

**Final report  
Of  
Minor Research Project  
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**On  
“Normative Study of Selected Physical Fitness  
Components of School Going Children Aged  
from 7 to 13 Years”**

**In The Faculty of Physical Education**

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**By  
Dr. Makarand Joshi  
Asst. Professor of Physical Education  
M.S.M.'s. College of Physical Education,  
Aurangabad, Maharashtra, India.**

**February, 2014**

## **DECLARATION**

I hereby declare that the present work completed in the form of Minor Research Project entitled, "**Normative Study of Selected Physical Fitness Components of School Going Children Aged from 7 to 13 Years**" is an original work and has not been submitted, or published in any form for the fulfillment of any other degree or any other similar to this or any other university.

**Dr. Makarand S. Joshi,**  
Asst. Professor of Physical Education  
MSM's College of Physical Education,  
Aurangabad, Maharashtra, India.

**PRINCIPAL**

**Place:** Aurangabad,  
**Date:** /02/2014

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# **NORMATIVE STUDY OF SELECTED PHYSICAL FITNESS COMPONENTS OF SCHOOL GOING CHILDREN BETWEEN 7 TO 13 YEARS**

## **(i) Introduction:**

### ***Origin of the research problem:***

The norms are prepared by the researchers in various fields of sports for evaluating the standards by administering standardized tests. Motor abilities are one of the prerequisites of performance and here the research scholar is in pursuit to prepare the norms for selected physical fitness components of the children between 7 to 13 years. The need to prepare the norms aroused from the differences observed in growth and development with respect to geographical locations. Aurangabad is one of the district place located on the 19.53 latitude and 75.23 longitudes towards the central part of Marathwada region of Maharashtra, is one of the upcoming districts of Maharashtra in Industrialization. The sports and physical education culture is witnessed right from the post independence period and is still consistent.

The growth and development difference according to geographical location is mismatching the already established norms to certain extent and hence the origin of the research problem to establish local norms in physical fitness components so that exact growth and development is interpreted. The norms may definitely help the local trainers, coaches, physical education teachers to assess the level of physical fitness of their students in turn helping them to channelize the potential according to the requirements of the sport.

### ***Interdisciplinary relevance:***

The established norms may surely help the educationalist to interpret and assess the overall development of an individual. The age group norms will help the parents to keep a note about their child and accordingly nutrition and other requirements may be provided at proper time. The field of pediatric medicine may also get benefit of the norms which provides one of the aspects of physical development at local level and according to geographical location.

### ***International status:***

The findings of the research may prove to quote references when similar normative studies are considered. The findings of the study may also help a coach, trainer or physical educator to channelize the potential in such a way that it may help him to shine at international arena.

### ***National status:***

The norms prepared at local level will surely contribute towards the sports research at national level, because every small unit of nation is part and parcel of the whole. Similar normative studies at various district levels may also be encouraged to promote for redefining and laying broad foundations towards the nation's sports research.

### **Background:**

The earliest form of fitness measurement tools were based on the concept of generality, i.e. it was believed that certain basic abilities underlies the performance of all motor tasks. But of late this concept has been tested and found to be untenable. It has been found that physical activity and fitness is not general but specific to the situation or activity which has been used to develop. In simple terms the theory of Specificity may be interpreted to mean the when an individual engages strenuous physical activity, he develops his physical fitness and his development manifest itself more noticeable when the individual participates in the same or a similar type of activity. The Darwin's theory, 'Survival of fittest' proved the things in every walk of life. Physical fitness is an important quality for every athlete to perform his task with vigor and alertness without undue fatigue. Fitness is the ability of the individual to live a complete and balanced life. It involves physical, mental, emotional and spiritual factors and the capacity for their wholesome expression. (Charle A. Buchers -1958)

There are four basic components of the physical fitness:

