to a jog and then a walk. Your pulse rate should gradually slow down, too. Toward the end of the cool down period stretch the muscles you have just worked. This will help to keep them flexible.

While you are planning special activities to improve your fitness, don't forget the little things you can do. Turn off the television and help around the house, walk whenever possible, take the stairs not the elevator, or do more yard work. The idea is to think of ways to keep yourself moving. All activity counts.

**ACTIVITIES**

**Before participating in these activities check for students who might not be able to participate fully due to health or medical reasons.**

**Activity #1 - Moving On**

Use Student Worksheet #3-1. Students will check items that will help them be more active. As a class you may take a few days or a week for the students to practice some of the activities they have checked. At a later class session schedule a report of the students' progress toward increased activity. Are they meeting their goals? What helps or hinders them from meeting goals? Is it possible to change the obstacles? If so, how?

**Activity #2 - Pulse Jump**

This activity helps students identify the effect of exercise on heart activity. Students will take their pulses at rest. Pulse may be felt by placing the first two fingers of one hand on the inside wrist of the opposite arm or on the carotid artery located on the side of the neck. (Don't use thumbs for taking pulses.) Count the number of beats for 15 seconds and multiply by four to get the resting heart rate. Students then should jump in place for two minutes and re-check heart rate. Has the heart rate doubled? Has the heart rate more than doubled? After a one minute rest following jumping what is the new heart rate? Is the rate returning to normal? If not, what does that indicate about fitness? (If physically fit, heart rates should be returning to normal after rest.) What can students do to increase their heart fitness?
**Activity #3 - Assessing Fitness**

Students can check their current level of fitness for strength, flexibility and endurance in this activity. Students should be wearing comfortable clothing that will allow them to move. For the flexibility and strength activities students should work in pairs. The endurance activity should be done after the flexibility and strength activities because they will serve as part of the warm-up period. Before the endurance test ask the students to complete their warm-up by walking briskly for 30-60 seconds. For the endurance activity use an area that you can measure distance beforehand. If students will be running laps ask them to keep track of their own number of laps. When students complete the five minute run have them walk through a cool down period and finish with some stretches. Students can use Student Worksheet #3-2 to record their results. Retest in four weeks.

**Activity #4 - My Fitness Goals**

This activity is best completed after Activity #3, Assessing Fitness. Ask students to complete Student Worksheet #3-3, “My Fitness Goals.” To complete this worksheet students will need to identify their resting heart rate. To take a resting pulse, students should be quiet and at rest for a minimum of five minutes. Using the first two fingers on one hand they should find their pulse on the inside wrist of their opposite arm or on the carotid artery located on the side of the neck. Students should count the number of pulses for 15 seconds. For heart beats per minute, students will multiply their count by four. (Never use a thumb to take a pulse because it has a pulse of its own.)

When students are setting fitness goals in this activity ask them to set short-term goals for a four week period. At the end of the four weeks you can review the goals and level of fitness. Students should also re-check their resting pulse rates. What changes, if any, have been made in fitness level and resting pulse rate? If there are changes, what has caused them? What are the students' feelings about the changes? Have the changes been worth the effort? Will students continue their fitness goals? Why or why not? Will they make changes in their fitness goals? In what way? If there are not any changes recorded, why not? (Students already fit, not working toward fitness, other reasons?) What conclusions can students make about working toward an appropriate fitness level?

One part of the success of this worksheet is helping students identify people who can help them with their fitness plans. Physical education teachers, coaches, parents, friends or you may be logical choices. Be ready for some suggestions for the students.

Student Handout #3-1 should be used with this activity to help students make exercise choices.
Taking Exercise to Heart

How to Stretch

To get the most out of a stretching session, keep in mind that stretching should be relaxing and pain-free. The key to successful stretching is how you feel when you stretch, not how far you move.

Flexibility and stretching exercises should be done slowly and smoothly allowing the muscles to relax and "let go." Vigorous bouncing, bobbing and pulling defeats your purpose. To begin stretching exercises, move slowly. When the first sign of tension occurs, hold that position for 10-30 seconds, then relax. Repeat the exercise several times.

If the stretch begins to hurt, stop. Overextending poorly prepared muscles can lead to injury. If stretching feels good you are probably doing it right. Include stretching exercises as part of your daily routine.

Side Bends: Stretches side muscles and upper arms. Be sure not to arch your back.

Wall pushes: Stretches calves, Achilles tendons and ankles. Always keep your back straight.

Knee hugging: Stretches back of thighs and lower back. Bring your knee up slowly and in good form.

Single Knee Raise:

The single knee raise stretches out the lower back and the hamstrings (muscle on the back of the thighs) to improve your flexibility.

• Lie on the back with knees bent and assume the pelvic tilt position.
• Slowly and smoothly raise one knee to chest.
• Then, gently, pull knee slowly toward chest by placing your hands over the knee (not over the lower leg).
• Hold for a count of five.
• Return to starting position and repeat with same knee three times, gradually increasing to 10 times.
• Repeat with other knee.
How to Increase Your Strength

To strengthen any muscle, it must be worked harder and longer than normal. Increase work load on the muscle gradually to get the best improvement in muscular strength. Work load on a muscle can be increased by doing more repetitions and/or by adding weight. If you try to do too much at first you will risk injury.

• Lie on back with arms by your sides.
• Bend your knees at a 90 degree angle.
• Roll your head and shoulders forward and upward, far enough to feel tension in the abdominal muscles.
• Do not lift lower back off the floor.
• Return to the starting position.

*Never do straight leg sit-ups or curl-ups. They can injure the lower back.

Arm Circles:*  
• Stand with feet shoulders width apart.
• Extend arms at shoulder level, palms up.
• Make five to ten forward circles with arms.
• Make five to ten backward circles.
• Turn palms down and make five to ten forward and backward circles.
• Keep arms straight making circles from shoulders.
• Vary the size of the circles from small to large diameter.
• Hold a book in each hand to increase difficulty.

*To increase work load, add weight to each hand ( canned goods).

Leg Lifts:*  
• Stand erect holding onto a chair or stable object for balance with right hand.
• Lift leg to the front three to ten times; lift leg to side three to ten times; lift leg to back three to ten times.
• Hold chair with left hand and repeat exercise sequence with right leg.
• Keep knees straight but not locked.
• Keep back straight.
• Do not throw or swing your leg; lift legs in a controlled and purposeful movement for best results.

*To increase work load, add weight to each foot ( heavy shoes).

Modified Push-Ups:  
• Lie on floor, face down, legs together.
• Place hands beneath shoulders, palms down.
• Keeping knees on floor, push upper body off floor until arms are fully extended and body is in straight line from head to knee.
• Lower until chest touches the floor.
• Keep knees on floor and back straight.
• Repeat five to 23 times.

