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Laboratory 6/7- Sensory Physiology
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Purpose

The purpose of laboratory 6/7 Sensory Physiology, is to understand and measure the capabilities of our sensory systems. Sensation is described as the monitoring of environmental stimuli. Sensation requires three basic components of the nervous system, receptors, sensory neurons, and interpretation centers. During this lab we performed various activities that focused on testing our sensory systems to see how we interpreted different sensations. We focused on cutaneous, olfactory, auditory, proprioceptive and visual receptors.

Procedure

The first two activities that we endured focused on testing our cutaneous sensation. In the first activity we were to distinguish two distinct points on our palm. My partner applied two pinpoints as close together as possible on my palm, she then removed the pin and moved them 1 millimeter apart. After she reapplied the pinpoints to my palm, we repeated this procedure until I was able to discriminate between the two distinct points. We recorded the distance between pins that it took for me to be able to discriminate between the two separate caliper points. We tested the palm of my hand, back of my hand, fingertips, outer edge of the lips and back of my neck. In the second activity, we were to place our left fingers in 15 degree celsius temperature water and place our right fingers in 37 degree celsius temperature water for 2 minutes. We recorded the sensation of each. After two minutes we recorded the sensation of each hand. After that, we prompted both hands into 25 degree celsius water and recorded the immediate sensation. The next activity that we performed focused on our olfactory sensation. For this activity we were to record the time that it took us to no longer distinguish different smells when exposed to them. We did this by holding a bottle of camphor oil under our nose and blocking one nostril. We recorded the amount of time it took us before we couldn't distinguish the smell anymore. The next two activities that we performed focused on our auditory sensation. For the first activity we were to check for middle ear damage, we did this by placing our hand over our left ear, and holding a vibrating fork into the right mastoid process, as soon as the sound disappeared we were to move the fork near the external auditory canal, if we were able to hear the vibrating sound again then this meant there was no middle ear damage. In the next activity we used an audiometer to test our hearing and record our results. In the next activity that we performed we did it as a class Doctor Oak spun a student to the right for 10 times, when Doctor Oak stopped the student looked straight ahead and we were to record the movement of the students eyes. The next activities focused on our visual receptors. For the first activity we were to record the distance it took for our optic nerve to blur an image. We did this by covering our left eye and focusing our right eye on a spot and moving the page closer to our eye until the spot disappeared. We then measured the distance from our eye to the page in which the spot blurred or disappeared. The next activity that we did was we performed a snellen test which is pretty simple. We read outline line 20 or until a line was fully read correctly and recorded this by the distance in which we read the letters over the lowest line read clearly at 20 feet. The next activity was to stand away from the astigmatism eye chart until it fills our field of

vision, cover our eyes and focus on the lines on the vertical plane out the eye chart with the opposite eye. We then recorded if the lateral lines blurred. If they did then this meant we had astigmatism in our eye. During the next two activities we tested our color vision. We did this by staring at different colored objects for a few seconds and then staring at a white blank piece of paper. We then recorded the negative after images, for each color. We also used an Ichikawa color blindness test that is used by attempting to read the colored numbers of each pattern. We used 10 different panels if we got them all correct that indicated no color blindness however if some were incorrect that indicated a color deficiency exists. For our last activity, we used a perimeter board to test our color vision. We performed this by sitting down placing our right eye at the edge of the semicircle all while covering out left eye, my lab partner than moved different colored blocks into my field of vision and i was to identify these color, we recorded this results for each block for both the horizontal and vertical perimetry charts.

Results

A-1 Two point discrimination

Palm of hand	8 millimeter
Back of hand	10 millimeter
Fingertip	3 millimeter
Outer edge of the lips	27 millimeter
Back of neck	20 millimeter

A-2 Accommodation of Thermoreceptors

The sensation after placing my hand in 15 degree celsius water was colder than the sensation of my hand in the 37 degree celsius water. However after placing both hands in the 25 degree celsius water the hand in the 15 degree water felt warmer in the 25 degree water. The hand in the 37 degree water felt cold in the 25 degree water.

