



# THE EFFECTS OF A PRE-EXERCISE CARBOHYDRATE DRINK ON MAXIMAL EXERCISE PERFORMANCE

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## Abstract

**INTRODUCTION:** Research shows that consuming a pre-exercise carbohydrate drink can improve one's ability to perform at a more efficient rate and thus increasing the amount of time able to perform incremental exercise to maximal levels. Maximal oxygen consumption is the maximum capacity of the body to transport and utilize oxygen during incremental exercise. It is expressed as a relative rate in milliliters of oxygen per kilogram of body weight per minute (ml/kg/min).

**PURPOSE:** The purpose of this study was to evaluate maximal exercise performance values of men following consumption of Gatorade Prime.

**METHODS:** Five men (age  $23.8 \pm 1.04$  yrs.) of the UTA Kinesiology department, volunteered to participate in this study. Each subject had body composition assessed by three site skinfolds (chest, abdomen, thigh). Each subject performed a graded exercise test on the treadmill with increasing speed and elevation until exhaustion. During each test heart rate (HR) and rate of perceived exertion (RPE) were recorded along with relative oxygen consumption every minute until max ( $VO_{2max}$ ). The main variable being evaluated was time to exhaustion.

**RESULTS:** The percent body fat calculated from the three skinfold sites was ( $12.26 \pm 4.37\%$ ). The average values for the baseline testing include: HR ( $143 \pm 34$  bpm); relative  $VO_2$  ( $23.15 \pm 10.2$  ml/kg/min); and time to exhaustion ( $11:09 \pm 3:15$ ). These values showed significantly different results ( $p < 0.05$ ) when compared to control data for HR ( $146 \pm 33$  bpm); relative  $VO_2$  ( $24.91 \pm 10.77$ ); and time to exhaustion ( $12:02 \pm 2:47$ ). However, there was no statistically significant difference ( $p \geq 0.05$ ) in RPE between baseline ( $14 \pm 3.5$ ) and control ( $13.4 \pm 3.6$ ).

**CONCLUSION:** The results of this study indicate that drinking a Gatorade Prime before exercise is beneficial for sustainability during that exercise. These significant differences may be attributed to other factors including becoming familiar with the testing procedure, and shooting for a target time based on the last test ran.

## Purpose

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## Methods

Five men (age  $23.8 \pm 1.04$  yrs.) of the UTA Kinesiology department, volunteered to participate in this study. Each subject had body composition assessed by three site skinfolds (chest, abdomen, thigh). Each subject performed a graded exercise test following the Bruce Protocol. This was done on a treadmill with increasing speed and elevation until exhaustion. During each test heart rate (HR) and rate of perceived exertion (RPE) were recorded along with relative oxygen consumption every minute until max ( $VO_{2max}$ ). The main variable being evaluated was time to exhaustion.

## -Instrumentation

The protocol was performed on the Sensormedics metabolic cart. A polar heart rate monitor was attached to each subjects chest. Every participant was fitted with headgear to hold a mouthpiece in place. A nose clip was used to ensure all expired air was analyzed.

## -Statistical Analysis

Statistical analysis was done with MicroSoft Excel using dependent t tests. The alpha level for significance was set at  $p \leq 0.05$ .

## Results

The average percent body fat calculated from the three skinfold sites was ( $12.26 \pm 4.37\%$ ). The average values for the baseline testing include: relative  $VO_{2max}$  ( $37.82 \pm 5.02$  ml/kg/min); and time to exhaustion ( $11:09 \pm 3:15$ ). These values showed significantly different results ( $p < 0.05$ ) when compared to the experimental data for relative  $VO_2$  ( $42.18 \pm 5.94$ ); and time to exhaustion ( $12:02 \pm 2:47$ ).

Control Data			
Variable	Mean	Standard Deviation	Significance
Relative $VO_2$ Max	37.82 (ml/kg/min)	$\pm 5.02$ (ml/kg/min)	$p = 0.0485$
Time To Exhaustion	11:09	$\pm 3:15$	$P = 0.0392$
Heart Rate Max	189 bpm	$\pm 10$ bpm	$P = 0.4110$
Experimental Data			
Variable	Mean	Standard Deviation	Significance
Relative $VO_2$ Max	42.18 (ml/kg/min)	$\pm 5.94$ (ml/kg/min)	$P = 0.0485$
Time To Exhaustion	12:02	$\pm 2:47$	$P = 0.0392$
Heart Rate Max	193	$\pm 7$ bpm	$P = 0.4110$

However, there was no statistically significant difference ( $p \geq 0.05$ ) in RPE between experimental ( $14 \pm 3.5$ ) and control ( $13.4 \pm 3.6$ ) and HR for experimental ( $193 \pm 10$ ) and control HR ( $189 \pm 33$  bpm) conditions.

## Conclusions

The results of this study indicate that drinking a Gatorade Prime before exercise is beneficial for sustainability during that exercise. These significant differences may be attributed to other factors including becoming familiar with the testing procedure, and shooting for a target time based on the last test ran.