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## A critical study of aerobic endurance among volleyball players and basketball players of C.C.S. University

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### Abstract

The purpose of the present study was to study the difference in aerobic endurance among Volleyball and Basketball players. The 40 male subjects between the age group of 18-21 years i.e., 20 Volleyball players and 20 Basketball players of Chaudhary Charan Singh University, Meerut, U.P., who have taken part in the C.C.S.U., Inter College Sports and Games during the year 2017-18 were taken for the study. The 12 Run Cooper Test were used to evaluate the aerobic endurance among Volleyball and Basketball players. The study shows that the Basketball players are having very good aerobic endurance compare to the Volleyball players. It is recommended that Volleyball and Basketball players must be given good endurance training to play the game in efficient manner.

**Keywords:** Aerobic Endurance, Volleyball, Basketball, 12 Run Cooper Test

### Introduction

Aerobic endurance is all about your level of cardiovascular fitness. Many would argue that this is one of the most vital fitness-related attributes because of its link to heart health. To improve your aerobic endurance is to improve your body's capability of meeting higher, faster demands for oxygen and energy, which it needs during more intense exercise.

Aerobic endurance is incredibly important as it affects how efficiently the body can transport oxygen to where it's needed, for example, during running. Your cardiovascular fitness depends on factors such as age, lifestyle, hereditary conditions and how much you exercise. It's usually at its best from your late teens to your thirties and then naturally declines with age.

Maintaining a good level of aerobic endurance is important for everyone – not just athletes – as it comes with a range of health benefits. Your heart is a muscle, and like other muscles, it requires routine training to improve its strength and ability to cope with everything that your body demands of it.

Aerobic Endurance is the amount of oxygen intake during exercise. Aerobic Endurance is the time which you can exercise, without producing lactic acid in your muscles. During aerobic (with oxygen) work, the body is working at a level that the demands for oxygen and fuel can be met by the body's intake. The only waste products formed are carbon-dioxide and water which are removed by sweating and breathing. Aerobic exercise is physical exercise of relatively low intensity and long duration, which depends primarily on the aerobic energy system. Aerobic means "with oxygen", and refers to the use of oxygen in the body's metabolic or energy – generating process. Many types of exercise are aerobic, and by definition are performed at moderate levels of intensity for extended periods of time. Aerobic exercise comprises innumerable forms. In general, it is performed at a moderate level of intensity over a relatively long period of time. For example, running a long distance at a moderate pace is an aerobic exercise, but sprinting is not. Playing singles tennis, with near continuous motion, is generally considered aerobic activity, while golf or two person team tennis, with brief bursts of activity punctuated by more frequent breaks, may not be predominantly aerobic. Some sports are thus inherently "aerobic", while other aerobic exercises, such as fartlek training or aerobic dance classes, are designed specifically to improve aerobic capacity and fitness.

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## Volleyball

Volleyball is a sport played by two teams on a playing court divided by a net. There are different versions available for specific circumstances in order to offer the versatility of the game to everyone. The object of the game is to send the ball over the net in order to ground it on the opponent's court, and to prevent the same effort by the opponent. The team has three hits for returning the ball (in addition to the block contact). The ball is put in play with a service: hit by the server over the net to the opponents. The rally continues until the ball is grounded on the playing court, goes "out" or a team fails to return it properly.

In Volleyball, the team winning a rally scores a point (Rally Point System). When the receiving team wins a rally, it gains a point and the right to serve, and its players rotate one position clockwise.

The complete set of rules is extensive, but play essentially proceeds as follows: a player on one of the teams begins a 'rally' by serving the ball (tossing or releasing it and then hitting it with a hand or arm), from behind the back boundary line of the court, over the net, and into the receiving team's court. The receiving team must not let the ball be grounded within their court. The team may touch the ball up to three times (one player cannot double touch the ball) to return the ball to the other side of the court, but individual players may not touch the ball twice consecutively. Typically, the first two touches are used to set up for an attack. An attack is an attempt to direct the ball back over the net in such a way that the team receiving the ball is unable to pass the ball and continue the rally, thus, losing the point. The team that wins the rally is awarded a point and serves the ball to start the next rally. A few of the most common faults include:

- Causing the ball to touch the ground or floor outside the opponents' court or without first passing over the net;
- Catching and throwing the ball;
- Double hit: two consecutive contacts with the ball made by the same player;
- Four consecutive contacts with the ball made by the same team;
- Net foul: touching the net during play;
- Foot fault: the foot crosses over the boundary line when serving or under the net when a front row player is trying to keep the ball in play.

The ball is usually played with the hands or arms, but players can legally strike or push (short contact) the ball with any part of the body.