Side Leg Raise:*  
• Lie on your left side.
• Use your arms to help keep you balanced there.
• Lift right leg straight up from your side as high as you can.
• Lower the leg, and continue repeating the movement five to ten times.
• Roll over and repeat with your left leg.
• It is important that you keep your body and leg straight and stay on your side.

*To increase work load, add weight to each foot ( heavy shoes).

Leg Straddles:  
• Stand with feet as wide apart as comfortably possible.
• Bend forward from waist and place hands on knees.
• Bend right knee, hold briefly, then straighten knee.
• Bend left knee in same manner.
• Repeat three to five times on each side.

*Nutrition, Fitness, and Youth*
Improving Endurance

Improve endurance through “heart” exercises you enjoy. Aerobic activities will strengthen your cardiorespiratory (heart and lungs) system. Ideally you should participate in aerobic activity at least three days a week for a minimum of 15 to 20 minutes. You will know if you are working at a good aerobic rate if you can carry on a conversation without being breathless while you exercise. On the other hand, if you can sing your favorite song you are probably not exercising at a high enough level.

Be sure to include warm-up and cool-down periods with your endurance-building session. Warming-up reduces muscle strain and injury. Cooling down gently returns your body to a less active state and prevents muscle cramps or sudden dizziness.

Activities for building endurance and aerobic capacity are:

- Running
- Jogging
- Brisk Walking
- Hiking
- Bicycling
- Racquetball
- Tennis
- Cross-Country Skiing
- Basketball
- Swimming

Information adapted from: The Diet-Exercise Connection. Texas Agricultural Extension Service.
Moving On

From the following list check the things you can do to become more active.

___ Stand up while talking on the telephone.
___ Run my own errands rather than asking another family member to do it while they’re up.
___ Limit television watching to no more than one hour on school nights.
___ Walk to school.
___ Always walk if the distance I need to go is less than a mile.
___ Go walking, hiking, bicycling, swimming or ___________________________ at least once a week.
___ Do yard work (mow lawn, rake leaves, shovel walks or whatever is in season).
___ Participate in an organized or intramural sport.
___ Your ideas: ___________________________________________________________
Testing Fitness

It's time to checkout. You will do three simple tests that will be indicators of your flexibility, strength and endurance. You will be working in partnership with a friend for two of the tests. But remember, you are not in competition with anyone else. This is for you. After four weeks, do a re-test.

REACH YOUR FEET

Use a box at least 12 inches high. Tape a ruler on top of the box with the end of the ruler even with the edge of the box. Remove your shoes and sit on the floor with the bottom of your feet against the box. Your feet should be about 12 inches apart. Extend your arms in front of you with your hands together. Stretch slowly forward from your waist. Do not bounce. Bouncing tightens your muscles instead of stretching them. Reach toward the ruler for three trial reaches. On the last stretch forward, hold your position for 5 - 10 seconds while your partner checks how far you have reached. Record the number of inches below.

BENT KNEE CURL UP

This activity tests the strength of your stomach muscles. Be sure to follow the directions to avoid any muscle strain. Lie on your back with arms by your sides. Keeping your feet on the floor, bend your knees at a 90 degree angle. Roll your head and shoulders forward and upward to feel tension in your stomach muscles. Do not lift your lower back off the floor. Return to starting position and repeat as many times as you can in one minute. Record your curl ups below.

RUN/WALK/RUN

Get ready for the run. With good shoes on and comfortable clothing prepare yourself for a five minute run/walk. The idea will be to go as far as you can in five minutes. Be sure to pace yourself and include proper warm-up and cool-down activities. Record your distance below.

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<th>How Far</th>
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<td>Reach Your Feet</td>
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<td>Curl Ups</td>
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My Fitness Goals

Based on my current level of fitness my fitness goals are:

My resting heart rate is _______.

To improve or maintain my fitness level I will do the following activities for at least the next four weeks:

For strength:

For flexibility:

For endurance:

The following people would be helpful to me in my fitness plan:

Signed ___________________________ Date ___________
Food and Exercise Connection

PURPOSE: To help 6th through 8th grade students identify the link between proper nutrition and athletic performance.

SUMMARY OF LEARNING ACTIVITIES: Students may use five different learning activities to help meet the objectives of this unit. They are:

1. Winning Sports Nutrition: The Training Diet - 45 minutes
2. The Pregame Meal - 60 minutes
3. Keeping Fluid Levels Up - 45 minutes
4. Family Waterworks - Home assignment; (25 minutes for classroom presentation)
5. Investigative Reporting - Home assignment; (20 minutes for class presentation)

OBJECTIVES:

1. The students will select foods that fit the training diet for athletes.
2. The students will select foods that keep energy levels up during physical activity or competition.
3. The students will investigate the carbohydrate content of various sports drinks.
4. The students will explore fluid needs during physical activity or competition.
5. The students will investigate the training diets of various types of athletes.
VOCABULARY:

Anemia - a condition in which blood lacks red blood cells or hemoglobin resulting in fatigue and weakness

Dehydration - loss of water or fluid

Electrolytes - an electric conductor; in the body some of the minerals serve as electrical conductors to transmit nerve impulses

Niacin - one of the B-complex vitamins

Recommended Dietary Allowances - recommended amounts of nutrients for individuals based on sex and age; the recommended amount includes a margin of safety

Riboflavin - one of the B-complex vitamins

Thiamin - one of the B-complex vitamins

SUPPLIES/PREPARATION:

Begin this unit with a presentation of background information. Continue with activities as you feel appropriate.

Activity #1 - Winning Sports Nutrition: The Training Diet

Order video “Winning Sports Nutrition: The Training Diet” through your local University of Nebraska Cooperative Extension office.

Student Worksheet #4-1, “Rating Your Training Diet”

Student Handout #4-1, “Your Training Table Guide”

Pencils

Activity #2 - The Pregame Meal

Student Worksheet #4-2, “The Pregame Meal”

Nutrient analysis computer program

(FOODAY is a University of Nebraska Cooperative Extension microcomputer program that may be used. An IBM computer is needed to run the program. Contact your local University of Nebraska Cooperative Extension office about using the FOODAY microcomputer program.)

Student Handout #4-2, “Guidelines for Your Pregame Plan”

Student Handout #4-3, “Foods to Choose for Pregame Meals”

Pencils

Activity #3 - Keeping Fluid Levels Up

Variety of juice products, pop and sports drinks that have nutrient labels

Student Worksheet #4-3, “Keeping Fluid Levels Up”
Activity #4 - Family Waterworks

Order video, “Teen Athletic Nutrition” through your local University of Nebraska Cooperative Extension office
Student Worksheet #4-4, “Tapping Your Family Waterworks”

Activity #5 - Investigative Reporting

Invite a local news or sports reporter to talk to your students about key points in writing a good news story. Be sure your guest understands the nature of the student assignment.

