EFFECTS OF FASTING ON SUBMAXIMAL EXERCISE

Abstract

INTRODUCTION: Glucose is the primary energy source for the human body. It is obtained through eating carbohydrates among other things. Its chemical energy contributes to the production of ATP during aerobic respiration. Glucose in stored in the body's tissues and liver as glycogen where it can be thus readily converted back to its original form. Studies have shown that this is beneficial to fasting before exercise. When eating right before a workout in promotes energy storage, inhibits the sympathetic nervous system and therefore inhibits fat burning. In the fasting condition process such as energy storage cease.

PURPOSE: The purpose of this study was to see if fasting allows the body to use glycogen stores more readily and will the use of these stores increase one’s exercise performance.

METHODS: Three men (M, age 23 ± 4 yrs) and three women (W, age 27 ± 8 yrs) of the UTA student body, volunteered to participate in this study. Each subject had four height and weight recorded. All subjects performed a steady state 30 minute submaximal cycle test on two separate occasions. These two research conditions were followed (NF) in which subjects were able to have a carbohydrate breakfast and lunch (L) in which subjects refrained from any meals 12 hrs prior to testing. During each test heart rate (HR) and rate of perceived exertion (RPE) was measured, in addition, blood glucose (BlGlu) levels were recorded pre and post-test.

RESULTS: All subjects reached 85% of their HRmax (NF: 164.25 ± 12.78 bpm; F: 164.15 ± 24.24 bpm) there was no significant difference between the conditions (p > 0.05). The remaining values had similar outcomes. RPE (NF: 14.75 ± 2.27; F: 15.3 ± 3.84), VO2 (NF: 3.13 ± 0.65 L/min; F: 3.54 ± 0.75). Blood glucose levels recorded as expected, there was an increase average of about 13 mg/dL during fasting state. For non-fastened there was a decrease average of about 17.6 mg/dL. However, there was not a significant difference between the conditions (p > 0.05).

CONCLUSION: The results of this study indicate that there is not a dramatic difference in Blood Glucose Levels between fasting and non-fasting conditions. Lack of difference could be associated with the inability to fully control subjects’ diet.

Purpose

The purpose of this study was to see if fasting allows the body to use glycogen stores more readily and will the use of those stores increase one’s exercise performance.

Methods

• There was a total of 6 participants; 3 males, 3 females ranging from ages of 19-41 yrs who varied in fitness background.
• The instruments used were: Sensormedics Cart, Monark Cycle Ergometer, Polar Heart Rate Monitor, Blood Glucose Monitoring System
• Subject Preparation:
  • The Subject would have either fasted overnight (12 hrs prior to testing) or have had a carbohydrate meal
  • Height, Weight, Date of birth and resting Heart Rate (HR) was recorded
  • VO2 Mouth Piece, Head Gear and Cycle height were adjusted to fit subject.

Results

• Results of only 5 subjects were used due to one participant’s inability to perform the test again.
  • All participants reached 85% HRmax
    • Mean HR: NF: 164.25 ± 12.78 bpm; F: 164.15 ± 20.28 bpm
    • Fasting Effect on HR: (p > 0.05)
  • RPE averaged higher during Fasted state
    • Mean RPE: NF: 14.75 ± 2.27; F: 15.3 ± .84
    • Fasting Effect on RPE: (p > 0.05)

Conclusions

The results of this study indicate that there is not a dramatic difference in Blood Glucose levels between fasting and non-fasting conditions. Lack of difference could be associated with the inability to fully control subjects’ diet. In similar studies the amount of carbohydrates ingested by the participants was controlled by the administrator. Also fasting time was greater (Knapik et al, 1988). However, it can be seen through Figure 1 and 2 that Blood Glucose levels do differ between the two states to a degree. In the NF state glucose is being stored, whereas in the F state it is being retrieved.

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