Monitoring the body’s reactions to stress

The purpose of this activity is:

* to examine how our body reacts to the anticipation of stress
* to assess the extent of stress during a task
* to measure how quickly our bodies return to their normal state after stress

### Procedure

SAFETY: Follow all your teacher’s instructions carefully.

### Investigation

1. Record all your results in the chart on page 4.
2. During the early part of this lesson, measure your colleague’s pulse rate at rest. If possible take 3 measurements within a 10 minute period and calculate your mean pulse rate. This is your baseline pulse.
3. Assess how nervous you are on a scale of 1-10 (where 1 is completely relaxed and 10 is extremely nervous). Describe how your body is feeling – using features that relate to how calm or nervous you are.
4. Your teacher will now explain the task.
5. Just before you carry out the task, measure your colleague’s pulse rate again.
6. Just before you carry out the task, assess how nervous you are on a scale of 1-10 (where 1 is completely relaxed and 10 is extremely nervous).
7. Describe any physiological symptoms you have of nervousness, such as butterflies in the stomach or sweaty palms.
8. Carry out the task.
9. After the task, measure your colleague’s pulse rate again, and report on your nervousness using the rating and physiological symptoms.
10. Measure pulse rate every three minutes for the next 10 minutes.
11. Calculate your mean average pulse rate at each point of the investigation.
12. Calculate each pulse rate as a percentage of your baseline pulse rate.
13. Collate your results with the rest of the class and plot the results to see how stress affects heart rate, how quickly heart rate returns to the baseline, how the nervousness rating changes and how nervousness is described.

**QUESTIONS**

1. Describe your class results for changing heart rate. How rapidly does the heart rate change?
2. Describe your class results from the nervousness rating. How rapidly do feelings of nervousness change?
3. What words in the descriptions of nervousness relate to changes in the body?
4. What could be the benefit to the body of increasing heart rate at a time of stress?
5. What do you think could be causing the other symptoms, such as sweating and butterflies in the stomach?
6. When physiological systems react rapidly, the autonomic nervous system is usually involved. What are the advantages to an organism of quick reactions to stress?
7. What survival advantage, if any, can you see in feelings of nervousness under stress?
8. Find out how the autonomic nervous system controls our reactions to stress.
9. Find out more about skin conductance changes as a measure of stress and how saliva could be used to monitor stress.
10. Devise an investigation to find out how stress affects memory or sports performance.

# Record sheet for data

## At beginning of session: Resting pulse

|  |  |  |  |
| --- | --- | --- | --- |
| **Pulse measurement 1** | **Pulse measurement 2** | **Pulse measurement 3** | **Mean** |
|  |  |  |  |

### Nervousness rating

relaxed 1 2 3 4 5 6 7 8 9 10 nervous

### Description of feelings

…………………………………………………………………………………………………………………………………………………………………………………………………………

## Just before task:

|  |  |
| --- | --- |
| **Pulse rate measurement** |  |

### Nervousness rating

relaxed 1 2 3 4 5 6 7 8 9 10 nervous

### Description of feelings

…………………………………………………………………………………………………………………………………………………………………………………………………………

## After task:

|  |  |  |
| --- | --- | --- |
| **Measurement 1** | **Measurement 2** | **Measurement 3** |
|  |  |  |

### Nervousness rating

relaxed 1 2 3 4 5 6 7 8 9 10 nervous

### Description of feelings

…………………………………………………………………………………………………………………………………………………………………………………………………………

## Pulse rate as percentage of baseline

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Mean resting** | **Before task** | **After task (1)** | **After task (2)** | **After task (3)** |
| 100% |  |  |  |  |