UNIT 9 - RESPIRATORY SYSTEM

ACTIVITY - Respiratory Fitness

Objectives:
The student will approximate a measurement of lung capacity; to compare lung capacities of males and females, active and inactive.

Materials:
Clock or watch with second hand, wet spirometer, if available, round balloons, string, rulers, stethoscopes.

Strategy:
Lung capacity
Define vital capacity, the maximum volume of air that can be exhaled forcibly following the deepest possible inhalation. Also, define the lung volumes that add up to the vital capacity: tidal volume, inspiratory reserve volume, and expiratory reserve volume.

As you define each term, demonstrate it with a spirometer. If a spirometer is not available, demonstrate how it would be measured by exhaling in the manner appropriate for each volume. Discuss the range of average values, and the factors which influence these values.

(The average adult male vital capacity ranges between 2.8 L and 5.5 L.)

Have students compare their vital capacities, males vs. females, athletic students vs. non-athletic. Have students inflate a round balloon with the maximum amount of air that can be exhaled after a forcible inhalation. Measure the circumference of the balloon at the widest point by wrapping a string around it and measuring the length of the string. Have each student record his measurement in a data table on the board, with separate columns for males, athletic and not, and
for females, athletic and not.

Discussion:
Discuss the results.

What are some variables that determine lung capacities?
How could you account for the different lung vital capacities in your classmates?