

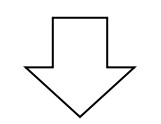
Introduction

- Detrusor underactivity (DUA) is an understudied and inadequately managed health concern.
- DUA is defined as a contraction of reduced strength and/or duration that results in prolonged and/or incomplete bladder emptying.
- The current animal models are limited and impede the development of new therapeutic approaches.
- We characterized voiding function of an obese prone rat model of DUA and measured the contractility of bladder and urethral tissues.

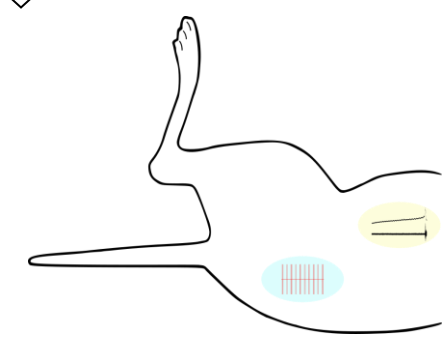
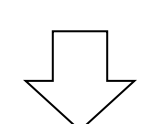
Methods



- Obese resistant rats
 - 308 g, 152 mg/dl glucose
- Obese prone rats
 - 567 g, 153 mg/dl glucose



60% fat feeding

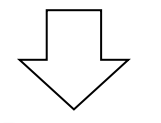


Awake Uroflowmetry

- Urinary frequency
- Voided volume
- Urine flow rate

Anesthetized Cystometry

- Bladder pressure
- Urethral EMG
- Neuromodulation

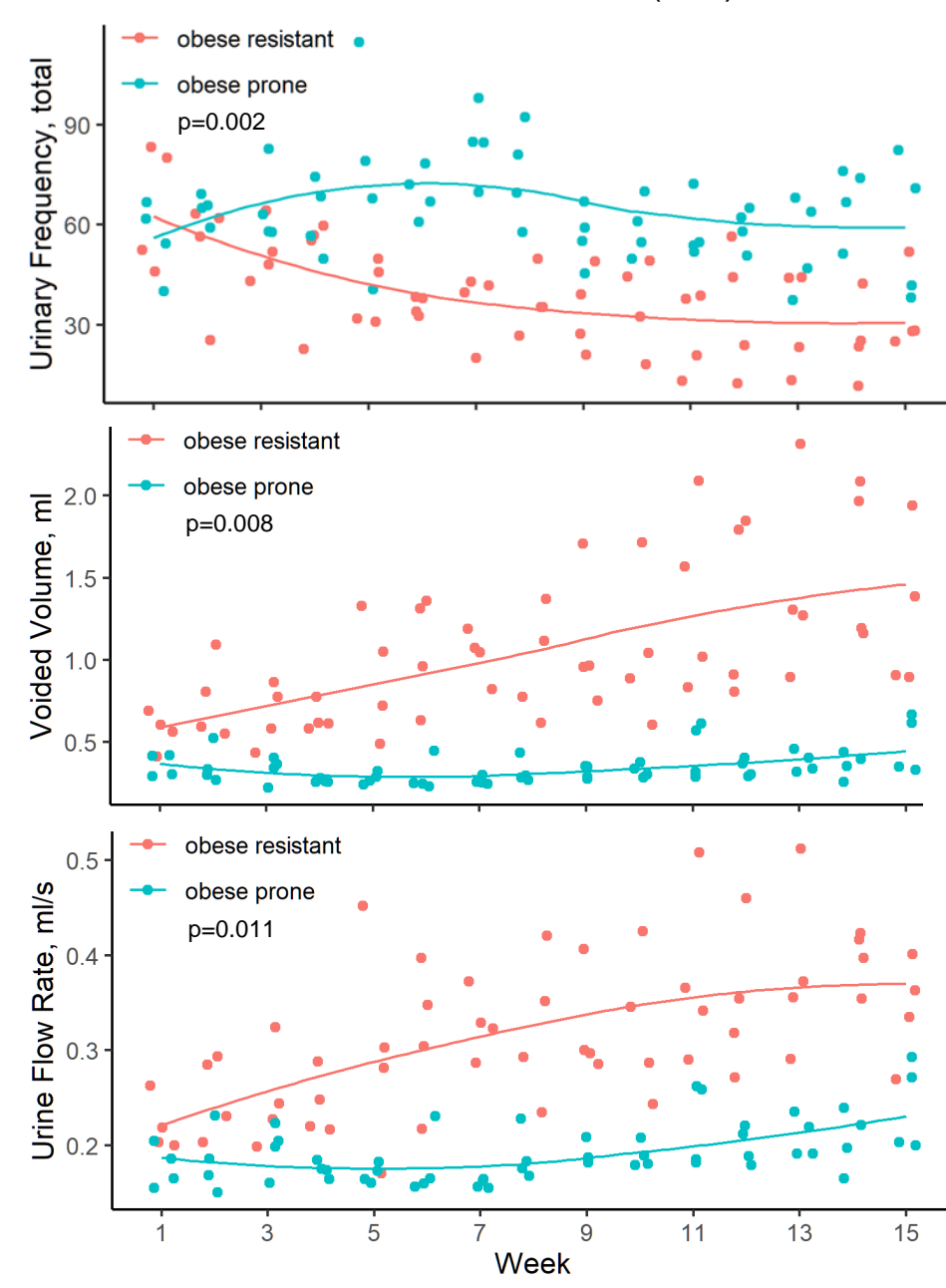


Bladder and Urethral Muscle Contractility

- Carbachol
- Electric field stimulation

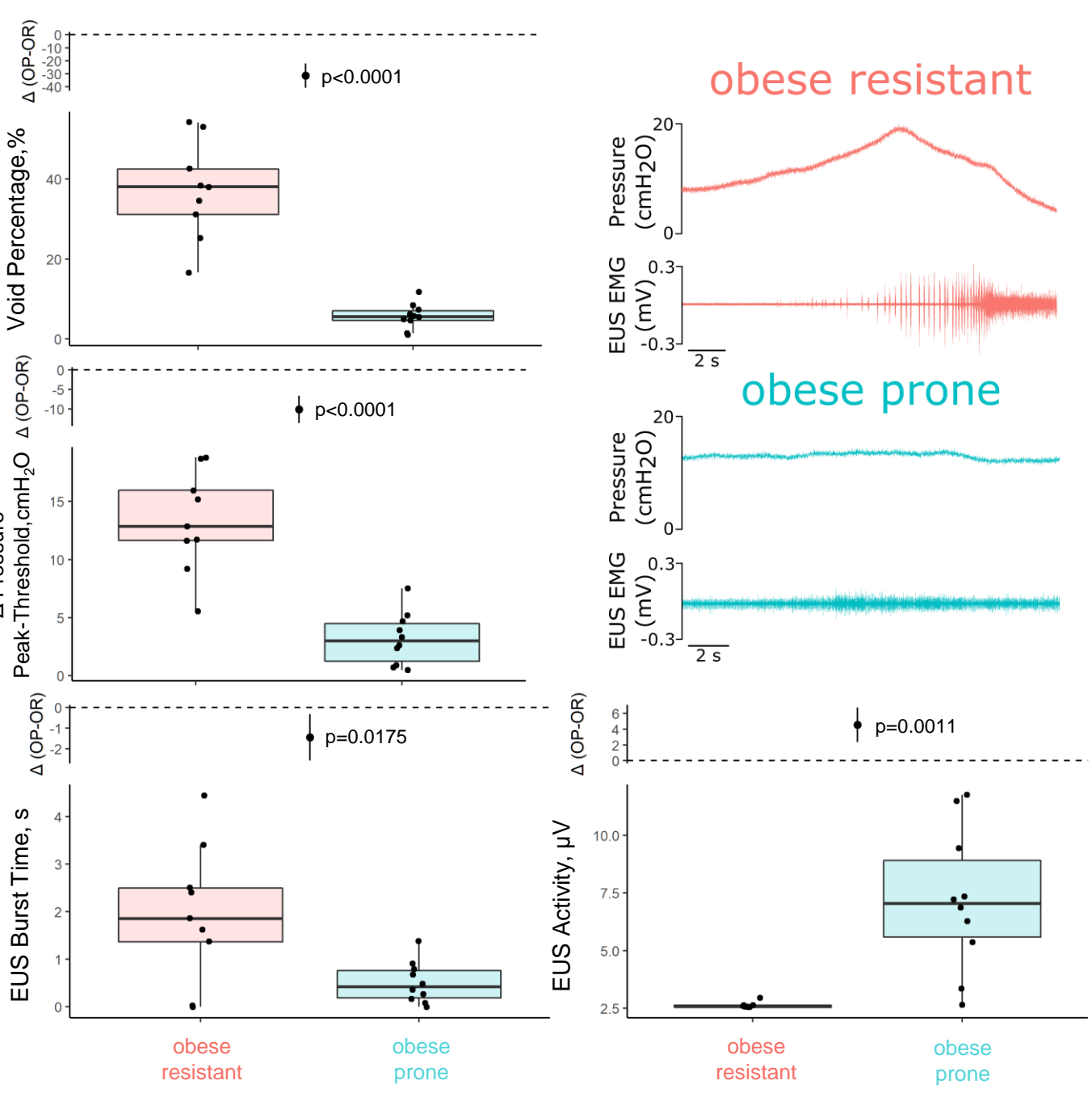
Uroflowmetry

Obese prone rats have increased frequency and decreased void volume and flow rate (n=4).