CREDITS:

Reber, R.J. and Heinisch, J. The PreGame Meal Planner. University of Illinois at Urbana-Champaign, Cooperative Extension Service.
BACKGROUND:

After presentation of the information on "Food and Exercise Connection," students will learn about appropriate dietary choices for athletic competition. Keeping energy levels and fluid levels up, and eating for growth needs and training/competition needs will be explored. Students will participate in decision making activities and act as investigative reporters.

After this unit, students will be able to make appropriate food choices for participation in athletic activities.

Making Food and Fluids Work for Competition

Many preteens and teens have a growing interest in participating in sports for competition and fun. Many youths are real competitors and are interested in gaining an edge over others participating in the same sport. To reach your highest potential, all body systems must be perfectly tuned. Good nutrition is closely related to your well-being and ability to perform. All of the physical conditioning and expert coaching in the world could go to waste if you don't pay attention to proper nourishment.

Some nutrition information for athletes is faddish and may even be harmful. There are no miracle foods to help you perform better. The key to proper nutrition planning is to combine many different foods to reach a balance. Since many of you are still growing, you will need to make sure you get enough energy to grow properly and to last through training and competition.

The nutrients — protein, carbohydrates, fats, vitamins, minerals (including trace minerals) and water — work together as a team to meet your nutritional needs. Each of these nutrients performs special functions to help your body perform. When one is missing you may not reach peak performance.

Carbohydrates

Carbohydrates are the major fuel source for exercise. Your muscles prefer to use carbohydrates. They are an economical energy source, too. More than half of your calories should come from carbohydrate-rich foods. Pasta, bread and bread products, cereal and cereal products, dry beans and peas, fruits and vegetables are good carbohydrate food sources.

Candy, pop and desserts are also carbohydrate sources. But they should be eaten only after you are sure you have selected other foods that help you meet your needs for protein, vitamins and minerals.

Protein

Proteins are the nutrients that help you grow and repair or maintain your muscles and bones. At this time in your life you do need to pay special attention to protein to meet your adolescent growth needs. At one time it was believed that muscle-building exercise greatly increased dietary protein needs. This led to special high-protein meals and drinks for athletes. However, your protein needs for muscle development are not much greater than the needs of your non-athletic friends.

The slightly increased protein needs of your growth years and your training level can be met easily without high protein diets. There's no need to double the serving size of protein-rich foods. At least two moderate servings of lean meat, fish, poultry or other meat substitute plus a minimum of four servings from the milk group will put you well on the road to meeting your protein needs.

Fats

Food fats are a concentrated source of energy and they supply some essential food elements that keep you healthy. Ounce for ounce fat has twice the energy value of carbohydrate or protein. Only about one-third of your calories should come from fat. It is important to remember that carbohydrates are the most efficient fuel for your body. You should choose starchy vegetables, pastas, cereals and bread before you choose fatty foods. Fatty foods eaten before competition take longer to digest than carbohydrate-rich foods. They may leave you feeling sluggish and uncomfortable.

Vitamins And Minerals

These tiny food elements are necessary to keep your body running smoothly and efficiently. They are needed in very small amounts that you will get when you eat a variety of foods. All food groups — milk, protein-rich, vegetable/fruit and bread/cereal group — will help you meet your vitamin and mineral needs.

In an effort to eat to win, some athletes think they need to use large doses of vitamins from pills or supplements. The use of a simple
A multi-vitamin supplement which contains no more than 100% of the Recommended Dietary Allowance for any nutrient is not going to be harmful. It may not help you perform better either. Supplementation in extremely large doses can be extremely harmful. It may reduce your ability to perform.

Let's review a few of the vitamins and minerals of interest:

**B Vitamins.** As a group, B vitamins (especially riboflavin, thiamin and niacin) are involved in using energy. Since energy is of great concern to an athlete it might be reasonable to think that athletes need more B vitamins than non-athletes. Most of your B vitamin needs will be met if you meet your energy needs. These vitamins are easily found in protein-rich foods, milk, and bread and cereals.

**Vitamin C.** Vitamin C is necessary for making one of the major components of skin, tendons and bones, and it helps with oxygen use. It is important to get adequate amounts but there is no evidence that you will perform better if you have more vitamin C than your body needs. When you select a variety of fruits and vegetables, especially citrus fruits, you will easily meet your vitamin C need.

**Iron.** This mineral is especially important because you are growing. Lack of iron in your body can result in anemia. You will feel tired and sluggish. Just like your non-athlete friends who are growing you will need to get plenty of iron-rich food sources such as meats and enriched breads and cereals.

Young female athletes may have a particular problem meeting iron needs. If you think there might be a problem, check with your family doctor.

**Calcium:** This mineral is a concern for female athletes. For some reason teenage girls sometimes give calcium-rich foods such as milk and milk products a bad name. Without proper calcium your bones won't be as strong as they could be.

All teens and pre-teens need at least four servings of calcium-rich foods each day to help meet calcium needs for their growth spurts. To keep fat intake at moderate levels select low-fat dairy products such as lowfat milk, lowfat cheese, lowfat or nonfat yogurt and ice milk. Other calcium-rich food sources are dark green, leafy vegetables, dried beans and peas and canned fish such as salmon or sardines that contain small pieces of softened bone.

On the plus side, exercise along with adequate calcium in the diet can help to improve bone strength. Teens in sports programs who plan carefully for calcium-rich diets may be doing their bones a service!

### Dietary Calcium Equivalents

Foods that contain approximately the same amount of calcium as one cup of milk:

<table>
<thead>
<tr>
<th>Food</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buttermilk</td>
<td>1 cup</td>
</tr>
<tr>
<td>cheddar cheese</td>
<td>1 1/2 oz</td>
</tr>
<tr>
<td>cottage cheese</td>
<td>2 cups</td>
</tr>
<tr>
<td>yogurt</td>
<td>1 cup</td>
</tr>
<tr>
<td>processed cheese</td>
<td>1 1/2 slices</td>
</tr>
<tr>
<td>ice cream</td>
<td>1 1/2 cups</td>
</tr>
<tr>
<td>ice milk</td>
<td>1 1/2 cups</td>
</tr>
<tr>
<td>tofu</td>
<td>1 cup</td>
</tr>
<tr>
<td>broccoli</td>
<td>2 cups</td>
</tr>
<tr>
<td>collard, turnip greens</td>
<td>1 cup</td>
</tr>
<tr>
<td>kale, mustard greens</td>
<td>1 1/2 cups</td>
</tr>
<tr>
<td>oysters</td>
<td>1 1/2 cups</td>
</tr>
<tr>
<td>salmon</td>
<td>4 oz</td>
</tr>
<tr>
<td>sardines</td>
<td>2 1/2 oz</td>
</tr>
</tbody>
</table>

**Sodium, chloride and potassium.** These minerals are important for regulating body fluids, relaying nerve impulses and contracting or relaxing muscles. They are called electrolytes. When you sweat you lose some of these electrolytes. Eating a variety of foods will help replace the minerals that are lost when you sweat. Slightly salted foods also will help but salt tablets should not be used. Salt tablets can cause stomach cramping and vomiting. They can pull water back into the intestinal tract and away from the body cells that need water most. You can become easily dehydrated if you use salt tablets.

