

Neurophysiology lab report essay sample



**ASSIGN
BUSTER**

Activity 1:

1. What was your observed threshold voltage?

Our observed threshold voltage at 3 V at a single stimulus.

1. How does this tracing compare to the one that was generated at threshold voltage? When we increased the threshold by 0.5 V the tracing was identical to the original 3 V threshold.

1. What reasons can you give for your answer?

There needed to be a more significant difference for there to be a big enough change in the threshold voltage.

1. At what voltage did you no longer observe an increase in the peak of the action potential trace. We no longer observed an increase in peak of action potential trace at the 3.5 Voltage.

Activity 2-4:

1. What did you observe when the glass rod contacted the nerve? When the glass rod contacted the nerve there was an instant deflection of the line. There was action potential on the oscilloscope.

1. How does this tracing compare with the other tracings you have generated? The tracing was the exact same outcome as the other tracings except there was no added voltage only the addition of the glass rod. 3.

What did you observe when the heated glass rod contacted the nerve? There was an instant deflection of the line similar to the line caused by the non-heated glass rod.

4. How does this trace compare to the trace that we generated with the unheated glass rod?

The tracing of the heated glass rod on the nerve was slightly a bit higher at its' maximum peak and slightly lower at the lowest peak than the tracing of of the non heated glass rod.

5. What did you observe when you added sodium chloride and hydrochloric acid solutions to the nerve?

Once sodium chloride and hydrochloric acid solutions were added to the nerve there was a deflection of the line and caused action potential.

1. Summarize your experimental results: What kinds of stimuli can elicit an action potential?

Any stimuli that can reach above the 3 Voltage can elicit an action potential .

Activity 5:

1. What are the effects of ether on the nerve?

The effects of the ether on the nerve is that it causes the nerve to have no action potential.

1. How long did it take for the nerve to return to normal?

It took the nerve 6 minutes to return back to normal. Activity 6:

1. What effect did adding curare have on the action potential? The effect of adding curare was that it created action potential to the nerve.

1. Explain this effect.

The effect of curare is paralyzing the action potential of the nerve. It interferes with the neuromuscular junction, it interferes with the Acetyl Choline and it depolarizes it.

1. What do you think would be the overall effect of curare on the organism

The overall effect of the curare on the organism is that it prevents the flow neuron impulses from neuron to neuron.

Activity 7:

1. Does adding lidocaine to the nerve generate an action potential? No, adding lidocaine does not generate action potential.

1. Explain why lidocaine has this effect on nerve fiber transmission.

Lidocaine is a sodium channel antagonist that neutralizes the action potential of nerve and prevents the sodium channels from opening. Activity 8:

Record Your Data:

Nerve| Earthworm (small)| Frog

(medium, myelinated)| Rat nerve 1

(medium, unmyelinated)| Rat nerve 2 (large, myelinated)|

Threshold voltage| 5.0 V| 3.0 V| 3.0 V| 3.0 V|

Elapsed time from stimulation to action potential| 5 m/sec| 1.61 m/sec| 2.53

m/sec| 1.0 m/sec| Conduction velocity|

8.60 m/sec

| 26.71 m/sec| 17.00 m/sec| 45.74 m/sec|

1. Which nerve in the group has the slowest conduction velocity? The earthworm had the slowest conduction velocity.

1. Which nerve of the four has the fastest conduction velocity? The rat nerve 2 had the fastest conduction velocity.

1. Explain the relationship between nerve size and conduction velocity. The smaller the nerve size the slower the conduction velocity. The larger the nerve size the faster the conduction velocity.

1. What are the physiological reasons for this relationship? The physiological reasons for this relationship are the larger the axon's diameter is, the less resistance there is for the flow of currents and therefore areas can be brought to the threshold faster.

1. What are the effects of myelination on conduction velocity? Myelination speeds up the conduction velocity.

1. What are the physiological reasons for your conclusion?

The physiological reasons for our conclusion is that it provides insulation and allows the current to be faster.

7. What are the evolutionary advantages achieved by the myelination of neurons? The evolutionary advantages achieved by myelination of neurons is that you can pack more power in smaller spaces with myelinated neurons.