

# LESSON PLANS FOR CHAPTER 11: MUSCLE FITNESS: BASIC PRINCIPLES AND STRENGTH

## Activity 11.1 – Partner Resistance Exercises

### LESSON OBJECTIVES

Students will perform exercises with a partner to build strength and muscular endurance.

### EQUIPMENT NEEDED

Bath towels (1 per 2 students), mats, benches, CD player and *Sound Track for Physical Education Volumes 1 and 2*

### ANCILLARIES AVAILABLE

Activity Cards 111-118: Partner Resistance Exercises

### ORGANIZATION

1. Have students choose a partner that is of a similar size and strength.
2. Refer students to the Partner Resistance Exercises worksheet.
3. Ask for volunteers to help demonstrate each exercise.
4. Have students follow the directions on the worksheets.

### WORKSHEET

Partner Resistance Exercises (PA 11-1)

## Lesson 11.1 - Muscle Fitness Basics

### VOCABULARY

absolute strength, calisthenics, fast-twitch muscle fibers, hypertrophy, intermediate muscle fibers, isokinetic exercise, isometric contraction, isotonic contraction, one repetition maximum (1RM), progressive resistance exercise (PRE), relative strength, reps, set, slow-twitch muscle fibers

### LESSON OBJECTIVES

1. Explain the difference between strength and muscular endurance.
2. Describe some of the health benefits of muscle fitness.
3. Describe the various types of muscles and muscle fibers.
4. Describe some of the methods of progressive resistance exercise used to improve muscle fitness.

### CONTENT (OPENER, TEACHING OUTLINE [QUESTION/ANSWER FORMAT], CLOSING)

Opener: Ideas to open this lesson can include: The teacher can show photos of people involved in activities, some involving strength (e.g., weightlifting, football, discus throw) and others involving endurance (swimming, cycling, mountain biking); in small groups the students can discuss the types of resistance training that would be most suitable to these activities; in small groups the students can be asked to list the resistance exercises a person playing a particular sport (e.g., softball, rowing, tennis) might do;

students can also discuss whether these exercises would also contribute to overall health and wellness; in small groups, students can be asked to create a resistance exercise routine, using only the equipment that is available in the school classroom (or at home).

### WRITE ON TARGET QUESTIONS

1. A friend in the weight room challenges you in lifting to see who can lift the most weight. What are some concerns about this situation?
2. You have been in a strength program for several months and are not seeing the results you want. Other people in the room start talking to you about performance enhancers. What is your response?

### Question outline to guide the lesson:

1. What is meant by the terms *muscle endurance* and *muscle strength*?
2. What is meant by the terms *absolute* and *relative strength*?
3. What type of equipment is available to do progressive resistance exercises?
4. What is the difference in the exercise prescription for building muscular endurance versus muscle strength?
5. What is meant by the term *hypertrophy*?
6. Why can a continuum be used to represent the relation between muscle strength and muscle endurance?
7. Can you explain the terms *reps* and *sets* used in designing a PRE program?
8. How does skeletal muscle differ from smooth muscle and cardiac muscle?
9. Muscles can contract while extending a joint (e.g., doing a triceps extension) or flexing a joint (e.g., doing a biceps curl). What is the name for these types of movements?
10. There are two types of isotonic contractions – eccentric and concentric. What movement action is described by each of these terms?
11. What is the difference between an isotonic and an isometric contraction?
12. What does the strength (or endurance) of a muscle depend on?
13. What is the difference between weight training for strength and circuit weight training?
14. Can you describe how training programs would differ for the following: weight training, weightlifting, power lifting, and bodybuilding?
15. How are muscle strength and muscle endurance usually assessed?

**Closing:** Review how muscle fitness can be characterized by muscle endurance and muscle strength; to improve either area of muscle fitness, a specific program of sets and repetitions is required; highlight the fact that each type of program will give benefits for sports and good health; provide examples of movements that are concentric and eccentric; finish with emphasizing that muscle fitness exercises can be done using a wide range of equipment – from home-based equipment to expensive machines in fitness centers.

### ENRICHMENT

Application 11

## RESOURCE MATERIALS

1. OTM 11-A: Some Major Muscle Groups (CR 11-2)
2. OTM 11-B: Fitness Target Zones for Strength (CR 11-3)
3. OTM 11-C: Strength/Endurance Continuum (CR 11-4)
4. OTM 11-D: Resistance Machines Versus Free Weights (CR 11-5)
5. Application 11: Strength Training (CR 11-6)

## WORKSHEET

None

# Self-Assessment 11 - Determining Your Modified 1RM and Grip Strength

## LESSON OBJECTIVES

To perform strength self-assessments to determine 1RM and grip strength.

