Engineering Universe for scientific Research and management
ISSN (Online): 2319-3069
Vol. XV Issue IV
April 2023

Coordinative Abilities between Sporty Students of School in Different Age Groups

Dr. Meenakshi Pathak[1], Mr. Atul Singh Sengar[2]
Professor, Department of Physical Education, SSSUTMS, Sehore, M.P., India[1]
Research Scholar, Department of Physical Education, SSSUTMS, Sehore, M.P., India[2]

Abstract

The purpose of this research is to compare some coordinative abilities in terms of team and individual sports. A total of 609 players of different game is selected and different age group of boys and girls such as 11 years, 13 years and 15 years were included in the research. It is also to accentuate that the coordinative abilities of dissimilar sports persons, playing various games are also dominating in various degrees. In this study, sports persons who have taken part in the interschool level competitions were considered as one of the categorical variables. To achieve this purpose, two standardized field tests were conducted. The investigation was carried out on 322 male subjects and 287 female subjects who belong to 11, 13 and 15 years of age and play basketball, handball and kho-kho for their school teams. Three sports disciplines, selected for this study were considered as another categorical variable. The coordinative abilities selected for the study were kinaesthetic differentiation ability of upper extremities and kinaesthetic differentiation ability of lower extremities. Standard instruments like electronic stop watch, steel measuring tape and play equipment's like, medicine ball, base balls, football, jumping box, balancing beam, gymnastic mat, and other materials like whistle, number plates, wooden planks, table and wall bars were used to conduct the tests. The conclusions is drawn from the results of the present study on selected coordinative abilities on boys and girls of different age groups and games. In this we found that there is no significant variation in kinesthetic differentiation ability of upper extremities between boys and girls on the selected games and age groups. The kinesthetic differentiation ability of lower extremities did not vary between boys and girls among 13 year age groups. The Basketball and Kho-kho boys are better than girls in kinesthetic differentiation ability of lower extremities only among 11 year age group.

Keywords: *Coordinative abilities, team sports, individual sports, differentiation, lower extremities, Upper extremities.*

1. Introduction

The aims of education are correlated terms. One should be clear with the aims of education and its purposes as much as its meaning and concept. Education is always purposive and goal seeking. As a result, parents are conscious of its aims before sending their children to school. In the complex world of education today, the clearness of educational aim has become necessary. They have to think of their children's future life and vocation so that their education may become purposive and useful and life becomes beautiful. To have an effective aim of education has become an urgent need from the country's socio-economic point of view. So, the aim of education is a matter of concern to all those involves in the task of education.[1]

In this study we have discuss another question – "what does education should do?" This question is related to the aims of education. Every activity is followed by some purpose or the other. Education is a purposeful activity with some definite ends in view. These ends as purposeful activity make education meaningful and are the aims of education. Aim is a pre-determined goal. It stimulates human activities to achieve it and provide direction to activities. It helps the process to be realised. An aim is essential to guide and make all the activities of an individual successful in all spheres of life. The importance of aims and objectives of education is recognised by all. It is said that education without aim is like a boat without its rudder. Any education without an aim is useless. Hence, both the teacher and student must know the aims of education to be achieved by them. Thus, in this chapter you will be introduced with some aims of education with reference to some specific context.[2]. PE and School Sport can majorly contribute to agendas such as educational achievement, public health, community cohesion and of course sporting performance at the highest level. Sports, physical education, education and health are interlinked and together contribute significantly to holistic human resource development. Within schools, physical education is an essential component of quality education. Not only do physical education and sport programmes promote physical activity, there is evidence that such

programmes co-relate to improved academic performance.

Given that rates of physical activity tend to decrease from adolescence, it is imperative that young people in primary schools gain an appreciation of Physical Education and School Sport in order to ensure life long active and healthy living.

Health and Physical Education, having components of health education, physical education and yoga are an integral part of school curriculum in India. Majority of the schools have Physical Education teachers at the secondary level (Classes 6-10) and hence physical education is not taught at the primary level whereas Sport and Play is one of the most distinctive features of early childhood. Through play, children both enjoy and challenge their current capacities, whether they are playing alone or with others. The value of creative play and exploratory learning is widely recognized in early childhood education. Providing regular opportunities for physical activity and play enhance overall physical fitness and help to alleviate stress.

