



EFFECT OF A PRE-WORKOUT SUPPLEMENT ON PREFORMANCE DURING A MAXIMAL EXERTION (VO₂ max) TEST

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Abstract

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INTRODUCTION: Maximal oxygen consumption (VO₂max) is the maximum capacity of the body to transport and utilize oxygen during incremental exercise. It is expressed either as an absolute rate in liters of oxygen per minute (L/min) or as a relative rate in milliliters of oxygen per kilogram of body weight per minute (ml/kg/min). Research indicates that with pre-workout supplementation and/or energy drinks that there is an increase in VO₂max and time to exhaustion (Byars, Greenwood, Greenwood & Simpson, 2006).

PURPOSE: The purpose of this study was to evaluate the effect of a pre-workout supplement (MusclePrime) on exercise performance during a VO₂ max test of men and women.

METHODS: Three women (W; age 22 ± 1.3 yrs, height 67.5 ± 3 inches, weight 72.4 ± 4.6 kg) and three men (M; age 29.3 ± 7.1 yrs, height 70.5 ± 1 inches, weight 84.8 ± 2.6 kg) of the UTA Kinesiology department, volunteered to participate in this study. Each subject had body composition assessed by three site skinfolds (Men: chest, abdominal, thigh; Women: tricep, supriliac, thigh). Each subject performed a graded exercise test on the treadmill with increasing speed and elevation until exhaustion. During each test heart rate (HR), rate of perceived exertion (RPE) and time to exhaustion (TTE) were recorded along with the maximal oxygen consumption values measured by the metabolic cart.

RESULTS: The percent body fat calculated from the three skinfold sites was 17.0 ± 3.0% (M) and 22.8 ± 0.8% (W). The maximal values with the supplement were as follows: HR (M: 187.7 ± 9.8 bpm; W: 190 ± 2.7 bpm); RPE (M: 18.7 ± 0.4; W: 17 ± 0.7); TTE (M: 12.3 ± 0.98 mins; W: 10.7 ± 0.56 mins); VO₂max of females (W: 41.7 ± 0.49 ml/kg/min) were not significantly different from their control values (p ≥ 0.05). However, there was a statistically significant difference (p = 0.001) between control and supplement for relative VO₂max of males (M: 47.5 ± 6.1 ml/kg/min).

CONCLUSION: The results of the study demonstrate that men and women both experienced higher VO₂max and time to exhaustion levels. However it was only the males that experienced VO₂max levels that were significant with the use of a pre-workout supplement (MusclePrime) in maximal exercise exertion testing.

Purpose

The purpose of this study was to evaluate the effect of a pre-workout supplement (MusclePrime) on the performance of men and women during a VO₂max treadmill test.

Methods

Three women (W; age 22 ± 1.3 yrs, height 67.5 ± 3 inches, weight 72.4 ± 4.6 kg) and three men (M; age 29.3 ± 7.1 yrs, height 70.5 ± 1 inches, weight 84.8 ± 2.6 kg) of the UTA Kinesiology department, volunteered to participate in this study. Subjects consumed supplement mixture when they first enter the lab. Subjects then had their height, weight (using a standing scale) and blood pressure (using a blood pressure cuff) checked by myself. Each subject had body composition assessed by three site skinfolds (Men: chest, abdominal, thigh; Women: tricep, supriliac, thigh). Then a heart rate monitor was attached to their chest to allow measurement of heart rate. This signal was sent to a watch and the heart rate read from there. Then they stood on the treadmill while the headgear was fitted to their head in order to hold the mouthpiece in place. A mouthpiece, similar to that used for snorkeling, was used along with a noseclip to ensure that exhaled air could be collected in the metabolic cart during the exercise. This allowed the calculation of oxygen consumption, a measure of aerobic fitness. Blood pressure was taken at the beginning and end of each test. A rate of perceived exertion score (RPE) with ratings from 6 (rest) to 20 (maximal exercise) was taken during each workload.

