MEET GREG'S CHALLENGE: SHAKE IT AND SHAPE UP

GRADES 5-12

JODALE ALES

TIME ALLOTMENT:

Approximately 2 ½ (50-minute) class periods.

OVERVIEW:

The goal of this lesson is to get students up off the couch and participating in a regular exercise program. After watching the video ***Exercise: The Motion Potion*** students will discuss the benefits of regular exercise to any age group and its importance throughout one's life. The class will accept Greg's challenge to exercise at least three times a week for 30 minutes. A guest exercise physiologist will develop an exercise plan and explain the plan to the class. Students will participate in the plan for six weeks and record their personal exercise data in a chart. During a debriefing activity students will discuss their reaction to the program and evaluate their findings.

SUBJECT MATTER:

Life Science, Biology,
Health and Physical Education,
Environmental Science

LEARNING OBJECTIVES:

Students will be able to:

- Organize data and other information into tables and graphs or charts.
- Describe the relationship between exercise and personal health.
- Improve their physical fitness through a regular exercise program.
- Communicate their personal findings and evaluate the impact of regular exercise on their health.

STANDARDS:

National Science Education Standards
http://www.nap.edu/readingroom/books/nses/html/
Content Standards: 5-8
Science in Personal and Social Perspectives

- Personal health

Content Standards: 9-12

- Personal and community health

Excellence in EE—Guidelines for Learning
http://naaee.org/npeee/learner_guidelines.php
Strand 4: Personal and Civic Responsibility
Guideline:
D) Accepting personal responsibility

Louisiana Science Frameworks:
State Standards for Curriculum Development
http:www.doe.state.la.us/doe/assessment/standards/SCIENCE.pdf
Life Science: 5-8
LS-M-A6: Describing how the human body changes with age and listing factors that affect the length and quality of life
Life Science: 9-12
LS-H-G1: Relating fitness and health to longevity

MEDIA COMPONENT:

Video:
Enviro-Tacklebox™ —
Exercise: The Motion Potion
Louisiana Public Broadcasting
Louisiana Education Television Authority. 2000. (20 minutes)

Web sites:

Enviro-Tacklebox™
http://www.envirotacklebox.org This is Louisiana Public Broadcasting's Web site providing teaching information, streaming media, and student activities involving environmental science. RealOne Player is used to view the video and can be downloaded from the Web site.

LPB

MATERIALS:

Per Group:

- Video: **Enviro-Tacklebox™—*Exercise: The Motion Potion***
- Basic materials for taking notes and writing are needed.
- Student handouts are listed under **Student Materials.**
- ***Exercise: The Motion Potion:*** **Student Viewing Guide Answer Key** for the teacher.

PREP FOR TEACHERS:

1. Prior to teaching the unit, bookmark the **Enviro-Tacklebox™** Web site students will access and, if possible, put a link to it from your school Web site or provide a link on your course management site, such as Blackboard.
2. Download the RealOne Player needed for viewing the video online from the **Enviro-Tacklebox™** Web site.
3. Review the **Module 1 Enviro-Tacklebox™** Web resources and the video related to ***Exercise: The Motion Potion***.
4. Schedule an exercise physiologist to speak to the class and set up an exercise plan. Meet with other teachers involved if you challenge other classes.
5. Prepare copies of student handouts or post them electronically.

INTRODUCTORY ACTIVITY:

1. Introduce the lesson by facilitating a class discussion about how physically active the students think they are. Have the students list on newsprint or the blackboard the physical activities they participate in each day including walking, climbing stairs, running, playing sports, and others. Ask them to estimate the amount of time they spend doing each. Next start a second column listing inactivity such as resting, sleeping, working on the computer, doing homework, watching TV, or reading. Again have the students estimate the amount of time spent doing each activity.
2. Ask the students to write a paragraph or two in their journals responding to the question, "Would you rate your personal health as poor, average, or excellent for your age group? Give reasons to support your answer."
3. Give the students an overview of the activities that will follow.

LEARNING ACTIVITIES:

Video Viewing

Introduce the personal health concepts by showing the **Enviro-Tacklebox™** video ***Exercise: The Motion Potion***.

A. Ask students if they have ever thought about the effects of exercise on their personal health. Hand out the **video viewing guide**.
B. **PLAY** the video. After each clip students will record their responses to questions on the **video viewing guide.** Pause the video and facilitate a class discussion after each clip.