6/7 B Olfactory Adaptation

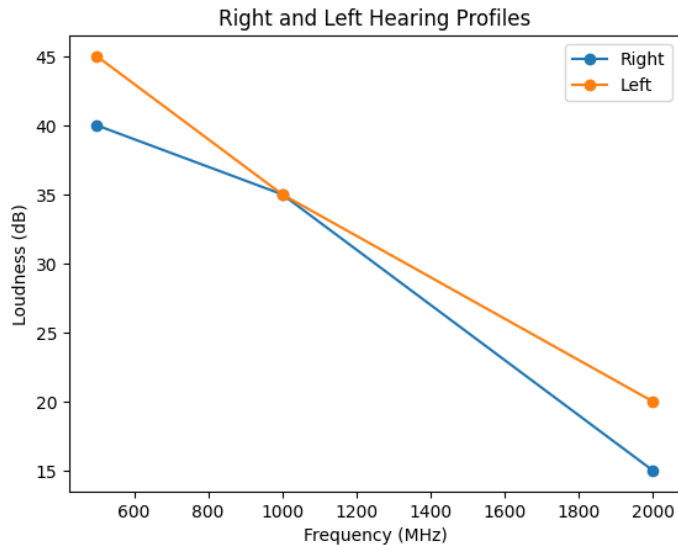
Camphor	35 Seconds
Cloves	30 seconds
Mint	37 seconds

C-1 Tuning Fork Tests

Right Ear	No Damage
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Left Ear	No Damage
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C-2 Audiometry



Average Right after subtraction: 4.0 Percent Impairment Right: 6.0 %
Average Left after subtraction: 7.333333333333336 Percent Impairment Left:
11.000000000000004 %

6/7-D Equilibrium- Demonstration of Nystagmus

Doctor Oak spun a student rapidly ten times to the right when he suddenly stopped. We observed the students eyes to check for any movement and there was no movement noted in their eyes.

Spun 10 times	No eye movement detected
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E-1 Demonstration of the blind spot

I was not able to identify the object at 10CM. The lack of vision at this point is explained because the brain is filling.

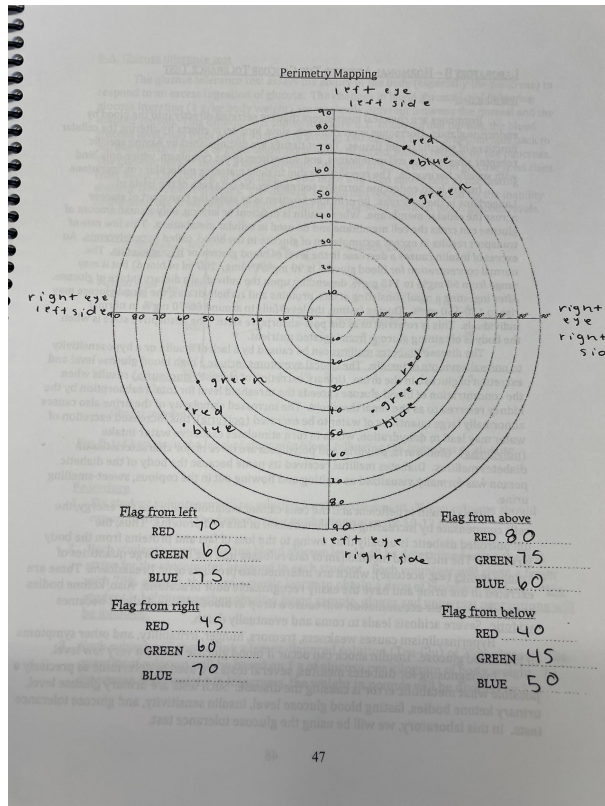
E-2 The Snellen Test

Right Eye	20/30
Left Eye	20/30

E-3 Astigmatism

Right Eye	No Astigmatism Detected
Left Eye	No Astigmatism Detected

E-5 Color Vision



Discussion

For laboratory 6/7 Sensory Physiology we performed various different activities to measure the capabilities of our sensory systems. My favorite activity performed was the turning forks test which was performed to detect middle ear damage. I learned that I don't have any ear damage on either ear. I learned very cool stuff about my own senses, such as my olfactory system is very strong. It took me quite a long time until I was finally not able to detect the smells of the bottle of cloves, peppermint oil, and bottle of camphor oil. My lab partners and I were surprised by this as it took them a much shorter time than it took me to finally not be able to detect the smells. What surprised me the most was that my auditory sensation is not very good and I learned that I have hearing impairment on both ears. A major limitation that we did have was

that it was very noisy in the lab room as everyone was discussing with their partners about their own activities and results. This could have portrayed experimental error on the audiometry test. My partners however did not have any hearing impairment, as I did.

Conclusion

In conclusion, sensations are triggered by different receptors which include cutaneous receptors, olfactory receptors, gustatory receptors, phonoreceptors, proprioceptors, and photoreceptors. The intensity in which a sensation is perceived, depends on the rate that impulses are delivered to an interpretation center. I learned that stronger sensations result from higher frequencies of nerve impulse arrival. In conclusion, I really liked this lab because I was able to measure my own sensory systems and learn new things about myself.