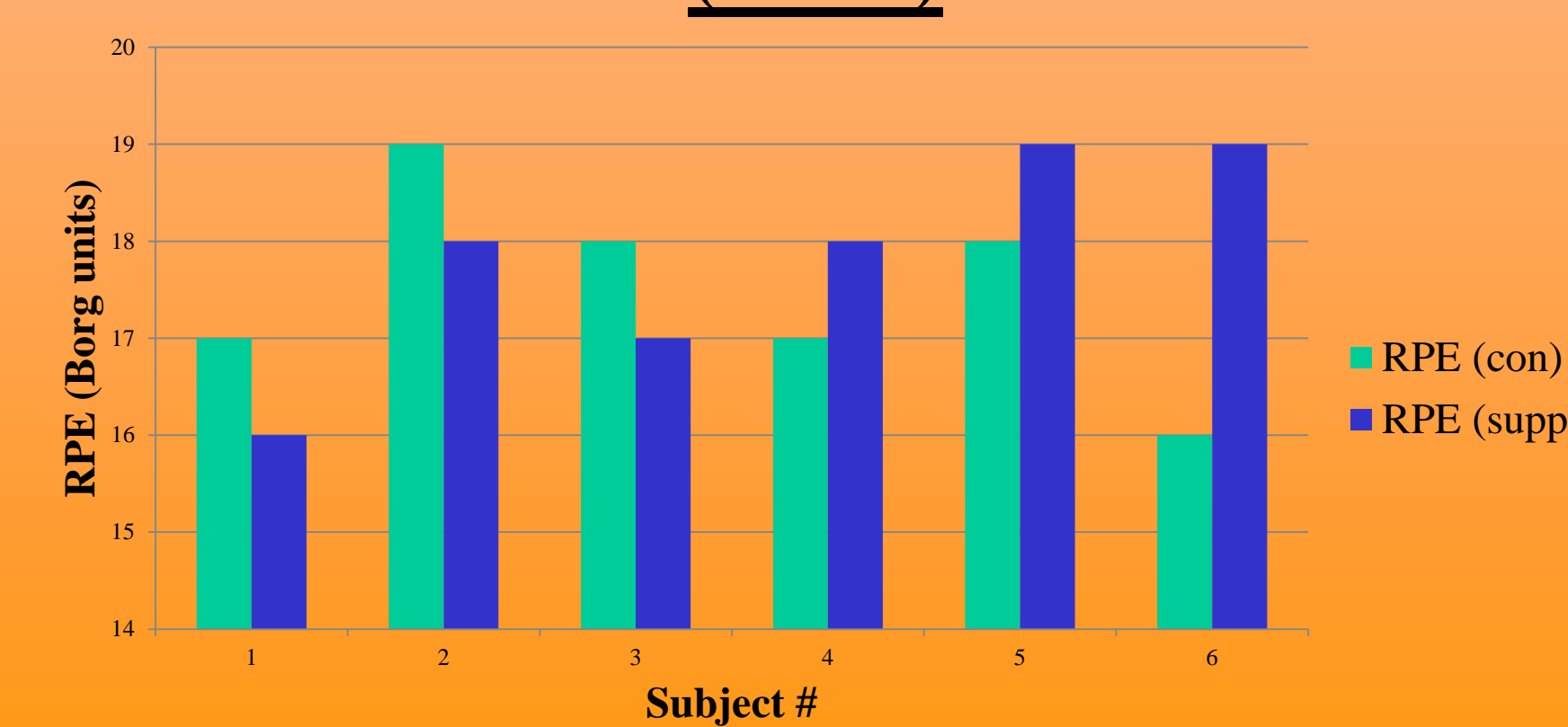


Methods (cont'd)

The treadmill protocol increases speed and elevation every three minutes until they cannot go any further. Because of the mouthpiece, the subjects communicated with hand signals. A "thumbs up" indicated continuing to exercise, a "waggle" of the hand, palm down, indicated not much longer. They were then asked to continue "another 30 sec" or "into the next workload" prior to stopping. This allowed the collection of final or maximal values. The treadmill was then sent into recovery mode and they were allowed to slow down while heart rate and blood pressure continue to be monitored. When their heart rate was below 120 bpm and/or their systolic blood pressure is below 130 mmHg and they felt recovered, they were allowed to leave. Subjects will return for the second day (3-5 days later) and the same procedures will be completed with the Kool-aid drink. During each test heart rate (HR), rate of perceived exertion (RPE) and time to exhaustion (TTE) were recorded along with the maximal oxygen consumption values measured by the metabolic cart. The statistical analysis was done using a two-tailed, paired sample T-test with an alpha level of p ≤ 0.05.