Video Clip 1 – Greg begins the video packing his tackle box with items for a trip. He states that the objective of the lesson is to learn ways to strengthen one's personal health through exercise. Rapid clips of kids participating in various physical activities get the students thinking about ways to exercise.

Greg then begins his trip as he develops the problem of why people do not focus more on fitness and sports. He hints at our hectic life styles that do not leave much time for structured physical activity and our increased involvement in passive activities such as watching a basketball game instead of playing basketball. Greg examines some of the benefits of exercise. These include increasing cardio-vascular efficiency resulting from using more muscle groups, building respiratory endurance, strengthening muscles, increasing flexibility, increasing energy levels, and helping us feel better by affecting brain biochemistry. Ask the students to define the objective and the problem and emphasize that flexibility, strength, and endurance will be emphasized throughout the video.

Video Clip 2 – A visit to a sports physiology lab reveals how exercise physiologists study individuals and how exercise affects them. Christina is on a treadmill demonstrating how we breathe air in and out of our lungs during exercise. At rest a person usually takes in about 6 L/min. This increases to 120 L/min during exercise. A comparison is made with a much larger animal, the horse that takes in 400 – 500 L/min during the same type of exercise. The exercise physiologist explains how to calculate the maximum volume of oxygen (VO_2) consumed when exercising. This is the best measure of heart and muscle fitness. The heart pumps blood through the body during exercise. The goal of exercise is to move from a low level of fitness to a high level or a low VO_2 to a high VO_2.

Video Clip 3 – In the next clip Greg compares aerobic (with oxygen) and anaerobic (without oxygen) exercise. An aerobics class demonstrates aerobic exercise that has long periods of uninterrupted activity at a low to moderate intensity. This type of activity increases the blood flow to the brain and other organs. Examples of aerobic exercise are cycling distance running, and lap swimming. Anaerobic exercise has quick bursts of high intensity activity that are interrupted by rest. Some types of anaerobic exercise are football, baseball, basketball, and sprinting.

A *Holy Mackerel* factoid pops up. The human heart beats 100,00 times a day equaling a total of 36.5 million beats a year. Next the **Tacklebox™** kids show a *Cool Demo*. They show how an individual can reach his or her target heart rate and improve cardiovascular endurance through exercise. The target heart rate equals the number of times the heart must beat per minute in order to improve cardiovascular endurance. This is calculated by subtracting one's age from 220 and multiplying the resulting number by 70% or [(220 – age) X .70].

When the students participate in the exercise program they will need to calculate their target heart rate so have them practice this after the clip. To find their resting heart rate they should check their pulse by lightly pressing two fingers over the carotid artery in the neck or the radial artery in the forearm. Measure the number of beats in 10 seconds and multiply by six to convert it to number of beats in a minute. Next they can check their exercise heart rate after continuously moving up and down from a step stool to the floor and back for at least one minute. For maximum cardiovascular benefits one needs to hold the target heart rate for 30 minutes.

With regular exercise this conditioning strengthens the heart and improves blood flow. In addition one's health improves and diseases such as high blood pressure, cancer, and heart disease are prevented. Over time the resting heart rate will become slower which means that the heart beats less to get the same amount of work done and you feel better. When beginning an exercise program you should start off slowly and you will gradually improve. It is important to check with your doctor before you start any exercise program.

Video Clip 4 – Next young adult athletes demonstrate sports that increase flexibility, strength, and endurance. The video begins with a national award-winning swimmer who demonstrates how she trains by combining dry land exercises and swimming. Swimming builds flexibility, strength, and endurance. She says that swimming is fun, feels good, and helps you make friends.

A young tennis champion says that the main benefit of tennis is building strength of muscles and bones. This improves your oxygen intake, decreases the risk of injury, and provides better support and posture. She likes tennis because it is fun, feels good, and improves her physical fitness.

Observation of a high school wrestling team shows that body size and type do not indicate physical fitness. Greg briefly discusses how diet relates to exercise. What we eat gives us energy (energy input) for exercising (energy output). A *Brainteaser* popup tells us that stair walking burns the most calories.

A gymnastics team demonstrates how gymnastics improves flexibility, keeps you healthy, prevents injury, and allows for a greater range of motion. Participating in this sport feels good and is fun. Other sports shown are roller blading, basketball, and BMX racing. Young adults taking part in them report that these sports are fun and enable them to be with friends. A **Tacklebox™** *School of Thought* popup states that moderate exercise can add up to two years to one's life.