Right after a game or training period is a good time to replace sodium, chloride and potassium. You can replace the lost minerals by eating slightly salted foods, and fruits and vegetables such as oranges, bananas, green vegetables and potatoes.

**Water, Water Everywhere**

Believe it or not, water is the nutrient that may cause you the most trouble if you don’t take special care to get enough. Water is lost through sweat during training and competition. Low water intake with no replacement quickly leads to dehydration. When you are dehydrated you will feel tired and will perform poorly. Severe dehydration leads to heat stroke.
and death. Never restrict water during training or competition.

On the other hand, if you drink too much water too quickly you will feel waterlogged and draggy. A good plan is to drink one to one-and-a-half cups of cool water about 15-30 minutes before your activity. During the training period or competition, drink about one cup of water every 15 minutes. Plain, cool water (at refrigerator temperature) is absorbed most quickly and helps to cool you down. Fruit juices and drinks, pop or soda, and some sports drinks have too much sugar in them and actually slow down absorption. Fluid absorption occurs best when sugar content is no more than 2.5 percent. In hot, dry weather fluids need to be replaced. Even in cold weather fluids need to be replaced. Many sports drinks may be used if diluted by at least one half with plain water. The important thing to remember is to drink ahead of your thirst. Train yourself to drink water during practice. Then it won't be a problem to remember to replenish fluids during competition.

After training or competition, use the TWO-for-ONE rule. For every one pound lost during activity, replace it with two cups of water. The weight you lose during heavy activity is water weight. It must be replaced to keep yourself in top shape.

The Training Diet

Your diet as an athlete should include the same foods you probably learned about when you were very young. Because you are growing and involved in athletic activity, you may need extra servings of these foods to fuel yourself. The Training Table Guide is in Student Handout #4-1.

The Pre-game Meal

What you eat before a game or competition can boost your energy stores but it cannot make up for poor nutrition the rest of the time. You will need to eat a variety of foods that are rich in carbohydrates, vitamins, minerals and protein all of the time. Your pre-game meal will do a couple of additional things for you. It will help to fuel your sport but not leave you feeling sluggish and full from a meal. Pre-game nutrition also should supply plenty of water to your body's cells.

These guidelines will help you make good choices for your own pre-game plan. (These guidelines are also provided in Student Handout #4-2.)

• Eat your meal at least three to four hours before the competition. The food that you eat will have time to digest and leave your stomach.

• Select foods that are high in starch — pasta, bread, cereal, potatoes, starchy vegetables. These foods are a source of ready energy. (See "Foods To Choose," Student Handout #4-3.)

• Limit fatty foods. Fats take longer to digest than starch. They can remain in your stomach during the competition and cause your stomach to be upset. (See "Foods To Avoid," Student Handout #4-3.)

• Eat moderate amounts of protein-rich foods. Remember protein is for building or repair. What you need during competition is an energy source. Carbohydrates will supply that need.

• Avoid sugary foods. Sugar can enter your blood stream very quickly and cause swings in your blood sugar level. It actually can leave you with less energy during competition. (See "Foods to Avoid," Student Handout #4-3.)

• Raw fruits, vegetables and dried beans may produce gas and cause discomfort. Avoid any foods before competition that cause you problems. (See "Foods to Avoid," Student Handout #4-3.)

• Drink fluids with your pregame meal.

Some athletes like liquid meals before competition. Liquid meals taken three to four hours before a game can meet your energy needs and yet allow stomach emptying. It is an individual choice that may work for you on occasion.

Remember this: About three or four hours before competition eat a carbohydrate-rich meal. Select foods that you enjoy and won't cause any stomach upset. Avoid fatty foods. Drink water to meet your fluid needs.

ACTIVITIES

Activity #1 - Winning Sports Nutrition: The Training Diet

Watch video, "Winning Sports Nutrition: The Training Diet". The video is 23.30 minutes in length. Use Student Worksheet #4-1. Ask students to complete the exercise and rate their own diets as a training diet. If students have already recorded their dietary
intake from a previous activity use that information.

**Activity #2 - The Pregame Meal**

Use Student Worksheet #4-2. Students should design a pregame meal they would enjoy eating. If a nutrient analysis computer program (such as FOODAY from the Nebraska Cooperative Extension) is available, code the food intake and enter it into the computer. Instruct students to answer the questions about their choices based on the computer printouts.

**Activity #3 - Keeping Fluid Levels Up**

Gather various juices, pop and sports drinks. Be sure to save the nutrient label from each drink. Divide the class into teams. Each team will evaluate the suitability of the drinks as a fluid replacement during physical activity or competition. The carbohydrate contents and ingredient lists will form the basis of the evaluation. Students will be involved in a tasting activity using 2.5 percent sugar solution as the standard for evaluating the other drinks.

Students should follow the instructions on the Student Worksheet #4-3 for completing this activity. Appropriate drinks for fluid replacement during exercise should have no more than 5-6 grams of sugar per 8 fluid ounces.

**Activity #4 - Family Waterworks**

Watch video, “Teen Athletic Nutrition.” Start with the segment on Keeping Fluid Levels Up, at approximately 1010 on the counter.

Students should complete Student Worksheet #4-4, Family Waterworks. Discuss findings with students.

**Activity #5 - Investigative Reporting**

Assign students to be investigative reporters. They should interview an older athlete about his/her dietary plan. What type of dietary plan is followed? Does the plan meet the diet recommendations for athletes? Where did the athlete get his/her diet recommendations? Are there certain beliefs about food that might give the athlete a psychological edge in competition? How does the reporter rate the diet of the person being interviewed? Does the athlete seem comfortable with his/her food plan? What impression does the athlete give the reporter about the importance of food in meeting his/her athletic goals? What conclusions can the reporter make about the athlete and his/her food plan?

The report should be written in the style of a newspaper story. You may ask a local journalist or sports writer to talk to your students about key points to a good news story. When the assignment is completed, ask students how they gathered their facts. What struggles did they experience in writing their stories? How did the interview process go? What parts of being an investigative reporter were easy? Hard? How did they organize their stories?
How has your diet been stacking up? Scientists have divided foods into four groups on the basis of the nutrients each provides. By eating the recommended amounts of food from each group daily, you can be assured of adequate nutrition.

