

A Critical Study on Comparison of Coordinative Abilities and Leg Explosive Strength among Tall and Short Men Volleyball Players of Hyderabad Karnataka Region

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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.

Objectives of The Study

The following are the major objectives of the study.

1. To study and assess coordinative abilities of tall and short men Volleyball players.
2. To study and assess leg explosive strength of tall and short men Volleyball players

Hypotheses of The Study

1. There would be significant differences between coordinative abilities of tall and short men Volleyball players.
2. There would be significant differences leg explosive strength of tall and short men Volleyball players

Review of Related Literature

Rawal (1999):

Conducted a study on coordinative abilities on 15 male Basketball players and 15 Handball players of L.N.I.P.E with the purpose to compare the coordinative abilities of Basketball and Handball players. The variables selected for the study were Orientation ability, Differentiation ability, Reaction ability, Balance ability and Rhythm ability. The comparison of various selected coordinative ability was done by using 't' test. On the basis of the results following conclusions were drawn.

- (1) Basketball and Handball players differ significantly in Balance ability and Reaction Ability.
- (2) Basketball and Handball Players do not differ significantly in Orientation ability. Differentiation ability and Rhythm ability.

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.

Key words: Volleyball, Vertical jump, acceleration,

Sample Selection;

The population selected for the study is the tall and short men Volleyball players ranging 20-25 years of age selected from six districts of Hyderabad Karnataka region. Total of 360 samples (180 each of tall and short Volleyball players) will be selected by simple random sampling procedure

Sample design

Volleyball players

District	Toll Volley Ball Players	Short Volleyball Players	Total
Kalaburgi	30	30	60
Raichur	30	30	60
Koppal	30	30	60
Bidar	30	30	60
Yadgir	30	30	60
Ballary	30	30	60
Total grand	180	180	360

Selection of Tests And Variables

The selected Physical and Physiological Parameters and their respective tests to be administered are presented in table.

Sr.no	Variables	Test
1	Coordinative	Ball reaction test
2		Numbered medicine run test
3		Backward medicine throw test
4		Long nose test
5		Sprint at he given rhythm test

Sr.no	Variables	tests
1	Motor fitness	Standing broad jump
		Vertical jump test

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, five metallic numbered plates,clapper,gymnastic mat size 3x6,one medicine ball weight 2kg, measuring tape apparatus which are available in the department of physical education, Gulbarga University, Kalaburgi were used

Collection of Data:

The data is collected from total 360 samples (180 free style wrestlers and 180 Kabaddi players) from six district of Hyderabad Karnataka region on the selected coordinative ability, like ball reaction test, numbered medicine ball run test, back ward medicine throw ball test, long nose test,sprin at the given rhythm test, motor ability test, like vertical jump test, standing broad test

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 troll 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. Numbered Medicine Ball Run Test:

Objective: To determine Orientation Ability of the subjects

Equipments:

- 1) Five medicine balls each weighing 3 kg.
- 2) One medicine ball weighing 4 kg.
- 3) Stop watch. 4) Five metallic numbered plates. 5) Clapper. 6) Pencil, Papers and Clipboard.

Description:

All the medicine balls weighing 3 kg were arranged on an even ground in a semicircle. The sixth medicine ball weighting 4 kg, was kept 3m away from theses medicine balls. Behind all the medicine ball of 3kg metallic number plates of 1 square foot size were kept from 1 to 5. Before the start of the test the subjects were asked to stand behind the sixth medicine ball facing towards the opposite direction. On signal, the subject turned and ran toward the ball, number called by the tester and touched the medicine ball and runback to touch the sixth medicine ball, immediately another number was called, similarly total of three times the number was called by the tester and the subject performed accordingly. Before the actual test was administered, one practice trail was given to all the.

Scoring:

The time takes to complete the course was noted in seconds. Two trails were given to each subject and the best one was recorded as score.

Interpretation of Results

1. Comparison of Reaction ability among short men inter-collegiate Volleyball players of Kalaburagi, Raichur, Yadgir, Ballary, Koppal and Bidar districts.

Table.No.1

The comparisons (paired t-test) on Reaction ability between Kalaburagi, Raichur, Yadgiri, Ballary, Koppal, and Bidar districts Short Volleyball players

Paired Samples Statistics (Reaction ability- Short)						
Pairs	Groups	Mean	N	Std. Deviation	t-value	Sig. (2-tailed)
Pair 1	KALABURAGI	5.36	30	0.50	0.59	.554
	RAICHUR	5.26	30	0.70		
Pair 2	KALABURAGI	5.36	30	0.50	1.07	.290
	YADGIRI	5.51	30	0.54		
Pair 3	KALABURAGI	5.36	30	0.50	1.03	.310
	BALLARY	5.49	30	0.52		
Pair 4	KALABURAGI	5.36	30	0.50	1.01	.320
	KOPPAL	5.52	30	0.64		
Pair 5	KALABURAGI	5.36	30	0.50	1.30	.203
	BIDAR	5.22	30	0.50		

