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V Sarath Chandu
Research Scholar, University
College of Physical Education &
Sports Sciences Acharya
Nagarjuna University, Guntur,
Andhra Pradesh, India

Dr. P Johnson
Associated Professor and
Director of Physical Education,
University College of Physical
Education & Sports Sciences
Acharya Nagarjuna University,
Guntur, Andhra Pradesh, India

The effect of high intensity interval training on vo2 max among male inter collegiate badminton players

V Sarath Chandu and Dr. P. Johnson

Abstract

The purpose of the study was to find out the effect of high intensity interval training on vo2 max among inter collegiate badminton players. Thirty badminton players were selected as subjects. The selected subjects were divided into two groups of fifteen each (n=15). The ages of the subjects ranged from 18 to 25 years. The experimental group was high intensity interval training group, and a control group. Initial test on Cooper 12 minutes run/walk test was conducted for all the groups and the performance was recorded for these groups. The experimental group was administered for eight weeks training. The control group was not given any treatment. After eight weeks the final test was taken on Cooper 12 minutes run/walk test for experimental group and control group. The collected data was statistically analyzed by using Univariate two way ANOVA. The result of the study was high intensity interval training group was significant improvement in compared to the control group.

Keywords: High intensity interval training, badminton, Cooper 12 minutes run/walk test

Introduction

Racquet game performance is made up of attributes such as agility, speed, strength, power and endurance. There are many training methods assigned to optimize the racquet player's performance. In the to improve performance in racquet type sports, high intensity interval training is one of the best method. (JoeGirard, *et al.*, 2018) [1].

The level of pulse (HR) when performing high-intensity interval training (HIIT) just as the dependability of endorsing badminton preparing forces on the court stays obscure. The utilization of game innovation gadgets is getting more famous in sports science. These gadgets likewise appear to be valuable apparatuses for players preparation. In any case, proof in regards to the advantages of such gadgets in pro preparation of players stays restricted. (Kuo-Chin Lin, *et al.*, 2020) Background High- intensity interval preparing (HIIT) might be a practical and viable system for development of wellbeing in youngsters.

High-intensity interval training

High-intensity interval training (HIIT) is a form of interval training, a cardiovascular exercise strategy alternating short periods of intense anaerobic exercise with less intense recovery periods, until too exhausted to continue. The method is not just restricted to cardio and frequently includes weights for the short periods as well. Though there is no universal HIIT session duration, these intense workouts typically last under 30 minutes as it uses the anaerobic energy systems which are typically used for short, sharp bursts. The times vary, based on a participant's current fitness level. Furthermore, traditional HIIT was designed to be no longer than 20 seconds on with no more than 10 seconds off. This would bring in the anaerobic energy system. The intensity of HIIT also depends on the duration of the session.

VO2 max

VO2 max take-up is one thing that can decide a competitor's ability to execute supported exercise and is connected to aerobic endurance. A high VO2 max may show a competitor's potential for incredible aerobic exercises. (Costill, D.L. what's more, Wilmore, J.H., 1994). The variables influencing VO2 are frequently isolated into supply and factors demands.

Corresponding Author:
V Sarath Chandu
Research Scholar, University
College of Physical Education &
Sports Sciences Acharya
Nagarjuna University, Guntur,
Andhra Pradesh, India

Supply is the transport of oxygen from the lungs to the mitochondria (counting lung dispersion, stroke volume, blood volume, and slender thickness of the skeletal muscle) while request is the rate at which the mitochondria can diminish oxygen during the time spent oxidative phosphorylation. (Bassett D.R. Jr & Howley E.T., 2000) [4].

Statement of the problem

To see how high intensity interval treatment affects the Vo2 max among selected two groups of affiliated college male badminton players in Nagarjuna University, Andra Pradesh, India.

Methodology

The purpose of the study was to find out the impact of high intensity interval training on vo2 max among inter collegiate badminton players. Thirty badminton players were selected as subjects. The selected subjects were divided into two groups of fifteen each (n=15). The ages of the subjects ranged from 18 to 25 years. The experimental group was high intensity interval training group, and a control group. Initial test on Cooper 12 minutes run/walk test was conducted for all the groups and the performance was recorded for these groups. The experimental group was administered for eight weeks training. The control group was not given any treatment. After eight weeks the final test was taken on Cooper 12 minutes run/walk test for experimental group and control group. The collected data was statistically analyzed by using Univariate two way ANOVA.

