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A Comparative analysis on Orientation ability and Differentiation ability among Male Volleyball, Basketball and Handball Players

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Abstract – The aim of this study is to find out the significant difference of Orientation ability and Differentiation ability between male Volleyball, Basketball and Handball players. A group of thirty-six(N=36) male subject aged between 18-23 years, who participated in inter- university competitions from Lakshmibai national institute of physical education volunteered to participate in this study were selected for this study. The purposive sampling technique was used to attain the objectives of the study. All subject, after having been informed objective of the study, gave their consent and volunteered to participate in this study. They were further divided into three groups of 12 each (i.e., N1=12; Volleyball players, N2=12; Basketball players and N3=12; Handball players). The one-way ANOVA was applied to find out the significant difference of Orientation ability and Differentiation ability between male Volleyball, Basketball and Handball players. To test the hypotheses, level of significance was set at 0.05. The result reveled significant difference between male Volleyball, Basketball and Handball players on the Orientation ability. However insignificant differences were noticed with regard to the Differentiation ability.

Key Words: - Orientation Ability, Differentiation Ability

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INTRODUCTION

Reconnoitering the possibilities of Coordinative abilities, the mystery of body and mind has long occupied researchers within fields such as phenomenology, psychology and cognitive science. Coordination is the ability to repeatedly execute a sequence of movements smoothly and accurately. Co-coordinative abilities are also needed for maximum utilization of conditional abilities, technical skills and tactical skills. In Volleyball, technical and tactical skills, anthropometric characteristics and individual physical performance capacities are most important factors that contribute to the success of a team in competitions (Hakkinen, 1993). Coordinative abilities are the generalized psychometric performance prerequisites having the functions of movement control and regulation. Coordinative abilities enable the sportsman to do a group of movements with better quality and effect. (Pramanick P., 2011). The Coordinative ability is the core of ability, which considered the “Spine of Motiveness” (Epuran M., 1996). Coordinative abilities are needed for maximal utilization of conditional abilities, technical and tactical skills (Singh 1991). The coordinative abilities to a great extent determines the maximum limits to which sport performance can be improved in several sports which depend largely on technical and tactical factors (Ruhal et al., 2010)

Motor learning process, continuous refinement and modification of sport skills to large extent depends on the level of coordinative abilities. Amateur players in particular still have to invest most of their training time in technical and tactical training as well as in endurance and strength training, whereas coordinative training is not encouraged so much (Gstottner et al. 2009). A player’s coordinative mastery over a sport technique can make him compete efficiently and effectively. Coordinative abilities become effective in movements only through the motor abilities and actively determined drives and cognitive processes (Hirtz 1985). In different sports requirement of coordinative abilities differ and these abilities ensures higher economy of movement, whereas is some sports events they help in higher frequency of movement with high explosiveness and force application. In strength sports they help in putting maximum effort in a short time and at the right time. But, where the technique dominates the event, these abilities help in better learning, stabilization, variability and autoimmunization. Apart from performance improvement, in team games coordinative abilities ensures an effective use of

tactical abilities in the continuous changing situations. (Lother Kalb, 1979).

Handball demands and develops high degree of muscles coordination and skills, speed of feet, good vision and great agility. Coordinative abilities serve the formation of the overall movement from partial movements in a consistent and coordinated way. If these movements are coordinated, we can achieve the highest level of general motor coordination needed for the performance of motor skills, as they are considered general motor and psychological conditions for sports achievements through which an individual can control motor performances in all sports activities. (Ikeda Namiko, 1960). Basketball is a sport played between two teams normally consisting of five or more players. Each team has five players on the Basketball court at any given time. The objective is to score more points than the other team, with points being scored by shooting a ball through a Basketball hoop (or basket), which is located ten feet above the ground. The two teams shoot at opposite goals. In order to move while in possession of the ball, a player must be dribbling, or bouncing the ball. The number of points awarded a player for successfully shooting the ball through his team's goal varies according to the circumstance. Volleyball is a complex game of simple skills. There are several contributing factors for getting Excellency in Volleyball game. The pattern of play in Volleyball demands high energetic body because of the nature of the movements performed in the game greatly dependent upon the agility, explosive power, endurance and well coordinative approach to show its best in the execution of Volleyball skills. Volleyball players require well-developed muscular strength, power and endurance, speed, agility, and flexibility, and have a high level of jumping ability, fast reaction time and swift movements (She, 1999).