1. Muscular fitness.
2. Flexibility fitness.
3. Aerobic fitness,
4. Body composition fitness. (Gide 1973)

Human being existence and effectiveness depend upon his Muscles. Muscular efficiency including strength and endurance is essential to every individual and needs vigorous exercise for growth and development. A muscle must be overload in order to be strengthened. If not it will become weak and degenerate. It is a biological principle that function builds structure and structure decides function (Peter V. Karpouich 1965). It is true that organs and muscles that are used will develop and those that are not used will disappear. Human being needs a stronger body than he has had, not only for specific tasks but to enable him to sustain the strain and stress of living. Strength has become an important trait for an athlete to perform his task in the athletic field. The value of strength in athletics is not a new idea. Hooks States “the good strong man will always beat the good weak management (Hooks 1974). Strength is properly defined as maximal force exerted at one time (Perry john son, 1971). By working the muscles at near its maximum capacity against some resistance will develop the strength of the muscle. Strength is considered as an important factor for all motor ability. (John Patrice al, 1959)

Physical fitness has been defined as a set of attributes or characteristics that people have or achieve that relates to the ability to perform physical activity. The above definition is taken from Physical Activity and Health: (A Report of the Surgeon General is the most common currently



used definition of physical fitness). Howley and Frank define fitness that provides additional descriptive information is: Physical fitness is a state of well-being with low risk of premature health problems and energy to participate in a variety of physical activities; most experts agree that physical fitness is both multidimensional and hierarchical. In earlier, fitness was commonly defined as the capacity to carry out the day's activities without undue fatigue. However, as automation increased leisure time, changes in lifestyles following the industrial revolution rendered this definition insufficient. In current contexts, physical fitness is considered a measure of the body's ability to function efficiently and effectively in work and leisure activities, to be healthy, to resist hypo kinetic diseases, and to meet emergency situation.

It has been seen that, we talk a lot about essential of physical fitness but we hardly participate in physical activities. Therefore the researcher has made an attempt to find out some physical fitness components level and established norms according to their age among the 7 to 13 years boys and girls. Also find out a relationship between ages and physical fitness components of school going children.

***Significance of the study:***

1. The findings of the research may prove fruitful to the trainers, coaches and physical educators at local level.
2. The growth and development and few physical components may be compared with national status to assess our school going children.
3. The norms may help to divert and develop the children according to their potential.

**(iii) Objectives:**

1. To gather the test results in speed ability of the school going children between 7 to 13 years by administering standards tests.
2. To gather large data of endurance ability of the school going children between 7 to 13 years by administering standardized tests.
3. To gather large data on lower extremities explosive strength of the school going children between 7 to 13 years by administering standardized tests.
4. To gather large data on strength endurance in upper extremity on the school going children between 7 to 13 years by administering standardized tests.
5. To gather large data on coordinative ability of the school going children between 7 to 13 years by administering standardized tests.
6. To gather large data on balancing ability of the school going children between 7 to 13 years in administering standardized tests.
7. To prepare norms of the speed ability, endurance, lower extremity explosive strength, strength in upper extremity, coordinative abilities and balancing ability from the data collected by treating statistically.
8. Fitness measurements were executed by qualified testers of MSM college of Physical Education, Aurangabad. The fitness data was used to generate normative tables by gender and age group, so that people could compare their fitness performance with the overall profile on their own.
9. To prepare age, sex wise norms, and co-relation matrix of selected physical fitness components of school going children between 7 to 13 years.
10. According to the findings, suggestions concerning education and related supporting policies were provided so as to raise Indian school going children's physical fitness component level and general fitness profile.

### **Methodology:-**

The methodology for said study was used descriptive survey.

### **Sample:**

The samples will be the school going boys and girls between 7 to 13 years of age from different schools within the vicinity of the Aurangabad district jurisdiction. Around 10,000 children will be randomly selected for the standardized tests in few physical abilities.

### **Variables:**

1. **Independent Variables:** Standardized tests related to physical fitness components.
2. **Dependent Variables:** Physical fitness components viz. Strength Endurance in upper extremity, explosive strength in lower extremity, endurance, balancing ability, eye hand coordination, and flexibility.
3. **Intervening Variables:** - Age, sex, and class.