Sport-based projects can contribute to the fulfillment of the right of the child to the enjoyment of the highest attainable standards of health. With the enactment of the Right of Children to Free and Compulsory Education Act 2009 (RTE Act) all schools (private, Government and aided) are mandated to provide free and compulsory child-friendly education to all 6-14 year olds across India. The importance of health and physical development has been emphasized in the National Curriculum Framework as: 'Physical development supports mental and cognitive development especially in young children. The curriculum must have a holistic approach to learning and development that is able to see the interconnections and transcend divisions between physical and mental development'. Most schools have put in place physical education teachers/coaches in upper primary school as mandated in the schedule of the RTE Act but a huge gap that needs to be addressed is to build on the experiences of the work in primary schools to ensure a robust sports and physical education programme in upper primary and secondary schools.

Two key factors that will strengthen this area in schools are (i) development of aids/ resources in line with the curriculum and (ii) capacity development of teachers to use the resources in classroom teaching.[3]

The purpose of this is to review relationships between physical education (PE), school physical activity (PA), school sports and academic performance. These relationships have been the subject of extensive discussion between advocates and skeptics of PE, school PA and school sports programmes. Both elements of this discussion (academic achievement and physical activity) are independent determinants of a child's health. Our intent in this article is to assess the effects on academic achievement of school PA programmes (including PE and school sports), in both elementary and high schools. Previous reviews have examined relationships between PA and academic achievement. Recent research results, echoed in the media, suggest that such activity may have a positive impact on learning and memory. It is now fairly well-recognized that PA is associated with the maintenance of cognitive function in older adults and offers some protection against Alzheimer's disease. Cognitive dysfunctions in older adults is becoming an urgent public health problem, given the ever-rising average life expectancy and the associated growth in the proportion of old and very old individuals in most societies. A positive association between PA and cognitive health is also suspected in younger subjects, but is not as well documented in this age group. Nevertheless, any positive influence of PA on the cognitive functions of children is important for at least 2 reasons:

1) It is a potential argument for increasing PE and/or other types of school PA without risk of decreasing academic progress, and

2) It may offer a way to reduce disruptive behaviour at school and the drop-out from educational programmes. Furthermore, an important by-product of an increased participation to school PA would be an enhanced level of physical fitness.[4]

2. Literature Review

Jun Chen et al. (2020) Researchers found that manipulative skill competency in childhood not only help improve physical activity participation, but also help adolescent learn specialized sport skills. This study aimed at examining the effects of an 8-week bilateral-coordinated movement (BCM) intervention on manipulative skill competency in school-aged children. Participants were 314 fourth-grade students in two elementary schools. This study used 2-arm quasi-experimental research design. For one elementary school, two fourth-grade classes were assigned to the BCM group, the other two fourth-grade classes were assigned to the control group. For another elementary school, one fourth-grade class was assigned to the BCM group and another fourth-grade class to the control group. The students in the BCM group received an 8-week, two 40-minute BCM lessons in soccer and another 8-week, two 40-minute BCM lessons in basketball, while the control group received an 8-week, two 40-minute regular PE lessons in soccer and basketball, respectively. Students' manipulative skill competency in soccer and basketball skills were pre- and post-tested using the two PE Metric assessment rubrics. Data were analyzed by means of descriptive statistics, independent sample t test, ANCOVA and ANOVA repeated measures.

Georgiy Georgievich Polevoy (2019) If you add the basic program of physical culture in the school with new physical exercise, the effectiveness of lessons for younger school children in physical culture will increase. Aim of the study **:** Development, testing, and study of the influence of the exercise «Classic's» on the indicators of

coordination abilities. The study lasted 9 months. 50 children attended it. Boys and girls 8-9 years old, who study in the second grade in a regular school engaged in physical education 2 times a week for 40 minutes. The study used tests Shuttle run 3 × 10 m and Jumping rope. Analysis of the results was perform using the software bio-stat 2009 and Microsoft excel 2016. The parametric criterion (t-student) was used, the result was considered reliable at p>0.05. If we are use the exercise «Classic's» in physical education classes at school, the indicators of coordination abilities will improve and school children will increase their interest in physical education.