Pair 1, Pair 2, Pair 3, Pair 4 and Pair 5:

- It can be seen from the table.No.1 that the value t-statistics 0.59, 1.07, 1.03, 1.01 and 1.30 of paired samples test between Kalaburagi and Raichur, Kalaburagi and Yadgir, Kalaburagi and Ballary, Kalaburagi and Koppal, Kalaburagi and Bidar districts short volleyball players respectively. The t-values are not significant as the p-values (.554, .290, .310, .320 and .203) are more than 0.05.
- Thus, it can be concluded that the mean values of Reaction ability test between Kalaburagi (5.36), Raichur (5.26), Yadgiri (5.51), Ballary (5.49), Koppal (5.52) and Bidar (5.22) districts short volleyball players are similar. In other words there is no significant difference in Reaction ability test between above said districts short volleyball players. The graph 1 also reveals the same.

Table.No.2

The comparisons (paired t-test) on Reaction ability between Raichur, Yadgiri, Ballary, Koppal, and Bidar districts Short Volleyball players

Paired Samples Statistics (Reaction ability- Short)						
Pairs	Groups	Mean	N	Std. Deviation	t-value	Sig. (2-tailed)
Pair 6	RAICHUR	5.26	30	0.70	1.64	.111
	YADGIRI	5.51	30	0.54		
Pair 7	RAICHUR	5.26	30	0.70	1.50	.144
	BALLARY	5.49	30	0.52		
Pair 8	RAICHUR	5.26	30	0.70	1.64	.111
	KOPPAL	5.52	30	0.64		
Pair 9	RAICHUR	5.26	30	0.70	0.23	.816
	BIDAR	5.22	30	0.50		

Pair 6, Pair 7, Pair 8 and Pair 9:

- It can be seen from the table.No.2 that the value t-statistics 1.64, 1.50, 1.64 and 0.20 of paired samples test between Kalaburagi and Raichur, Kalaburagi and Yadgir, Kalaburagi and Ballary, Kalaburagi and Koppal, Kalaburagi and Bidar districts short volleyball players respectively. The t-values are not significant as the p-values (.111, .144, .111 and .816) are more than 0.05. Thus, it can be concluded that the mean values of Reaction ability test between Raichur (5.26), Yadgiri (5.51), Ballary (5.49), Koppal (5.52) and Bidar (5.22) districts short volleyball players are similar.

In other words there is no significant difference in Reaction ability test between above said districts short volleyball players. The graph 2 also reveals the same.

Table.No.3
The comparisons (paired t-test) on Reaction ability between Yadgiri, Ballary, Koppal, and Bidar districts Short Volleyball players

Paired Samples Statistics (Reaction ability- Short)						
Pairs	Groups	Mean	N	Std. Deviation	t-value	Sig. (2-tailed)
Pair 10	YADGIRI	5.51	30	0.54	0.13	.894
	BALLARY	5.49	30	0.52		
Pair 11	YADGIRI	5.51	30	0.54	0.05	.954
	KOPPAL	5.52	30	0.64		
Pair 12	YADGIRI	5.51	30	0.54	2.02*	.042
	BIDAR	5.22	30	0.50		

Pair 10, Pair 11 and Pair 12:

- It can be seen from the table.No.3 that the value t-statistics 2.02 of paired samples test between Yadgir and Bidar districts short volleyball players respectively. The t-value is significant as the p-value (.042) is less than 0.05. Thus, it can be concluded that the mean values of Reaction ability test between Yadgiri (5.51) and Bidar (5.22) districts short volleyball players are not similar. In other words there is significant difference in Reaction ability test between above said districts short volleyball players.
- It can be also seen from the table.No.3 that the value t-statistics 0.13 and 0.05 of paired samples test between Yadgir and Ballary, Yadgir and Koppal districts short volleyball players respectively. The t-values are not significant as the p-values (.894 and .954) are more than 0.05. Thus, it can be concluded that the mean values of Reaction ability test between Yadgiri (5.51), Ballary (5.49) and Koppal (5.52) districts short volleyball players are similar. In other words there is no significant difference in Reaction ability test between above said districts short volleyball players. The graph 3 also reveals the same.

