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BACKGROUND

Rehabilitation from a drug addiction is a very difficult process. Withdrawal syndrome forces the patient who is in the process of rehabilitation to go through extreme anxiety that causes them to quit the treatments. Studies suggest that the hormone oxytocin, which is associated with a **sense of calmness**, is a potential facilitator in the rehabilitation process. **Oxytocin** is known as the **love hormone** because of the calming effects attributed to it that helps humans make bonds. **The present study aims to test the calming effects of oxytocin in rats addicted to Cocaine.**

RESEARCH QUESTION

Can intranasal administration of the oxytocin in rats, during abstinence of Cocaine treatment decrease withdrawal elicited anxiety and thus the craving of the drug?

Variables

- Independent: **Levels of Anxiety**
- Dependent: **Oxytocin treatment**

METHODOLOGY

Animal House



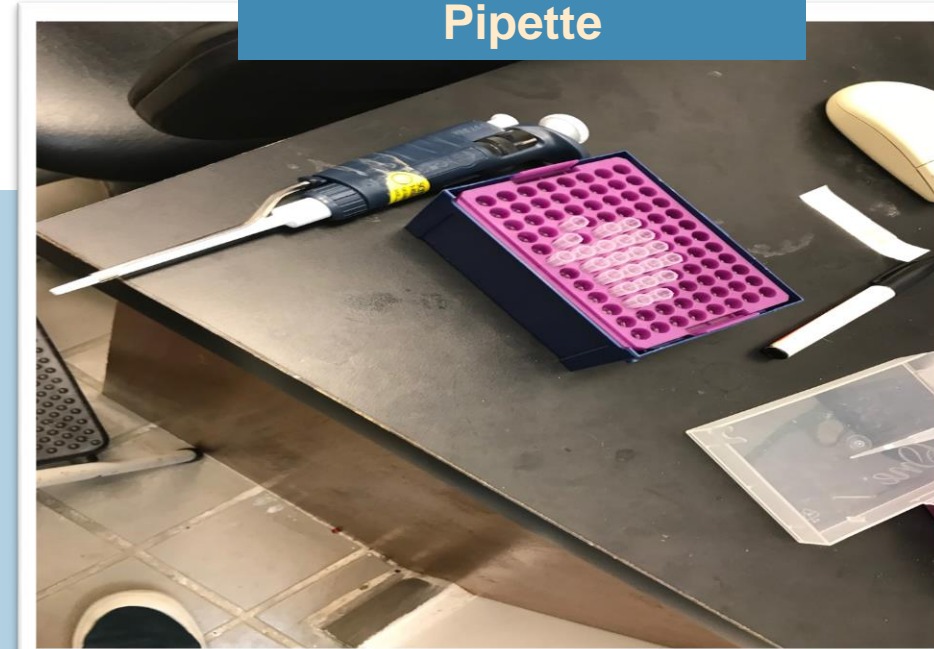
Habituation Phase

- Sprague Dawley rats were **seven days** in quarantine in a **12 hour day/night** shift.
- Seven days of handling** to allow the subjects to habituate to experimental procedures.
- Three days of habituation** exposure where all subjects were, intranasally, administered saline.

