A Comparison of Continuous and Intermittent Exercise Effect on Excess Post-Exercise Oxygen Consumption (EPOC)

Author: Kelly Tran: KINE 4400

TM Faculty Sponsor: Dr. Judy Wilson Cardiovascular Research Laboratory, The University of Texas at Arlington, Arlington, TX;

Abstract

The purpose of this study was to determine if there is a difference in excess post-exercise oxygen consumption between continuous and intermittent exercise.

Methods (cont’d)

Protocol 1: Continuous exercise, after the participants were attached to the metabolic cart resting data was recorded and the participants proceeded to warm-up. Once 70% of age predicted heart rate max was achieved the participants were instructed to maintain this intensity for 20 minutes.

Protocol 2: Intermittent exercise, once attached to the metabolic cart participants remained at rest and began to warm-up to 70% of age predicted heart rate max. Once intensity was met the participants were instructed to continue cycling for 10 minutes, after completing the 10 minute cycle participants rested until VO₂ returned to baseline values. Once baseline was met the participants began to increase intensity and cycle for another 10 minutes. Following completion of the exercise protocol participants remained on the cycle until VO₂ returned to baseline and recovery data was collected.

Results (cont’d)

The time it took participants to recover after continuous protocol was 4.8 ± 1.79 minutes, for intermittent exercise the recovery time was 5.2 ± 0.84 minutes there was no significant difference in recovery time (p > 0.05). The average heart rate during recovery for continuous exercise was 111.84 ± 6.26 bt/min, the average heart rate during recovery for intermittent exercise was 112 ± 5.14 bt/min. There was no significant difference in average recovery heart rate (p > 0.05). All data analysis was conducted using a paired two tail t-test. Figure 2 displays the mean VO₂ during recovery period after exercise testing, in both conditions participants displayed similar patterns. For both conditions VO₂ declined rapidly for the first few minutes after exercise.

Conclusions

In conclusion, dividing a 20 minutes exercise session into two 10 minutes sessions did not show any significant difference in EPOC. These findings may be attributed to the rather small sample size. Other attributing factors such as issues while collecting data and participant motivation.

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Methods

Participants: Five male participants from the University of Texas at Arlington volunteered for this study.

Table 1: Participant Demographics

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<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard deviation</th>
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<tbody>
<tr>
<td>Age (yr)</td>
<td>23.2</td>
<td>± 3.83</td>
</tr>
<tr>
<td>Height (in.)</td>
<td>70</td>
<td>± 2.55</td>
</tr>
<tr>
<td>Weight (kg.)</td>
<td>78.44</td>
<td>± 12.51</td>
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Procedures: The participant’s height and weight were measured and recorded upon arrival at the UTA Kinesiology cardiovascular research laboratory located inside the Maverick Activity Center. All testing was done using a Monark cycle ergometer. Seat height was adjusted to the comfort of each participant. Resting data was collected for 3 minutes before participants began to warm-up. There were two different protocols for this study.

Results

The EPOC calculated for the participants for continuous exercise was 0.29 ± 0.071 L/min and for intermittent the EPOC was 0.36 ± 0.18 L/min (see Figure 1) there was no significant difference (p > 0.05). The total net VO₂ for continuous exercise was calculated to be 1.43 ± 0.36 L/min, intermittent values were 1.79 ± 0.88 L/min there was no significant difference (p > 0.05).