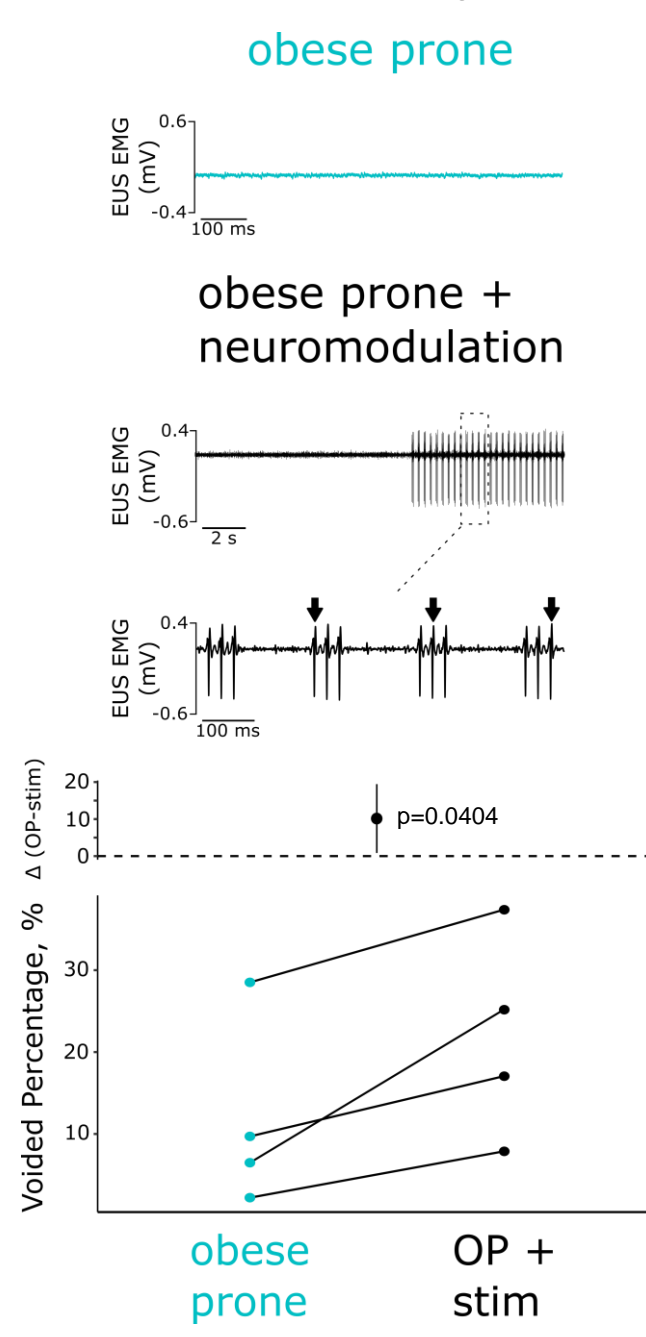
Cystometry

Obese prone rats have decreased voided percentage, void pressure generation, EUS bursting time, and increased EUS activity (n=9-10).