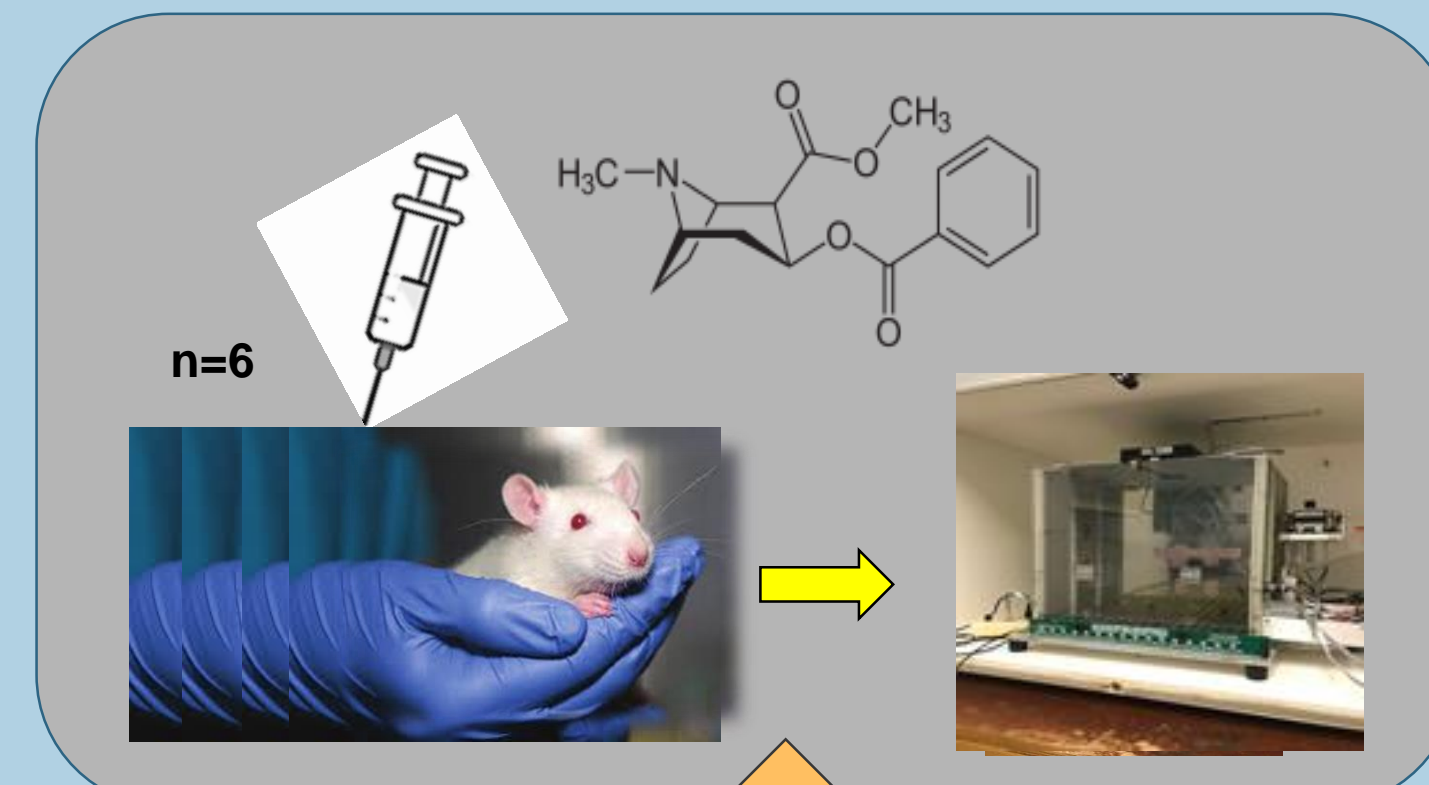
Handling



Pipette



METHODOLOGY



Cocaine Phase

- Days 1-5:** all rats were injected 10mg/kg of Cocaine diluted in sterile 0.9% saline water.
- Animals were placed in an operant chamber for 30 minutes. Locomotor activity was monitored.

