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## Effect of harness training on vital capacity of and heart rate of Kho-Kho players

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### Abstract

The objectives of the study were to know the Effect of Harness training on Vital Capacity and Heart Rate of Kho-Kho Players. Forty (40) male Kho-Kho Players were selected from various clubs or mandals of Amravati, who has at least participated in state level or inter collegiate level tournaments. Subjects were selected with purposive random sampling methods. The age of the subjects were ranged between 20 to 28 years. Subjects did not use any ergogenic aids or supplementations and also they were all free from any injuries during the collection of data. They were randomly assigned into two groups i.e. Experimental Group & Control Group. Experimental group has gone through six weeks (3 days a week) of Harness training program. Control Group has gone through their regular training program. Vital Capacity was measured by using the equipment of Peak Flow Meter. Heart Rate was taken manually. To see the effects of Harness training, on Vital Capacity and Heart Rate of kho-kho players 't' test was applied by the researcher, level of significance was kept 0.05 at 38df. Result shows that on the basis of mean difference there was difference between the means of pre and post test of control and experimental group of kho kho players in reference to vital capacity and heart rate. To see this difference is significant or not at 0.05 level of significance. Researcher further calculated 't' test & above table shows that there is significant difference between pre and post test of experimental group of kho-kho players in both the parameters as the calculated 't' value 3.778 and 2.999 was greater than tabulated 't' value 2.024. But there is insignificant found between pre and post test of control group of kho-kho players in both the parameters, as the calculated 't' value 1.913 and 0.907 is lesser than the tabulated 't' value 2.024. That significant may be attributed that because exercise strengthens the heart muscle. It allows it to pump a greater amount of blood with each heartbeat. More oxygen is also going to the muscles. This means the heart beats fewer times per minute than it would in a nonathlete. However, an athlete's heart rate may go up to 180 bpm to 200 bpm during exercise.

**Keywords:** Harness training, vital capacity, heart rate, etc.

### Introduction

Sports physiology applies the concept of exercise physiology to training the athlete and enhancing the athlete's sports performance. As physiology mainly focuses on the functions of structures of human body, we cannot discuss physiology without knowing anatomy. Similarly, we cannot understand the anatomy and physiology until unless we know the composition of human body. The human body consists of atoms of chemical elements such as carbon, hydrogen, nitrogen and oxygen. It also contains smaller amounts of many other elements including, calcium, iron, phosphorus, potassium and sodium. Atoms of chemical elements combine and make thin structures called molecules. Water is the most common molecules in our body. About 65 percent of our body and most of the chemical reactions that take places in our body require water. Exercise physiology is the study of the effect of exercise on the body specifically. Exercise physiology concerned with the players responses and adaptation to exercise at the system as well as sub cellular level.

The physiological parameters seems to play a very important role in the modern competitive sports in production of more excellent performance, because competitions are organized more frequently than ever the sum sets at a place at a particular time it may rise at other place, moreover because of physiological parameters and difference in time the athletes the same time at another place. It is well known that the individual performance in any sports activities follows diurnal physiological parameters.

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Pattern method may be derived to condition the athletes to produce peak performance with change in diurnal physiological parameters.

The physiological parameter seems to play a very important role in the modern life in production of more excellent performance in daily activities. It is well known that the individual performance in any activities follows diurnal physiological parameters. Pattern method may be derived to condition an individual to produce peak performance with change in diurnal physiological parameters.

Vital capacity is the total amounts of air that can be forcibly expire after a complete inspiration has been used frequently as a measure of adequacy of the respiratory system. Although it measures the approximately capacity of the lungs, recent information indicates it is of little use in predicting ability to perform tasks of endurance. Obviously other factors are more important. For example, any limitations of the oxygen delivery system to the cells will reduce the effectiveness of the delivery, regardless of vital capacity is the ability to take in more air per unit of time with fewer, but deeper inspiration, thus prolonging the onset of fatigue in the respiratory muscle. Heart rate is also termed as pulse rate, is the number of times the heart beats per minute. Normal heart rate varies from a person to person, but a normal range heart rate for adults is usually between 60 to 80 beats per minute. Heart rate is commonly measured in beats per minute (bpm). But more over an athlete have resting heart rates as low as 40 to 60 bpm.

There are various types of training methods through which an athlete can improve his performance or fitness. These methods include Weight or resistance training, Plyometric training, Circuit training, Interval training, Aerobic or continuous training, etc. There are also some other various training methods which are unknown to many athletes these also can use to obtain the required improvement in performance as well as fitness which is mainly based on physiological parameters. They are harness training, water training, sand training, hill training etc.

Harness training is the training given to an individual by holding his back while sprinting, this is so that when the resistance is removed from the body muscles will still activate and are faster. The affect from the harness training helps increase the resistance and specify the training set ideally for rugby players. As the harness represents the opposition tackler this can help an athlete to increase the capacity of physiological parameters making an athlete to burst through the challenge.

Therefore, physiological parameters such as cardio-vascular endurance, vital capacity, heart rate, etc. receive a special consideration and it is an important requisite for outstanding performance in any activity. Hence the researcher has taken the study "Effect of Harness training on Vital Capacity and Heart Rate of Athlete"

## Methods

Forty (40) male Kho-Kho Players were selected from various clubs or mandals of Amravati, who has at least participated in state level or inter collegiate level tournaments. Subjects were

selected with purposive random sampling methods. The age of the subjects were ranged between 20 to 28 years. Subjects did not use any ergogenic aids or supplementations and also they were all free from any injuries during the collection of data.