<table>
<thead>
<tr>
<th>FOOD GROUP</th>
<th>FOODS INCLUDED</th>
<th>MAJOR NUTRIENTS SUPPLIED</th>
<th>RECOMMENDED AMOUNTS FOR TEENAGE ATHLETES*</th>
</tr>
</thead>
<tbody>
<tr>
<td>MILK GROUP</td>
<td>Milk and all types of cheese (ice cream can serve as a partial replacement).</td>
<td>Provides calcium. Also contains protein, vitamin A, and riboflavin (B₂).</td>
<td>4 or more servings daily</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>1 serving is</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>—an 8 oz. glass of milk</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>—2 oz. of cheese</td>
</tr>
<tr>
<td>PROTEIN-RICH GROUP**</td>
<td>Beef, pork, lamb, organ meats, poultry, fish, shellfish, eggs. As alternates —dry peas, dry beans, lentils, peanuts, peanut butter.</td>
<td>Good source of protein in the diet. These foods also contain thiamin (B₁), riboflavin (B₂), niacin, and iron.</td>
<td>2 or more servings daily</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>1 serving is</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>—3 oz. of lean cooked meat</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>—2 eggs</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>—1 cup cooked dry peas, dry beans, or lentils</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>—4 tablespoons peanut butter</td>
</tr>
<tr>
<td>VEGETABLE-FRUIT GROUP</td>
<td>Vegetables, fruits, and their juices.</td>
<td>Provides carbohydrates, vitamins and minerals that complement other food sources. Good sources of vitamin C include citrus fruits and their juices, cantaloupe, tomatoes, raw strawberries, broccoli, brussels sprouts. Good sources of vitamin A include the deep-yellow and dark-green vegetables and some fruits. Examples are cantaloupe, apricots, carrots, broccoli, spinach, turnip greens, pumpkin, sweet potatoes.</td>
<td>5 or more servings daily</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Each day have 1 serving high in vitamin C. At least every other day have 1 serving high in vitamin A.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 serving is</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>—1/2 cup of vegetable or fruit</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Normally served portion such as 1 apple or 1 orange</td>
</tr>
<tr>
<td>BREAD-CEREAL GROUP</td>
<td>(All whole grain enriched, or restored) breads and cereals, such as cooked or ready-to-eat cereals, bread, macaroni, grits, spaghetti, crackers, noodles, and rice.</td>
<td>Contributes food energy mostly as carbohydrates and appreciable amounts of protein, B vitamins, and iron.</td>
<td>6 or more servings daily.</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>1 serving is</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>—1 slice of bread</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>—2/3 cup cooked cereal, macaroni, rice, grits, etc.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>—1 oz. of ready-to-eat cereal. Because of different densities, 1 oz. ranges from 1/2 cup to 1 1/3 cups with various dry cereals.</td>
</tr>
</tbody>
</table>

*To meet increased energy needs, most teen athletes require more than minimum number of servings listed. For example, an athletic teenage girl may consume 5 servings of milk, 3 servings of meat, 6 servings of fruits and vegetables, and 12 servings of breads and cereals daily. Commonly eaten foods that are not included in the four food groups (such as butter, margarine, sugar, fats, jellies, and unenriched cereal products) provide energy and some nutrients. However, keep consumption of these foods to a minimum. Get your energy from foods that supply needed nutrients. Make the four food groups the basis of your training table.

**Choose the leaner cuts of meat. The teen athlete should select a diet that contains a bit less fat than the average American diet.

Guidelines For Your Pregame Plan

• Eat your meal at least three to four hours before the competition. The food you eat will have time to digest and leave your stomach.

• Select foods that are high in starch — pasta, bread, cereal, potatoes, starchy vegetables. These foods are a source of ready energy. (See “Foods To Choose,” Student Handout #4-3.)

• Limit fatty foods. Fats take longer to digest than starch. They can remain in your stomach during the competition and cause your stomach to be upset. (See “Foods to Avoid,” Student Handout #4-3.)

• Eat moderate amounts of protein-rich foods. Remember protein is for building or repair. What you need during competition is an energy source. Carbohydrates will supply that need.

• Avoid sugary foods. Sugar can enter your blood stream very quickly and cause swings in your blood sugar level. It actually can leave you with less energy during competition. (See “Foods to Avoid,” Student Handout #4-3.)

• Raw fruits, vegetables and dried beans may produce gas and cause discomfort. Avoid before competition those that cause you problems. (See “Foods to Avoid,” Student Handout #4-3.)

• Drink fluids with your pregame meal.
# Foods to Choose for Pregame Meals

<table>
<thead>
<tr>
<th>Foods</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pasta</td>
<td>Meats, cheese and oil add fat to the sauce. Use them sparingly.</td>
</tr>
<tr>
<td>Macaroni, spaghetti, noodles, ravioli, etc. (plain or with sauce)</td>
<td>Use a sauce low in fat and only as spicy as you can tolerate easily. Or try rice with a little soy sauce flavoring.</td>
</tr>
<tr>
<td>Rice</td>
<td>Use nutritious, lowfat bread products and spreads.</td>
</tr>
<tr>
<td>Potatoes</td>
<td>Limit butter, gravy, or sour cream.</td>
</tr>
<tr>
<td>Baked, boiled, mashed, not french fries</td>
<td>Cooked vegetables are more easily digested.</td>
</tr>
<tr>
<td>Starchy vegetables</td>
<td>Use nutritious, lowfat bread products and spreads.</td>
</tr>
<tr>
<td>Peas, carrots, winter squash, sweet potatoes</td>
<td>Avoid cereals with high sugar content.</td>
</tr>
<tr>
<td>Breads</td>
<td>Choose lowfat soups. Eating large portions of chili, split pea, or bean soups may lead to digestive problems for some athletes.</td>
</tr>
<tr>
<td>Rolls, muffins, crackers, quick breads, bagels</td>
<td>Though not a substitute for solid foods in the daily diet, they are convenient for occasional pregame use. You can make liquid meals at home using the following recipe that makes about 1 quart: 1/2 cup of water 1/2 cup of nonfat dry milk 1/4 cup of sugar 3 cups of skim milk Flavor with a teaspoon of vanilla or cherry extract</td>
</tr>
<tr>
<td>Cereals</td>
<td>Limit butter and syrup.</td>
</tr>
<tr>
<td>Oatmeal, other hot cereals, cold cereals</td>
<td>Use any juice or cooked fruit except prune. Oranges, bananas, and peeled apples would be easily digested raw fruits. You may wish to dilute juices, especially in hot weather. Try hot cider or juice during cold weather.</td>
</tr>
<tr>
<td>Soups</td>
<td>Limit butter and syrup.</td>
</tr>
<tr>
<td>Noodle, rice, vegetable, clear broth, bouillon or consomme</td>
<td>Use any juice or cooked fruit except prune. Oranges, bananas, and peeled apples would be easily digested raw fruits. You may wish to dilute juices, especially in hot weather. Try hot cider or juice during cold weather.</td>
</tr>
<tr>
<td>Pancakes</td>
<td>Limit butter and syrup.</td>
</tr>
<tr>
<td>Fruits, fruit juices</td>
<td>Limit butter and syrup.</td>
</tr>
<tr>
<td>Milk</td>
<td>Use any juice or cooked fruit except prune. Oranges, bananas, and peeled apples would be easily digested raw fruits. You may wish to dilute juices, especially in hot weather. Try hot cider or juice during cold weather.</td>
</tr>
<tr>
<td>lowfat milk, lowfat yogurt, lowfat cottage cheese, lowfat cheeses, “shakes” made with lowfat milk or yogurt and fruit and/or juice, puddings</td>
<td>Though not a substitute for solid foods in the daily diet, they are convenient for occasional pregame use. You can make liquid meals at home using the following recipe that makes about 1 quart: 1/2 cup of water 1/2 cup of nonfat dry milk 1/4 cup of sugar 3 cups of skim milk Flavor with a teaspoon of vanilla or cherry extract</td>
</tr>
</tbody>
</table>
Foods to Avoid for Pregame Meals