Differentiation ability enables the sportsman to perceive micro- differentiation regarding the temporal, dynamic, spatial aspect of movement execution and the differentiation can be in regard to an implement or movement like serve, movement serve, water feeling, etc. Orientation permits the sportsman to determine the position and movement of his own body and /or of a moving object (opponent, partner) with regard to space. Better developed Coordinative ability provides an essential base for faster and effective learning, stabilization and variation in technique and their successful execution in game situation (Singh 1991). Therefore, researcher feel worthwhile to examine the differences in coordinative abilities among male Volleyball, Basketball and Handball players.

MATERIAL & METHODS

Selection of subjects

Thirty-six(N=36) male subject (mean ± SD: age 21.65 ± 1.81 years, height 1.75 ± 0.08 m, weight 69.00 ± 2.32 kg), who participated in interuniversity competitions from Lakshmibai national institute of physical education volunteered to participate in this study were selected for this study. The purposive sampling technique was used to attain the objectives of the study. All subject, after having been informed objective of the study, gave their consent and volunteered to participate in this study. They were further divided into three groups of 12 each (i.e., N1=12; Volleyball players, N2=12; Basketball players and N3=12; Handball players).

Selection of Variables

The study was conducted on selected coordinative abilities i.e. Orientation ability, differentiation ability. The necessary data was collected by administering various Coordinative ability tests as suggested by Peter Hirtz, 1985.

CRITERION MEASURES

Numbered Medicine Ball Run Test

This test was used to determine Orientation ability. Five medicine balls weighing 3Kg each were placed on an even surface in a semi-circle with a distance of 1.5 meters between them and metallic numbered 1 – 5 plates of 1 sq. ft. size were fixed behind the balls. The sixth ball weighing 4Kg was kept in such a way that it was 3 meters from each of the 1 – 5 numbered balls. Before the start of the test the subject/s were asked to stand behind sixth ball facing opposite direction. On signal the subject turned and run towards the number called by the tester and touched the medicine ball and run back to sixth ball, immediately another number was called. Similarly, a total of three times the number was called by the tester and subject performed accordingly. The time taken to complete the course was noted in seconds and better one from given two trials was recorded as score.

BACKWARD MEDICINE BALL THROW TEST

This test was administered to assess the differentiation ability. A gymnastic mat was kept 2 meters away from the starting line. A circle of 40 cm. radius was drawn in the middle of the mat and a medicine ball of 2Kg was kept at the centre of the circle. The subject/s were asked to stand behind the starting line facing opposite direction and asked to throw five medicine balls of 1Kg each over the head by targeting 2Kg ball placed on the mat, one after another by using both the hands. The total of points scored in all five throws (medicine ball touching the mat – 1 point, touching the circle line -2 points, inside the circle – 3 points and touching the 2Kg medicine ball -4 points) was recorded as score.

STATISTICAL ANALYSIS

The Statistical Package for the Social Sciences (SPSS) version 20.0 was used for all the analyses. One-way Analysis of Variance (ANOVA) was applied

to find out the significance of differences with regard to selected coordinative abilities among male Volleyball, Basketball and Handball players. Least significant difference post-hoc test (LSD) was applied to see the direction and significance of differences where 'F' value found statistically significant. The level of significance was set at 0.05.

RESULTS

Finding pertaining to the descriptive Statistics of the players from selected groups on the selected coordinative abilities has been presented in Table 1. The values of mean, standard deviation and standard error of mean for Volleyball, Basketball and Handball were shown in Table 1.

Table 1

Descriptive statistics of the players from selected groups on the selected coordinative abilities

Descriptive					
		N	Mean	Std. Deviation	Std. Error
Differentiation ability (In Points)	Volleyball	12	10.33	1.37	0.40
	Basketball	12	10.75	1.36	0.39
	Handball	12	10.67	1.44	0.41
	Total	36	10.58	1.36	0.23
Orientation ability (In Sec)	Volleyball	12	7.95	0.25	0.07
	Basketball	12	7.58	0.21	0.06
	Handball	12	7.58	0.22	0.06
	Total	36	7.70	0.28	0.05

Table 2

Test of Homogeneity of Variances.

