



THE EFFECTS OF PASSIVE, ACTIVE, AND BETA-ALANINE SUPPLEMENTED RECOVERY ON BLOOD LACTATE DURING ANAEROBIC EXERCISE

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Abstract

INTRODUCTION: It is widely shown through experimentation and knowledge of human physiology that an active recovery following high-intensity exercise removes lactic acid (BLA) more quickly than passive recovery. Some research suggests that Beta-Alanine (BA) supplementation can decrease BLA levels following supramaximal exercise.

PURPOSE: The purpose of this research was to assess whether passive, active, or Beta-Alanine supplemented recovery is more effective at lowering blood lactate accumulation following supramaximal anaerobic exercise.

METHODS: Five male (M, 21.2 ±1.48 yrs, 178.25 ±6.36 cm, 85.59 ±10.30 kg) and three female subjects (F, 22 ±1.73 yrs, 164.23 ±1.50 cm, 70.9 ±12.56 kgs) at UTA volunteered to participate in this study. Each subject completed three sessions of active, passive, and supplemented Wingate protocols. Blood Lactate measurements were taken at rest for each protocol, and after completion of the final recovery. Blood lactate values were compared between initial (resting) and final values between the differing protocols.

RESULTS: Results were determined using SPSS, where the *p* value was set at .05. There was no statistical significance for the differences in between active and passive recovery ($F(1,7)= 1.297, p = .292$). There was no statistical significance for differences between Beta-Alanine and placebo supplemented groups ($F(1,6)= .003, p = .962$).

CONCLUSION: The results of this study indicated that there were no differences between blood lactate in passive and active recovery, and no benefits of Beta-Alanine supplementation on blood lactate accumulation following supramaximal exercise.

Purpose

The purpose of this research was to assess whether passive, active, or Beta-Alanine supplemented recovery is more effective at lowering blood lactate accumulation following supramaximal anaerobic exercise.

Methods

- **Subjects**
 - Moderately active
 - PAR-Q
 - English-speaking
 - College-age students at UTA
- **Instrumentation**
 - **Blood Lactate**
 - Resting and Final BLA recorded for each session
 - Accusport Lactate Analyzer
- **Wingate**
 - Height and weight
 - 1 minute warm-up
 - 30 sec supramaximal anaerobic pedaling
 - 4 minutes
 - Active (pedaling at comfortable speed)
 - Passive (sitting) protocol
- **Repeat Steps**



Methods (cont'd)

- **Supplementation**
- **Final Session**
 - Washout time
- **Randomly assigned**
 - **Week-long regimen**
 - All-Max Nutrition Beta-Alanine (2X/day)
 - Placebo (Tylenol) (2X/day)



Results

Table 1: Female Demographics

Female (F)	Mean	SD	Min	Max
Age	22.0	1.7	20.0	23.0
Height (cm)	164.2	1.5	162.5	165.1
Weight (kg)	70.9	12.5	56.8	80.9
BMI	26.3	5.0	20.84	30.64

Table 2: Male Demographics

Male (M)	Mean	SD	Min	Max
Age	21.2	1.4	19.0	23.0
Height (cm)	178.2	6.3	170.0	182.8
Weight (kg)	85.5	10.3	77.2	102.2
BMI	26.9	2.7	23.37	30.58

Table 3: Passive Protocol Blood Lactate

	Passive Initial	Passive Final
Mean	2.78	15.22
SD	.69	2.94
Min	1.9	12.2
Max	4.1	19.2

Table 4: Active Protocol Blood Lactate

	Active Initial	Active Final
Mean	3.63	13.75
SD	.75	4.78
Min	2.2	8.3
Max	4.9	19.5

Table 5: Beta-Alanine Supplemented Passive Protocol Blood Lactate Values

	Beta-Alanine Initial	Beta-Alanine Final
Mean	3.65	16.2
SD	1.51	3.07
Min	2.8	13.5
Max	5.9	20.1

Table 6: Placebo Supplemented Passive Protocol Blood Lactate Values

	Placebo Initial	Placebo Final
Mean	4.5	16.3
SD	1.35	2.55
Min	3.4	13.1
Max	6.2	19.2

SPSS Results:
 There was no significant difference between active and passive recovery ($F(1,7)= 1.297, p = .292$).
 There was no significant difference between supplementation and placebo ($F(1,6)= .003, p = .962$).

