The Effect of a Commercially Available Pre-Workout Supplement (The Bracket™) on Wingate Anaerobic Cycle Test Performance in Athlete Females

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ABSTRACT

The Bracket™ is a proprietary blend, pre-workout supplement whose primary active ingredients consist mostly of a mixture of creatine, B-complex vitamins, and a glycerol/laurine combination. It has been third party tested for ingredient accuracy, and is also certified by NSF. The present study was designed to examine the effects of a commercially available pre-workout supplement (The Bracket™), in athletic females, on relative peak and mean power, rate of fatigue, and absolute/relative total work (ATW) utilizing the Wingate Anaerobic Cycle Test (WACT), a 30-s supra-maximal exercise protocol. METHODS: Thirty-three athletic females, aged 18–30, with no prior hamstring or quadriceps injuries within the last years were recruited. All subjects underwent three experimental trials (treatment [TRT, supplement with Gatorade®], placebo [PLC, Gatorade®], and a control [CON, water]) in a single experimental trial. An informed consent, a medical screening, and a familiarization trial was performed approximately one week apart. The differences in the dependent variables between treatments were analyzed using an ANOVA [(1, 96) = 13, p = 0.0006]. The Bracket™ treatment did differ significantly between the treatments. Mean ± SD.

RESULTS, cont.

Figure 2: Treatment effect on relative peak and mean power. Relative peak (p = 0.02280) and mean (p = 0.00320) power output from the WACT did not differ significantly between the treatments. Mean ± SD.

Table 2: Treatment Effect on Total Work and Fatigue Rate

<table>
<thead>
<tr>
<th>Variable</th>
<th>TRT</th>
<th>PLC</th>
<th>CON</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Absolute Work (J)</td>
<td>13,360 ± 2,798</td>
<td>13,066 ± 2,550</td>
<td>13,246 ± 2,749</td>
</tr>
<tr>
<td>Total Relative Work (% J kg⁻¹)</td>
<td>218 ± 42</td>
<td>212 ± 33</td>
<td>215 ± 38</td>
</tr>
<tr>
<td>Fatigue Rate (%)</td>
<td>62 ± 13</td>
<td>64 ± 17</td>
<td>59 ± 12</td>
</tr>
</tbody>
</table>

CONCLUSIONS

The study examined changes to absolute/relative mean and peak power, rate of fatigue, and absolute/relative total work following consumption of a pre-workout supplement (The Bracket™). According to the data, there was no significant difference between the treatments. Therefore, the WACT remained relatively constant across trials.

METHODS, cont.

Wingate Anaerobic Cycle Test (WACT): The WACT is a 30 sec cycle ergometer task where subjects pedal as fast as possible against a resistance that requires maximal effort for the 30 sec duration. The flywheel resistance is determined as a fraction of the subject’s body mass (0.097 kg/kg body mass³ for female adult athletes). The test is preceded by a test specific warm-up lasting 4 min (0.5 min on 30 rpm against 0 kg). Following the warm-up, subjects have a 5 min rest period before the actual 30-s test begins. Recovery from the 30 sec test includes at least 5 min of pedaling against a light-moderate resistance (1 kg). Heart rate is monitored during warm-up, exercises, and recovery for this test. For this study, no verbal encouragement was used during the WACT. Two investigators were present for all tests.

RESULTS

Figure 1: Treatment effect on absolute peak and mean power. Absolute peak (p = 0.2490) and mean (p = 0.2280) power output from the WACT did not differ significantly between the treatments. Mean ± SD.

REFERENCES


INTRODUCTION

Ergogenic aids, especially pre-workout supplementation, has become increasingly popular in the athletic male and female populations. The Bracket™, a commercially available pre-workout supplement whose primary active ingredients consists mostly of a mixture of creatine, B-complex vitamins, and a glycerol/laurine combination. It has been third party tested for ingredient accuracy, and is also certified by NSF. The present study was designed to examine the effects of a commercially available pre-workout supplement (The Bracket™), in athletic females, on relative peak and mean power, rate of fatigue, and absolute/relative total work (ATW) utilizing the Wingate Anaerobic Cycle Test (WACT), a 30-s supra-maximal exercise protocol.

METHODS

IBR Approval: The study was approved by the Institutional Review Board (Human Subjects) at Texas A&M University– Kingsville.

Subjects: All subjects were provided informed consent prior to testing. Thirteen female subjects (N=13) were recruited from the student population at Texas A&M University–Kingsville. All subjects were current or former collegiate athletes.

Pre-participation Screening/Testing: All subjects underwent a health screening according to the American College of Sports Medicine’s guidelines for exercise testing and prescription. Only subjects classified as low risk for untoward events during exercise based on these guidelines were allowed to participate. Additionally, only those who had not previously injured, hamstrings and/or quadriceps, prior to one year before testing were allowed to participate. Tests for body composition (triceps, stature, body mass index) were also conducted. A standard physicians scale was utilized to assess body mass, and a stadiometer was utilized to assess body stature. Subjects were given instructions on how to report for each experimental trial, including specific pre-trial diet and hydration instructions.

RESULTS, cont.

Table 1: Subject Demographics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yr)</td>
<td>21.2</td>
<td>1.6</td>
<td>19.0-24.0</td>
</tr>
<tr>
<td>Body Mass (kg)</td>
<td>62.2</td>
<td>12.9</td>
<td>51.0-99.0</td>
</tr>
<tr>
<td>Body Stature (cm)</td>
<td>163.3</td>
<td>7.9</td>
<td>155.0-183.0</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>23.2</td>
<td>3.0</td>
<td>18.3-29.6</td>
</tr>
</tbody>
</table>

CONCLUSIONS

The study examined changes to absolute/relative mean and peak power, rate of fatigue, and absolute/relative total work following consumption of a pre-workout supplement (The Bracket™). According to the data, there was no significant difference between the treatments. Therefore, the WACT remained relatively constant across trials.

Previous research has been done, which has shown promising results within trials due to the pre-workout supplement. The pre-workout supplement (The Bracket™) which was used contains creatine in it’s active ingredients; however, no changes were observed between trials. This is most likely because in previous research the subjects undergoing testing, following consumption of creatine, had been utilizing the supplement for at least five consecutive days prior to engaging in testing. Human muscle only holds small amounts of creatine, which can be the ATP-PCr system produce energy, but acute consumption as in the present study, is not sufficient for storage. Likewise, most of the studies examined the effects of long term creatine use coupled with a resistance training program. In this study, we were looking at immediate performance effects following acute consumption.

Regardless, this information is useful for athletic females who use ergogenic aids, specifically, The Bracket™ pre-workout supplement to increase the power performance and reduce their rate of fatigue. Further investigation using larger sample sizes, and increase pre-workout supplementation on a long term diet plan is warranted to examine the effects of this pre-workout supplementation.