

Thesis Defense Presentation

Katelyn Kurrie

Comparison of Cardiac Muscle between Male and Female Rats with Exercise and Aging: Analyzing Vitals, GDNF Expression, NGF Expression, RNA Expression, Sympathetic Innervation, Parasympathetic Innervation, and Sensory Innervation

Introduction

- Cardiovascular Epidemic
 - Aging Contributes to Risk
- Exercise has been found to reverse these effects
 - Positive Adaptation- Muscle quality; activity-induced protection of large motor units (MU)
 - Neurotrophic Factor promotes survival of MUs
 - NGF vs. GDNF
- Neuromuscular junction:
 - Communication of neurons and muscle cells;
- Hypothesis
 - HIGHER in females due to estrogen and higher content of slow twitch fibers

Methods

- Exercise Physiology Research – Spitsbergen Lab
 - Examines NGF and GDNF expression in cardiovascular tissues and skeletal muscle of rats exposed to differing levels of physical activity.
- **Treatments:**
 - Exercised Male, Female (n=6) – 6,8,12 weeks
 - Sedentary Male, Female (n=6) – 6,8,12 weeks

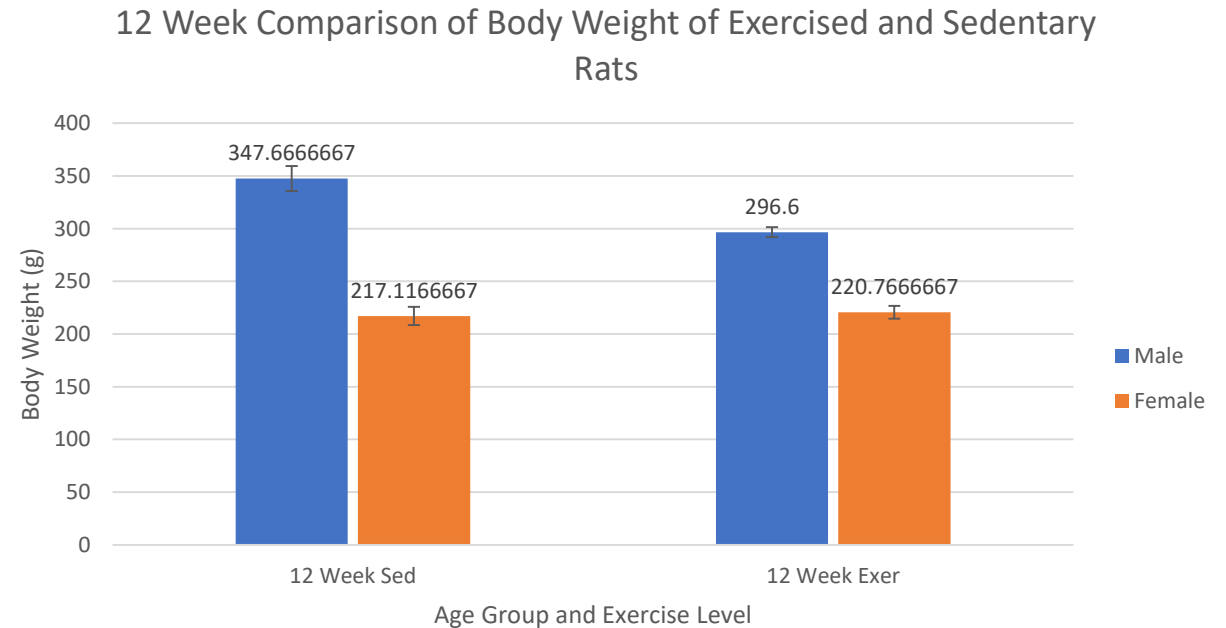
Vitals: Blood pressures were measured via tail cuff, weights via scale

Animals were euthanized by CO₂ asphyxiation

- Hearts were sectioned into right/left atria and ventricles.

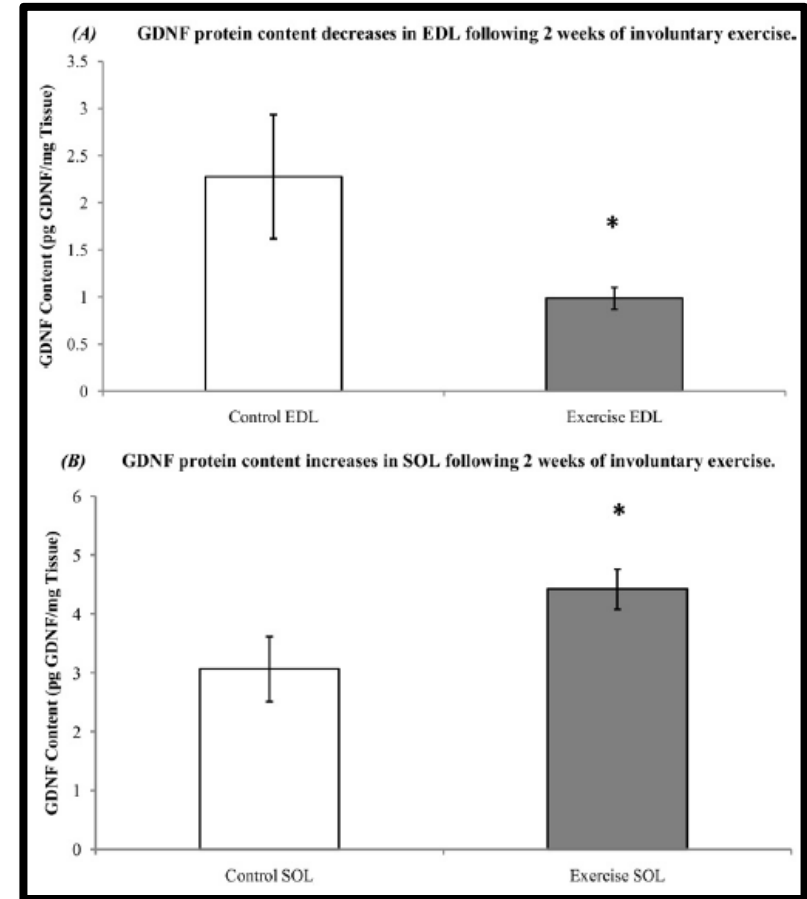
Results

- Only data I have (Thanks to Covid-19 and limited graduation timeline):



Discussion

- GDNF is Regulated Differently in Slow and Fast Twitch Muscle



McCullough et al., (2011)
45min/d, 5d/wk for 2wks @ 10m/min

Conclusion