

**A Critical Study on Comparison of Co-coordinative Abilities and Leg Explosive Strength among Tall and Short Men Inter-Collegiate Volleyball Players of Ballary and Koppal Districts**

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**Introduction:**

In Volleyball performance depends on well developed physical qualities which are agility, acceleration, strength, and vertical jumping, and superior anticipation and decision-making skills. Volleyball performed on an area requires high-speed whole body movements. Many of these are in response to the motion of a ball, opposition players, or team-mates. Thus, volleyball is an intermittent sport that combines active and passive phases of play and requires players to compete infrequent short bouts of high-intensity exercise, followed by periods of low-intensity activity. Also, volleyball is an intermittent sport that vertical jump is a fundamental part of the spike, the block, and the topspin and floating serves. The most effective spike in volleyball is likely dependent on vertical jump height and the body position adopted before ball contact. Specifically, a high vertical jump in volleyball is a critical component in hitting and blocking. Indeed, the vertical jump is a common tool used to assess explosive strength in volleyball athletes. During volleyball competitive players are involved in defensive and offensive jumping activities where power, strength, agility, and speed are required. Generally, athletic performance coaches are responsible for the improvement of these movements. Speed, agility, and power are important components of sport performance. Agility performance has been determine many ways, including “the whole body quick/accurate movement in response to stimulus” and “the ability to change direction, as well as to start and stop quickly”. Also, agility has been reported to be influenced by explosive strength, balance, muscular coordination, and flexibility. Agility deals with the changes in direction and the ability to effectively couple eccentric and concentric actions in ballistic movements. The cognitive components involved in tasks that have traditionally been described as agility (e.g. athletics sprint start, shot put, zigzag runs) differ greatly from tasks that contain significant uncertainty of time or space (e.g. reacting to a spike in volleyball, evading an opponent in football). Because the limiting factor in sprinting is the vertical jumping due to the acceleration of gravity and because high horizontal jumping production is requested, agility movements likely involve these same components. Acceleration is defined the rate of change in velocity that allows a player to reach maximum velocity in a minimum amount of time and is often measured by assessing sprint performance over short distances, such as 5 or 10 yards. Maximum speed is the maximal velocity at which a player can sprint. Human locomotion requires coordination of the upper and lower body. Linear actions such as acceleration and top end speed can be affected by changing the mechanics of the armor legs. As such, the ability to develop velocity in as short a time as possible (acceleration) may be of most importance to performance in many sporting activities. Furthermore, it is thought that acceleration and maximum velocity are relatively separate and specific qualities. Thus, achieving maximum speed earlier or possessing greater acceleration has obvious advantages in many sports. Little studies have shown strong relationships between strength and power

measures and vertical jump performance suggesting that to some extent, strength and power qualities influence performance in vertical jumping. Therefore, the aim of this study was to determine the relationships between acceleration, agility, and jumping ability in female volleyball players.

**Key words:** Volleyball, Vertical jump, acceleration,

**Objectives of The Study:** The following are the major objectives of the study.

1. To study and assess coordinative abilities of Inter-Collegiate Tall and Short men Volleyball Players.
2. To study and assess leg explosive strength of Inter-Collegiate Tall and Short men Volleyball Players

**Hypotheses of The Study:**

1. There would be significant differences between coordinative abilities of Inter- Collegiate Tall and Short Men Volleyball Players.
2. There would be significant differences leg explosive strength of Inter-Collegiate Tall and Short Men Volleyball Players

**Review of Related Literature:**

**Geldhof (2006):** In 2006 a study based on assessing static and dynamic balance on 99 children from 9 to 10 years old, including test-retest reliability, with the aim of Furnishing reference values for the balance at that age was published. The results showed significantly lower sway velocities in girls compared to boys, indicating a better postural control in girls at age 9 to 10 years.

**Haci Murat Sahin (2014),** the aim of this study was to determine the relationships between acceleration, agility, and jumping ability in female volleyball players. Total of 12 female collegiate volleyball players were examined. The mean (SD) age was 20, 10±1,197 years, height was 1,74±0,057m, and weight was 61,30±4,244 kg for the 12 volleyball players. In this study, the T test for agility, acceleration test, and vertical jump test were used. A significant negative correlation existed between vertical jump with acceleration and agility ( $P < 0.01$ ). Vertical jump was highly correlated with acceleration and agility ( $r = - 0.799, -0.777$ , respectively). In conclusion, the present research showed vertical jump performance for collegiate female volleyball players that positively affected acceleration and agility. Also, relationship between jump performance and acceleration, agility in volleyball is very important to produce high force and rapid stretch shortening cycle movements and high-speed whole body movements. Vertical jump performance, working with volleyball teams, need to be able to administer efficient, but relationship between vertical jump and acceleration, agility needs to be determined in longitudinal training investigations. Vertical jump and agility, acceleration development program can be designed with minimal cost and equipment. The results of the investigation show that coaches can utilize agility and acceleration training for vertical jump development.