Oxytocin n=3



Saline n=3



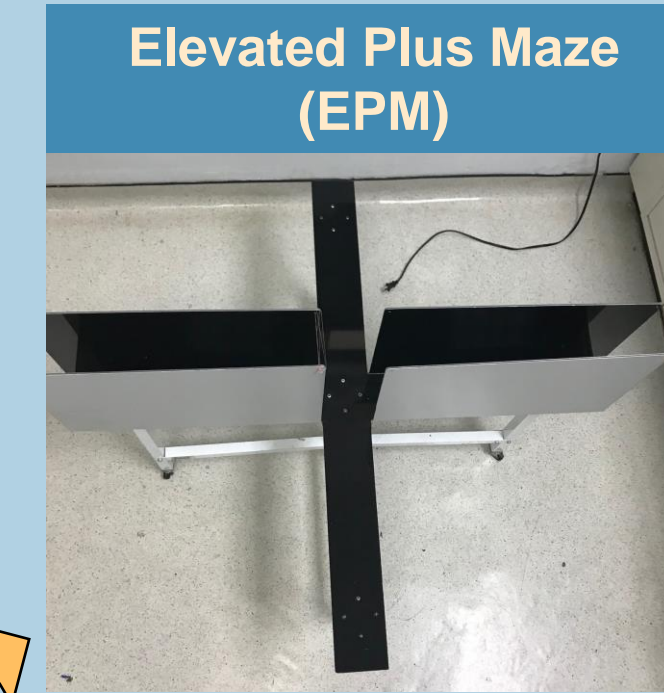
Treatment Phase

- Day 6:** subjects were divided into two groups that received intranasal injections (20 µg) of either.



All rats were then placed in the operant chamber for **thirty minutes**. Activity was recorded.

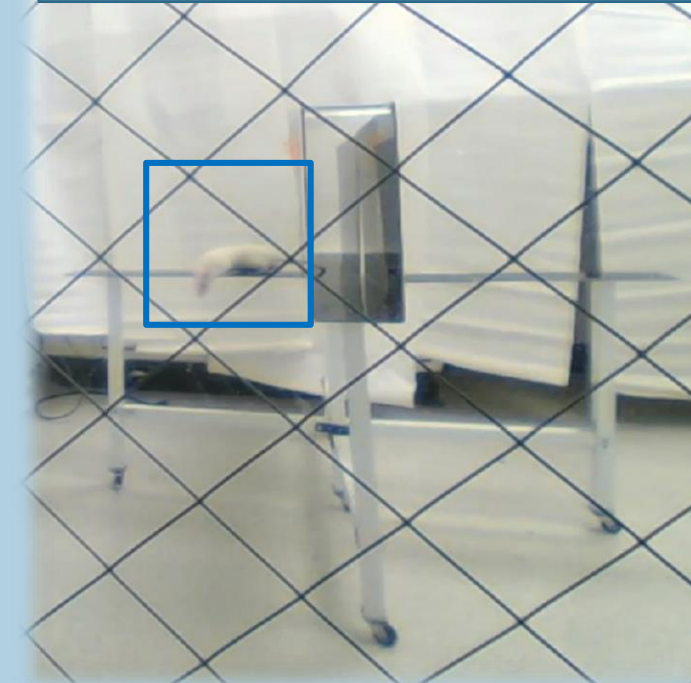
Data Recollection Phase



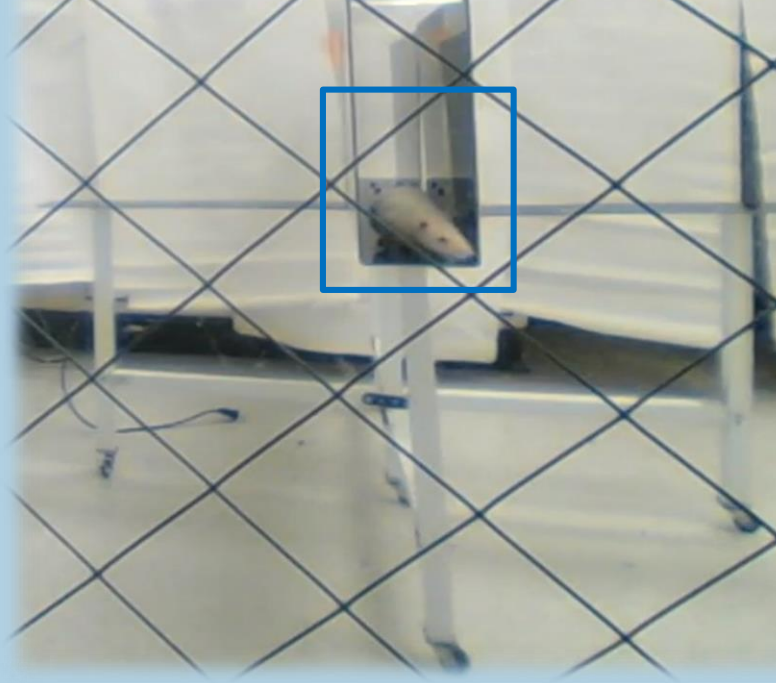
- Elevated Plus Maze test for 5 minutes and behaviors were recorded.

