



# The Effect of Caffeine on Blood Lactate After a Maximal Exercise Test

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## Abstract

Numerous studies exist on the use of caffeine for both endurance exercise and short-term, higher intensity exercise. Consumption of caffeine is known to help athletes train harder and longer. This study examined the effectiveness of the caffeine supplement NoDoz on blood lactate and selected indicators of maximal cardiorespiratory fitness in male and female UTA students.

## Purpose

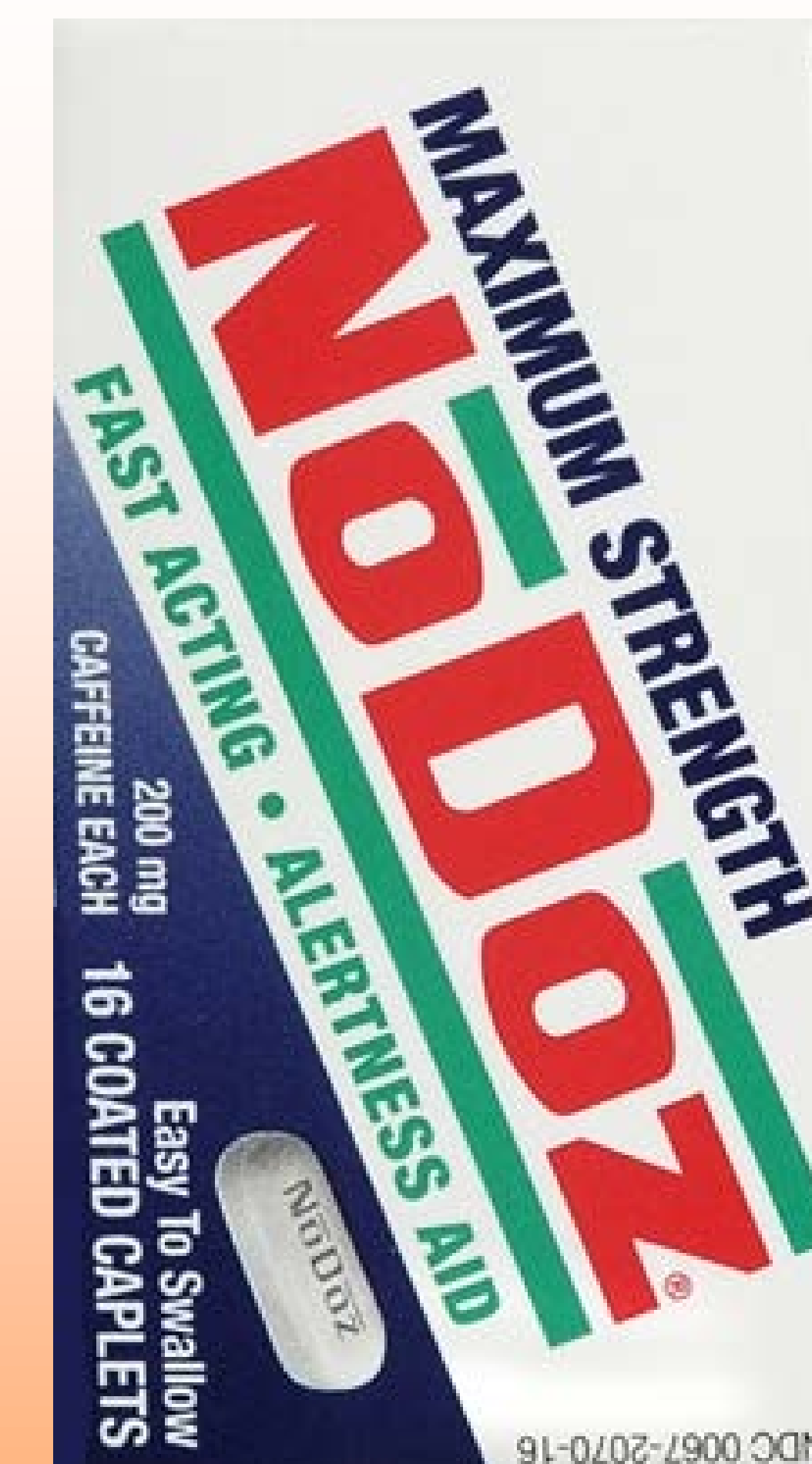
The specific purpose of this study was to determine if there was an effect on blood lactate when consuming caffeine prior to a maximal exercise test.

## Methods

Six male and female, University of Texas at Arlington students (age  $24 \pm 3$  years, height:  $70 \pm 5$  in, weight:  $46.9 \pm 23.45$  kg) were given an informed consent form to perform two maximal oxygen consumption tests on a treadmill. They each signed the consent form and then drank a placebo (grape-flavored Propel water) or the supplement (Propel water with No Doz) approximately 30 minutes before the exercise bout. Heart rate (HR), blood pressure (BP), and blood lactate (BLa) were recorded at rest and then the test was initiated. Both heart rate and blood pressure were recorded every 3 minutes during the test, and blood lactate was measured 3 minutes after the test. The subjects were not informed which drink they had consumed and the protocol was repeated on a separate day with the other supplement. The  $VO_{2max}$ , blood lactate, heart rate, blood pressure, and time to exhaustion were measured to determine the effects of caffeine on blood lactate levels among those other variables after a maximal exercise test.

