



“CREATINE LOADING: ITS EFFECT ON ANAEROBIC CAPACITY IN RESISTANCE TRAINED INDIVIDUALS”

Physiology

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ABSTRACT

Creatine supplementation is a very popular ergogenic aid in the fitness and sports industry nowadays. Its supplementation along with resistance training helps in improving performance. The purpose of this study was to establish the effect of 7 days creatine supplementation on anaerobic performance in resistance-trained subjects. The study found that a 7-days creatine loading regimen resulted in significant improvement in anaerobic capacity test performance in the selected study population.

KEYWORDS

Creatine loading, Ergogenic aids, Resistance training, Performance.

INTRODUCTION

Creatine monohydrate is most commonly used in the fitness and sports industry. As it is very safe to use and effective in enhancing performance, it is a supplement of choice by athletes. The importance of creatine monohydrate has been studied since 1920¹. The exogenous intake of creatine is mainly used to improve muscular strength, increase anaerobic performance and improves resistance training effectiveness^{2,3}.

Creatine is present in skeletal muscle so increasing oral supplementation leads to increase the muscular pool of creatine. Creatine Phosphate acts as a reservoir of phosphate and facilitates resynthesis of adenosine triphosphate, thus providing the immediate fuel for high-intensity exercises.

Although the use of creatine supplement is widespread but very limited documented data is available in India. Therefore, the present study conducted to ascertain the effect of creatine supplementation on the anaerobic capacity of resistance-trained individuals.

MATERIAL AND METHOD

The study was conducted at D.Y. Patil Hospital and Research Center, Nerul, Navi Mumbai. 30 resistance-trained male subjects were recruited for the study. The research protocol was approved by the institutional ethical committee. After the explanation of procedures, risks and benefits informed consent was taken from all the volunteer. Subjects were also instructed to refrain from any additional nutritional supplement during the study.

After baseline data, 20 gm/day Creatine monohydrate supplement⁴ (Labrada Nutrition- CreaLean™ 100% Pure Creatine) was given for 7 days along with exercise program designed by an exercise specialist. Subjects completed the supervised exercise sessions on 5 consecutive days followed by 2 days of no exercise before final evaluation. All training sessions started with the warmup targeted at elevating heart rate, mobilizing joints and activating muscles. Parameter for anaerobic capacity were recorded and comparison was done before and after creatine loading for a week among the subjects.

PROCEDURE:

For Anaerobic Capacity 300-Yard Shuttle Test was performed⁵. After explaining the purpose of the test, the subjects were prepared for the test by performing a proper warm-up and practice trial before administering the test.

The test is performed on a stable surface that provides good traction with two parallel lines are marked 25 yards (22.86m) apart. The subject runs back and forth between the two lines, making foot contact with the second line, then turning and running as quickly as possible back towards the starting (first) line. The goal of this test is to complete six continuous round trips without stopping in the quickest time possible. After completing the test, the subject takes a five-minute recovery interval after which the same test is performed immediately

by subjects. The average score of the two trial is noted as the final test score.

Table 1: Comparison of Pre and Post creatine loading on anaerobic capacity.

Parameters	Pre (Mean)	Post (Mean)	P Value	Significan
Weight	62.19 ± 5.57	63.28 ± 5.49	<0.0001	H.S.
Anaerobic capacity	70.80 ± 2.58	69.60 ± 3.23	<0.05	S

HS: Highly Significant, S: Significant

RESULTS:

The observations revealed that there is a highly significant increase in the weight of the subjects after creatine supplementation for a week. In terms of performance, data revealed that subjects exhibited significant improvement in the anaerobic capacity test.

DISCUSSION:

The result of this study demonstrated that a 7 days creatine loading regime produces significant improvement in anaerobic capacity. This is in support of similar studies that investigated the effect of short-term creatine supplementation, Hall⁶ and stout⁷ also reported an increase in anaerobic capacity. Eckerson et al.⁸ also concluded an increase in anaerobic performances. The increased performance following creatine supplementation could result due to increase in creatine phosphate stores in skeletal muscles which resulted in increased ATP resynthesis.

It is also observed in the study that short-term creatine supplementation for a week also results in increase in body weight of the subjects. This finding is similar to many other studies^{9,10,11,12}. This increase in body weight is due to water retention in the muscle as a result of creatine supplementation.

CONCLUSION:

In summary, the present study found that creatine supplementation augments performance in resistance trained individuals so such supplements can be used as an effective means of improving performances in fitness and sport industry. Therefore, the standard 7 days creatine loading regime can be taken as an ergogenic aid among athletes involved in anaerobic sports.

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