	Levene Statistic	df1	df2	Sig.
Differentiation Ability	.162	2	33	.851
Orientation ability	.072	2	33	.930

To test the equality of variances, Levene's test was used. The F-value was insignificant as the p-value was more than.05. Thus the null hypothesis of equality of variances might be accepted, and it was concluded that the variances of the two groups were equal. The results were presented in Table 2.

Table 3

ANOVA of the present study

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Differentiation Ability	Between Groups	1.167	2	.583	.303	.741
	Within Groups	63.583	33	1.927		
	Total	64.750	35			
Orientation ability	Between Groups	1.105	2	.553	10.803*	.000
	Within Groups	1.688	33	.051		
	Total	2.793	35			

* F-value significant at 0.05 level.

Out of two variables one variable showed significant differences i.e. Orientation ability which was shown in Table 3. In the case differentiation ability, the p-values were greater than 0.05. There were no significant differences among these variables in Volleyball, Basketball and Handball. But in case of Orientation ability p-value was less than 0.05. Thus, there were significant differences in Orientation ability in Volleyball, Basketball and Handball. Since f-value was significant in Orientation ability post hoc test was needed for comparing the means of groups.

Table 4

Multiple comparison of Orientation ability

Dependent Variable	(I) type of sports	(J) type of sports	Mean Difference (I-J)	Std. Error	Sig.
Orientation ability	Volleyball	Basketball	.373*	0.092	0
		Handball	.370*	0.092	0
	Basketball	Volleyball	-0.373	0.092	0
		Handball	-0.003	0.092	0.971
	Handball	Volleyball	-.37000*	0.092	0
		Basketball	0.003	0.092	0.971

*. The mean difference is significant at the 0.05 level.

In case of Orientation ability difference between Volleyball and Basketball was significant as the p-value for the mean difference was less than 0.05. Similarly, the mean difference between Volleyball and Handball was also significant as the p-value was less than 0.05. However, there was no difference between the means of Basketball and Handball. The graphical representation of group mean difference is shown below:

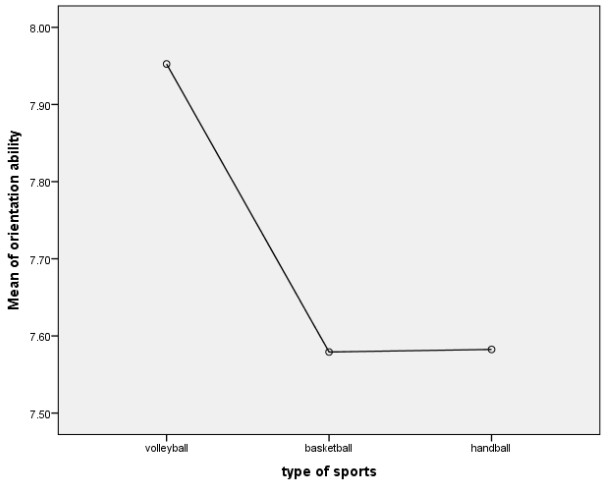

Fig 1: Means plot of Orientation ability

DISCUSSION

The purpose of the present study was to compare the Orientation ability and Differentiation ability among male athletes from Volleyball, Basketball and Handball. No significant difference was observed in case of Differentiation ability of all athletes (Table 3). But in case of Orientation ability there was significant difference among male athletes of Volleyball, Basketball and Handball.

In case of differentiation ability, no significant difference was found because Differentiation ability has a direct bearing on the performance game of Volleyball, Basketball and Handball. Differentiation ability enables the sportsman to perceive micro-differentiation regarding the temporal, dynamic, spatial aspect of movement execution and the differentiation can be in regard to an implement or movement like serve, movement serve, water feeling, etc. (Shondell Donald Stuart, 1972), and in these three-sports Differentiation ability is more or less same because as in case of Volleyball players have to pass the ball to other court so it the players have to ensure that they possess high degree of accuracy and economy of separate body movements and movement phases so that the energy is preserved till the game finishes. In games of Basketball and Handball also they have to score the basket or goal by aiming towards the target so it requires a great amount of accuracy and control that is why researcher get an insignificant result in Differentiation ability among these three sports.

In case of Orientation ability significant difference was found in means of Volleyball, Basketball and Handball players. And it was also found that the difference of Basketball and Handball players have better Orientation ability than Volleyball players. It is because of the nature of the game as in Basketball and Handball players have to score and come back for defense and Orientation ability permits the sportsman to determine the position and movement of his own body and /or of a moving object (opponent, partner) with regard to space. (Shondell Donald Stuart, 1972) but in Volleyball players moves little as compare to Basketball and Handball that is why researcher found these results in Orientation ability.