Sanjib Kumar Dey and Ashok Kumar Goon (2020) Psychomotor ability is related to motor control and cognitive aspect. Cricket players need an optimum range of psychomotor ability to perform well in batting, bowling, wicket keeping and fielding. The purpose of this study was to measure the psychomotor capacity that was tested by kinesthetic perception, reaction ability, and coordinating ability among the different age groups cricket players in Bangladesh. Male district level cricket players from Noakhali District Sports Association (NDSA), Bangladesh were randomly selected. The total number of subjects pertaining to the kinesthetic perception was 68; reaction ability 72; and coordinating ability was 76 (including all three groups; U-14, U-16, U-18). The Statistical Package for the Social Sciences (SPSS) version 14.0 was used for all analyses. One-way ANOVA method was applied for analyzing the data obtained from the present study if there were significant difference found in different groups than the Scheffe post hoc test was used to analyze the mean differences and their significance. For testing the Hypothesis, the level of significance was set at 0.05. There is a significant difference exists among different age levels cricket players in respect of coordinating ability. A proper training schedule must be taken to enhance psychomotor ability.

Furqan Rustam et al. (2019) The use of data from social networks such as Twitter has been increased during the last few years to improve political campaigns, quality of products and services, sentiment analysis, etc. Tweets classification based on user sentiments is a collaborative and important task for many organizations. This paper proposes a voting classifier (VC) to help sentiment analysis for such organizations. The VC is based on logistic regression (LR) and stochastic gradient descent classifier (SGDC) and uses a soft voting mechanism to make the final prediction. Tweets were classified into positive, negative and neutral classes based on the sentiments they contain. In addition, a variety of machine learning classifiers were evaluated using accuracy, precision, recall and F1 score as the performance metrics. The impact of feature extraction techniques, including term frequency (TF), term frequency-inverse document frequency (TF-IDF), and word2vec, on classification accuracy was investigated as well. Moreover, the performance of a deep long short-term memory (LSTM) network was analyzed on the selected dataset. The results show that the proposed VC performs better than that of other classifiers. The VC is able to achieve an accuracy of 0.789, and 0.791 with TF and TF-IDF feature extraction, respectively. The results demonstrate that ensemble classifiers achieve higher accuracy than non-ensemble classifiers. Experiments further proved that the performance of machine learning classifiers is better when TF-IDF is used as the feature extraction method. Word2vec feature extraction performs worse than TF and TF-IDF feature extraction. The LSTM achieves a lower accuracy than machine learning classifiers.

Ilona Bidzan-Bluma and Małgorzata Lipowska (2018) Childhood is an important and sensitive period for cognitive development. There is limited published research regarding the relationship between sports and cognitive functions in children. We present studies that demonstrate the influence of physical activity on health, especially a positive correlation between sports and cognitive functions. The keywords "children, cognition, cognitive function, physical activity, and brain" were searched for using PsycInfo, Medline, and Google Scholar, with publication dates ranging from January 2000 to November 2017. Of the 617 results, 58 articles strictly connected to the main topics of physical activity and cognitive functioning were then reviewed. The areas of attention, thinking, language, learning, and memory were analyzed relative to sports and childhood. Results suggest that engaging in sports in late childhood positively influences cognitive and emotional functions. There is a paucity of publications that investigate the impact of sports on pre-adolescents' cognitive functions, or explore which cognitive functions are developed by which sporting disciplines. Such knowledge would be useful in developing training programs for pre-adolescents, aimed at improving cognitive functions that may guide both researchers and practitioners relative to the wide range of benefits that result from physical activity.

3. Methodology

Selection of Subjects

The subjects for the present study were selected from the following five schools (1) Government Modal School Murar, (2) ABM Convent School, (3) Central Academy School, (4) Model Convent High School and (5) Adarsh Higher Secondary School area of Gwalior Madhya Pradesh. All the subjects volunteered to take part in the study. 322 male and 287 female school sportspersons who exemplified the school team in the interschool competition from three particular sports disciplines, three different age groups, and the number of sportspersons selected in numerous sports disciplines are given in Table 1.

Table 1 Numbers of Selected Sportspersons from Various Games and Age Group

S.NO	SPORTS DESCIPLINE	BOYS			GIRLS		
		11YRS	13YRS	15YRS	11YRS	13YRS	15YRS
1	Basket Ball	34	25	30	25	20	30
2	Hand Ball	49	38	30	44	30	22
3	Kho-kho	41	40	35	51	37	28
TOTAL		**124**	**103**	**95**	**120**	**87**	**80**

Selection of Variables

The diverse coordinative abilities present amongst the eleven, thirteen and fifteen-year school level sports persons may be diverse in diverse sports disciplines. It is also to accentuate that the coordinative abilities of dissimilar sports persons, playing various games are also dominating in various degrees. In this study, sports persons who have taken part in the interschool level competitions were considered as one of the categorical variables. Three sports disciplines, selected for this study were considered as another categorical variable. The coordinative abilities selected for the study were kinaesthetic differentiation ability of upper extremities and kinaesthetic differentiation ability of lower extremities. The names of coordinative abilities and the tests conducted are given in Table 2.

