N. Sample, K. Sniffen, C. Palmer, C. Reyes, PhD, J. Peterson, PhD
Why:
- Applicable to all athletes
- Often overlooked
- Significant effect on athlete’s performance
- Body composition control

Gastin (2001)
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
Cool down

Static stretching, Foam rolling

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

- Jovanovic & Flanagan (2014)
- **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

**N=8**

**Avg Age:** 20.55

**Avg Weight:** 77.4 kg

**Avg Height:** 1.72 m

**Avg Weight:** 73.1 kg

**Avg Height:** 1.65 m
<table>
<thead>
<tr>
<th>Biometrics</th>
<th>Weight, Blood pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutrition</td>
<td>Consumption of either carbohydrate or fat</td>
</tr>
<tr>
<td>Digestion</td>
<td>45-minute digestion period</td>
</tr>
<tr>
<td>Warm-up</td>
<td>Foam rolling, Light Static Stretching, Dynamic warm-up, Barbell back squat warm-up</td>
</tr>
<tr>
<td>Back Squat</td>
<td>Squat 75% of 1-RM until failure</td>
</tr>
<tr>
<td>Cool down</td>
<td>Foam rolling, static stretching</td>
</tr>
</tbody>
</table>
Average Number of Reps to Failure

- CHO: 29.2
- Fat: 11.5
Average Time to Failure

- CHO: 109.4 seconds
- Fat: 40.5 seconds
- Our hypothesis was supported by the data
- A carbohydrate heavy meal is a more beneficial choice to maximize muscular endurance in resistance training
- Sample size
  - Goal: 20 total – 10 per group
- Willingness
- Time commitment
- Facilities
- Injury
- Controlling pace
- Control for outside factors
  - Nutrition
  - Physical Activity
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


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- Janet Peterson
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- Sarah Coste
- Participants!