Results

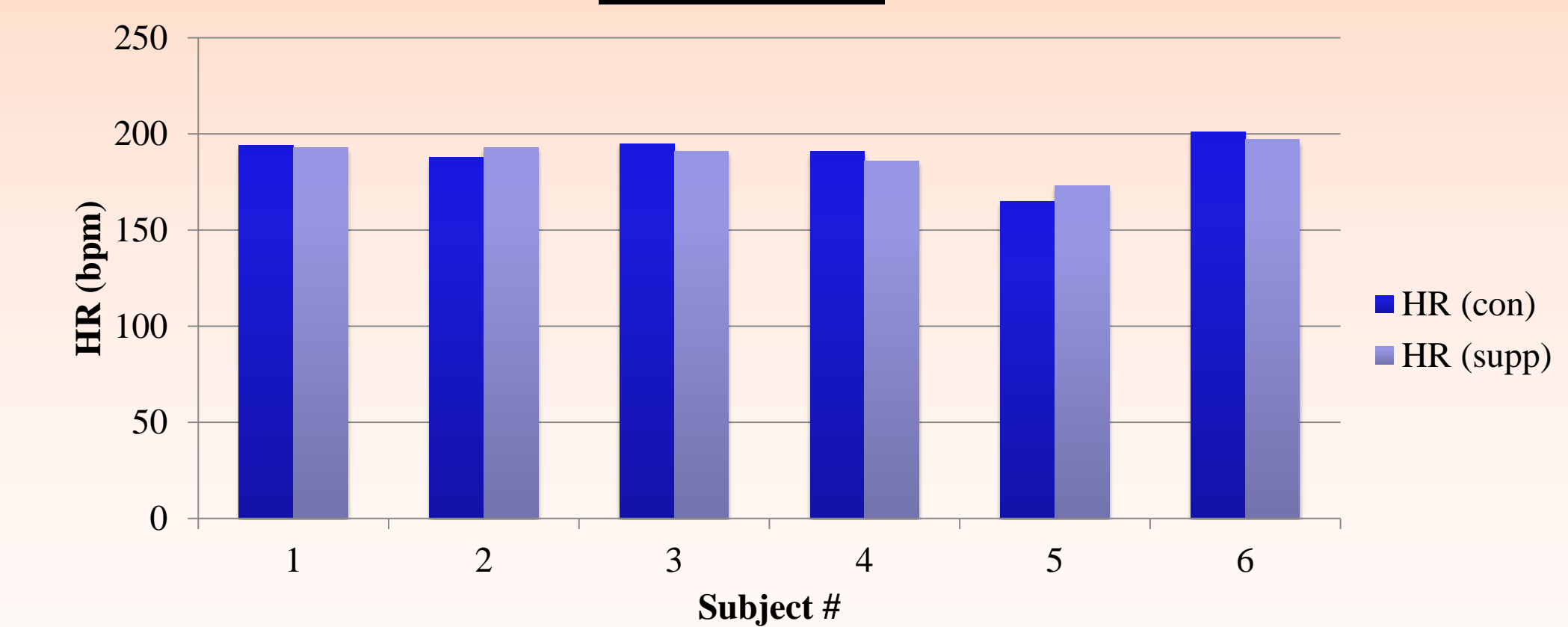
Rated Perceived Exertion (RPE)



	M	F
avg (con)	17.7	17.3
dev (con)	1.1	0.4
avg (supp)	18.7	17
dev (supp)	0.4	0.7
p value	0.477767	0.666667