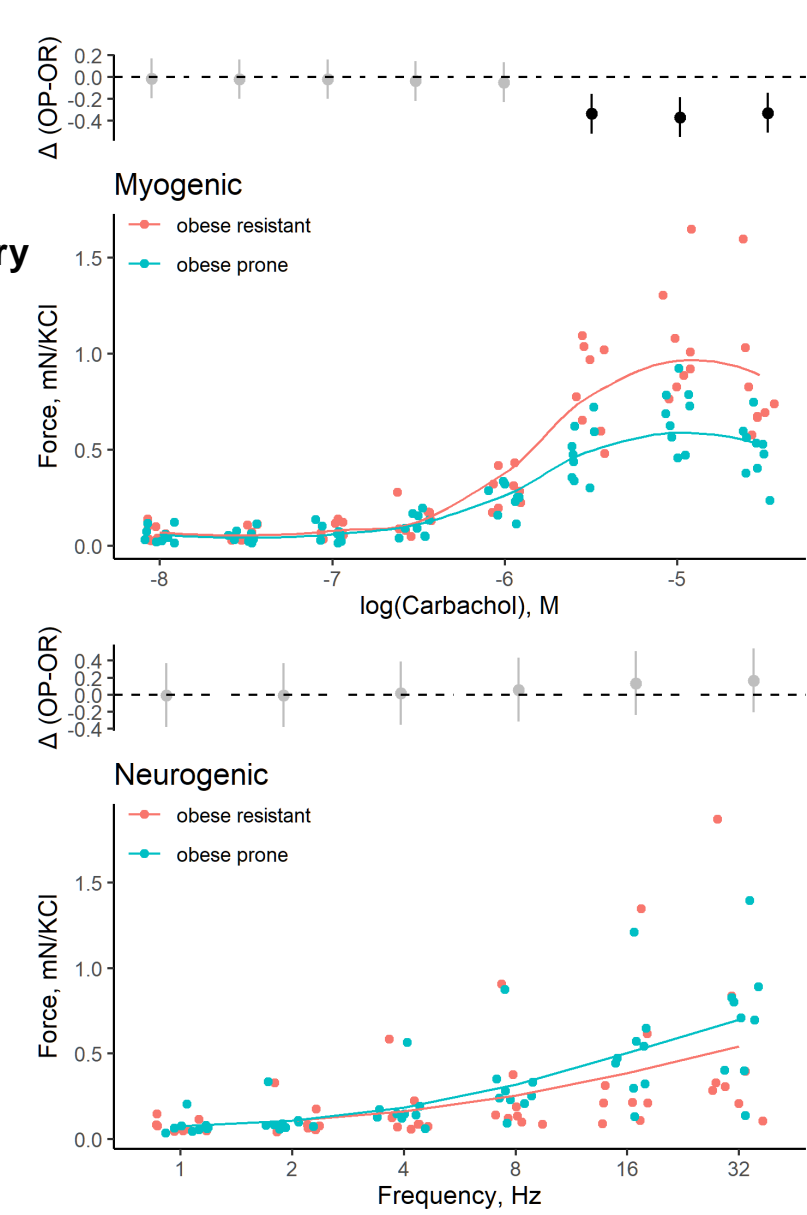
Treatment - Neuromodulation

Burst patterned electrical stimulation of the pudendal motor nerve increased bladder emptying (n=4).