## EQUIPMENT NEEDED

Weight training equipment, grip dynamometer

## ANCILLARIES AVAILABLE

None

## ORGANIZATION

1. Place a sign and equipment at each station.
2. Refer students to the Determining Your Modified 1RM and Grip Strength worksheet.
3. Divide the class into six groups and assign each group a station.
4. Have students read the directions and then practice the assigned exercise.
5. Have each group demonstrate their safe exercise to the class.
6. Specify the number of sets and reps for each exercise.
7. Have each group return to their starting station and perform the assigned exercise.
8. Ask students to record the repetitions they performed, the weight lifted, the estimated 1RM, the calculated strength-to-weight ratio, and their fitness rating for each exercise.
9. When the signal is given, tell groups to rotate to the next station.
10. Have students estimate their 1RM on their record sheets.
11. Demonstrate the use of the grip dynamometer.
12. Have students perform the grip test and record their results.

## RECORD OF ASSESSMENT

Have students put their recorded results into their Portfolios or Activity Record Books.

## WORKSHEET

Determining Your Modified 1RM and Grip Strength (SW 11-1)

## Lesson 11.2 - Building Strength

### VOCABULARY

double progressive system, muscle-bound

### LESSON OBJECTIVES

1. Describe health and wellness benefits of strength.
2. Describe some myths about strength and tell why they are wrong.
3. Explain the FIT formula for developing strength.
4. Describe some basic guidelines for safe PRE.

### CONTENT (OPENER, TEACHING OUTLINE [QUESTION/ANSWER FORMAT], CLOSING)

**Opener:** Ideas to open this lesson can include: The teacher creates two columns on the board under the heading of Strength: “Myths” and “Facts”; in small groups the students list as many points as they can under the respective columns; to the entire class, the teacher elicits ideas on the health and wellness benefits of strength (for teenagers, for adults, for the elderly); in small groups, students are asked why they think muscular strength activities are an important feature of the Physical Activity Pyramid; in small groups students are asked to rank sporting activities (from highest strength needs to lowest strength needs).

#### **Question outline to guide the lesson:**

1. What are some ways in which good muscular strength can benefit you in daily life?
2. What health problems might be prevented by having good muscular strength?
3. What are some benefits of strength training for physical appearance?
4. Pre-teens can improve strength by doing a PRE program: what accounts for these improvements in strength?
5. Describe why the saying “no pain, no gain” is inappropriate.
6. What is meant by the term *body dysmorphia*?
7. Is training for muscle strength more appropriate for boys than girls?
8. What is meant by the term *muscle-bound*?
9. How is the principle of overload used to improve muscle strength?
10. How is the principle of specificity used to improve muscle strength?
11. How is the principle of progression used to improve muscle strength?
12. Why are rest and recovery so important when doing strength training?
13. What is the FIT formula for doing muscle fitness exercises for health benefits?
14. What are some major guidelines to follow when beginning a weight training program?
15. What are the advantages and disadvantages of resistance machines and of free weights?

**Closing:** Review all of the following: the health benefits of good muscular strength; why all people (young and old, male and female) can benefit from strength training; the myths and assumptions made about strength training; finish with highlighting the key principles (FIT formula) to follow in order to receive health benefits from strength training.

## **ENRICHMENT**

1. Reinforcement 11
2. Taking Charge 11: Students will have the opportunity to assess how they might fare with long-term adherence to physical activity.

## **RESOURCE MATERIALS**

1. Reinforcement 11: Strength Word Scramble (CR 11-7)
2. Personal Project 11: Logging and Planning Resistance Training Exercises for Strength (CR 11-8)

## **WORKSHEET**

Taking Charge 11: Preventing Relapse (TC 11-1)

# **Activity 11.2 - Fundamentals of Weight and Resistance Training**

## **LESSON OBJECTIVES**

Students will perform exercises that improve muscular endurance.

## **EQUIPMENT NEEDED**

Machine and free weight equipment

## **ANCILLARIES AVAILABLE**

Activity Cards 119-129: Fundamentals of Weight and Resistance Training

## **ORGANIZATION**

1. Have students do a warm-up.
2. After the warm-up, refer students to the Fundamentals of Weight and Resistance Training worksheet.
3. Place a sign and equipment at each station – number the stations so that the machine and free weights stations alternate.
4. In pairs, students will complete the exercises at each station.
5. Students will keep track of the number of reps and sets performed at each station.

## **RECORD OF ASSESSMENT**

Have students put their recorded results into their Portfolios or Activity Record Books.

## **FOR INCLUSION: ACCOMMODATIONS FOR PERSONS WITH DISABILITIES**

No adaptations are needed for these exercises as long as a full array of free weights is available to accommodate the lowest functioning student. Two- and five-pound weights can be purchased at local sporting goods stores.