### **Tools and Means:**

**Personal data bank:** It was used to collect the information of an individual. Personal data bank consists of the following aspect: Full name, name and address of the school, date of birth and age, gender, class.

**Standardized Physical Fitness Tests:** (1) 30 meters dash for evaluating speed ability; (2) Canadian fit test for endurance (VO<sub>2</sub> max); (3) Standing broad jump for lower extremity explosive strength; (4) Flex arm hang for girls and Chin-ups for boys to assess upper extremities strength endurance; (5) Ball throw and catch for eye-hand coordination; (6) Stork stand for balancing ability.

### **30 meters dash test:-**

Objective: To measure speed.

Age: Ages six to seventeen.

Sex: Satisfactory to both boys & girls.

Equipments: Stop watch, Suitable running area allows to 30 m. run plus extension for stopping is also required.

Test Administration: It is advised that one or two subjects run at the same time. Start from a standing position on starting line. The commands, “Ready? And “Go” are given. At the command to go the starter drops his arm so that the timer at the finish line can start the timing. The subjects run as fast as possible across the finishing line.

Scoring: Consider the elapsed time from the starting signal until the runner crosses the finishing line is measured to the two digits of second.

**Canadian fit test for endurance (VO<sub>2</sub> max), or 20m. Shuttle run.**

Objective: To measure endurance ((VO<sub>2</sub> max).

Age: Six to sixty. (In a medically fit condition)

Sex: Suitable for both sexes.

Equipments: i) a 20M. Area with markings on the ground.

ii) A cassette player.

iii) A 20M. Shuttle run audio cassette.

iv) Paper, pencil, etc.

Administration of test: This is very simple test used and recognized internationally and introduced in India by Armed force Sports Medicine centre, Pune. Just by means of simple Audio Cassette and a tape recorder, one can determine the (VO<sub>2</sub> max) endurance of an athlete and identify real talent with better VO<sub>2</sub> max. capacity amongst many participants. Simplicity of this test facilitates many people to be tested in a very short time. The test as such involves jogging and running at progressively increasing pace, over a 20mtrs. Course for as long as possible. The pace is given by the audio cassette. At every sound heard, you must have reached one of the 20mts lines and upon hearing the sound you should pivot and reverse your direction and run at the set pace to the opposite line in time for the next Audio –Signal. This way you run till your maximum capacity is reached. If twice in a row you can't reach within 2 strikes of the line, you have reached your capacity and remember the last number announced on the cassette player. This is your stage level and equates this score from the score sheet attached to know your VO<sub>2</sub> max. as per your age.

Reading your run score from the chart: i) The chart/ score sheet has been worked out from age group of 7 onwards to 18+ (which includes adults of all ages)- which has been put on the Horizontal Axis of the chart. ii) The 1<sup>st</sup> column vertically downwards shows the number of stages/ minutes you have run. Iii) The 2<sup>nd</sup> vertical column downwards shows your running speed in Kms/ hour. Iv) The columns thereafter are placed age-groups wise and divided into two sub-

sections vertically:- a) the first shows the METS- value ( MET is energy unit- & indicates the Aerobic fitness level. At rest it is one MET and during exercise it should be able to reach between 10-20 METS i.e., 10-20 times your resting level) b) the second sub-section shows the VO<sub>2</sub> in ml/kg. The Table of prediction of MET/VO<sub>2</sub> max. is given in the Armed forces sports Medicine centre, Pune.

### **Standing Board Jump:**

Objective: To test the explosive power of logs in jumping horizontal Distance

Sex: Boys & Girls at 7 Year & above

Equipment : Floor, mat or long jump pit, measurement

Test admiration:

Demonstration of the jump is given to the group of subject to be tested.

Subject is then asked to stand behind the starting line with feet parallel to each other.