Table 2: Names of Coordinative Abilities and Tests

S. No	NAME OF THE CORDINATIVE ABILITIES	NAME OF THE TESTS
1	Kinaesthetic differentiation ability of upper extremities	Backward ball throw(BBT)
2	Kinaesthetic differentiation ability of lower extremities	Jump down on the line (JDL)

Even though there are more number of coordinative abilities mentioned in various literatures, the above said coordinative abilities are significant, most common and were used to analyse the coordinative abilities among school sports persons of different age groups and disciplines. [1]

Orientation of Subjects

All the sports persons were clearly and thoroughly oriented about the purpose of the study before subjected to test procedures. They were given one test trial before the actual test to motivate them and to give optimum proficiency in each test.

Reliability of Instruments And Tests

Standard instruments like electronic stop watch, steel measuring tape and play equipment's like, medicine ball, base balls, football, jumping box, balancing beam, gymnastic mat, and other materials like whistle, number plates, wooden planks, table and wall bars were used to conduct the tests. All the instruments and equipment's were in good working condition. They were tested and found to be accurate enough. The scholar learnt the procedure and methods to handle and operate the instruments to administer the tests. All the tests were conducted by the scholar herself. A pilot study was conducted with a mixed group of sports persons to test the reliability using test-retest method and the correlation coefficients are mentioned in table 3.3.

Time Schedule For Collection Of Data

The collected data were entered in the individual performance card and a model card is given in Appendix A.

Table 3 Intraclass Correlation Coefficients of Test-Retest Scores

S.NO	TESTS	γ
1	Backward ball throw	.82*
2	Jump down on the line	.87*

*Significant at 0.01 level

Administration of the Tests

Backward Ball Throw Test

Aim : To measure the kinesthetic differentiation ability of upper extremities.

Equipment

Medicine ball of 1-kilogram weight, one number, Base balls six numbers, steel measuring tape, Gymnastic mat one number [2mxlm] and a Hoop with 40 cm diameter.

Procedure

A Gymnastic mat of 2m x1m was kept on the ground width wise, two metres away from the start line. The hoop was placed on the middle of the mat. A medicine ball weighing one kilogram was placed in the middle of the hoop. Each subject was given five chances. The subjects were asked to throw the base balls backwards over the head, aiming at the medicine ball, kept in the middle of the hoop, one after another, taking not more than 15 sec after each throw, as shown in figures I and H. When the thrown ball touched the medicine ball, four points were awarded. When the thrown ball touched the mat between the medicine ball and the hoop, three points were awarded. When the thrown ball touched the hoop, two points were awarded. When the thrown ball touched the mat outside the hoop, one point was awarded.[2]

Scoring

All the points scored were added and recorded as the total score in the individual performance card.

Fig. 1 Backward BallThrow (Initial Position)

Fig. 2 Backward Ball Throw (Final Position)

Jump Down On the Line Test

Aim

To find out the kinesthetic differentiation ability of lower extremities.

Equipment

One vaulting box of 90 cm height, Gymnastic mat, Steel measuring tape and Colour tape.

Procedure

The subjects were asked to jump down, from a 90 cm high vaulting box on a line, one metre away from the base of the box marked on the gymnastic mat. This line was marked with the help of colour tape as shown in figures III and N. Each subject was given two chances.

Scoring

The deviation from the marked line and the landing point was measured for both the chances and the average was recorded in the individual performance card as the actual score.

Fig. 3 Jump Down On The Line (Initial Position)

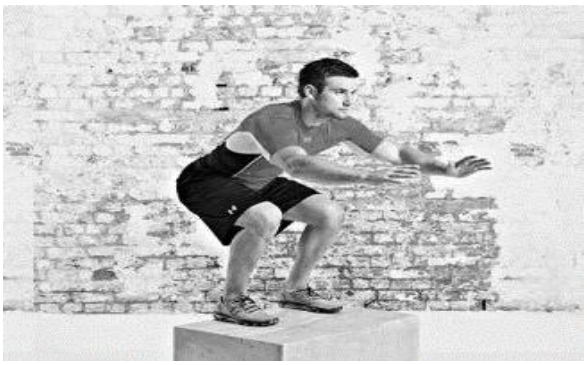

Fig. 4 Jump Down On The Line (Final Position)

Statistical Techniques

The main purpose of the study was to evaluate the selected coordinative abilities among school sports persons of different age groups and sports disciplines. The subordinate purpose was to compare the selected coordinative abilities among boys and girls of selected age groups and sports disciplines.

