



EFFICACY OF CIRCUIT TRAINING ON VO2 MAX

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Abstract

Physical fitness is inextricably linked to VO2 max. It is one of the most important factors in determining cardiovascular endurance. Your heart and vein's ability to push blood to your muscles and the rest of your body can be assessed by your VO2 Max. Knowing your VO2 Max efficiency over time might help you track your fitness and heart health progress. The primary goal of this research is to determine the impact of circuit training on VO2 Max. To achieve this goal, 30 subjects were chosen and divided into two groups: experimental and control. The experimental group received 8 weeks of circuit training, while the control group went about their daily routines. The VO2 Max score was measured using the beep test before and after training. T-test was used to determine the difference between pre- and post-test. Circuit training improved VO2 Max, according to the findings.

Keywords: VO2 Max, Circuit training, Cardiovascular Endurance and Beep Test.

Introduction

Physical fitness is linked to improved sports performance, and consistent training is usually required to achieve it. Physical training is one of the most important aspects of sports training. If a great athlete wants to accomplish outstanding results and reach the pinnacle of world sports fitness, the first step is to establish a solid physical fitness foundation. Physical, skill, technique, psychological, and intelligence ability training are all included in sports training. Physical conditioning is a crucial component of sports preparation. It is the process of combining numerous particular demands and improving the athletes' body shape, improving the organ system function of each athlete's body, ensuring full development of sports quality, and promoting and boosting sports performance through appropriate load action.

The greatest quantity of oxygen the body can use during exercise is known as VO2 max. It's a mix of your heart's ability to pump oxygen-rich blood and its efficiency in absorbing and utilizing oxygen. VO2 max

is significant because it represents how much oxygen your body consumes at maximum effort during exercise. The international standard of physical capacity has been established as maximal oxygen uptake as a measure of aerobic capacity. For optimal endurance performance, a high VO2 max is essential. Direct measurement of maximal oxygen uptake can be used to determine aerobic capacity with remarkable precision. The endurance section includes VO2Max, which is an important component of athlete performance. The best single marker for aerobic fitness is VO2Max, which is a direct assessment of maximum oxygen absorption. The American Heart Association (AHA) issued a policy statement in 2013 recognising the need for stronger VO2max reference criteria. A crucial measurement for the exercise physiologist is cardiorespiratory fitness, which is commonly assessed by maximal oxygen uptake (VO2max). The extent of an individual's cardiorespiratory fitness has traditionally been seen as a hallmark of endurance athletes as well as a marker of overall health. Elevated VO2max has long been seen to be a necessary trait for success in endurance races.

Circuit training is a well-known training method for improving cardiovascular endurance as well as strength. Circuit training is quickly transitioning from one activity to the next. A typical circuit includes 5 to 10 exercises, each lasting 30 to 90 seconds. Almost any fitness goal can be met by creating one's own circuit. Because there is little time for rest in between exercises, a circuit training routine helps to speed up the workout and increase endurance. While a circuit can contain any of the thousands of exercises available, the workouts are divided into several types. Moderate-intensity circuit training has been shown to improve VO2 peak max in studies.

Methodology

In this investigation, an experimental method was applied. As subjects, physical education students from Mahatma Gandhi University, Kottayam were used. A total of 30 individuals, ranging in age from 19



to 25, were chosen, including undergraduate and post graduate students in physical education. The total number of subjects were divided into two 15-person experimental and control groups. For 8 weeks, the experimental group received circuit training. Three times a week, the training was carried out. During the training time, a total of 24 sessions were successfully completed. The control group went about their business as usual. The sample had a history of regular physical activity, which aided the experimental group's adaption process. The circuit training consisted of five stations with a variety of exercises. The training sessions were included exercises such as squat, lunges, dumbbell chest press, dumbbell shoulder press and push up. Frequency, intensity and time were increased every two weeks of training session.

Scholars combed through a variety of literatures, spoke with professionals in the field of physical education, and chose a standardised test item. Beep test was the tool used to find out the VO2 Max score. Before and after the training, beep test was performed. Through the use of beep test score calculator, the VO2 max score was calculated.

The difference between pre-test and post-test was determined using the T test. The significance level was set at 0.05.

Findings

Table 1

Experimental Group							
Group	Mean	Mean Difference	SD	L.O.S	t' value	d.f	p value
Pre-test	47.5193	0.4853	0.4725	5%	3.843	14	0.00089
Post-test	48.0046						

Inference: p-value<0.05

Table 2

Control Group							
Group	Mean	Mean Difference	SD	L.O.S	t' value	d.f	p value
Pre-test	45.348	-0.2446	1.3311	5%	0.687	14	0.2514
Post-test	45.5926						

Inference: p-value>0.05

S.D= Standard deviation, L.O.S - level of significance, d.f = degrees of freedom

Significance difference has been identified among experimental group at 5% level since the p value less than 0.05 (table 1). But in control group, significance difference has not been found since the p value is greater than 0.05 (table 2).

Discussion on findings

The experimental group's VO2 max score was found significantly higher after the training session. The results revealed that significant differences found between pre-test and post-test among experimental group since the p value seen less than 0.05. Hence, some improvements were found among control group also but there is no significant difference between pre-test and post-test. The improvement is because of the regular physical activity routine among the subjects. Experimental group's significant improvement is attributable to their circuit training regimen. Because of the varied nature of circuit training, the study also found that individuals were actively engaged during training sessions. Variation in activities is a key aspect in sports training since it helps athletes to avoid boredom.

According to the findings, circuit training is a better alternative activity for improving endurance performance in cardiovascular endurance training since the experimental group's VO2 max score increased after the training period

Based on the findings, it can be stated that an 8-week circuit training program improved cardiovascular endurance in the experimental group, as evidenced by an increase in VO2 max score after the program.

Conclusion

8 weeks circuit training has made a significant change in VO2 max on experimental group circuit training-based body weight resistance activities can be used as a better alternative training method to improve the cardiovascular endurance since VO2 max has improved by the training program.

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