Subject is instructed to jump as farthest as possible by bending knees & swinging arms to take off for the board jump in the forward direction. The subject is given three trials

Scoring: Distance between the starting line & nearest point at the landing provides the score of the test.

### **Flex Arm hang test / chin ups test:-**

Objective: To measure the isometric strength endurance of the arm & shoulders girdle.

Age: Seven to eighteen years.

Sex: Satisfactory for boys (flex arm) up to 9 years, and chin ups for 10 to 18 years, and all age groups (flex arm hang) of girls.

Equipments: Horizontal bar, stop watch, Magnesium powder (light), paper, pencil etc.

Administration of test: 1) Subject is to asked to grip the Horizontal bar over grip manner.2) with the assistance of two helpers are in front & one in back of the subject. The subject's body is raised of the floor to a certain position where the chin is above the bar without touching.

#### **Chin-up Test:-**

Objective: To measure strength endurance of Arm.

Sex: - Seven to eighteen years,

Equipment: - Horizontal bar, stop watch, paper, pencil magnesium powder (light) etc.

Test administration:-

1. Subject is asked to hold the Horizontal Bar in over Grip position.
2. Subject is then asked to raise the body of the floor by pooling the arms to Attain chin-up legs flex arm position mentioned in earlier test.
3. He then instructed to extend the arm to bring body towards floor and regain the initial position.
4. Step 1, 2 &3 forms one chin-up.

Scoring: - Score of the subject is number of chin-ups performed in correct position mentioned above. Chin ups performed when chin is not raised over the bar will not counted.

### **. Ball Throw and catch/Transfer**

(Eye-Hand Coordination)

Equipment and Materials: Two boxes or other containers large enough to hold at least five 10-inch play ground balls. Distance between boxes should be at least 15 feet.

Directions: The child takes the balls out of the box one at a time on the left and places them in which he deposits the ball in the box depends on the nature and level of skill desired .The teacher may want the child to a) simply place the balls in the basket. b) Toss it from a specified distance's. c) Toss is over barrier d) bounce it in e) bank it in, etc. The size and number of balls can be altered also.

### **Stork Stand Test:-**

Aim: - To Measure the Static Balance on the ball of the foot.

Sex/Age: - Boys & Girls above 10 yrs.

Equipment: - Horizontal Bar & stop Watch

Test administration:-

1. The Subject is asked to stand on one foot of the dominant leg to place the ball of the other foot on the inside of the supporting knee.
2. Subject is informed to place the hands on the respective sides of waist.
3. On start signal timer will start, subject is informed to stand on the toe of the Dominant leg & maintain the same for longest possible time without moving ball of feet from its initial position .i.e. 1<sup>st</sup> step.
4. As soon as the subject losses the balance indicates either by touching heel to the floor or by movement of the foot from the initial possible, the administration will stop the work.

Scoring: - Total time for maintaining the correct balance position is the score of the subject.

Procedure:

A team of 12 trainees along with the principal investigator were visited to different schools selected for the administration of various tests in the vicinity of Aurangabad district. The subjects were selected boys and girls lying between 7 to 13 years. The subjects were asked to do warming-up before undergoing various tests. The status and health of the subjects were ensured before conducting the test. The large amount of data was collected from administering various selected tests on around 10,000 children. The data is than segregated according to age-wise and test-wise. On each segregated data statistical treatment is ensured for analysis and interpretation. The norms were prepared in the six physical fitness components for various age groups i.e., between 7 to 13 years for both sexes.

**Collection of Data:**

The numerical data were collected for different six physical fitness components on school going boys as well as girls between 7 to 13 years. The data was arranged according to age, test and sex-wise for statistical applications.

**Statistical Methods:**

The collected data is then statistically treated by using co-relation matrix and percentile for preparing norms. After collecting the data from administering physical fitness tests, the research team carried out statistical analyses, including descriptive statistics, sampling distribution, comparisons, and correlation analysis. The relationships between participants' fitness levels and their exercise patterns as well as lifestyle habits and so on were investigated.