To find out the differences in the selected coordinative abilities, among sports disciplines and at different age levels, two way *analysis of variance* was applied.

To find out the differences in the selected coordinative abilities between boys and girls and at different age groups, 't' ratio was applied.

Data Collection

Data collection is defined as the procedure of collecting, measuring and analyzing accurate insights for research using standard validated techniques. A researcher can evaluate their hypothesis on the basis of collected data. In most cases, data collection is the primary and most important step for research, irrespective of the field of research. The approach of data collection is different for different fields of study, depending on the required information.

(a) Questionnaires and surveys

Questionnaires and surveys can be used to ask questions that have closed-ended answers.

Data gathered from questionnaires and surveys can be analyzed in many different ways. You can assign numerical values to the data to speed up the analysis. This can be useful if you're collecting a large amount of data from a large population.

To be meaningful, surveys and questionnaires need to be carefully planned. Unlike an interview, where a researcher can react to the direction of a respondent's answers, a poorly designed questionnaire will lead the study nowhere quickly. While surveys are often less expensive than interviews, they won't be valuable if they aren't handled correctly.

Surveys can be conducted as interviews, but in most cases, it makes sense to conduct surveys using forms.

Online forms are a modern and effective way to conduct surveys. Unlike written surveys, which are static, the questions presented in online forms can change

according to how someone responds thanks to the conditional logic form feature. For instance, if you use Jotform to create your forms, when someone answers no to a question about allergies, they won't have to scroll past all of the related follow-up questions about specific allergies. Instead, they'll go immediately to a question on a different topic.

(b) Sampling

Sampling is the process of identifying a subset of a population that provides an accurate reflection on the whole. It can be a tricky process, as populations are often diverse. However, there are some statistical methods that can make sure a small subset of the community accurately represents the whole group.

(c)Random sampling

Just as its name indicates, random sampling involves picking respondents with no design or order, like picking names out of a hat. While randomness may seem unscientific, this method can be valuable in research, and in fact, is the preferred way of sampling, as a truly random sample eliminates elements that can affect the validity of a study. Randomness requires some planning. For example, randomly picking pedestrians in Manhattan's Times Square on a Saturday afternoon will give the researcher a reasonably diverse cross-section of tourists. This would not, however, be an excellent way to test native New Yorkers who often shun the area, especially on weekends.

4. Data Interpretation and Result Analysis

Statistical analysis of the data collected with regard to the study has been presented in this chapter. The influence of various games (basketball, handball and kho-Kho) and age of sportspersons (15-year-old, 13-year-old and 11-year-old) on the kinesthetic differentiation ability of upper extremities and lower extremities, **space** orientation ability, complex reaction ability and dynamic balancing ability was examined by two way analysis of variance.

The study comprised of two factors. The first factor is various games and the second factor is different age groups. The selected variables along with their changes are mentioned in the following tables.

BOYS

Table 1 Basketball Players in different age group

School	Basket Ball		
	11Y	13Y	15Y
1	6	5	9
2	7	8	6
3	8	5	8
4	5	3	3
5	8	4	4
Total	**34**	**25**	**30**

Table 2 Handball Players in different age group

School	Hand Ball		
	11Y	13Y	15Y
1	9	8	6
2	10	6	5
3	12	10	9
4	11	8	6
5	7	6	4
Total	**49**	**38**	**30**

Table 3 Kho-kho Players in different age group

School	Kho-kho		
	11Y	13Y	15Y
1	10	6	7
2	12	11	8
3	8	6	9
4	7	10	5
5	4	7	6
Total	**41**	**40**	**35**

Kinesthetic Differentiation Ability of Upper Extremities Mean and standard deviation of kinesthetic differentiation ability of upper extremities of various games of different age group boys have been presented in Table 4.

Table 4 Mean and Standard Deviation of Kinesthetic Differentiation Ability of Upper Extremities for Players of Various Games and Age Group Boys

	11 Y		13 Y		15 Y	
	Mean	SD	Mean	SD	Mean	SD
Basket Ball	6.8	1.30384	5	1.87083	6	2.5495
Hand Ball	9.8	1.923538	7.6	1.67332	6	1.8708
Kho-kho	8.2	3.03315	8	2.34521	7	1.5811
Combined	8.266667	2.086843	6.8667	1.96312	6.333333	2.00 05

The results of analysis of variance for kinesthetic differentiation ability of upper extremities of various games and age groups are presented in table 5.