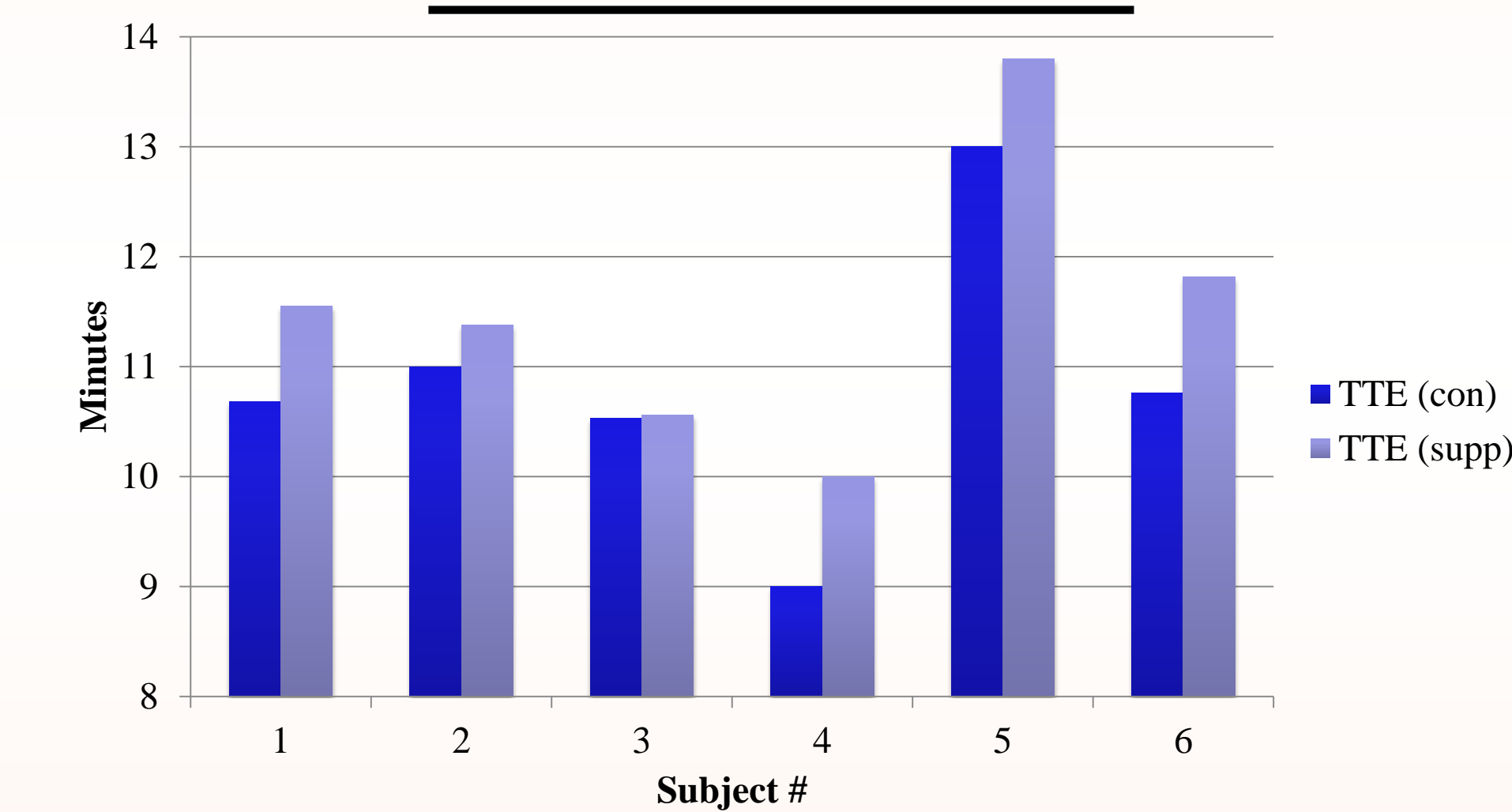
Results (cont'd)