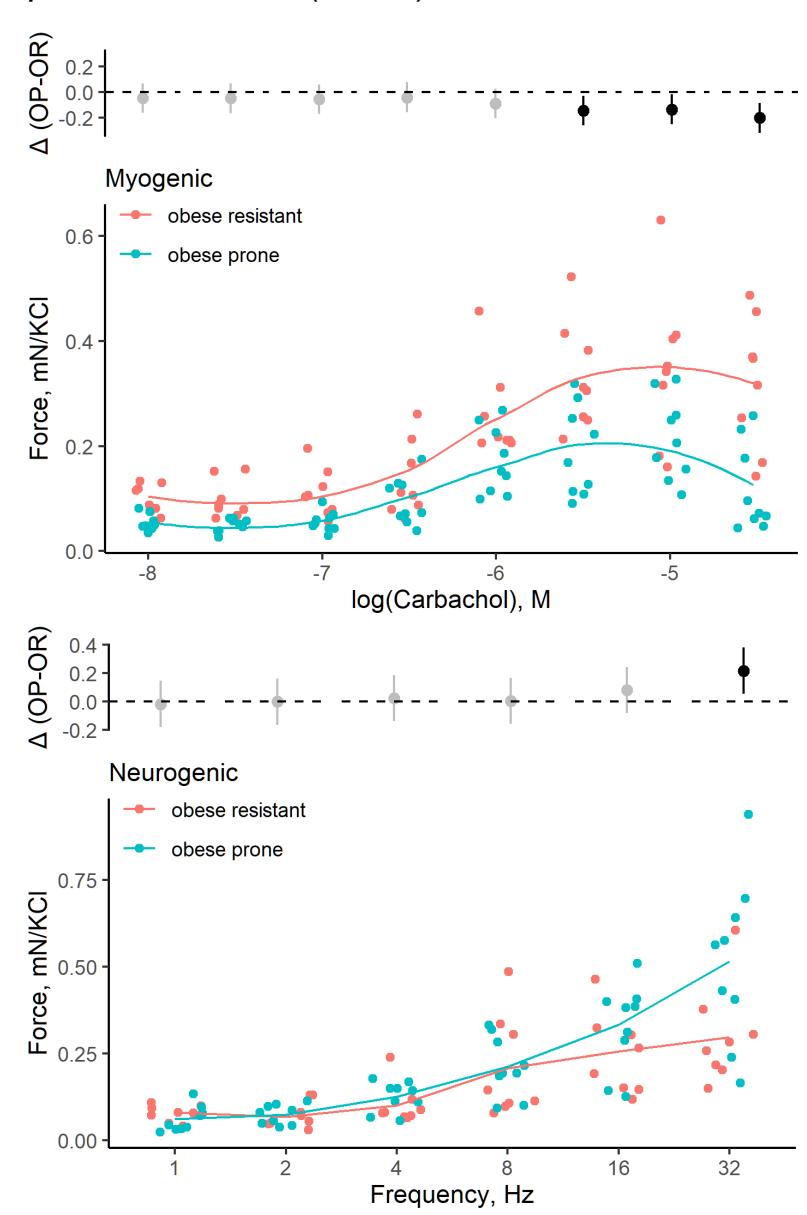
Bladder Contractility

Obese prone rats have decreased myogenic cholinergic activity in the bladder (n=8-9).



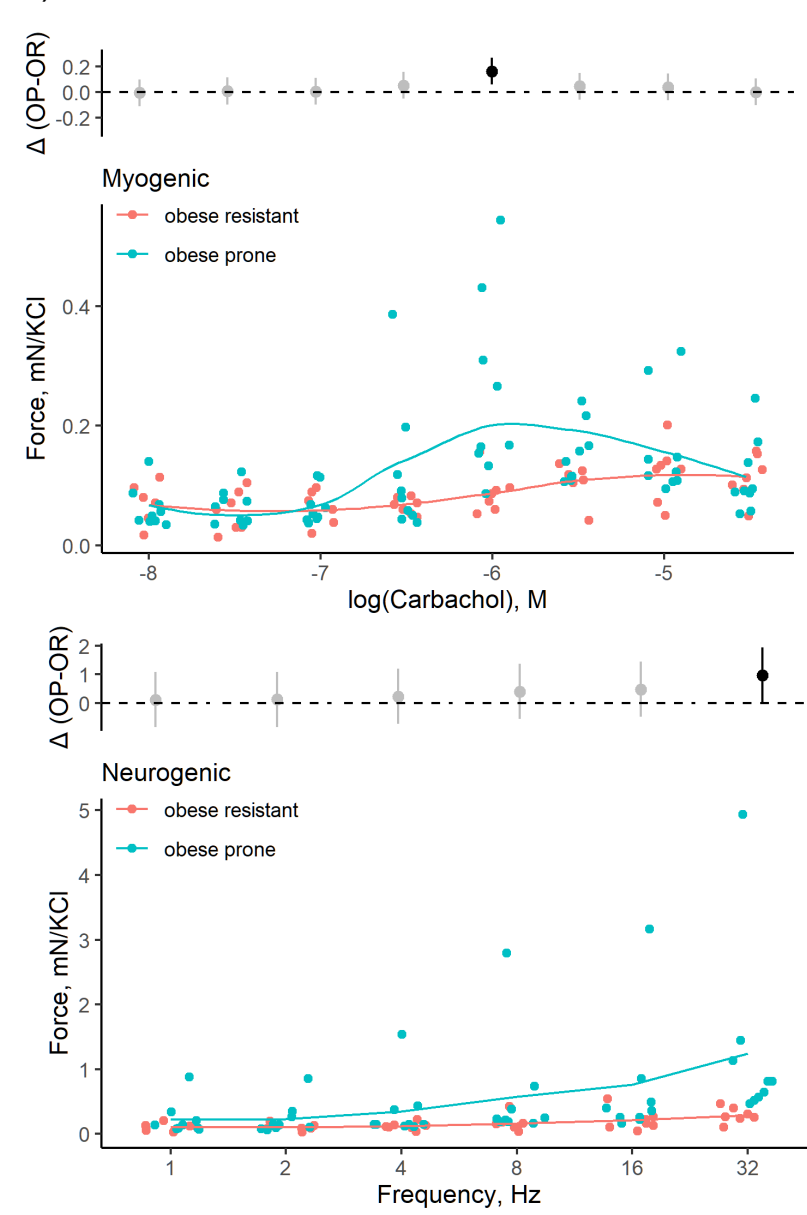
Proximal Urethra Contractility

Obese prone rats have decreased myogenic and increased neurogenic activity in the proximal urethra (n=8-9).



Middle Urethra Contractility

Obese prone rats have increased myogenic and neurogenic activity in the middle urethra (n=7-9).



Conclusions

- Obese prone rats exhibited characteristic underactive voiding function changes.
- Reintroducing urethral bursting activity increased bladder emptying, perhaps through the pudenda-vesical reflex.

Overall Summary