Table 5 Two Way Analysis of Variance for Kinesthetic Differentiation Ability of Upper Extremities Among Basketball, Handball and Kho-Kho Players of Eleven, Thirteen and Fifteen Year Age Group Boys

	Sum of Square	df (between)	df(Within)	Mean square	Mean square	F Ratio
		K-1	N-K	Between	Within	
Game	504.666667	2	319	252.333333	1.58202716	7
Age	448.666667	2	319	224.333333	1.40647857	28.3
Game ×Age	697814	4	3410 2	174453.5	20.4625535 2	3.2

Table value required for significance at 0.05 level for df 4, 2 and 4, 2 are 3.03 and 1.58 respectively. Table 4.5 shows that the obtained F ratio for game is 7.00, which is higher than the required table value. This shows that there is a significant variation in kinesthetic differentiation ability of upper extremities among basket ball, handball and kho-kho players irrespective of age. The obtained F ratio for age is 28.3 which is also higher than the required table value. This reveals that there is a significant variation in kinesthetic differentiation ability of upper extremities among 11 year old, 13 year old and 15 year old boys irrespective of game. The obtained F ratio for interaction is 3.2 and it is statistically significant. This reveals that there is a significant variation in kinesthetic differentiation ability of basketball, handball and kho-kho players of 11, 13 and 15 year old boys.

Scheffe 's post hoc test was applied in kinesthetic differentiation ability of upper extremities among basketball players of different age group boys and the results obtained are shown in table 6.

Table 6 Paired Mean Differences n Kinesthetic Differentiation Ability of Upper Extremities among Basket Ball Players of Different Age Group Boys

11 years	13 years	15 years	Mean difference	Confidence interval
6.8	5	-	1.8	1.16
6.8	-	6	0.8	1.16
-	5	6	1	1.24
*Significant at 0.05 level				

Table 6 shows that the mean difference in kinesthetic differentiation ability of upper extremities between 15 year old and 11 year old is 3.41 and between 15 year old and 13 year old is 1. They are higher than the required confidence interval. This clearly shows that the differentiation ability of upper extremities is better for 15 year old than 13 year old and 11 year old boys. However, there is no significant variation between 13 year old and 11 year old age group boys.

The results of the paired means in kinesthetic differentiation ability of upper extremities among basketball players of different age groups are presented graphically in figure 5.

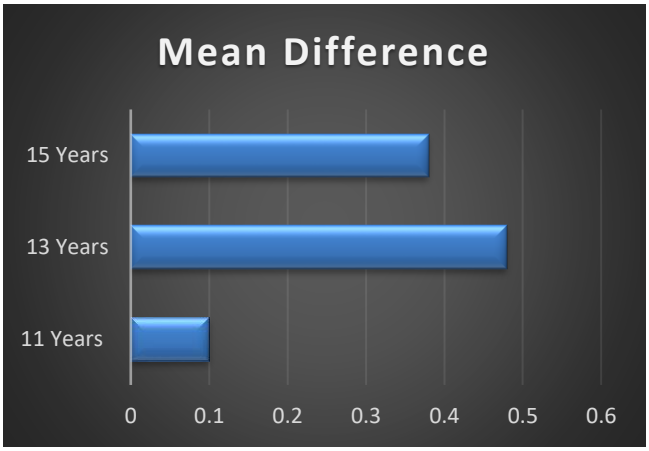

Fig. 5 Multiple Bar Diagram of Kinesthetic Differentiation Ability of Upper Extremities among Basket Ball Players of Different Age Group Boys

Scheme 's post hoc test was applied in kinesthetic differentiation ability of upper extremities among handball players of different age group boys and the results are shown in table 7.

Table 7 Paired Mean Differences in Kinesthetic Differentiation Ability of Upper Extremities among handball Players of different Age Group Boys

11 years	13 years	15 years	Mean difference	Confidence interval
7.69	7.79	-	.1	.69
7.69	-	8.17	0.48	.78
-	7.79	8.17	.38	.78
*Significant at 0.05 level				

The above table shows the mean difference of 0.1 between 13 year old and 11 year old handball players. It is not significant. However, the mean differences are .48 between 15 year old and 11 year old handball players and 0.38 between 15 year old and 13 year old handball players are statistically significant. Tt is inferred from the results that the 15 year old handball players have better kinesthetic differentiation ability of upper extremities than 13 year old and 11 year old volleyball players.