A number of consistent techniques have evolved in volleyball, including spiking and blocking (because these plays are made above the top of the net, the vertical jump is an athletic skill emphasized in the sport) as well as passing, setting, and specialized player positions and offensive and defensive structures.

## Basketball

Basketball is a team sport in which two teams, most commonly of five players each, opposing one another on a rectangular court, compete with the primary objective of shooting a basketball (approximately 9.4 inches (24 cm) in diameter) through the defender's hoop (a basket 18 inches (46 cm) in diameter mounted 10 feet (3.048 m) high to a backboard at each end of the court, while preventing the opposing team from shooting through their own hoop. A field goal is worth two points, unless made from behind the three-point line, when it is worth three. After a foul, timed play stops and the player fouled or designated to shoot a technical

foul is given one, two or three one-point free throws. The team with the most points at the end of the game wins, but if regulation play expires with the score tied, an additional period of play (overtime) is mandated.

Players advance the ball by bouncing it while walking or running (dribbling) or by passing it to a teammate, both of which require considerable skill. On offense, players may use a variety of shots – the layup, the jump shot, or a dunk; on defense, they may steal the ball from a dribbler, intercept passes, or block shots; either offense or defense may collect a rebound, that is, a missed shot that bounces from rim or backboard. It is a violation to lift or drag one's pivot foot without dribbling the ball, to carry it, or to hold the ball with both hands then resume dribbling.

The five players on each side fall into five playing positions. The tallest player is usually the center, the second-tallest and strongest is the power forward, a slightly shorter but more agile player is the small forward, and the shortest players or the best ball handlers are the shooting guard and the point guard, who implements the coach's game plan by managing the execution of offensive and defensive plays (player positioning). Informally, players may play three-on-three, two-on-two, and one-on-one.

Invented in 1891 by Canadian-American gym teacher James Naismith in Springfield, Massachusetts, United States, basketball has evolved to become one of the world's most popular and widely viewed sports. The National Basketball Association (NBA) is the most significant professional basketball league in the world in terms of popularity, salaries, talent, and level of competition. Outside North America, the top clubs from national leagues qualify to continental championships such as the EuroLeague and the Basketball Champions League Americas. The FIBA Basketball World Cup and Men's Olympic Basketball Tournament are the major international events of the sport and attract top national teams from around the world. Each continent hosts regional competitions for national teams, like EuroBasket and FIBA AmeriCup.

The FIBA Women's Basketball World Cup and Women's Olympic Basketball Tournament feature top national teams from continental championships. The main North American league is the WNBA (NCAA Women's Division I Basketball Championship is also popular), whereas the strongest European clubs participate in the EuroLeague Women.

## Aim

To find out the Aerobic Endurance between male Volleyball and male Basketball players.

## Sample

The sample for present study consists of 20 male Volleyball players and 20 male Basketball players of Chaudhary Charan Singh University who has taken part in the C.C.S.U. Inter College sports and games during the year 2017-18.

## Tools

12 Minute Cooper Test is used for collection of data

## Procedure of Data Collection

The Cooper test is a test of physical fitness. It was designed by Kenneth H. Cooper in 1968 for US military used in the original form; the point of the test is to run as far as possible within 12 minutes. To undertake this test you will require:

- 400 meter track
- Stop Watch

- Whistle
- Technical Official

This test requires the Volleyball and Basketball players to run as far as possible in 12 minutes.

- The subjects given 10 minutes for warm-up.
- The assistant gives the command “GO”, starts the stopwatch and athlete commences the test
- The Technical Official keeps the athlete informed of the remaining time at the end of each lap

- The Technical Official blows the whistle when the 12 minutes has elapsed and records the distance the athlete covered to the nearest 10 meters

### Results and Discussion

The Table No. 1 showing the Mean, S.D, Standard Error, t-ratio of Volleyball players and Basketball players in Cooper Test.

**Table 1:** Showing the Mean, S.D, Standard Error, t-ratio of Volleyball players and Basketball players in Cooper Test

Results of 12 min Cooper Test	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Basketball players	20	3050.00	219.71	49.13			
					1.69453	38.00	0.10
Volleyball players	20	2950.00	137.71	30.79			

The Basketball players mean performance is 3,050 meters and the Volleyball players mean performance is 2950 Meters. There is mean difference of 100 meters between Volleyball and Basketball players. The performance of Basketball players is very good comparing to Volleyball players. Hence it is concluded that Basketball players are good in Aerobic Endurance than Volleyball players.

### Recommendations

1. It is recommended that good Aerobic Endurance must be given to Basketball and Volleyball players.
2. It is recommended that similar studies can be conducted on female sports persons.

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