**RESULTS & DISCUSSION:-**

This scale has been standardized on approximately Ten thousand (9841) school going boys & girls in each age group i.e. 7 years (633), 8 years (1320), 9 years(1265) 10 years (1623), 11 years (1789), 12 years (1787), & 13 years (1368) respectively. Another 56 students were also taken for the study because when the samples were taken out for test they were asked their date of birth for classification of age groups. Many of them found above 13 years, thus, we put them in the age group of 14 years and were tested in all said above physical fitness components. After collecting the data from physical fitness test, the data was treated by using statistical analysis, including descriptive statistics, sampling distribution, correlation analysis and percentile. The relationship between participant's fitness levels and their age and gender were investigated. Besides preparing the norms six physical fitness test, a co-relation matrix was constructed for age, sex and all six physical fitness component tests. Table number 1 to 3 shows mean and standard deviation of six physical fitness component tests of 7 to 13 years boys and girls. Six different physical fitness tests were used for percentile scale. However, percentile scale is not considered as standard scale as mean and standard deviation are not used in constructing the scale and scores are not constantly distributed. The distance on the base line are close together near the mean and spread out at the extremities of the distribution. Zero is located at lowest value of the data, from where the tables are constructed and 100 is placed at the top. All descriptive analysis was given according to the test and sex wise.

**Table no.:- 1**

**The mean values of physical fitness components were shown in the following table:**

Physical fitness components	7 years				8 years				9 years			
	Boys		Girls		Boys		Girls		Boys		Girls	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
30M. Dash	6.84	0.95	7.36	0.94	6.47	0.78	7.16	0.82	6.24	0.66	6.91	0.70
Standing Broad Jump	0.98	0.20	0.89	0.16	1.06	0.18	0.95	0.17	1.13	0.20	1.00	0.15
Flexed Arm Hang	7.19	7.7	5.17	7.50	8.36	8.29	3.86	4.82	6.21	9.06	3.79	5.50
20M. Shuttle run	2.49	0.63	2.50	0.59	2.98	0.99	2.58	0.61	3.00	0.92	2.82	0.75
Ball Throw & Catch	4.40	5.02	1.10	2.52	7.85	5.99	2.65	4.16	11.32	5.68	4.93	5.27
Stork Stand	1.72	1.69	1.55	1.64	1.78	1.76	1.65	1.55	1.67	1.23	2.04	2.43
N=	341		292		714		606		680		585	

In the present study, Pearson's co-relation method was employed to find out the co-relation between different physical fitness test and age group and gender. Above table revealed that physical fitness components like speed, explosive strength of lower extremities, strength in upper extremities, VO2 Max. Cardio-vascular endurance, co-ordination and balance abilities were gradually increased as their age grew and gender difference was also found in all age groups. This reflected the growth spurt in physical development during childhood. Except flexed arm hang fitness component which showed irregularity development among all three age groups of boys and girls. This may found due to weight gaining and occurring physiological differences at the age of 9 in the girls.

- 1) 30M. Dash Physical fitness test revealed significant co-relation ( $r = 0.093$ ) at 0.05 level was found between 9 years boys and 8 years boys.
- 2) Standing Broad Jump physical fitness test was found significant co-relation ( $r = 0.162, 0.147$ ) at 0.05 and 0.01 level respectively among 7 years boys, 9 years boys and 9 years girls.
- 3) Flexed Arm hang physical fitness test was found significant co-relation ( $r = 0.172, 0.131$ ) at 0.05 and 0.01 level respectively among 7 years 8 years and 9 years girls.
- 4) 20M. shuttle run physical fitness test was found significant co-relation ( $r = -0.192, -0.202$ ) at 0.05 level among 8 years boys, 9 years boys and 7 years girls.
- 5) Stork stand physical fitness test was found significant co-relation ( $r = 0.208, 0.115$ ) at 0.05 level among 7 years boys, 8 years boys and 8 years girls.
- 6) Ball throw and catch physical fitness test was only component didn't found significant co-relation among all groups.