Results

Analyzing the ability of Vo2 max

The data collected before and after the experimental period on the ability of Vo2 max between pre-test and posttest high intensity interval training group and a control group were analyzed and presented in table I.

Table I: The Univariate two way ANOVA for pre and post test data on Vo2 Max of the experimental and control group

Group	Test	Mean	S.D.	F	T	Sig	Paired 'T' test	Sig. (2-tailed)
Experimental	Pre	30.05	0.79	0.008	0.090	0.929	0.435	0.00*
Control	Pre	30.11	2.68					
Experimental	Post	34.01	0.81	33.016	5.746	0.00*		
Control	Post	29.85	2.67					

Data expressed as Mean \pm Standard deviation of Triplicates. *-Significantly different ($p < 0.05$) and NS-Non significant

Values were means \pm standard deviation. Value with the same superscripts in a row did not significant ($p < 0.05$) by Univariate analysis of variance (ANOVA).

This table indicates of mean, standard deviation, 'F', 'T' and paired 'T' test results of experimental group and control group of Vo2 max of college level men badminton players. The experimental group pre and posttest mean values are 30.05 and 34.01 SD were 0.79 and 0.81. Control group mean values were 30.11 and 29.85, SD values were 2.68 and 2.67. Obtained 't' and 'f' pre value for experimental group and control group was 0.008 and 0.090. Obtained 't' and 'f' post value for experimental group and control group was 33.016 and 5.746. Obtained 't' value 0.435. The discussion of the study stipulated statistically proved that experimental group showed significant improvement on Vo2 max due to impact of high intensity interval training on college level men badminton players.

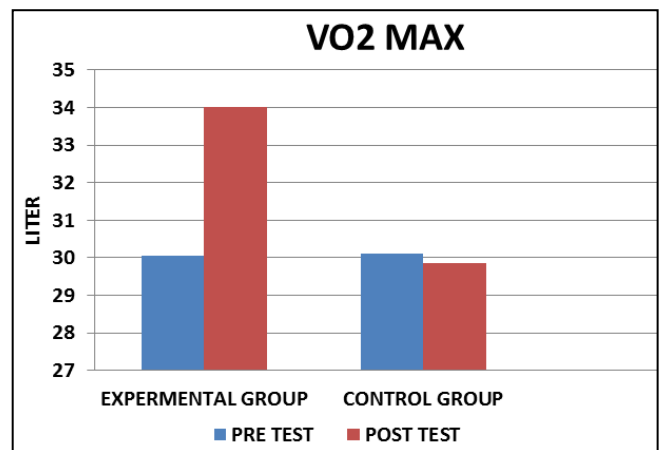


Fig 1: Figure showing the mean values of the experimental and control groups for vo2 max

Discussion on Findings

Vo2 Max

The results of the study indicated that there was a significant enhancement in Vo2 max after the high intensity interval training program. Abdul Moiz Bin Nor Azmi (2020) studied that "effects of high intensity functional interval training on selected fitness components among young badminton players". This study concluded the experimental group showed VO2 max & agility performance improved significantly after ten weeks of HIIT.

Ruo-chin Lin (2020) [2, 8] studied "the cardio respiratory fitness and agility after 2 weeks high-intensity foot work interval training in badminton players". This study Concluded that after 2-week HFIT program similar benefits for the VO2 Max.

Kitit, *et al.* (2019) [5] "effects of high-intensity interval training Vs. on-court tennis training in young tennis players". This study Concluded that after HIIT in similar improvements in VO2 Max.

Doniel and Hermanzoni (2017) [9] studied the "increases VO2 max badminton athletes use exercises footwork with method HIIT (High Intensity Interval Training). Study concluded that there is effect of footwork training with HIIT technique to enhance VO2 max in badminton players.

Myong – won Seo (2019) [10] studied the "effects of various work – to – rest ratio during high-intensity interval training on athletic performance in adolescents". Concluded that VO2 max enhanced significantly in all HIIT groups.

Hamid Azazi, *et al.*, (2017) [11] studied the "effects of heart rate Vs. speed-based high intensity interval training in Aerobic and anaerobic capacity of female soccer players". This study concluded that the high intensity interval training group improved VO2 max after HIIT training.

Florian Azad Engel *et al.*, (2017) studied the high – intensity interval training performance by young athletes: A systematic review Meta – analysis". This study concluded that youth athletes performing HIIT may develop significant variables related aerobic (Vo2 Max)

Conclusion

1. This study found substantial improvements in the Vo2 max after 8 week of HIIT period.
2. There were no significant differences in Vo2 max before the high intensity interval training

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