<table>
<thead>
<tr>
<th>Foods</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candy, sugar, honey</td>
<td>After an initial rise, your blood sugar level can actually drop below normal, resulting in a sudden feeling of tiredness or fatigue.</td>
</tr>
<tr>
<td>Tea, coffee, chocolate, cola</td>
<td>Caffeine leads to dehydration.</td>
</tr>
<tr>
<td>Fried foods, high-fat meats, fats, oils, gravies, sour cream, etc.</td>
<td>Fat digests slowly and therefore stays in the stomach longer.</td>
</tr>
<tr>
<td>Some raw fruits, vegetables, popcorn, nuts, dry beans and peas</td>
<td>Some of these foods may cause gas and/or an uncomfortable feeling of fullness during the game. An athlete needs to avoid the foods that give him or her problems.</td>
</tr>
<tr>
<td>Any new food</td>
<td>Don't experiment with new foods right before an event. If you experience any adverse reactions, your body has little time to recover.</td>
</tr>
<tr>
<td>Fruit-flavored drinks and powdered drink mixes</td>
<td>Many drinks contain little fruit juice and a lot of sugar. Read the label.</td>
</tr>
</tbody>
</table>

# Rating Your Training Diet

Record your diet for the last two days as closely as you can remember. Include all snacks and beverages as well as meals.

<table>
<thead>
<tr>
<th>Time</th>
<th>Food</th>
<th>Food Group</th>
</tr>
</thead>
</table>

Day 1

Day 2

In the last column indicate which food groups the foods fall into.
Rating Your Training Diet (continued)

Compare your intake to the recommended training diet for young athletes (Student Handout #4-1).

Which food group(s) have the recommended number of servings or more?

Which food group(s) do not meet the recommended number of servings?

If there are food groups that need to be improved in your diet, what changes can you make to have a better food plan? What would keep you from making these changes? What are some ways to reduce the barriers to change?

List any foods or beverages that don't fit into the Training Diet plan. Evaluate whether these foods are replacing foods from the basic food groups. Will you make any changes in your selections? What are the changes?
The Pregame Meal

1. Use Student Handout #4-3 for information about your pregame meal. Plan what you would like to eat for a pregame meal. Write the amounts and foods on the form below.

2. If using FOODAY, from University of Nebraska Cooperative Extension use a FOODAY code book to write in the food and amount codes for each food you have selected for your pregame meal. If another computer program is used follow directions for recording and coding food entries for that program.

Name ____________________
Check one: _____ Male
  _____ Female
Age: ______ years
Barefoot height: _____ feet _____ inches
Weight (no clothes): _____ pounds
Days of food intake: __ 1__
Characteristic codes(s): no

<table>
<thead>
<tr>
<th>Pregame meal</th>
<th>Amount Eaten</th>
<th>Amount Code</th>
<th>Food Code</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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</tbody>
</table>

3. Enter your selections into the computer program. If using FOODAY, run a print-out for option 4 on the Option Menu.

4. The % of calories from carbohydrate in my pregame meal is: _________
The % of calories from fat in my pregame meal is: _________
The % of calories from protein in my pregame meal is: _________

5. Does the balance of calories from carbohydrate, fat and protein seem appropriate for the pregame meal? Why or why not? Remember the pregame meal should be high in starch carbohydrates and low in fat. Sugary food intake should be low.

6. If you need to make changes in your selections, what changes would you make?
Keeping Fluid Levels Up

What are you looking for in a drink to replace body fluids during activity? Cool water is the best idea. Sometimes a slightly sweetened drink will help satisfy your fluid needs and give you a little extra energy. Many of the commercial sports drinks, juices and pop are too concentrated in sugar to do a good job for you. The high sugar concentration will actually slow down the emptying of water from your stomach. Water will not be quickly absorbed. The following activity helps you make your own evaluation of drinks to use for fluid replacements during training or competition.

Activity
1. Mix 1 1/2 level teaspoons of table sugar into 1 cup of plain water. Replacement fluids during training or competition should not be any sweeter than this solution.
2. Check the nutrient label on each of the drinks and record the grams of carbohydrate. The better drinks will provide from five to six grams of carbohydrate per eight fluid ounces.
3. Taste each of the drinks against the sugar-water standard. Be sure to drink some plain water between tasting each drink to get rid of any aftertastes. Record your impression of the sweetness of the drinks.
4. Complete your recommendation about the drinks for use as fluid replacement during athletic activity.

<table>
<thead>
<tr>
<th>Drink</th>
<th>Grams of carbohydrate per 8 fluid ounces</th>
<th>Comments about Sweetness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plain water</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Sugar-water</td>
<td>6 grams</td>
<td></td>
</tr>
<tr>
<td>Drink 1:</td>
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<tr>
<td>Drink 2:</td>
<td></td>
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<tr>
<td>Drink 3:</td>
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<tr>
<td>Drink 4:</td>
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</tbody>
</table>

Which drink or drinks would be appropriate for a quick fluid replacement during exercise?
Family Waterworks

Involve your family members in a survey of liquid/water consumption. On the chart below, ask family members to put an X on the chart for each 1 cup of water or liquid consumed in one day. Tack or tape the chart where it is visible and easy to reach in your home. Be sure that family members record their fluid intake in all categories on the chart.

At the end of the day, total the number of marks for each family member. Write the totals on the chart.