**Table no.2 shows mean and SD of 10 to 12 years boys & girls physical fitness components**

Physical fitness components	10 years				11 years				12 years			
	Boys		Girls		Boys		Girls		Boys		Girls	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
30M. Dash	6.09	.618	6.81	.757	5.88	.517	6.52	.663	5.74	.510	6.55	.741
Standing Broad Jump	1.22	.199	1.06	.168	1.32	.187	1.12	1.82	1.38	.202	1.13	1.87
Flexed Arm Hang(Boys chin-counts)	1.39	4.41	3.38	4.78	.812	1.85	4.72	6.31	.844	1.75	3.96	5.27
20M. Shuttle run	3.30	1.18	3.00	.863	3.83	1.31	3.16	.962	3.90	1.52	3.03	.940
Ball Throw & Catch	14.44	4.99	7.65	5.92	16.18	4.03	10.45	6.04	17.62	2.92	12.90	5.48
Stork Stand	2.03	2.03	2.82	3.19	2.63	2.67	3.25	3.73	3.15	3.29	3.28	3.97
N=	938		685	1623	969		820	1789	991		796	1787

**Table no. 3 shows mean and SD of 13 and 14 years boys & girls physical fitness components.**

Physical fitness components	13 years				14 years			
	Boys		Girls		Boys		Girls	
	M	SD	M	SD	M	SD	M	SD
30M. Dash	5.73	.477	6.85	.941	5.79	.369	7.32	.913
Standing Broad Jump	1.36	.227	1.14	.266	1.41	.193	0.947	.233
Flexed Arm Hang(Boy chin-counts)	1.12	1.84	3.22	3.59	2.21	2.29	.685	.952
20M. Shuttle run	3.90	1.61	3.53	1.31	3.88	1.61	2.76	.704
Ball Throw & Catch	17.46	3.34	12.83	5.28	12.92	6.31	8.62	8.78
Stork Stand	3.40	3.97	2.62	2.79	2.42	1.97	1.95	.514
N=	856		512	1368	37		19	56

In the present study, Pearson's co-relation method was employed to find out the co-relation between different physical fitness test and age group and gender. Above table revealed that physical fitness components like speed ability was gradually improved as boys increased their age and also found correlation among some of the ages. Explosive strength of lower extremities was also improved as the age increased in boys. Table no. 10 & 11 shown that explosive strength of legs of each age group had gradually increased. Strength in upper extremities, VO2 Max. Cardio-vascular endurance, co-ordination and balance abilities were also gradually increased as their age grew and gender difference was also found in all age groups of boys. This reflected the growth spurt in physical development during childhood. Except flexed arm hang fitness component which showed irregularity development among all three age groups of boys and girls. This may found due to weight gaining and occurring physiological differences at the age of 9 in the girls.

- 1) The significant correlation was not found in any age group of boys in relation to Speed ability.
- 2) Significant co-relation ( $r = 0.88$ ) at 0.05 level was found between 10years and 11years girls in 30M. Dash.
- 3) The significant correlation was not found in any age group of boys in relation to Explosive strength ability.
- 4) Significant correlations ( $r = 0.826$  &  $0.739$ ) at 0.05 level were found among 11years, 13years and 14years girls in Standing Broad Jump.
- 5) The significant correlation was not found in any age group of boys in relation to Muscular strength endurance ability.
- 6) Significant correlations ( $r = 0.496$  &  $0.100$ ) were found among 10years, 11years, and 13 years girls in Arm-hang test.
- 7) The significant correlation( $r = -0.306$ ) at 0.01 level was found between 12years and 13years boys in relation to Cardio-vascular endurance ability.
- 8) Significant correlations ( $r = 0.700$  &  $0.822$ ) were found among 12years, 13years, and 14years girls in Shuttle run test /Canadian fit test.
- 9) The significant correlations ( $r = 0.143$  &  $0.475$ ) at 0.01 level and ( $r = 0.241$ ) at 0.05 level were found among 10years, 11years, 12years,and 13years boys in coordination ability
- 10) The significant correlation was not found in any age groups of girls in relation to coordination ability.
- 11) The significant correlation was not found in any age group of boys in relation to balance ability.
- 12) The significant correlation was not found in any age groups of girls in relation to balance ability.



