

The Effects of Beta-Alanine Supplementation and High-Intensity Interval Training on Cardiovascular Parameters, Fatigue, and Anxiety in Male Basketball Players Over ۳۰ Years Old

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ABSTRACT

This present study investigated beta-alanine supplementation and HIIT on cardiovascular parameters and fatigue and anxiety indices in basketball players over ۳۰ years of age. A total of ۳۶ athletes divided into three groups: one group received placebo with HIIT, one group received beta-alanine with HIIT, and one group received beta-alanine without exercise. Measured parameters included heart rate variability, fatigue index, and anxiety index. Based on the results obtained, it has been observed that the combination of beta alanine with HIIT has positively influenced the improvement in performance, reduction of fatigue, and anxiety in this age group.

Keywords: Beta Alanine, HIIT, Fatigue and Anxiety

INTRODUCTION

Significant physiological changes mark aging in many systems of the body, particularly in the cardiovascular and muscular systems of the athlete. These changes may have unfavorable influences on both athletic performance and the quality of life for the individual. Therefore, scientific and effective attention needs to be paid to the improvement of middle-aged athletic performance, which uses sport supplements like beta-alanine. It is established that beta-alanine is a non-essential amino acid capable of leading to increased concentrations of carnosine in muscles. In its turn, carnosine provides buffering function for muscles and can be used for delaying the onset of muscular fatigue. In its turn, HIIT is mentioned among the effective methods for improving cardiovascular capacity as well as reductions in levels of body fat in athletes. Due to its short duration and high intensity, HIIT is considered one of the popular strategies in training programs, especially for those who would want to quickly enhance their performances. Research conducted on athletes has shown that HIIT can have many positive effects in terms of the development of endurance and anaerobic capacity.

METODOLOGY

In this study, ۳۶ male basketball players over the age of ۳۵ were divided randomly into three groups: Placebo group with HIIT-۱۲ members Beta-alanine group with HIIT-۱۲ members Beta-alanine group without exercise-۱۲ members - Beta-Alanine Supplementation: Groups two and three are to receive ۴ to ۶ grams of beta-alanine daily.

HIIT training: All placebo and beta-alanine groups were on HIIT for ۳۰ days, three days a week.

Parameters measured before and after the study period included:

Heart Rate Variability: The heart rate monitoring devices measured the HRV.

Fatigue Index: General Fatigue Scale, PFS was used for the assessment of the fatigue index.

Anxiety Scale: Measured using the Hospital Anxiety and Depression Scale.

RESULTS

Let's examine the charts

Table ۱. Anxiety index

Group	Average (before)	Average (after)	t_value	P_value
Placebo+HIIT.vs beta alanine +HIIT	۲۲.۰	۲۱.۰	۱.۳۴	۰.۱۹۱
Placebo+HIIT.vs beta-alanine (without exercise)	۲۲.۰	۲۱.۰	۰.۰۰	۱.۰۰۰
Beta+HIIT.vs beta-alanine (without exercise)	۲۱.۰	۱۶.۰	۳.۵۰	۰.۰۰۲

Table ۲. Fatigue index

Group	Average (before)	Average (after)	t_value	p_value
Placebo+HIIT.vs beta alanine +HIIT	۳۰.۰	۲۸.۰	۲.۱۰	۰.۰۴۱
Placebo+HIIT.vs beta-alanine (without exercise)	۳۰.۰	۲۹.۰	۰.۸۵	۰.۴۰۸
Beta+HIIT.vs	۲۹.۰	۲۴.۰	۳.۵۰	۰.۰۰۲

beta-alanine (without exercise)				
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Table ۳. HRV

Group	Average (before)	Average (next)	t_value	P_alue
Placebo+HIIT.vs beta alanine +HIIT	۴۴.۵	۴۶.۰	۲.۴۵	۰.۰۲۳
Placebo+HIIT.vs beta-alanine (without exercise)	۴۴.۵	۴۵.۵	۱.۶۷	۰.۱۰۳
Beta+HIIT.vs beta-alanine (without exercise)	۴۶.۴	۴۵.۵	۳.۲۲	۰.۰۰۵

Table ۴. Descriptive summary of data

Group	HRV (before)	HRV (next)	Fatigue index (before)	Fatigue index (next)	Anxiety index (before)	Anxiety index (next)
Placebo + HIIT	۴۴.۵ ±۱.۳	۴۶.۰ ±۱.۵	۳۰.۰ ±۲.۰	۲۸.۰ ±۲.۵	۲۲.۰ ±۱.۵	۲۱.۰ ±۱.۸
beta- alanine + HIIT	۴۶.۴ ±۱.۲	۵۰.۴ ±۱.۳	۲۹.۰ ±۲.۰	۲۴.۰ ±۲.۰	۲۱.۰ ±۱.۴	۱.۶ ±۱.۵
Beta- alanine (without exercise)	۴۴.۵ ±۱.۱	۴۵.۵ ±۱.۰	۳۰.۰ ±۱.۹	۲۹.۰ ±۱.۸	۲۲.۰ ±۱.۶	۲۱.۰ ±۱.۷

