

LESSON 7: BONE-STRENGTHENING VERSUS MUSCLE-STRENGTHENING ACTIVITIES

Grade-Level Outcomes

Primary Outcomes

Fitness knowledge: Identifies each of the components of the overload principle (FITT formula: frequency, intensity, time, type) for different types of physical activity (aerobic, muscular fitness and flexibility). (S3.M11.6)

Fitness knowledge: Employs correct techniques and methods of stretching. (S3.M9.6)

Embedded Outcomes

Fitness knowledge: Sets and monitors a self-selected physical-activity goal for aerobic and/or muscle- and bone-strengthening activity based on current fitness level. (S3.M8.6)

Engages in physical activity: Participates in self-selected physical activity outside of physical education class. (S3.M2.6)

Lesson Objectives

The learner will:

- continue his experience of the progressive overload principle through a walk/run progression.
- display correct stretching techniques after participating in a walk/run progression.
- differentiate between muscle-strengthening and bone-strengthening physical activities.

Equipment and Materials

- Stopwatches (1 per group of four or five students)
- Whiteboard easel on casters
- Index cards
- Pencils
- Index cards with definitions and examples of bone-strengthening and muscle-strengthening activities
- Small whiteboards (about 8 1/2 × 11 inches; 22 × 28 cm), 1 per small group
- Dry-erase markers (1 per small group)
- Beginner's 5K Training Schedule, 1 copy per group of 4 or 5 students (see lesson 2)

Introduction

Today, we will continue our walk/run progression so that you can continue to experience the progressive overload principle. In addition, we will review the difference between muscle-strengthening and bone-strengthening physical activities and also learn about aerobic conditioning.

Instructional Task: Warm-Up

■ PRACTICE TASK

Have students complete a brisk 5-minute walk in small groups of four or five, with one person in each group keeping time.

Have students discuss in their small groups the differences between bone-strengthening and muscle-strengthening exercises and what activities contribute to each.

Student Choices/Differentiation

Student leaders can rotate.

What to Look For

- Students walk briskly.
- Student groups time their 5-minute warm-ups precisely.

Instructional Task: Training (Week 3, Workout 1)

■ PRACTICE TASK

While students perform the walking portion of their walk/jog activity, they read and discuss the teacher-provided index cards that include definitions and examples of muscle-strengthening and bone-strengthening exercises and aerobic conditioning.

Have students do two repetitions of the following:

1. Jog for 90 seconds.
2. Walk for 90 seconds.
3. Jog for 3 minutes.
4. Walk for 3 minutes.

Group leaders use stopwatches to monitor their groups. Provide each group with a laminated index card specifying the progression.

Have students track distance traveled.

Have students encourage one another within their small groups.

Note: You can modify the Beginner's 5K Training Schedule to fit various school and class schedules (e.g., block schedule, shorter or longer class periods).

Student Choices/Differentiation

- Student leaders can rotate.
- Students can choose their own groups.
- Students can walk at a pace comfortable for reading and talking instead of brisk walking.

What to Look For

- Students alternate jogging and walking.
- Students keep track of distance traveled (e.g., laps around the school, field, track).
- Students read about and discuss muscle-strengthening and bone-strengthening activities during the walking portion of the activity.

Instructional Task: Review of Training Program

■ PRACTICE TASK

Define *progressive overload*, *frequency*, *intensity*, *time*, and *type* on the whiteboard.

Guiding questions for students:

- How far did you travel today during your 20-minute walk/jog?
- Are you seeing a trend in the distance you're covering?
- What are you seeing in regard to intensity?

Briefly review the concept of the FITT formula.

Extension

Challenge students to apply the FITT formula to another activity besides walking and jogging (e.g., swimming or cycling).

Student Choices/Differentiation

Have examples to help students use the FITT formula.

What to Look For

- Students recognize that the FITT formula is not a principle of exercise.
- Students recognize that FITT is a formula that can help some people better design an exercise program.
- Students recognize that the distance they cover and the overall intensity of the activity are increasing.

Instructional Task: Stretching

■ PRACTICE TASK

Have students perform stretches for the major muscle groups of the legs.

Extension

Peer assessment: Have students video-record peers performing stretches. Have peers use a teacher-generated checklist to make sure that students perform the stretches appropriately.

Student Choices/Differentiation

- Students can do PNF stretching in pairs or individually.
- Students can do static stretching.

What to Look For

- Students hold the stretch long enough to maintain or improve range of motion.
- Students follow the sequence for PNF stretching.

Instructional Task: Bone-Strengthening Versus Muscle-Strengthening Activities

■ PRACTICE TASK

Define *bone-strengthening activities* and *muscle-strengthening activities* on the portable whiteboard.

Provide each small group with a small whiteboard and dry-erase marker.

Ask students based on what they have learned today whether the walk/run is a muscle-strengthening or bone-strengthening exercise. Have them explain their answers on the whiteboard.

On the word “Go!” each group holds up its whiteboard to reveal its answer. Have each group explain its answer.

Extension

EMBEDDED OUTCOME: S3.M8.6. Have students evaluate their daily activities and determine a goal for either bone-strengthening or muscle-strengthening exercise.

Student Choices/Differentiation

Students can choose groups.

What to Look For

- Students recognize that the walk/jog program is primarily bone strengthening since there is an impact with the ground.
- Students recognize that the walk/jog program is not really muscle strengthening since this would require resistance training instead.

Formal and Informal Assessments

- Whiteboard activity and class discussion
- Peer assessment: teacher-created checklist on the critical elements of stretching
- Exit slip: Set a goal for either bone-strengthening or muscle-strengthening exercise.

Journal assignment:

- What is the major difference between bone-strengthening and muscle-strengthening activities?
- With regard to how you feel during your training, are you improving fitness?
- Using your vocabulary words, please explain why you are becoming more successful in your training.

Closure

EMBEDDED OUTCOME: S3.M2.6. *To increase overall fitness, try to participate in at least one physical activity outside of physical education class.*

Reflection

- Do students seem to understand the difference between bone strengthening and muscle strengthening?
- Do students recognize that activities can be both aerobic conditioning and bone strengthening?
- Were students able to justify their answers?

Homework

We are going to start planning a 5K fun run next class. See if you can come up with materials to help in the planning process.

We will have our end-of-module quiz. Make sure you review material you learned on the school's physical education website.

Make sure you have your physical activity log filled out completely and ready to be turned in next class. Write a brief reflection on your activity levels and any patterns you see.

Finish your journal assignment.

Resources

U.S. Department of Health and Human Services. (2008). *Physical activity guidelines for Americans*. Washington, DC: Author. Available at www.health.gov.

Internet keyword search: "5K running plans"