



# The Impact of Acute Salinity Exposure on Salinity Tolerance in *Tigriopus Californicus*

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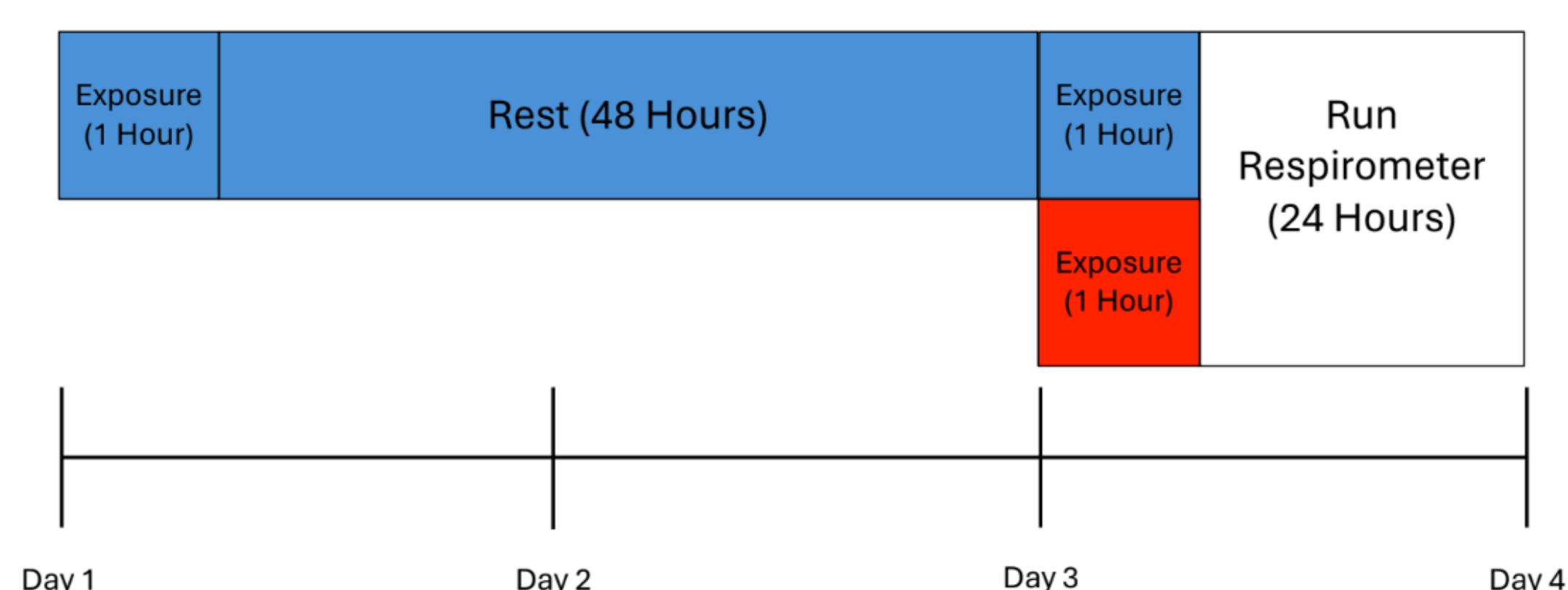
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## Introduction

- *T. Californicus* are microscopic crustaceans living in the intertidal zone along the coast of California. (1)
- As ocean temperatures rise due to global warming, the relationship between salinity and temperature assumes a crucial role in impacting marine life. (3)
- Previous studies have drawn comparisons in salinity and heat tolerance between copepod populations with potential sex differences, finding that females and Southern populations tended to fare better. Assays involving prior exposure to a heat stress indicated increased tolerance. (2)
- This experiment delves deeper into the copepod response to elevated salinity levels via stress events and repeated exposure. Potential sex differences were also recorded.