Results (cont'd)

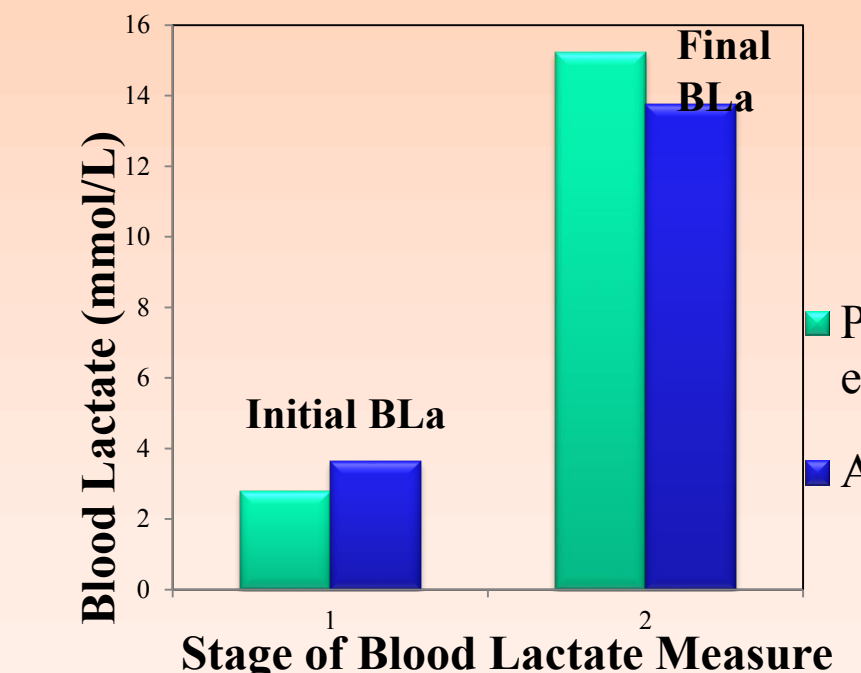


Figure 1: Differences in Initial and Final Blood Lactate Measurement Between Passive and Active Recovery Protocols

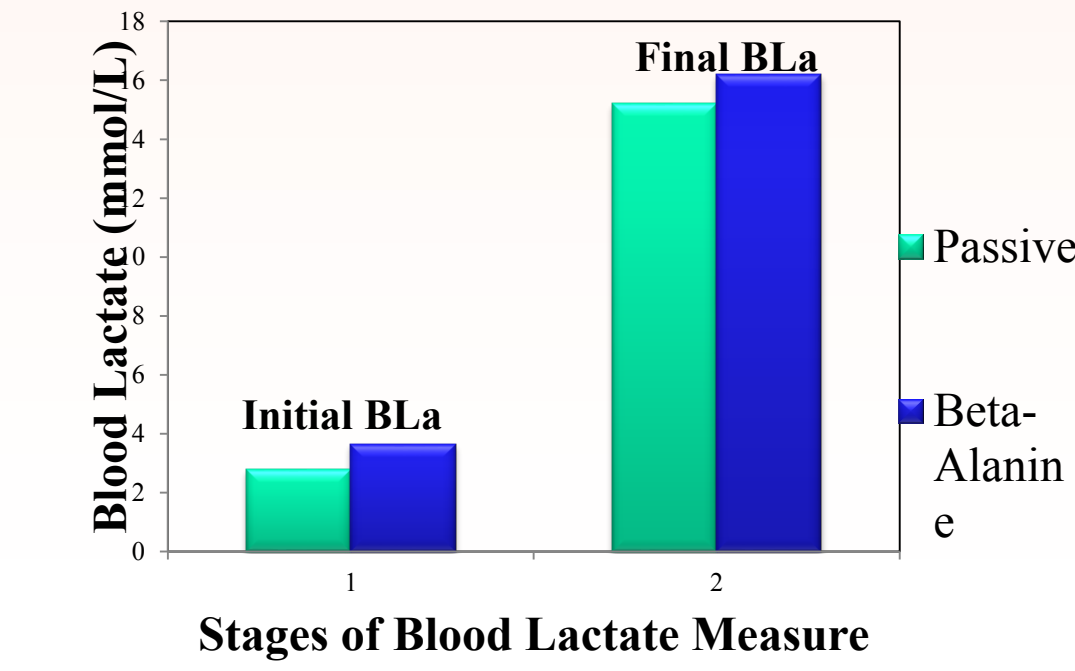


Figure 2: Differences in Initial and Final Blood Lactate Measurements Between Passive and Beta-Alanine Supplemented Passive Protocols