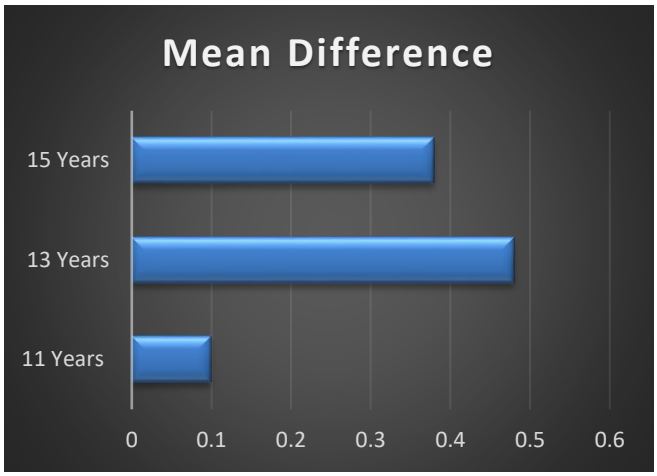

Fig. 6 Multiple bar Diagram of Kinesthetic Differentiation Ability of Upper Extremities among handball Players of Different Age Group Boys

Scheffe 's post hoc test was applied in kinesthetic differentiation ability of upper extremities among kho-kho players of different age group boys and the results are shown in table 8.

Table 8 Paired Mean Differences in Kinesthetic Differentiation Ability of Upper Extremities among Kho-Kho Players of different Age Group Boys

11 years	13 years	15 years	Mean difference	Confidence interval
7.15	6.89	-	.26	.91
7.15	-	7.89	0.74	.91
-	6.89	7.89	1	.98
*Significant at 0.05 level				

The above table shows that the mean difference for kinesthetic differentiation ability of upper extremities between 13 year old and 11 year old is 0.26 and is not statistically significant. Whereas, the mean difference of .74 between 15 year old and 11 year old and mean difference of 1 between 15 year old and 13 year old are statistically significant. It is inferred from the results that among kho-kho players 15 year old boys have better kinesthetic differentiation ability of upper extremities than 13 and 11 year old boys.

The results of the paired means in kinesthetic differentiation ability of upper extremities among kho-kho players of different age group boys are presented graphically in figure 7.

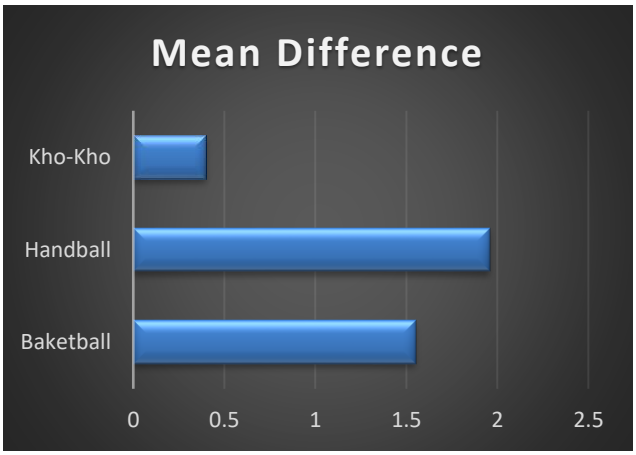

Fig. 7 Multiple Bar Diagram of Kinesthetic Differentiation Ability of Upper Extremities among Kho - Kho Players of Different Age Group Boys

5. Conclusion

The following conclusions were drawn from the results of the study on selected coordinative abilities on boys of different age groups and games.

1. Kinesthetic differentiation ability of upper extremities was better for 15 year age group than 13 and 11 year age groups in all the selected games.
2. Kinesthetic differentiation ability of lower extremities was better for 11 year old than 13 and 15 year old boys among basketball and handball players.
3. Basketball players show better kinesthetic differentiation ability of upper extremities than handball and kho-kho players.
4. There was no significant variation among basketball, handball and kho-kho players in kinesthetic differentiation ability of lower extremities among all the three age categories.

The following conclusions were drawn in coordinative abilities on girls of different age groups and games.

1. Kinesthetic differentiation ability of upper extremities was better for 15 year old girls than 13 and 11 year old among basketball group.
2. Kinesthetic differentiation ability of lower extremities did not vary among the age groups.
3. Basketball players showed better kinesthetic differentiation ability of upper extremities than kho kho and handball players.
4. There is no variation in kinesthetic differentiation ability of lower extremities among the selected three games.