**Tapping Your Family's Waterworks**

<table>
<thead>
<tr>
<th>Names</th>
<th>Water</th>
<th>Milk</th>
<th>Coffee/Tea (hot/cold)</th>
<th>Soda/ Fruit Drinks</th>
<th>Juice</th>
<th>Soup</th>
<th>Other (What?)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

Write your evaluation of your family's fluid consumption. Do all members drink plenty of fluids (at least 6-8 cups daily)? Is plain water included as one of the liquids for each family member? Which liquid is consumed most? Would it be easy to increase fluid intake, if needed? Why or why not? Was your family aware of their fluid intake before this activity? What was their reaction to your results?
Be a Wise Consumer

PURPOSE: To allow 6th through 8th grade students to explore factors in the advertising world and marketplace that affect their food choices.

SUMMARY OF LEARNING ACTIVITIES: There are four learning activities for this unit. They are:

1. Selling the Product - 30 minutes
2. "Lite" Activity - 40 minutes
3. Food Inventory - Home Activity; 10 minutes for classroom discussion
4. Designing a Commercial - 15 minutes for pre-activity discussion
   45-60 minutes for group work
   30 minutes for presentations depending on number of students

OBJECTIVES:

1. The students will identify factors that affect consumer food choices.
2. The students will use label reading as a decision making tool in consumer purchases.

VOCABULARY:

Food and Drug Administration - governmental regulatory agency for food and drug laws

U.S. RDA - U.S. Recommended Daily Allowances; standards for recommended nutrient amounts that are used on nutrition labels in food packaging

SUPPLIES/PREPARATION:

Begin this unit with a presentation of the background information. Continue with the activities as you feel appropriate.
Activity #1 - Selling the Product

Collection of breakfast cereal boxes (at least 10)

Activity #2 - “Lite” Activity

Collection of food labels using “lite” or “light” in the description
Small paper containers for tasting activity
Regular and “lite” food products for tasting activity (be sure to keep track of the price of the items you choose)
Spoons
Student Worksheet #5-1, “Lite” Activity
Pencils

Activity #3 - Food Inventory

Student Worksheet #5-2, “Food Inventory”

Activity #4 - Designing a Commercial

Paper and pencils
Props for students to use in their commercials

CREDITS:

BACKGROUND:

This lesson allows students to examine the world of food marketing and advertising. Activities of this unit offer hints for making wiser consumer choices.

Food Advertising

When it comes to food, nutrition and health, food advertisers seem to have an interested and captive audience. Today’s consumers have an eager and earnest interest in the potential health benefits of the foods they buy. Labels such as “No cholesterol,” “Lite,” and “Low calorie” are more appealing to consumers than ever.

While most advertising is truthful, it can be somewhat misleading. A case in point is the cholesterol frenzy. Several plant-based products from bananas to vegetable shortenings are being advertised as “cholesterol-free.” Although the statement is truthful the information is irrelevant. All plant and vegetable products are free of cholesterol. Cholesterol is a component of animal products only. Because consumers have become very familiar with the word “cholesterol,” advertisers have used it as an opportunity to market their products.

There are other advertising gimmicks that are effective in selling products. Breakfast cereal producers have used many of these approaches to their advantage. Toys and games in cereal boxes, give-aways, sweepstakes and using popular entertainers, athletes and cartoon characters are all techniques that have been used.

Occasionally a certain image is promoted. The slim and energetic individual, improved athletic ability, increased popularity and beating the humdrums are all major themes that have been carried out in food advertisements. The timing and placing of these advertisements are carefully planned by television, radio and printed media advertisers to reach the intended audience at just the right time.

An approach using specific health claims in food advertising is currently being debated by food processors and the Food and Drug Administration (FDA). On one hand it makes sense for advertising agencies to use the health claims approach. Health claims in advertisements can boost consumers’ knowledge about important health issues while boosting food sales. As an example, before 1984 only nine percent of the public knew of the link between fiber and colon cancer. Following a widespread airing of bran cereal ads that touted the relationship, public knowledge about the link grew to 33 percent by 1986. In addition, the cold cereal market also grew, mostly due to sales of ready-to-eat bran cereals. The dilemma is that health claims must be substantiated by carefully controlled studies or there is an increased risk of promoting health fraud.

Food Labels

One source of food information is the food label. The nutrient content, ingredient makeup, and time frames for using the product are some of the information that can be gleaned from a label. Some information on a food label is required while other types of information are voluntarily added by the manufacturer. In the 1990s consumers will be asking for more complete and effective labeling information that will help them make better decisions about the foods they buy. For now the following information is on many food products:

Ingredient Listing. Except for foods such as ketchup, mayonnaise, ice cream and others which have a standard identity, the ingredients of a food product must be listed on the label and identified by their common or usual name. The ingredient present in the largest amount, by weight, must be listed first, followed by the other ingredients in descending order. Additives must be listed but if colors and flavors are used it is permissible to use general language such as “artificial flavor,” “artificial color,” or “natural flavor.” The exception is that one artificial color, Yellow No. 5, must be listed because it can cause an allergic reaction in some people.

Nutrition Information. Nutrition information is required on food products only if a manufacturer adds additional nutrients to the product or if a nutritional claim is made about the product. Many manufacturers voluntarily include nutrition information on the label when they are not required to do so.

Part of the nutrition label includes information about the serving size, servings per package, and the amount of protein, carbohydrates, fat and sodium in a product serving. Fiber, cholesterol and fatty acid contents may be listed. In addition information is provided about the nutrient contribution of protein and at least seven essential vitamins and minerals as percentages of the U.S. RDAs.

Other Label Terms. Some label terms are very well defined while others are a bit fuzzy. The following terms have been defined and
should be used appropriately on food packages. (These are provided in Student Handout #5-1.)

- Low Calorie: No more than 40 calories per serving and no more than 0.4 calories per gram. Foods that are naturally low in calories may not use the term low calorie immediately before the food name. For example, tomatoes could not be labeled low calorie tomatoes but could be labeled tomatoes, a low calorie food.

- Reduced Calorie: One-third fewer calories than a product it most resembles.

- Dietetic: Meets the requirements for low or reduced calorie foods or if it is clearly intended for special dietary purposes other than weight control, such as “for low sodium diets.”

- Sugar-free/sugarless: Contains no sucrose, the name for table sugar. If the product is not low or reduced in calories, the label must say so. A sugar-free/sugarless product may contain sugar alcohols—xylitol or sorbitol—that contribute as many calories as their sugar-sweetened counterparts.

- Low-fat: For dairy products low-fat means the food contains from 0.5 to 2 percent fat by weight. Low-fat meat has no more than 10 percent fat by weight.

- Lean: Contains no more than 10% fat by weight—not by calories.

- Extra Lean: Contains no more than 5% fat by weight—not by calories.

- Leaner: At least 25% less fat, by weight, than a comparable product.

- Sodium-free: No more than 5 milligrams sodium per serving.

- Very Low Sodium: No more than 35 milligrams sodium per serving.

- Low Sodium: No more than 140 milligrams sodium per serving.

- Reduced Sodium: Usual level of sodium is reduced by at least 75 percent.