**Sample Selection;**

The population selected for the study is the tall and short men Inter-Collegiate Volleyball players ranging 20-25 years of age selected from two districts of Ballary and Koppal. Total of 60 samples (30 each of tall and short Inter-Collegiate Volleyball players) will be selected by simple random sampling procedure.

**Sample Design:**

**Volleyball players**

Name Of the district	Samples
Ballary	30
Koppal	30
<b>Total</b>	<b>60</b>

**Selection Of Tests And Variables:**

The selected coordinative and leg explosive strength and their respective tests to be administered are presented in table.

S.No	Variables	Test
1	Coordinative	Ball reaction test

S.No	Variables	Test
1	Motor fitness	Standing broad jump

In the present study standard equipments such as two wooden plants each of 4mtr length, one inflated volleyball, a supporting stand, paper pencil and clip board, stop watch, apparatus which are available in the Department of Physical Education, Gulbarga University Kalaburgi, were used.

**Collection of Data:**

The data is collected from total 60samples (30 Inter-Collegiate tall and short men Volleyball players) from two district of Ballary and Koppal. On the selected coordinative ability, like Ball reaction test, , Standing Broad Test.

**1. Coordinative Ability :**

**(a) Ball reaction exercise test**

**Objective: To measure the reaction ability.**

**Equipments used Equipments:**

- 1) Two wooden plants, each of 4m length.
- 2) One inflated Volleyball.
- 3) A supporting stand.
- 4) Paper, Pencil and clipboard.

**Procedure**

Two wooden planks of 4mtr in length each were kept inclined by a supporting stand having a height of one meter and twenty centimeters. So that it could enable volleyball toll freely from a height of 1.20 tm. The lower ends of the wooden planks were kept at distance of 1.5 tm away from the starting line, outer sides of one of the planks was graduated in centimeters. Volleyball was held by the tester at the top of the planks. The subjects were asked to stand behind the starting line, facing opposite to the planks on clapping, the subject took a turn and ran towards the planks and stopped the

ball with both the hands which was developed on the signal. Each subject was given a practice trail before actual commencement of the test.

**Instructions:**

1. The Ball should be stopped with one hand.
2. The Ball should not be pushed upwards while stopping.

**Scoring**

The score was the distance measured in centimeters from the top of the planks to appoint where the subjects stopped the ball. Only two trials were given and the best one was recorded as the scope.

**2. Standing broad jump test:**

**Equipments:** The Standing long jump, also called the Broad Jump, is a common and easy to administer test of explosive leg power, the standing long jump was also once an event at the Olympic Games, and is also an event in Sports Hall competitions in the UK.

**Purpose:** To measure the Explosive Power of the Legs

**Equipment required:** Tape measure to measure distance jumped, non-slip floor for Take off and soft landing area preferred. Commercial Long Jump Landing Mats are also Available. The take off line should be clearly marked.

**Procedure:**

The athlete stands behind a line marked on the ground with feet slightly apart. A two foot take-off and landing is used, with swinging of the arms and bending of the knees to provide forward drive. The subject attempts to jump as far as possible, landing on both feet without falling backwards. Three attempts are allowed. See some long jump video Examples.

**Scoring:**

The measurement is taken from take-off line to the nearest point of contact on the landing (back of the heels). Record the longest distance jumped, the best of three Attempts. The table below gives a rating scale for the standing long jump test for adults, Based on personal experiences. See some athlete results for the long jump test. You can Also use this calculator to convert cm to feet and inches.

**Interpretation of Results**

**The comparisons (Paired t- test) on (Coordinative Test) between Ballary and Koppal**  
**Table.no.1**

S.No	Groups	Mean	Numbers	S.D.Deviation	T-value
1	Ballary	5.49	30	0.52	0.16
2	Koppal	5.52	30	0.64	

**The comparisons (Paired t-test) on (Leg Explosive Strength Test) between Ballary and Koppal**

**Table.no.1**

S.No	Groups	Mean	Numbers	S.D.Deviation	T-value
1	Ballary	1.31	30	0.42	1.29
2	Koppal	1.43	30	0.37	

**The Analysis of Data:**

1. The analysis of data and interpretation is done based on the stastical results and findings. Further the results are discussed as per the following steps, Comparison of Reaction ability among short men Inter-collegiate Volleyball Players of Ballary and Koppal district.
2. Analysis of standing broad jump, Inter-collegiate Volleyball players of Ballary and Koppal district.

**Conclusions and Recommendation:**

**Conclusion:** Based on the findings and results of present study the following conclusions were drawn,

1. There is no significant difference in Reaction Ability Test between Inter-collegiate Volleyball Players of Ballary and Koppal District.
2. There is no significant difference in Leg Explosive Strength between Inter-collegiate Volleyball Players of Ballary and Koppal District.

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