

Homeostasis Lab

Introduction: Homeostasis means maintaining a relatively constant state of the body's internal environment. The term used to describe a pattern of response to restore the body to normal stable level is termed negative feedback. When a stimulus (environment change) is met by a response that reverses (negates) the trend of the stimulus, it is negative feedback. As a result, the internal environment is returned to normal. Pulse rate is constantly checked by receptors (sensors) throughout your body. A stimulus such as elevated pulse rate leads to a reaction by an organ making the response. An appropriate response will return the pulse rate to normal.

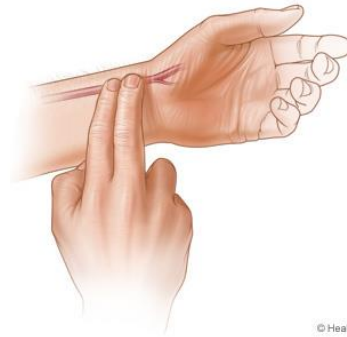
Purpose: To observe an example of homeostasis working to control your body's pulse rate (heart rate) and breathing rate.

Materials: stop watch

Procedure:

Resting Heart Rate

1. While resting find your pulse. This can be done by placing two fingers on the inside of your wrist or elbow. You can also place two fingers on your neck just below the jaw line. Push hard enough to detect your heart beat, but not hard enough to cause pain or injury.
2. Once you have located your pulse, use the stopwatch to count the number of beats you feel in 20 seconds. Multiply this number by 3 to get the number of beats per minute (bpm). Record this number in **Table 1**.
3. Repeat this two more times.
4. Calculate your average resting heart rate by adding all three resting rates recorded in **Table 1** together and dividing by 3.
5. Record this number in **Table 1**.



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Resting Breathing Rate

6. While resting find your breathing rate.
7. Use the stopwatch to count the number of times you breathe in and out in 30 seconds. Multiply by 2 to get breaths per minutes. One inhale plus one exhale equals one breath. Record this number in **Table 2**.
8. Repeat this two more times.
9. Calculate your average resting breathing rate by adding all three resting breathing rates recorded in **Table 2** together and dividing by 3.
10. Record this number in **Table 2**.
11. You OR your partner will exercise vigorously for two minutes by doing jumping jacks or running. Start your stop watch when you start exercising. Measure the pulse rate and breathing rate immediately on finishing the two minutes of activity; measure the same as before. Record the value in Data Table 3.
12. Reset your stopwatch and exercise for another two minutes. Measure your pulse/breathing rates again. Record in Data Table 3.
13. Repeat steps 5-6 two more times. Record the values in Data Table 3.
14. After eight minutes of exercise, rest for 1 minute. Measure the pulse and breathing rates. Record in Data Table 3.
15. Repeat step 8 four more times.