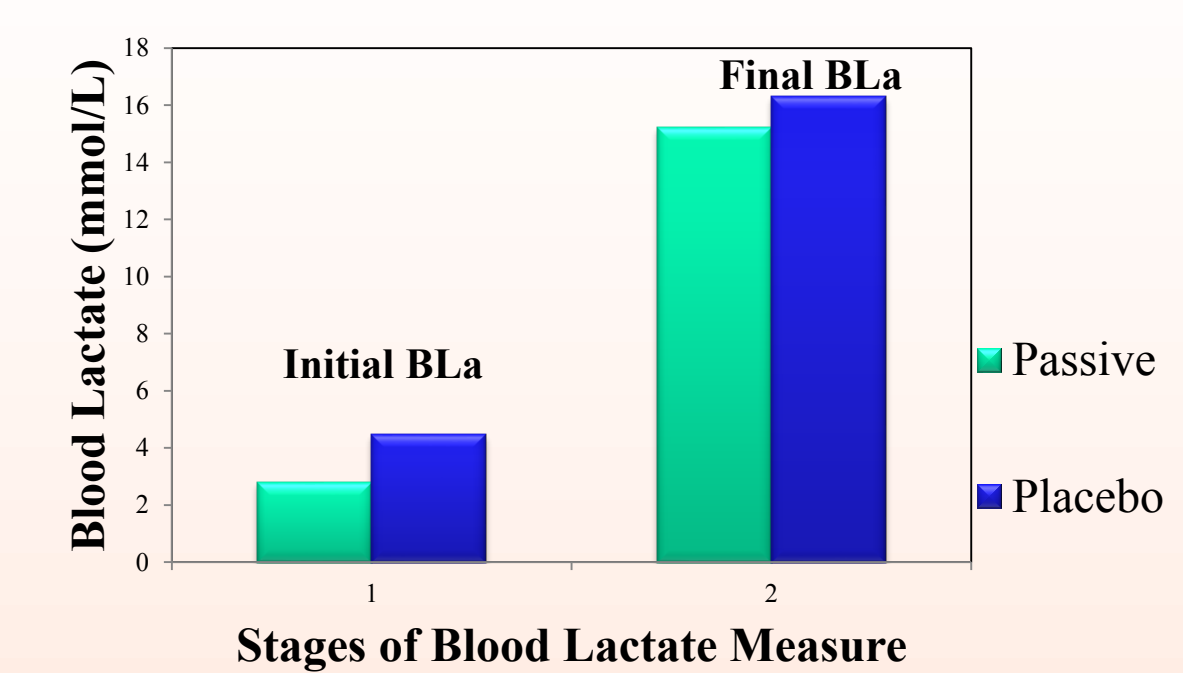


Figure 3: Differences in Initial and Final Blood Lactate Measurements Between Passive and Placebo Supplemented Passive Recovery Protocols