Anxiety levels were determined by time in arms.

Open arms= less anxiety



Closed arms= more anxiety



CONCLUSIONS

- Oxytocin treatment did not affect locomotor activity of Cocaine treated animals on day 6.
- Oxytocin made experimental animals **less anxious** when compared to controls in the EPM, although it did not reach statistical significance in the t-test.
- We suggest oxytocin **has calming** effects on high levels of anxiety.

FUTURE RESEARCH

- Incorporate more subjects into each group.
- Add another dose of Oxytocin.
- Study the effect of Oxytocin interacting with other hormones and chemicals such as Tetrahydrocannabinoid or Serotonin.
- Test how addictive Oxytocin could be.

WHAT I LEARNED?

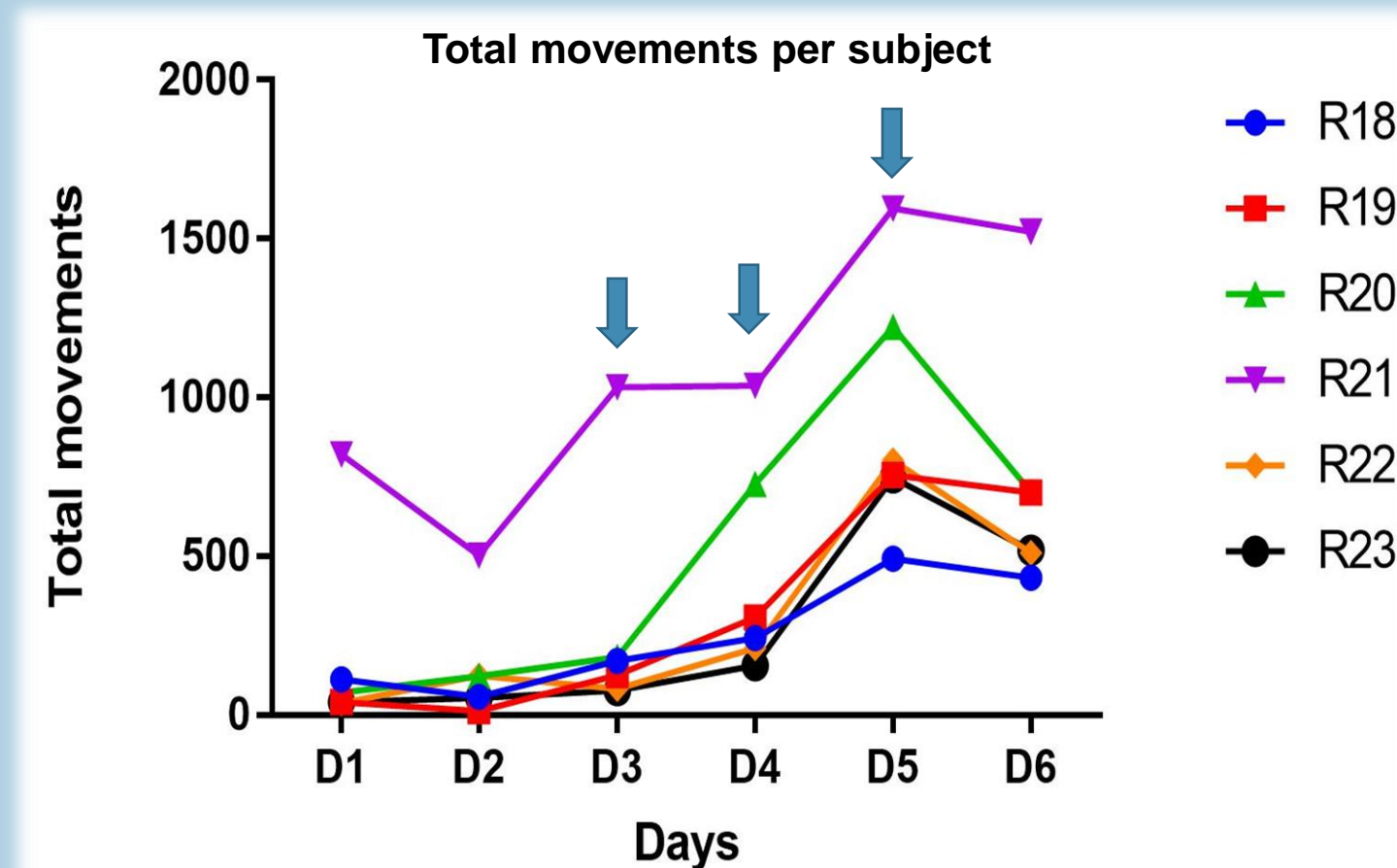
Throughout this process I have also been allowed to acquire a new set of skills and knowledge:

