

HOW FAST DOES YOUR HEART BEAT?

A. Question: *Can we determine our pulse in the classroom? Does it ever change?*

B. Materials Needed:

- Low step stools
- A stop watch or a watch with a second hand

C: Procedure:

1. Let students work in pairs: one acting as the tester and the other as the subject. Instruct the tester to count the number of heartbeats of the subject by placing his/her fingers on the subject's wrist, and counting the number of pulses that occur within 10 seconds. Once the number is observed and recorded it should be multiplied by 6.
2. After this is completed, allow the subject to step up and down on a stool 10 times. Immediately after the 10th step, the tester should retake the subject's pulse for a 10 second period. Once again multiply this number by 6 and record the data.
3. Give the subject time to recuperate breath if needed (perhaps wait 3 minutes). Then have him/her do 20 stool climbs. Immediately retake the pulse as before. Record data.
4. Repeat step 3, but with 30 steps this time.
5. After all data has been recorded, the tester and subject should switch roles.

D: Anticipated Results:

It is expected to see an increase in pulse rate as intensity of exercise increases.

E: Thought Questions for Class Discussion:

1. What was the normal resting pulse (before the steps up and down the stool) ?
2. What was the pulse after 10, 20, and 30 steps up and down the stool?
3. What made the heart beat faster after exercise?
4. What did the muscles need to do all that work?

F: Explanation:

The pulse or heartbeat is caused by the blood pressure impact on the arteries as the heart muscles contract. It can be felt by placing a finger on the radial artery on the wrist. By doing vigorous exercise, like the steps up and down the stool, the leg muscles need more oxygen and thus more blood to carry this oxygen. Thus the heart automatically speeds up to pump more blood to the working muscles, from around 72 beats per minute to more than 120. However, within three minutes this sped up pulse should return to the normal 72. By increasing the number of steps on the stool, an increase in the subject's pulse should be observed. Some deviations from the expected pulse rates may be normal for certain individuals.