They were randomly assigned into two groups i.e. Experimental Group & Control Group. Experimental group has gone through six weeks (3 days a week) of Harness training program. Control Group has gone through their regular training program.

## Administration of the test

### Harness training

The subject will secure the belt around the waist with the D-ring positioned behind them. The training partner should be holding the handle directly behind the runner. Prior to starting the drill, the training partner should insure that there is a slight tension in the nylon lead.

### Week 1 & 4

**Monday:** Warm-up, Light harness from rolling start—fast over 30m x 3-4, cool-down.

**Wednesday:** Warm-up, Left leg lead 10 bounds plus run out to 50m x 2-3, cool-down.

**Friday:** Warm-up, 1 min easy, 2 min hard, 1 min easy; 3 min hard; 1 min easy; cool-down.

### Week 2 & 5

**Monday:** Warm-up, Heavy harness sprints from crouch (30m-40m x 3-4), 5m cool-down.

**Wednesday:** Warm-up, fast knee lift max speed of limb (20-30m x 3-5), cool-down.

**Friday:** Warm-up, high knee prancing (40m - 60m x 4-6), cool-down.

### Week 3 & 6

**Monday:** 5m warm-up, heavy harness sprints (30m - 40m x 4-5), 5m cool down.

**Wednesday:** Warm-up, thigh-high/fast knee lift/max speed of limb (20-30m x 3-5), cool-down.

**Friday:** Warm-up, Sprint Stride Power running over 100m x 3-4, cool-down.

## Criterion measure

**Vital capacity:** Vital Capacity was measured by using the equipment of Peak Flow Meter.

**Heart rate:** Heart Rate was taken manually. Pretest & post test of control & experimental group was taken. After taking data of pretest experimental group were gone through harness training whereas control group were gone through their regular practices. After competition of six weeks, post test was conducted.

## Statistical analysis

To see the effects of Harness training, on Vital Capacity and Heart Rate of an Kho Kho Players the 't' test was applied by the researcher, level of significance was kept 0.05 at 38df.

**Table 1:** Comparison of Pre & Post Test

Variables	Group	Test	Mean	S.D	S.E	M.D	D.F	Obt. "t"	Tab "t"
Vital Capacity	Controlled	Pre test	425.2	8.92	3.032	5.8	38	1.913	2.024
		Post test	431	10.21					
	Experimental	Pre test	427.4	9.24	3.49	13.2		3.778*	
		Post test	440.6	12.6					

Heart Rate	Controlled	Pre test	68.25	3.04	0.936	0.85		0.907
		Post test	67.4	2.88				
	Experimental	Pre test	67.8	2.98	0.867	2.6		2.999*
		Post test	65.2	2.48				

\*0.05 level of Significance (38df) tabulated 't' = 2.024

Above table shows that on the basis of mean difference there was difference between the means of pre and post test of control and experimental group of kho-kho players in reference to vital capacity and heart rate. To see this difference is significant or not at 0.05 level of significance. Researcher further calculated 't' test & above table shows that there is significant difference between pre and post test of

experimental group of Kho-Kho players in both the parameters as the calculated 't' value 3.778 and 2.999 was greater than tabulated 't' value 2.024. But there is insignificant found between pre and post-test of control group of Kho-Kho players in both the parameters, as the calculated 't' value 1.913 and 0.907 is lesser than the tabulated 't' value 2.024.

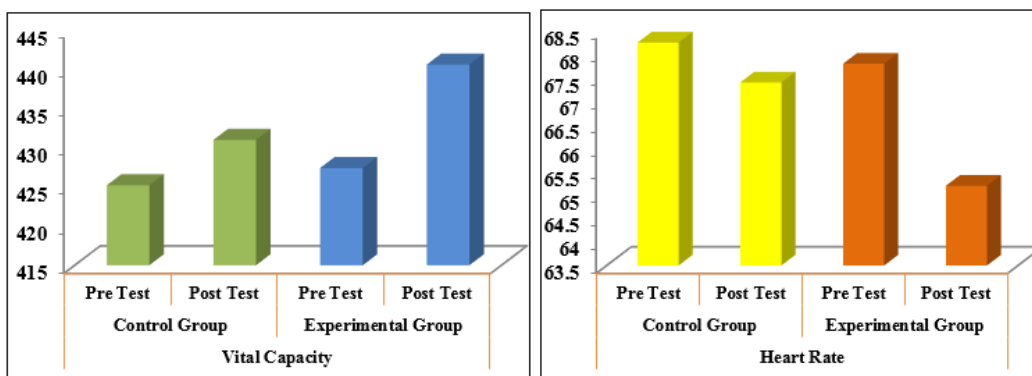


Fig 1: Kho-Kho players in both the parameters

**Conclusion**

The above table shows that on the basis of mean difference there was much difference between the means of vital capacity and heart rate parameters of kho-kho players. To see this differences is significant or not at 0.05 level of significance. Researcher further calculated 't' test & above table shows that vital capacity and heart rate both the parameters shows significant difference between pre and post test of experimental group of kho kho players. Whereas both the parameters show insignificant difference between both pre and post test of control group of kho kho players.

That's likely because exercise strengthens the heart muscle and the heart pump a greater amount of blood with each heartbeat. More oxygen is also going to the muscles. This means the heart beats fewer times per minute than it would in a nonplayers. However, player's heart rate may go up to 180 bpm to 200 bpm during exercise.

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