**Determining The Sensitivity of the Skin**

****

**Purpose:** To measure the sensitivity of various regions of the body.

**Background:** Touch receptors are located in the skin. Some areas of the body are more sensitive than others – the more sensitive areas have more touch receptors. There are several types of touch receptors. The Meissner’s corpuscles are believed to detect light touch, light pressure, and vibration. This is the type of touch receptor you will be mapping in this lab.

 The density of touch receptors not only varies from area to area on the body, but also changes with age. An older person has a lower density of receptors than a teenager. A teenager has a lower density of receptors than a young child.

**Materials:** Note cards, tooth picks, tape, ruler, sharpened pencil with intact eraser

**Procedure:**

1. Each group will make 5 probes using notecards, toothpicks, and tape. Toothpicks will be taped evenly to a notecard. The probes will be set up as follows:

 Probe 1: 1 toothpick

 Probe 2: 2 toothpicks, spaced 1 mm apart

 Probe 3: 2 toothpicks, spaced 3 mm apart

 Probe 4: 2 toothpicks, spaced 5 mm apart

 Probe 5: 2 toothpicks, spaced 10 mm apart

2. Make a hypothesis (found on pg 2) about your skin sensitivity.

3. Blindfold one partner (or have that partner close his/ her eyes) as a test subject.

 a. Choose a random setup for the trials (no patterns!).

 b. Gently touch the test site (determined by the data table) with the probe – hold on area for a few seconds.

c. The test subject will respond with the number of probes felt. Record data in Data Table 1.

 For a correct response, place a “+” in the data table.

For an incorrect response, place a “-“ in the date table.

4. When all the trials are complete on one test subject, repeat all the trials using the other lab partner as the test subject.

5. Count the number of correct responses (“+”) for each site and enter this number in the data table in the *Totals* row.

6. Test your partner to see how well he/she can sense a sharp or dull probe.. Blindfold one partner (or have that person close his/ her eyes).

a. Choose a random setup for the trial.

b. *Caution:* Be careful with the sharpened point of the pencil; do not press the tip into the skin! Using a relatively sharp pencil with an intact eraser, test the same areas of the body gently using either side of the pencil. Test each area at least 4 times, for a total of 36 trials.

*Note*: You do not need to divide the 4 tests on each area into 2 blunt and 2 sharp. Do test at least 1 blunt and 1 sharp per area.

c. The test subject will respond with the type of probe felt. Record data in Data Table 2.

For a correct response, place a “+” in the data table.

 For an incorrect response, place a “-“ in the date table.

7. When all the trials are complete on one test subject, repeat all the trials using the other lab partner as the test subject.

8. Count the number of correct responses (“+”) for each site and enter this number in the data table in the *Totals* row.

9. Record your results for both tests as a class on the chalk board.

10. Answer the following questions *on separate paper.*

**Hypothesis:**

1. What areas of the body do you think will be the most sensitive and least sensitive? Why?

**Conclusion and Questions:**

1. What were the most sensitive and least sensitive areas of your body tested? Was your hypothesis accepted or rejected?

2. Create an activity that compares skin temperature to its sensitivity.

3. How do your results compare with the rest of the class? Explain.

4. What are the advantages of having pain receptors near the surface of your skin? What are the disadvantages?

5. Explain the following situation. A person enters a bath tub that is very hot. The person stays in the tub and a few minutes later the water doesn’t feel as hot, even though the water temperature hasn’t changed.

DATA TABLE 1

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| TEST      | Finger  | Palm  | Forearm (inside)  | Back of hand  | Forearm (outside)  | Forehead  | Lips  | Cheek | Back of Neck  |
| 1 probe    |    |    |    |    |    |    |    |  |    |
| 1 mm    |    |    |    |    |    |    |    |  |    |
| 3 mm    |    |    |    |    |    |    |    |  |    |
| 5 mm    |    |    |    |    |    |    |    |  |    |
| 10 mm    |    |    |    |    |    |    |    |  |    |
|   TOTALS    |    |    |    |    |    |    |    |  |    |

DATA TABLE 2

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| TEST      | Finger  | Palm  | Forearm (inside)  | Back of hand  | Forearm (outside)  | Forehead  | Lips  | Cheek | Back of Neck  |
| Trial 1    |    |    |    |    |    |    |    |  |    |
| Trial 2   |    |    |    |    |    |    |    |  |    |
| Trial 3   |    |    |    |    |    |    |    |  |    |
| Trial 4   |    |    |    |    |    |    |    |  |    |
| TOTALS   |    |    |    |    |    |    |    |  |    |