- Understand the dangers of drug addiction.
- Taught to handle rodents, to administer certain substances through pipette or syringe and to extract brains.
- Learn different types of analysis and the preparation needed for a formal scientific presentation.

RESULTS

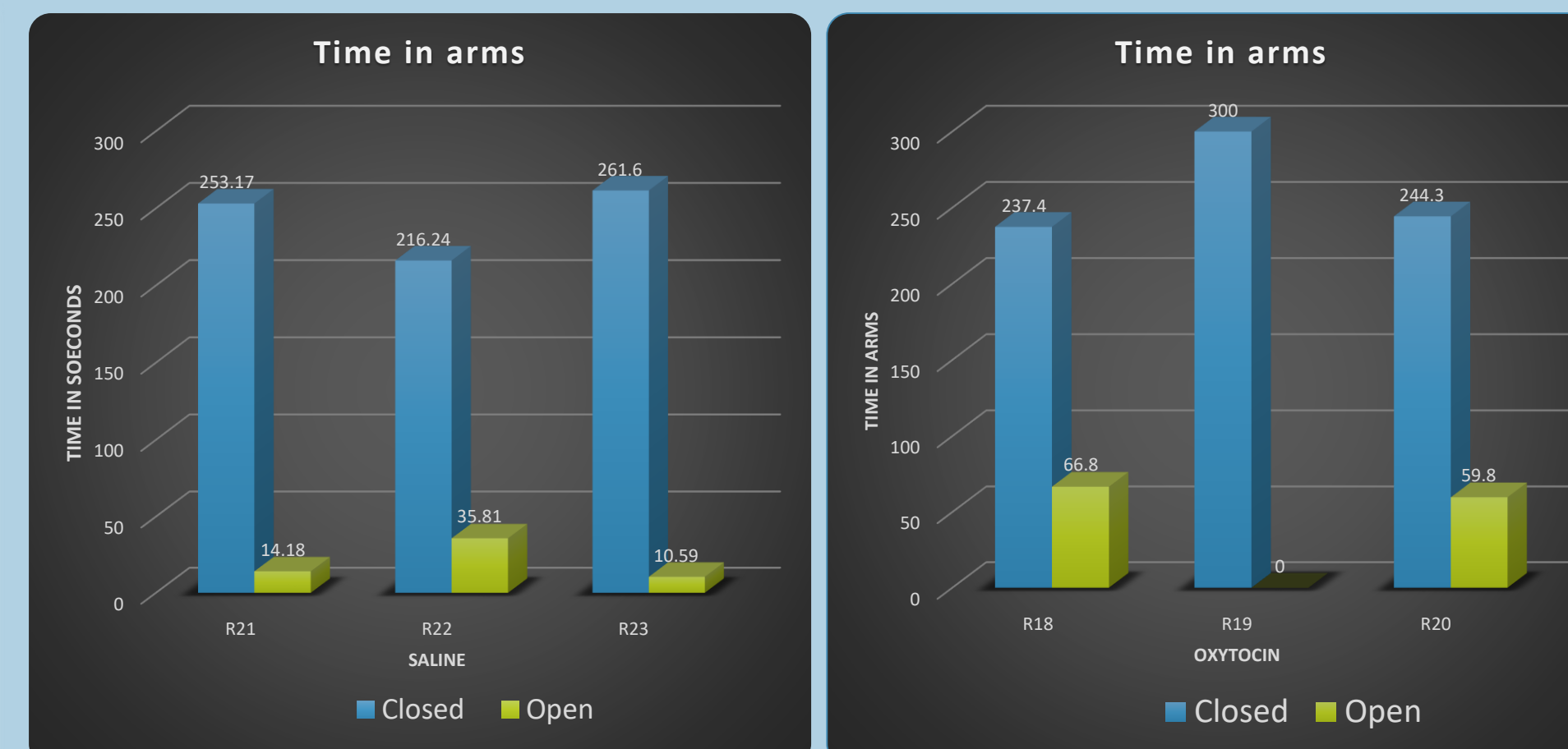
Locomotion