Table.No.4
The comparisons (paired t-test) on Reaction ability between Ballary, Koppal, and Bidar districts Short Volleyball players

Paired Samples Statistics (Reaction ability- Short)						
Pairs	Groups	Mean	N	Std. Deviation	t-value	Sig. (2-tailed)
Pair 13	BALLARY	5.49	30	0.52	0.16	.873
	KOPPAL	5.52	30	0.64		
Pair 14	BALLARY	5.49	30	0.52	2.25*	.032
	BIDAR	5.22	30	0.50		

Pair 13 and Pair 14:

- It can be seen from the table.No.4 that the value t-statistics 2.25 of paired samples test between Ballary and Bidar districts short volleyball players respectively. The t-value is significant as the p-value (.032) is less than 0.05. Thus, it can be concluded that the mean values of Reaction ability test between Ballary (5.49) and Bidar (5.22) districts short volleyball players are not similar. In other words there is significant difference in Reaction ability test between above said districts short volleyball players.

- It can be also seen from the table.No.4 that the value t-statistics 0.16 of paired samples test between Ballary and Koppal districts short volleyball players respectively. The t-value is not significant as the p-value (.873) is more than 0.05. Thus, it can be concluded that the mean values of Reaction ability test between Ballary (5.49) and Koppal (5.52) districts short volleyball players are similar. In other words there is no significant difference in Reaction ability test between above said districts short volleyball players. The graph 4 also reveals the same.

Table.No.5

The comparisons (paired t-test) on Reaction ability between Koppal, and Bidar districts Short Volleyball players

Paired Samples Statistics (Reaction ability- Short)						
Pairs	Groups	Mean	N	Std. Deviation	t-value	Sig. (2-tailed)
Pair 15	KOPPAL	5.52	30	0.64	1.83	.076
	BIDAR	5.22	30	0.50		

Pair 15

- It can be also seen from the table.No.5 that the value t-statistics 1.83 of paired samples test between Koppal and Bidar districts short volleyball players respectively. The t-value is not significant as the p-value (.076) is more than 0.05. Thus, it can be concluded that the mean values of Reaction ability test between Koppal (5.52) and Bidar (5.22) districts short volleyball players are similar.
- In other words there is no significant difference in Reaction ability test between above said districts short volleyball players. The graph 5 also reveals the same

Table.No.6

One way ANNOVA on Reaction ability between Kalaburagi, Raichur, Yadgiri, Ballary, Koppal, and Bidar districts Short Volleyball players

ANOVA					
REACTION ABILITY OF SHORT VOLLEYBALL PLAYERS					
Group	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	172.23	32	5.382	1.742	.926
Within Groups	345.56	148	2.334		
Total	517.79	180			

- The table.No.6 presents values of the analysis of variance (One way ANNOVA) on Reaction ability test among selected six districts short volleyball players of Hyderabad Karnataka region. The F-value (1.742) in table.No.6 is not significant as its p-value (.926) is more than 0.05. Thus, it can be concluded that there is no significant difference between and within groups on Reaction ability test among six districts short volleyball players.

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 Kalaburagi, Raichur, Yadgir, Ballary, Koppal and Bidar districts.

2. Analysis of variance (ANOVA) of Reaction ability among short men inter-collegiate Volleyball players of Kalaburagi, Raichur, Yadgir, Ballary, Koppal and Bidar districts.
3. Comparison of Reaction ability among tall men inter-collegiate Volleyball players of Kalaburagi, Raichur, Yadgir, Ballary, Koppal and Bidar districts.
4. Analysis of variance (ANOVA) of Reaction ability among tall men inter-collegiate Volleyball players of Kalaburagi, Raichur, Yadgir, Ballary, Koppal and Bidar districts.
5. Comparison of Reaction ability among short and tall men inter-collegiate Volleyball players of Kalaburagi, Raichur, Yadgir, Ballary, Koppal and Bidar districts.
6. Analysis of variance (ANOVA) of Reaction ability among short and tall men inter-collegiate Volleyball players of Kalaburagi, Raichur, Yadgir, Ballary, Koppal and Bidar districts.

Conclusions And Recommendation

Conclusion:

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

- There is no significant difference in Reaction ability test between Kalaburagi, Raichur, Yadgiri, Ballary, Koppal and Bidar districts short volleyball players.
- There is significant difference in Reaction ability test between Yadgiri and Bidar, Ballary and Bidar districts short volleyball players.
- There is no significant difference in Reaction ability test between Yadgiri, Ballary and Koppal districts short volleyball players.
- There is no significant difference in Reaction ability test between Ballary and Koppal, Bidar and Koppal districts short volleyball players.
- There is significant difference in Reaction ability test between Kalaburagi and Yadgir districts tall volleyball players.
- There is no significant difference in Reaction ability test between Kalaburagi, Raichur, Yadgiri, Ballary, Koppal and Bidar districts tall volleyball players.

Recommendations;

- It is recommended that based on the study results coaches and trainers can prepare scientific training programmers for better performance of toll and shot men volley ball players in the Hyderabad Karnataka region
- The data and results can be utilized by concerned federation of volleyball / association of Karnataka and India in general for talent identification in Hyderabad Karnataka region.

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