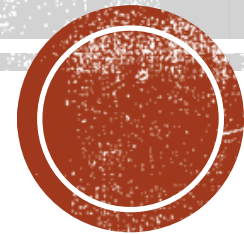


EFFECTS OF PRE-WORKOUT MEALS HIGH IN CARBOHYDRATES OR LIPIDS ON MUSCLE FATIGUE DURING RESISTANCE EXERCISE: A PILOT STUDY

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PhD



INTRODUCTION

- **Why:**
 - Applicable to all athletes
 - Often overlooked
 - Significant effect on athlete's performance
 - Body composition control
- **Gastin (2001)**



PURPOSE

Dependent Variables

- Repetitions to failure
- Time under tension

Independent Variables

- Carbohydrate-heavy bar
- Lipid-heavy bar

Hypothesis:

Consumption of carbohydrates before exercise will increase muscular endurance compared to lipids



METHODS – SESSION 1

Biometrics

Height, Weight, Blood pressure



Warm-up

Foam rolling, Light Static Stretching, Dynamic Warm-up, Barbell back squat warm-up



Estimated 1-RM

3 sets of 5 reps with PUSH strength band accelerometer



Cool down

Static stretching, Foam rolling



METHODS – SESSION 1

- PUSH Strength Band Accelerometer
 - Calculated estimated 1-RM using velocity of concentric motion of test sets

- Jovanovic & Flanagan (2014)



METHODS – SESSION 2

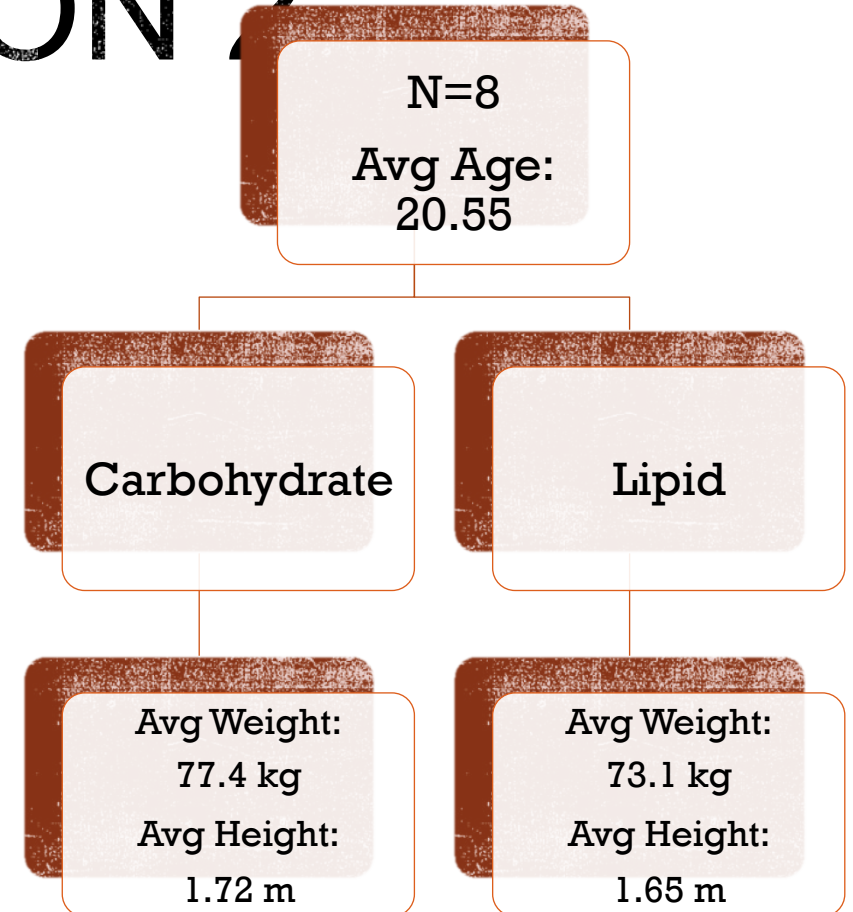
- Carbohydrate:

- Chocolate Chip Brownie Larabar
 - 31 g CHO
 - 9 g Fat
 - 4 g Protein



- Lipid:

- Chocolate Peanut Butter Keto Bar
 - 20 g Fat
 - 12 g CHO
 - 9 g Protein



METHODS – SESSION 2

Biometrics

Weight, Blood pressure

Nutrition

Consumption of either carbohydrate or fat

Digestion

45-minute digestion period

Warm-up

Foam rolling, Light Static Stretching, Dynamic warm-up, Barbell back squat warm-up

Back Squat

Squat 75% of 1-RM until failure

Cool down

Foam rolling, static stretching



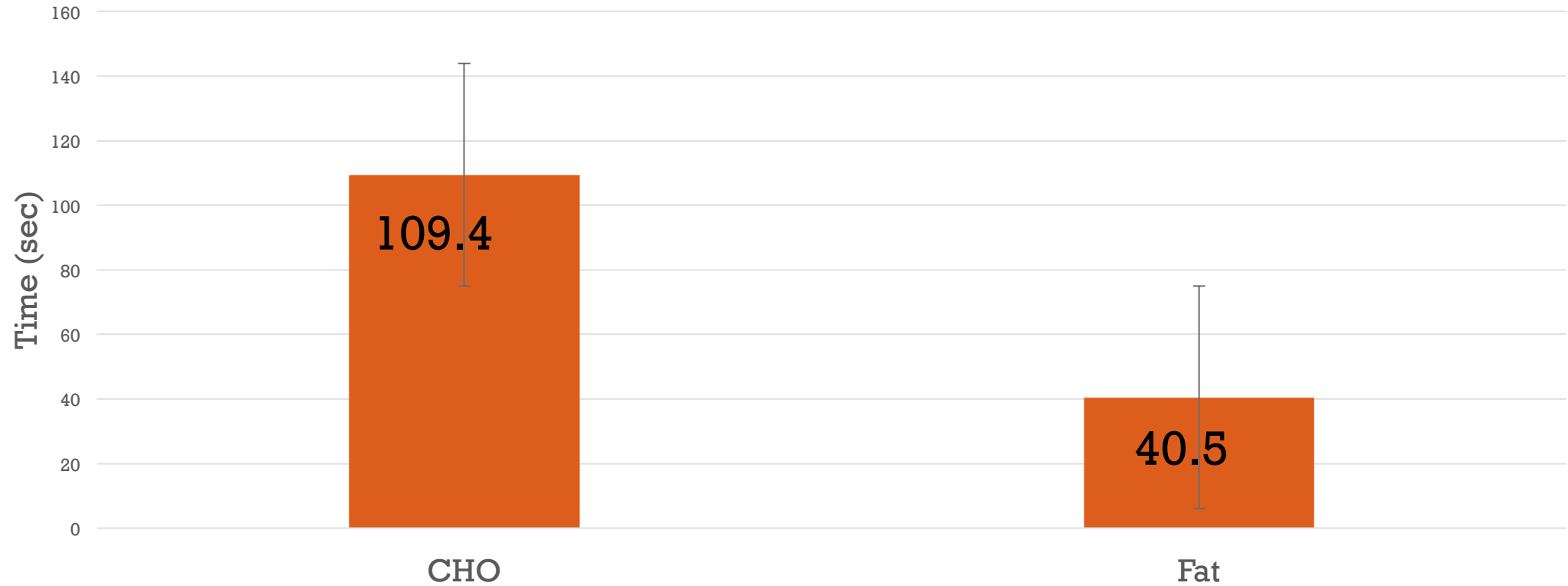
RESULTS

Average Number of Reps to Failure



RESULTS

Average Time to Failure



CONCLUSION

- Our hypothesis was supported by the data
- A carbohydrate heavy meal is a more beneficial choice to maximize muscular endurance in resistance training



LIMITATIONS

- **Sample size**
 - Goal: 20 total – 10 per group
- **Willingness**
- **Time commitment**
- **Facilities**
- **Injury**
- **Controlling pace**
- **Control for outside factors**
 - Nutrition
 - Physical Activity



APPLICATION & FUTURE RESEARCH

Application

- Consumption of carbohydrates within an hour of exercise
- Larabar contains 26 g CHO and 9 g Fat
- Body composition

Future Research

- How many grams?
- What kind of carbs?
- Combination of simple and complex?
- Include RPE
- Control pace



REFERENCES & ACKNOWLEDGEMENTS

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