The following conclusions were drawn from the results of the present study on selected coordinative abilities on boys and girls of different age groups and games.

1. There is no significant variation in kinesthetic

differentiation ability of upper extremities between boys and girls on the selected games and age groups.

2. The kinesthetic differentiation ability of lower extremities did not vary between boys and girls among 13 year age groups.
3. Basketball and Kho-kho boys are better than girls in kinesthetic differentiation ability of lower extremities only among 11 year age group..

Reference

[1] Jun Chen et al., "Impact of bilateral-coordinated movement on manipulative skill competency in school-aged children", University of Michigan https://orcid.org/0000-0003-0380-0743, DOI: https://doi.org/10.21203/rs.3.rs-46038/v1, 2020, PP-1-14.

[2] Bisht R. and Mardikar M., "A Comparative Study Of Selected Coordinative Abilities Among Players Belonging To Semi-Contact And Non-Contact Sports Of Rashtrasant Tukadoji Maharaj Nagpur University, NagpuR", I J R B A T, Vol. V, March 2017: 1-4 ISSN (Online) 2347 –517X, PP-1-4.

[3] Ajoy Bag et al., "Comparative Study on Physical Fitness of Volleyball and Football Players in University Level", IOSR Journal of Sports and Physical Education (IOSR-JSPE) e-ISSN: 2347-6737, p-ISSN: 2347-6745, Volume 2, Issue 5 (Sep. – Oct. 2015), www.iosrjournals.org, PP 01-05.

[4] Dagmar Hrusova et al., "Coordination Motor Abilities Of Sport Management Students", International Conference on Sport, Education & Psychology, ISSN: 2357-1330, http://dx.doi.org/10.15405/epsbs.2017.06.3, pp-20-26.

[5] Georgiy Georgievich Polevoy, "Development of Coordination Abilities with Use of Classic's Exercises", International Journal of Medical Research & Health Sciences, 2019, 8(12), ISSN No: 2319-5886, pp-41-45.

[6] JOB FRANSEN et al., "Differences in physical fitness and gross motor coordination in boys aged 6–12 years specializing in one versus sampling more than one sport", Journal of Sports Sciences, ISSN 0264-0414 print/ISSN 1466-447X online _ 2012 Taylor & Francis http://dx.doi.org/10.1080/02640414.2011.642808, February 2012; 30(4): pp-379–386.

[7] Sanjib Kumar Dey and Ashok Kumar Goon, "A Comparative Study On Psychomotor Components Among The District Level Cricket Players Of Bangladesh", European Journal of Physical Education and Sport Science ISSN: 2501 – 1235 ISSN-L: 2501 – 1235, DOI: 10.46827/ejpe.v6i6.3284 Volume 6 | Issue 6 | 2020, pp-84-96.

[8] Zeycan Acar and Nevin Gündüz, "Participation Motivation for Extracurricular Activities: Study on Primary School Students", Universal Journal of Educational Research 5(5): 901-910, 2017 http://www.hrpub.org DOI: 10.13189/ujer.2017.050533, PP-901-910.

[9] Furqan Rustam et al., "Tweets Classification on the Base of Sentiments for US Airline Companies", Entropy 2019, 21, 1078; doi:10.3390/e21111078 www.mdpi.com/journal/entropy, pp-1-22.

[10] Ilona Bidzan-Bluma and Małgorzata Lipowska, "Physical Activity and Cognitive Functioning of Children: A Systematic Review", International Journal of Environmental Research and Public Healt, 2018, 15, 800; doi:10.3390/ijerph15040800 www.mdpi.com/journal/ijerph, pp-1-13.

[11] Shailesh Kumar Singh and Biswajit Basumatary, "A Comparative analysis on Orientation ability and Differentiation ability among Male Volleyball, Basketball and Handball Players", International Journal of Physical Education and Sports Sciences Vol. 14, Issue No. 01, January-2019, ISSN 2231-3745, pp-64-68.

[12] Amit Kumar, "A Study of Wellness Life Style Kabaddi Player between Rural and Urban in School Children", International Journal of Physical Education and Sports Sciences Vol. 14, Issue No. 3, June-2019, ISSN 2231-3745, pp-1-7.

[13] Praveen M. and N. Chandrappa, "A Research on Anthropometric Characteristics and Motor Fitness Components of School Going Students", International Journal of Physical Education and Sports Sciences Vol. 14, Issue No. 3, June-2019, ISSN 2231-3745, pp-59-63.