Video Clip 5 – In this last clip Greg challenges the audience to exercise at least three times a week for 30 minutes. In order to improve endurance, flexibility, and strength one has to hold his or her target heart rate for those 30 minutes. Greg closes by returning to the bait shop and warning us that the old "no pain, no gain" saying about exercise is not necessarily true. He points out that one final benefit of exercise is that it relieves stress.

Assign the class the objective of meeting Greg's challenge. Several science classes or even the whole school could meet Greg's challenge.

Guest Speaker: Ask an exercise physiologist to talk to the class about the relationship between lifelong exercise and personal health. Explain your goals and have the physiologist develop and present an exercise plan for the class. This individual should also provide follow-up to you after completion of the program.

Explain the exercise program to the students, the directions for successfully completing it, and the assessment rubric.

CULMINATING ACTIVITIES:

1. Review the exercise plan developed by the exercise physiologist and give instructions for student participation. Get parental permission forms signed and note any medical reasons for limitations on physical activity.
2. Students should fill in the **My Exercise Log** sheet each time they exercise for six weeks.
3. Check the student exercise records weekly for the six weeks to assess progress toward the final goal and offer encouragement and support.
4. Use a rubric to assess student attainment of objectives.
5. Students will compare their physical fitness before and after the exercise program. Ask them to respond again to the question, "Would you rate your personal health as poor, average, or excellent for your age group? Give reasons to support your answer."

CROSS-CURRICULAR EXTENSIONS:

HEALTH/PE:

- The exercise program could be carried out during PE class. A professional would be monitoring it and this would also show the students the importance of exercise.

COMMUNITY CONNECTIONS:

- Invite a speaker to talk about the importance of exercise for different age groups such as babies, physically handicapped individuals, and the elderly.
- Have students work with different age groups and help them exercise.

STUDENT MATERIALS:

- ***Exercise: The Motion Potion*** Student Viewing Guide
- **My Exercise Log**

NAME_____CLASS_____DATE_____

Exercise: The Motion Potion
Student Viewing Guide

Clip 1:

1. List reasons why people do not get enough exercise.

_____

2. Name and describe the benefits exercise provides to a person's well being.

_____

_____

3. State the objective and the problem of the video.

_____

_____

Clip 2:

4. What is the best measure of heart and muscle fitness?

_____

Clip 3:

5. Compare aerobic exercise and anaerobic exercise and give examples of both types.

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6. Define target heart rate. Calculate your target heart rate.

_____

7. Measure and record your resting heart rate in number of beats/min. Then measure and record your heart rate after one minute of moderate exercise.

_____

8. How long should you hold the target heart rate in order to get maximum cardiovascular benefits? _____

9. Why should you check with your doctor before beginning any exercise program?

_____

Clip 4:

10. What are some of the benefits of exercise the young athletes in the video give?

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Clip 5:

11. State Greg's Challenge. _____

EXERCISE: THE MOTION POTION
STUDENT VIEWING GUIDE
ANSWER KEY

1. Hectic life style, watching sports events instead of participating in sports, and more
2. increase cardiovascular efficiency, improve respiratory endurance, strengthen muscles, increase flexibility, increase energy, feel better, handle stress better
3. objective – demonstrate ways to strengthen one's personal health environment through exercise
   problem – In spite of today's increased focus on sports and fitness, people are not getting physically fit. How can people increase their physical fitness through exercise?
4. VO_2 or volume of oxygen consumed during exercise
5. aerobic exercise – long periods of uninterrupted physical activity with low to moderate intensity; cycling, distance running
   anaerobic exercise – short periods of high intensity exercise interrupted by rest; football, sprinting
6. target heart rate – number of times the heart beats per minute during exercise in order to improve endurance

   220 – age X .70 = target heart rate (beats/min)

7. Answers vary
8. 30 minutes 3X a week
9. A doctor can determine the level of exercise that is appropriate and identify any health problems.
10. FUN, being with friends, feel better, fitness, and others
11. Greg's Challenge – Exercise at least three times a week for 30 minutes.

NAME_____ CLASS_____

TARGET HEART RATE _____

MY EXERCISE LOG

DATE	EXERCISE TYPE	TOTAL EXERCISE TIME	HEART RATE	WARM UP/COOL DOWN