Students with disabilities can learn the fundamentals of resistance training. If they have limited capacity to do some exercises, they should be encouraged to excel at the exercises they can do. Students with language, learning, or other cognitive disorders may function best working in groups of three, where they can watch their partners perform the exercises, and have them close by to spot and guide them when they are lifting.

## **WORKSHEET**

Fundamentals of Weight and Resistance Training (SW 11-2)

## RESOURCES FOR CHAPTER 11

**Activity**      **Partner Resistance Exercises**

Activity Cards 111-118: Partner Resistance Exercises  
Partner Resistance Exercises (PA 11-1)

**Class**            **Muscle Fitness Basics (11.1)**

OTM 11-A: Some Major Muscle Groups (CR 11-2)  
OTM 11-B: Fitness Target Zones for Strength (CR 11-3)  
OTM 11-C: Strength/Endurance Continuum (CR 11-4)  
OTM 11-D: Resistance Machines Versus Free Weights (CR 11-5)  
Application 11: Strength Training (CR 11-6)

**Activity**            **Self-Assessment 11: Determining Your Modified 1RM and Grip Strength**

Determining Your Modified 1RM and Grip Strength (SW 11-1)

**Class**            **Building Strength (11.2)**

Reinforcement 11: Strength Word Scramble (CR 11-7)  
Personal Project 11: Logging and Planning Resistance Training Exercises for Strength (CR 11-8)  
Taking Charge 11: Preventing Relapse (TC 11-1)

**Activity**            **Fundamentals of Weight and Resistance Training**

Activity Cards 119-129: Fundamentals of Weight and Resistance Training  
Fundamentals of Weight and Resistance Training (SW 11-2)

**Ancillaries**

- ▶ *Fitness for Life Video Series: Lifelong Physical Fitness and Wellness*
- ▶ *CD-ROM: Fitness for Life Presentation Package*
- ▶ *Audio CD: Sound Tracks for Physical Education Volumes 1 and 2*

# Chapter 11 Review

## Answers

### REVIEWING CONCEPTS AND VOCABULARY

1. Strength
2. Hypertrophy
3. injured
4. resistance
5. c
6. f
7. e
8. a
9. b
10. d
11. They give the body a firm appearance and can prevent back problems and weak bones.
12. Younger teens have levels of hormones too low to produce changes in muscle size.
13. To allow you to monitor your progress toward your strength-training goals.
14. Improvements in strength are made when the weights and number of reps gradually increase over time.
15. This depends, but 2 to 3 times per week is a good recommendation.



#### Project

Keep a record of your daily participation in resistance exercises for strength development for one week. Record the minutes of these exercises you do each day. How might you adjust your physical activity to better maintain or improve your strength? What short-term goals might you have for performing specific strength exercises each day? Make a written plan for the following week, incorporating changes that might help you reach your goals. Use the worksheets provided by your teacher.

## 11

### Chapter Review

#### Reviewing Concepts and Vocabulary

Number your paper from 1 to 4. Next to each number, write the word (or words) that correctly completes the sentence.

1. \_\_\_\_\_ is the amount of force a muscle can exert.
2. \_\_\_\_\_ refers to an increase in muscle fiber size.
3. A person can become \_\_\_\_\_ if he or she does strength training improperly by developing some muscles while ignoring others.
4. When you do callisthenics to develop strength, you use your body weight as the \_\_\_\_\_.

Number your paper from 5 to 10. Next to each number, choose the letter of the best answer.

#### Column I

5. isometric exercise
6. weightlifting
7. progressive resistance
8. isokinetic exercise
9. 1RM
10. isotonic exercise

#### Column II

- a. muscle fitness exercise that regulates velocity
- b. the maximum amount of weight a group of muscles can lift one time
- c. exercises in which the muscles do not move
- d. muscle fitness exercises that involve movement
- e. the gradual increase of weight used in strength training
- f. a sport, not a method of training

Number your paper from 11 to 15. On your paper, write a short answer for each statement or question.

11. How do strong muscles help you look better and prevent health problems?
12. Why can't preteens build as much muscle size as older teens?
13. Why should you assess your strength before you start a strength-training program?
14. Why should you gradually increase the amount of weight you use?
15. How often should you do your strength training program?

#### Thinking Critically

Click on the Web icon that provides additional information concerning muscle fitness myths (page 186). This Web site provides information about muscle fitness training for preteens and teens. It also leads you to the Web sites of the ACSM and the President's Council on Physical Fitness and Sports. Read some of the articles at these sites (on resistance training for preteens and teens) and write a short paper on the topic. Report your results to your class.

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### THINKING CRITICALLY

Points in this paper should include the fact that some teens can do resistance training if the program is supervised and structured in an appropriate manner. Specific issues for teens include keeping the volume and intensity reasonably low (focus more on muscular endurance outcomes as opposed to muscular strength) and avoiding some multi-joint lifts, such as squats and power cleans.