CONCLUSIONS

Out of two variables of selected Coordinative ability one variables has shown significant difference i.e. Orientation ability. Differentiation ability of selected Coordinative ability has shown insignificant difference in male Volleyball, Basketball and Handball players. From the above results we could inferred that in case of Differentiation ability of three games i.e. Volleyball, Basketball and Handball is similar. But in case of Orientation ability Basketball and Handball players are better than the Volleyball players.

REFERENCES:

Akram Esfahankalati and C. Venkatesh (2013), Relationship between coordinative abilities and performance in elite male Handball players, Asian journal of multidisciplinary studies volume 1, issue 5, December ISSN: 2321-8819

Gautam Deepa (1996). Relationship of selected coordinative abilities to shooting performance Basketball. Unpublished Master s thesis, LNIPE, Gwalior.

Gorostiaga E.M., Granados C., Ibanez J., Gonzalez-Badillo J.J,. Izquierdo M. (2006). Effects of an entire season on physical fitness changes in elite male Handball players. *Med Sci* Sports *Exerc*; 38: pp. 357-366.

Gorostiaga E.M., Izquierdo M., Iturralde P., Ruesta M., Ibanez J. (1999). Effects of heavy resistance training on maximal and explosive force production, endurance and serum hormones in adolescent Handball players. *Eur J Appl Physiol Occup Physiol*.; 80: pp. 485-493

Gstottner, M., Neher, A., Scholtz, A., Millonig, M., Lembert, S. and Raschner, C. (2009). Balance Ability and Muscle Response of the Preferred and Non-Preferred Leg in Soccer Players. Motor Control, 2009, 13, pp. 218-231.

Hakkinen K. (1993). Changes in physical fitness profile in male Volleyball players during the competitive season. Journal of Sports Medicine and Physical Fitness. 1993; 33: pp. 223-232.

Hirtz P. (1985). Koordinative fahigkeiten im schulsport. Volk and Wissen Volkseigner verlag, Berlin

Ikeda Namiko(1960). "Relationship of selected Measurements of Wrist flexibility, Kinesthesia and Agility to Badminton playing ability," Completed Research in Health, physical Education and Recreation 2: p. 44.

Lidor, R., Argov, E. & Daniel, S. (1998). An exploratory study of perceptual-motor abilities of women: novice and skilled players of team Handball. Perceptual and Motor Skills, 86, pp. 279-288.

Lother Kalb (1979). Introduction to general theory and methodic of training (the performance factor coordination technique Leipzig) p. 15

Pramanick P. (2011). Determine the relationship of selected coordinative abilities to the performance in Badminton.

Ruhal, G.S., Ruhal, A.S. & Singh, M.K. (2010). Coordinative abilities of cricket players in relation to different playing positions. Human Kinetics, 1(1): pp. 42-46

She M.K. (1999). Influence of the new competition rule on Volleyball and development of techniques and tactics. Fujian Sports Science and Technology, pp. 18-20.

Shondell Donald Stuart (1972). "The relationship of selected motor performance and anthropometric measurement to successful Volleyball performance."Dissertation abstracts international 32: 5026 – A

Singh, Simrat Pal, Singh Sukhdev, Singh Pritam Singh (2015). Study of Co-Coordinative abilities of the male Volleyball players at different level of competition International Journal of Physical Education, Sports and Health 2015; 2(2): pp. 25-27 E-ISSN: 2394-1693

Singh Amandeep and Gaurav Vishaw, Physical status and coordinative abilities among male football players in relation to different playing positions international journal of physical education, fitness and sports, September (2014) vol.3.no.3, ISSN: 2277: 5447

Singh, Amarpreet (2013). Study of coordinative abilities of Basketball players at different levels of competition, International journal of behavioral social and movement sciences vol.02, july2013, issue03 ISSN: 2277-7547

Singh, H. (1991). Science of Sports Training. D.V.S. Publisher, New Delhi, pp. 164-165.

Zwierko, T., Lesiakowski, P., & Florkiewick, B. (2005). Selected aspects of motor coordination in young Basketball players. Human Movement Science, 6, pp. 124-128.

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