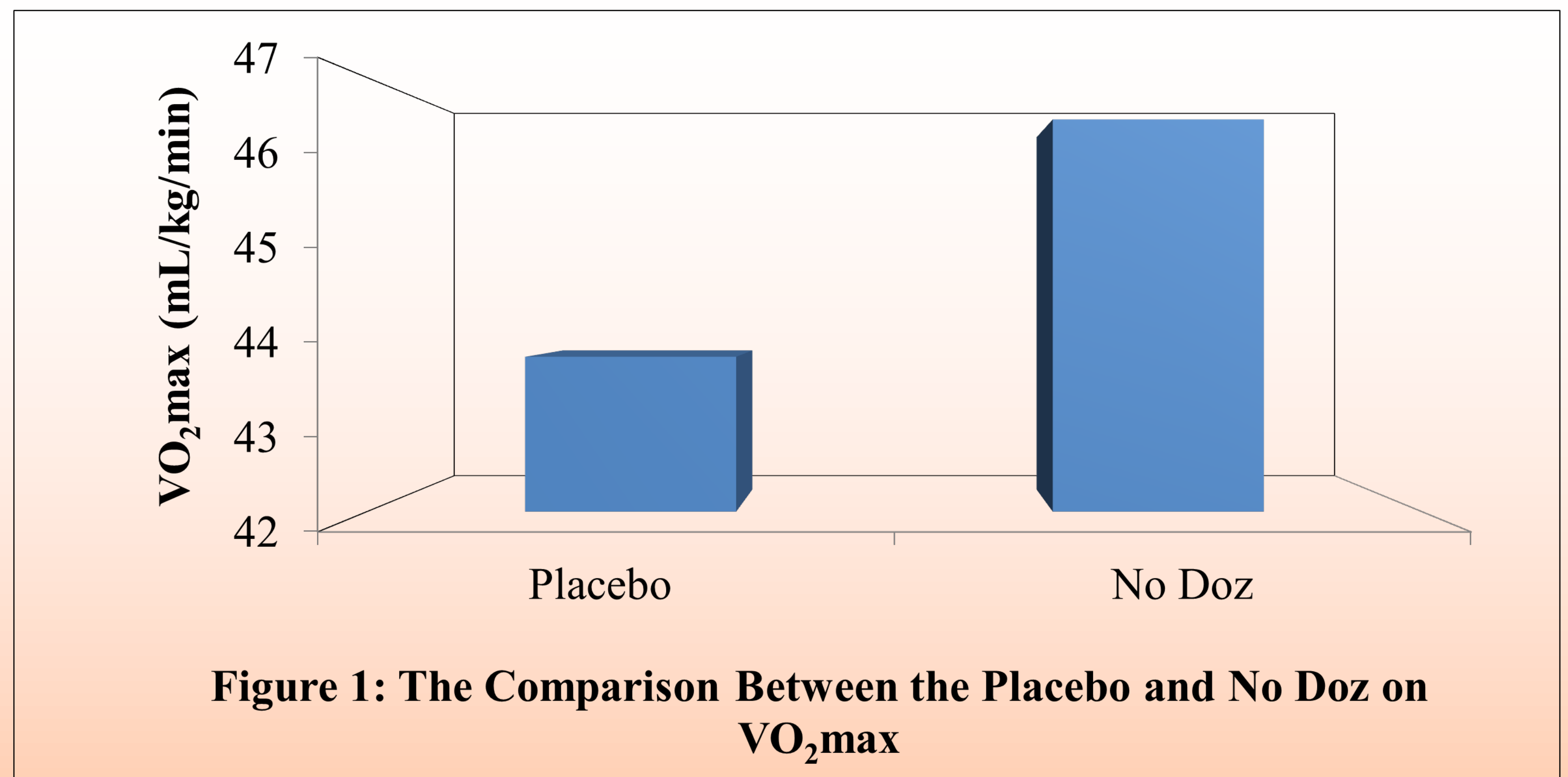
## Results

Subjects	Placebo Blood Lactate	NoDoz Blood Lactate
1	10.2	14.8
2	14.4	12.4
3	13	12.8
4	8.9	13
5	8.2	16.9
6	19.3	17



## Results (cont'd)

The t-test used to analyze the data for the maximal exercise test revealed no significant differences between BLa ( $p= 0.282$ ),  $VO_{2max}$  ( $p= 0.120$ ), HR ( $p= 0.103$ ), SBP ( $p= 0.580$ ), DBP ( $p= 0.091$ ), or total exercise time ( $p= 0.130$ ). The mean placebo results were blood lactate (BLa) max  $12.3 \pm 3.8$  mmol/L,  $VO_{2max}$   $43.8 \pm 9.2$  mL/kg/min, systolic blood pressure (SBP) max  $174.3 \pm 13.8$  mmHg, diastolic blood pressure (DBP) max  $75.7 \pm 5.0$  mmHg, max heart rate (HR)  $191.5 \pm 4.8$  bpm, and time  $11:33 \pm 2:26$  minutes. The mean No Doz supplementation resulted in a BLa max of  $14.5 \pm 1.9$  mmol/L,  $VO_{2max}$   $46.5 \pm 6.7$  mL/kg/min, systolic blood pressure (SBP) max  $177.3 \pm 13.6$  mmHg, diastolic blood pressure (DBP) max  $71.7 \pm 7.6$  mmHg, max heart rate (HR)  $197 \pm 4.2$  BPM, and time  $12:02 \pm .08$  minutes.



## Conclusions

The results indicate that there was no significant difference between blood lactate with the use of No Doz or a placebo prior to a maximal exercise test.