An increase in locomotor activity is found in animals on days 4-6.



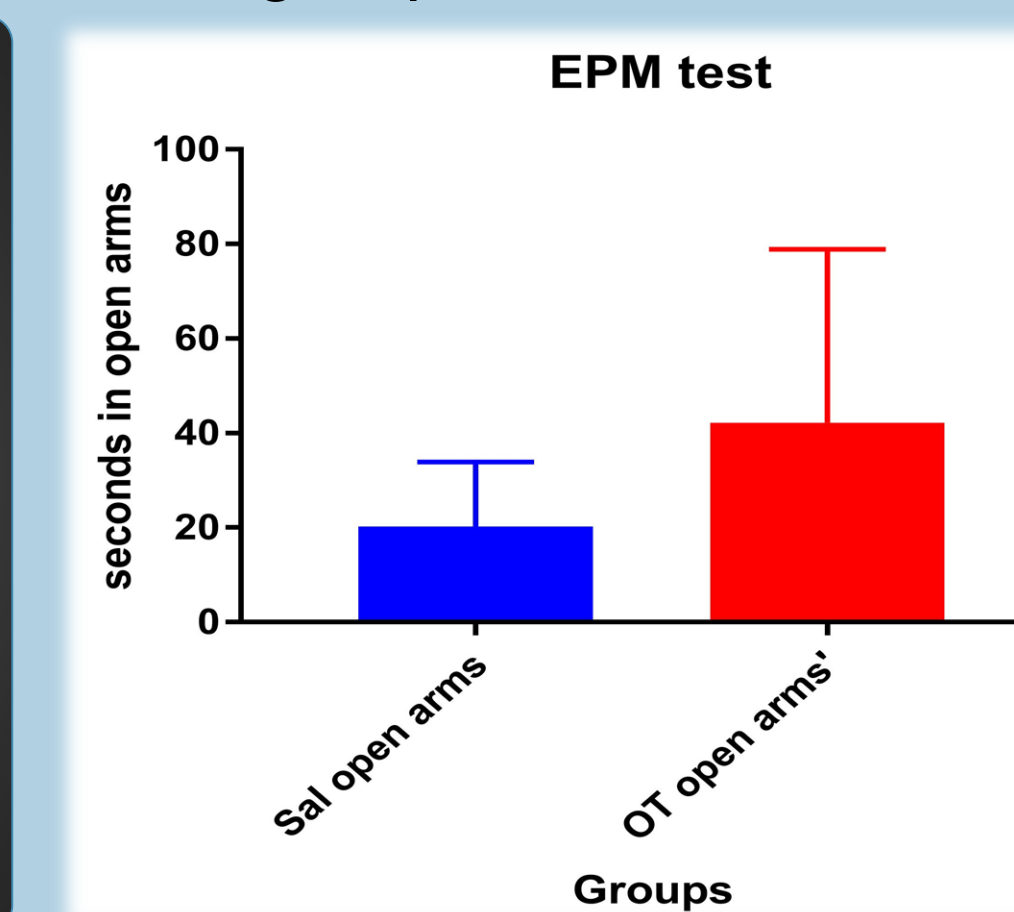
EPM Test

Data shows evidence of different levels of anxiety between the groups.



Anxiety Levels

Average on open arms: group of oxytocin was 22 sec. more than group of saline.



ACKNOWLEDGEMENTS

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