HR max



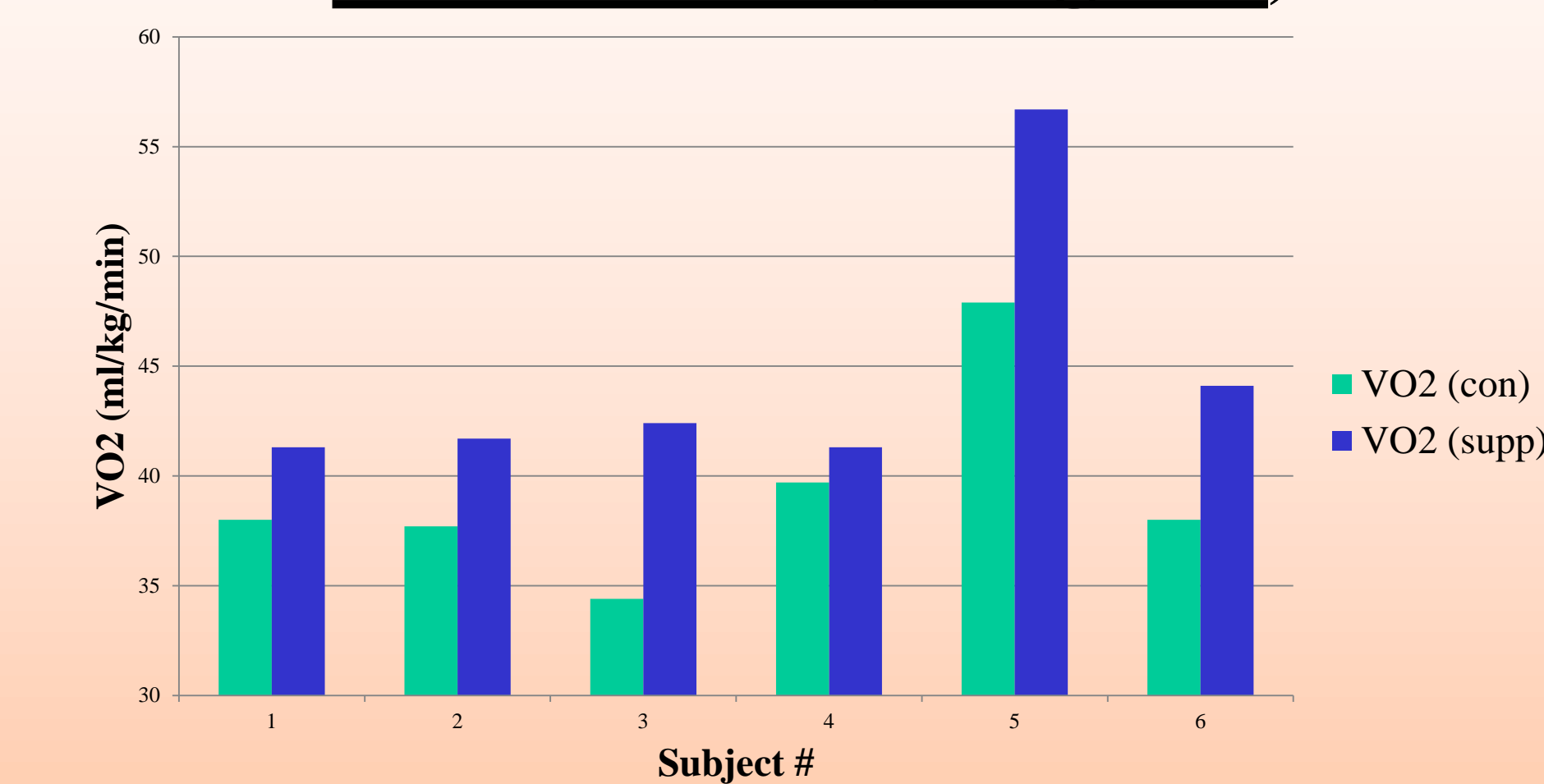
	M	F
avg (con)	184.7	193.3
dev (con)	13.1	1.6
avg (supp)	187.7	190
dev (supp)	9.8	2.7
p value	0.492907	0.109129

Time to Exhaustion



	M	F
avg (con)	11.6	10.1
dev (con)	0.94	0.71
avg (supp)	12.3	10.7
dev (supp)	0.98	0.56
p value	0.063736	0.172614

Relative VO₂ (ml/kg/min)



	M	F
avg (con)	41.2	37.4
dev (con)	4.47	1.98
avg (supp)	47.5	41.7
dev (supp)	6.1	0.49
p value	0.045345	0.153712

Conclusions

The results of the study demonstrate that men and women both experienced higher VO₂max and time to exhaustion levels. However it was only the males that experienced VO₂max levels that were significant with the use of a pre-workout supplement (MusclePrime) in maximal exercise exertion testing.