- No Salt Added: No salt has been added during processing. The product may contain naturally occurring sodium or sodium from sources such as soy sauce, preservatives or leavening agents.

- Enriched: Nutrients that were lost in processing have been replaced.

- Fortified: Nutrients are added to foods that did not originally contain them. A common example is the addition of vitamin D to milk.

The use of the words lite or light are less well defined. They can mean anything from a lighter color or texture to less sodium, calories, fat or alcohol. In meat and poultry products, light, leaner or lower fat means the product must have at least 25 percent less fat than similar products. Light on meat or poultry labels may also mean 25 percent less sodium, calories or breading. The label will indicate what has been reduced.

Other terms that are not well defined include natural, organic, and no sugar added. If you see these words on a product you may want to look at the label more closely or check with the manufacturer about their meaning. Products that are advertised as no sugar added are typically naturally sweet products to which no additional sugars have been added.

Making Wise Decisions

Food shoppers can use a three step process to help make decisions about the foods they buy and eat. Regardless of advertising lingo or package appearance, look for the following information about the product:

1. Check for nutrition information—use the nutrition label if there is one. For the number of calories that are provided is there a reasonable number and amount of nutrients provided?

2. Check the list of ingredients—what are the top three or four ingredients by weight? Do the ingredients represent the type of product you want?

3. Check for product freshness. Look for dates on the package that indicate when the product was packaged or by what date the product should be used. If the product is outdated make a different selection.

Being a wise food consumer is a challenge. As technology grows we need to stay alert and gather more information about the foods we eat and their impact on our nutritional well-being. The advertising world and those involved in food marketing are partially responsible for shaping consumers’ opinions and attitudes about food products. However, it rests with each individual to sort through the information and develop his or her own sensible and reasonable nutrition game plan.

ACTIVITIES

Activity #1 - Selling the Product

Bring several examples of breakfast cereal boxes to class. Divide the students into small groups of three to four people. Ask students to
examine the cereal boxes and develop lists of techniques used by the food producers and advertisers to sell their products. Some of the factors to consider might be colors used, packaging features, specific nutrition information, use of a celebrity, promotion of an image, games, toys, contests and so forth. Ask each group of students to select the package they think has the greatest appeal to consumers and give the reasons why. From the answers generated by the smaller groups develop a list of criteria that food marketers might use to sell food products. This list can be used in Activity #4. Do students think food marketers should use more or fewer persuasive techniques to sell their product? Why or why not? In what ways are consumers hurt or helped by these techniques? Why are consumers attracted to gimmicks and special packaging? What would a “plain label” grocery store be like? Why or why not would students shop there?

Alternate activity: Ask students to look for possibly misleading claims found on the cereal boxes. Discuss their findings and why the claims are misleading.

Activity #2 - “Lite” Activity

Collect samples of packages that use the word “lite” or “light” on the label and their regular counterparts. Canned fruits, canned vegetables, cocoa mixes, cheese, yogurt and other dairy products, breads, and meats or packaged meat products are possible choices. Ask the students to group the products according to the meaning of the word “lite” or “light.” Are they “light” in sugar, calories, salt, color, fat or some other factor? If possible conduct a taste test of the “light” and regular products. Use Student Worksheet #5-1. Students will be considering the differences in color, taste, texture, acceptability and cost between the products. A key point to discuss is why consumers might be willing to pay more for “lite” products.

Activity #3 - Food Inventory

Ask students to survey five different foods from their cupboards at home and record their findings on Student Worksheet #5-2. They will look for fat, sugar and sodium ingredients in the ingredient listing. Worksheet #5-2 provides a list of ingredients that may indicate the presence of fat, sugar or salt. Were students expecting more or less fat, sugar or salt than they found? What surprises in ingredients did they find? Will their use of the product change as a result of their search? Why or why not?

Activity #4 - Designing a Commercial

Creativity and communication skills are featured in this activity. Assign students to develop a television commercial (time limit: 60 seconds) that would persuade young children to eat a fresh vegetable for a snack. Before beginning the activity discuss these factors that help make commercials a success. If students have already completed Activity #1 Selling the Product, be sure to use their list of criteria that food marketers might use to sell a product.

Attention-getting  - Uses music, jingles, funny characters
Creates interest  - Shows benefits to audience
Introduces craving  - Appeals to the senses, especially sight, sound and smell.
Instills confidence  - Gives factual information, uses “expert” testimony

The students will probably work best in small groups. When completed the commercials may be presented to the entire class, or to a kindergarten or first grade class. How did the commercial making process go? How was the message and focus of the commercial decided? Was it easy or hard to capture the attention of young children? What was the response of the audience to the commercial?
Labeling Terms

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"Lite" Activity

Taste a regular and "light" food product and record your comments below. Consider color, taste and texture of the product. Record the cost per serving for each product, if available.

<table>
<thead>
<tr>
<th>Food</th>
<th>Color</th>
<th>Taste</th>
<th>Texture</th>
<th>Cost</th>
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<tbody>
<tr>
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What product do you think is the best?

If there is a difference in cost between the regular and "lite" food, why would consumers be willing to pay the difference?
Food Inventory

Look at the ingredient listing of five different foods that you have at home. Record all of the ingredients that indicate there is fat, sugar and/or sodium in the product. Use the following list to help you identify the ingredients.

<table>
<thead>
<tr>
<th>Fat</th>
<th>Sugar</th>
<th>Sodium</th>
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</thead>
<tbody>
<tr>
<td>butter</td>
<td>corn syrup</td>
<td>monosodium glutamate</td>
</tr>
<tr>
<td>coconut oil</td>
<td>dextrose</td>
<td>salt</td>
</tr>
<tr>
<td>cottonseed oil</td>
<td>fructose</td>
<td>sodium acid pyrophosphate</td>
</tr>
<tr>
<td>hydrogenated</td>
<td>honey</td>
<td>sodium aluminum sulfate</td>
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<tr>
<td>lard</td>
<td>mannitol</td>
<td>sodium ascorbate</td>
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<tr>
<td>lecithin</td>
<td>maple sugar</td>
<td>sodium benzoate</td>
</tr>
<tr>
<td>margarine</td>
<td>maple syrup</td>
<td>sodium bicarbonate</td>
</tr>
<tr>
<td>palm oil</td>
<td>molasses</td>
<td>sodium bisulfite</td>
</tr>
<tr>
<td>peanut oil</td>
<td>sorbitol</td>
<td>sodium caseinate</td>
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<tr>
<td>safflower oil</td>
<td>sorghum</td>
<td>sodium citrate</td>
</tr>
<tr>
<td>shortening</td>
<td>sucrose</td>
<td>sodium sulfite</td>
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<tr>
<td>soybean oil</td>
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<table>
<thead>
<tr>
<th>Fat</th>
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