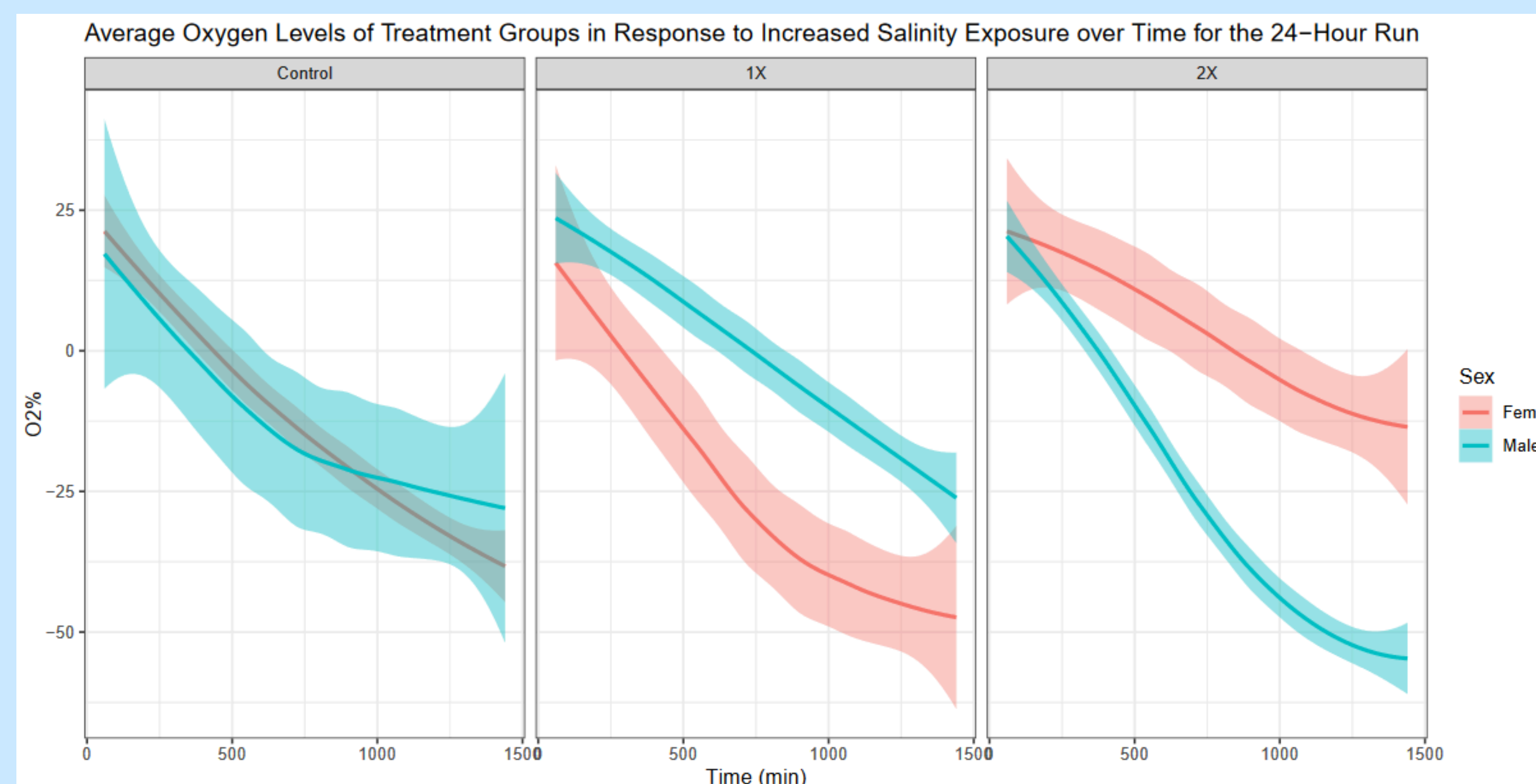
## Methods

■ = 2X Treatment Group  
 ■ = 1X Treatment Group

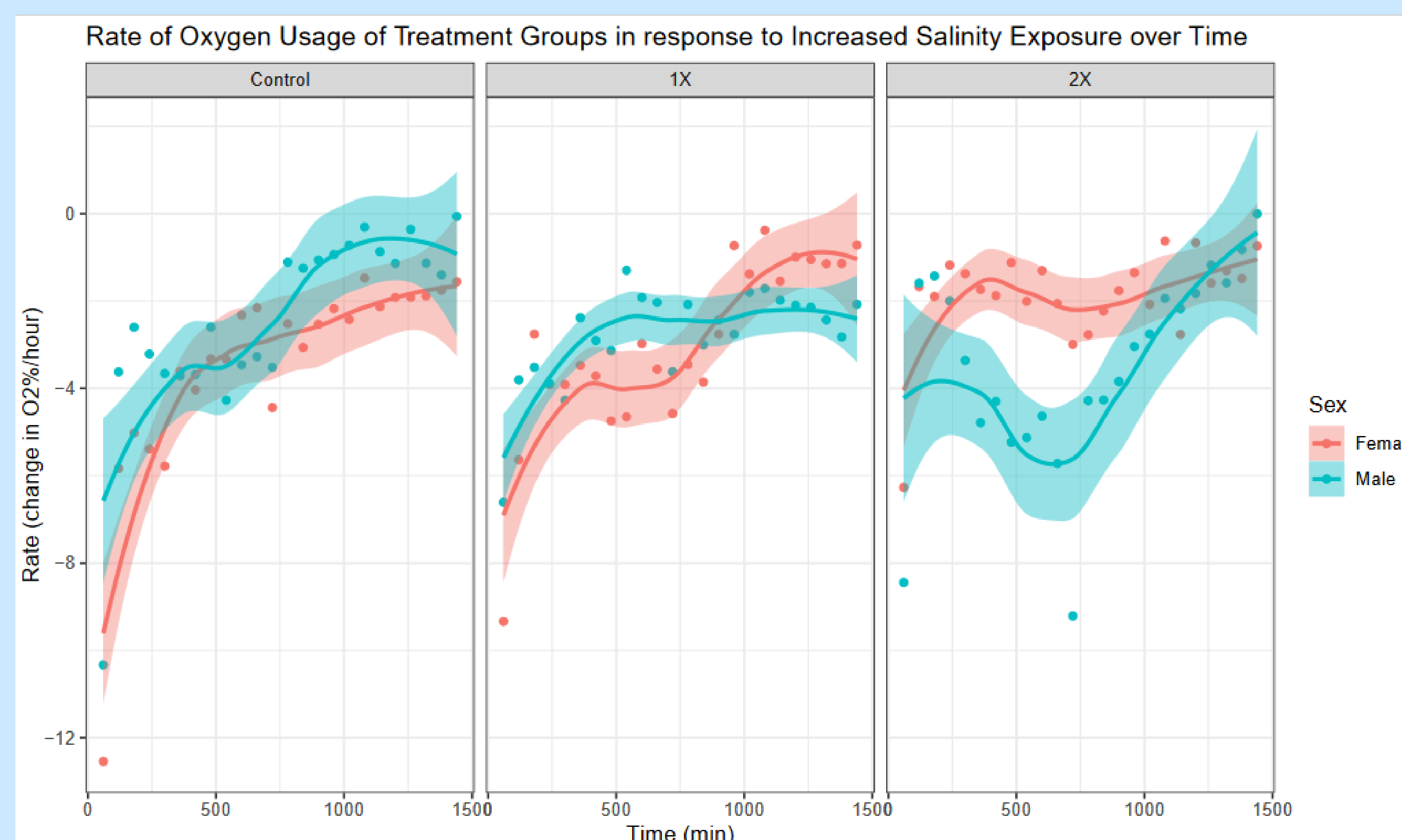


## References

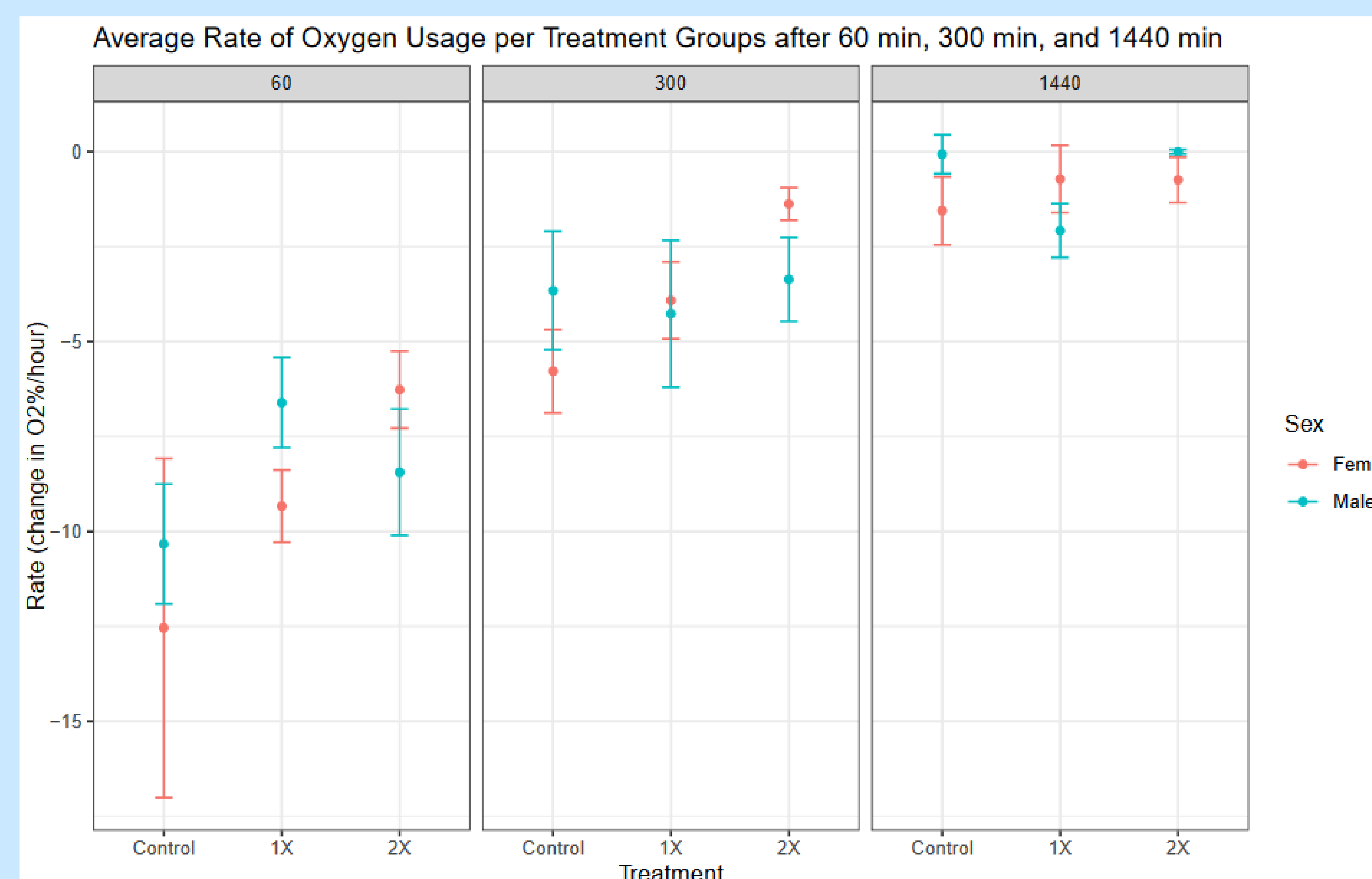
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**Figure 2.** The average oxygen percentage from copepods in response to salinity exposure over a twenty four-hour period. The line on the graph represents the mean, fill area represents standard error, and color represents sex.



**Figure 3.** Average rate of oxygen usage by copepods in response to salinity exposure over a twenty four hours. The line on the graph represents the mean, fill area represents standard error, and color represents sex.



**Figure 4.** Average rate of oxygen usage of copepods in response to salinity exposure recorded at 60 min, 300 min, and 1440 min. Bars represent standard error and color represents sex.

## *Tigriopus Californicus*



## Discussion

- Over time average oxygen level is decreased over time as copepods used oxygen in respirometer.
- Oxygen levels become negative due to faulty calibration with not fully deoxygenated water.
- For oxygen rate (O2%/Hour), more negative values represent greater oxygen usage per hour. The rate of oxygen usage in response to salinity became more positive over time, with the 1X and 2X treatment starting at higher rates than the control and after 1440 minutes all treatments showed similar rates.

## Conclusion/Future Work

- Linear modeling and ANOVA Chi-Sq tests were applied to the average rates of oxygen usage (Fig. 4)
- Statistical tests showed that treatment nor sex had no significant impact on the rate of oxygen consumption for tested copepods
- Unclear whether respiration rates were the most representative of tolerance, further testing should explore other measures of fitness.
- Due to the small sample sizes, conclusions may be unreliable or have limited generalizability
- Repeat experiment with other populations of *T. californicus* to see if other populations show the same results