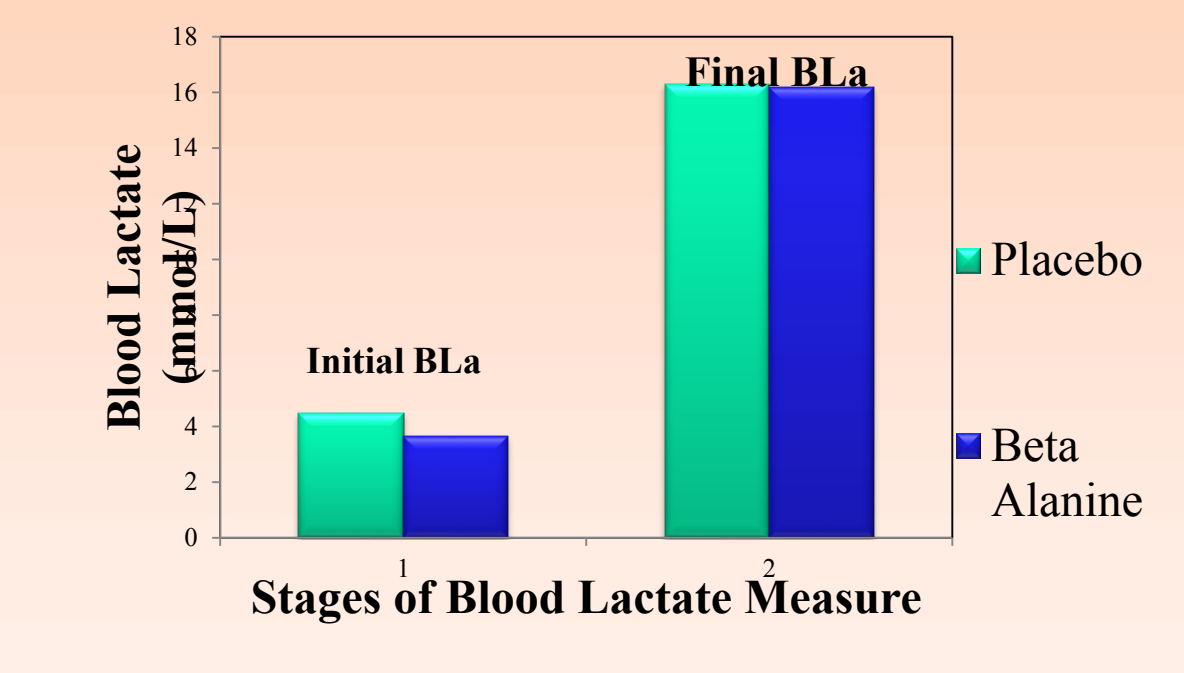


Figure 4: Differences in Initial and Final Blood Lactate Measurements Between Beta-Alanine and Placebo Supplemented Passive Recovery Protocols

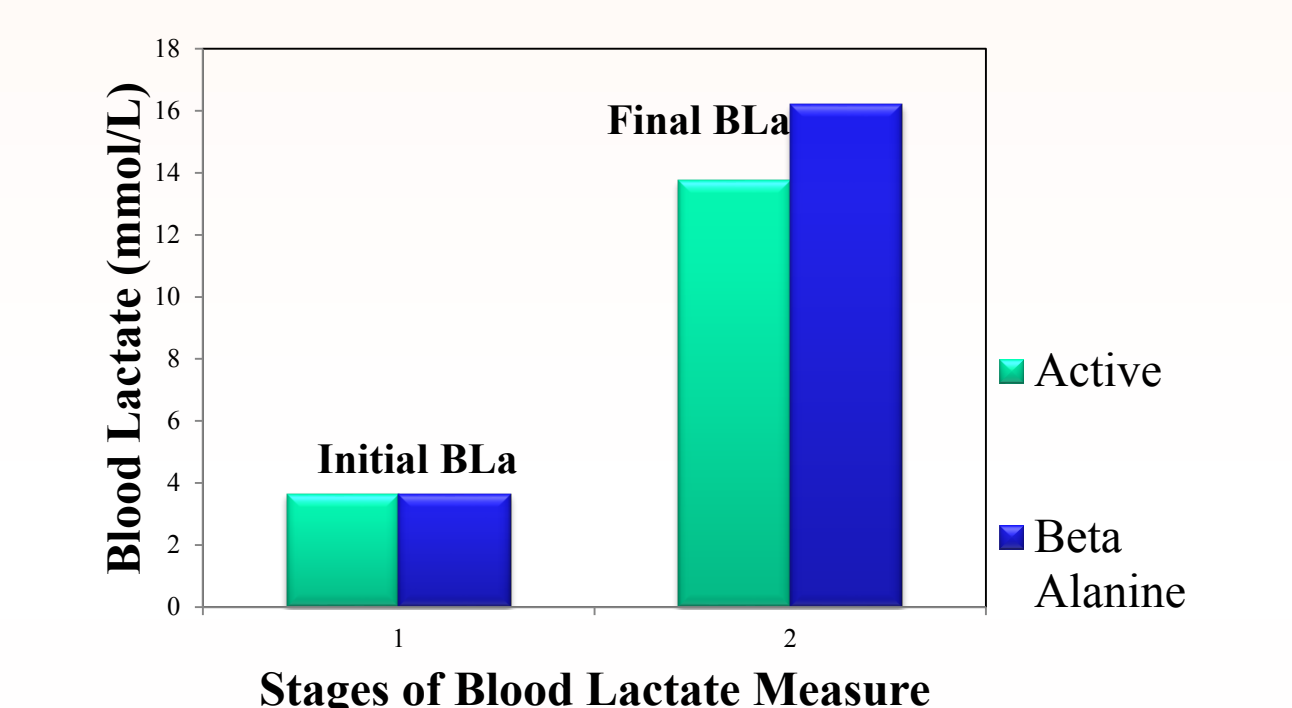


Figure 5: Differences in Initial and Final Blood Lactate Measurements Between Active and Beta-Alanine Supplemented Passive Recovery Protocols

Conclusions

This experiment yielded no significant difference between active and passive recovery protocols or between Beta-Alanine and placebo supplemented passive recovery protocols. Research included in the discussion suggests that a number of changes in experimental set up could provide significant difference in further experimentation. To control resting blood lactate, participants should be asked to abstain from intense exercise 24 hours prior to testing, and one Wingate session should be considered a training period for the subject to acclimate to the protocol. For supplemented recoveries, encouraging compliance with regimens, and extending the supplementation period may provide more experimental efficacy. Co-supplementation with creatine or testing a more highly trained population may yield more conclusive results.