**Table-5  
Standing  
Broad  
jump**

<b>Percentile</b>	<b>7 years</b>	<b>8 years</b>	<b>9 years</b>	<b>10 years</b>	<b>11 years</b>	<b>12 years</b>	<b>13 years</b>
	mtrs	Mtrs	mtrs	mtrs	mtrs	mtrs	Mtrs
<b>100</b>	1.35	1.6	1.64	1.76	1.93	1.91	1.85
<b>95</b>	1.27	1.35	1.43	1.53	1.61	1.7	1.67
<b>90</b>	1.2	1.3	1.38	1.45	1.55	1.63	1.65
<b>85</b>	1.16	1.26	1.32	1.41	1.51	1.59	1.58
<b>80</b>	1.11	1.22	1.3	1.38	1.48	1.57	1.55
<b>75</b>	1.1	1.19	1.28	1.35	1.44	1.54	1.53
<b>70</b>	1.09	1.16	1.25	1.33	1.42	1.5	1.5
<b>65</b>	1.05	1.14	1.22	1.3	1.4	1.48	1.47
<b>60</b>	1.03	1.12	1.2	1.28	1.38	1.45	1.44
<b>55</b>	1	1.1	1.18	1.26	1.35	1.41	1.41
<b>50</b>	1	1.09	1.15	1.24	1.32	1.38	1.4
<b>45</b>	0.98	1.05	1.12	1.21	1.3	1.36	1.37
<b>40</b>	0.95	1.03	1.1	1.19	1.28	1.33	1.35
<b>35</b>	0.94	1	1.08	1.16	1.26	1.3	1.27
<b>30</b>	0.92	0.97	1.05	1.13	1.24	1.28	1.22
<b>25</b>	0.89	0.95	1.02	1.1	1.22	1.24	1.17
<b>20</b>	0.87	0.9	1	1.07	1.19	1.2	1.15
<b>15</b>	0.83	0.85	0.96	1.02	1.15	1.18	1.1
<b>10</b>	0.8	0.81	0.9	0.98	1.1	1.1	1.08
<b>5</b>	0.7	0.7	0.8	0.9	1.03	1.05	1.03
<b>0</b>	0	0	0	0	0	0	0

**Table-6 Flexed arm hang/ chin ups**

<b>Percentile</b>	<b>7 years</b>	<b>8 years</b>	<b>9 years</b>	<b>10 years</b>	<b>11 years</b>	<b>12 years</b>	<b>13 years</b>
	sec	Sec	Sec	no.	no.	no.	no.
<b>100</b>	47.79	50.58	58.23	8	25	20	7
<b>95</b>	21.95	24.92	24.74	6	4	4	5.5
<b>90</b>	15.97	19.42	17.94	4	3	3	4
<b>85</b>	13.02	15.98	13.97	3	2	2	3
<b>80</b>	10.76	13.79	10.84	2	2	2	2
<b>75</b>	9.21	11.94	8.52	1	1	1	1
<b>70</b>	8.13	10.57	7.01	1	0	1	1
<b>65</b>	7.61	9.22	5.7	0	0	0	1
<b>60</b>	6.74	8.21	4.64	0	0	0	1
<b>55</b>	6.11	6.99	3.64	0	0	0	0
<b>50</b>	5.35	5.99	3	0	0	0	0
<b>45</b>	4.99	5.27	2	0	0	0	0
<b>40</b>	4.4	4.37	1.03	0	0	0	0
<b>35</b>	3.45	3.71	0	0	0	0	0
<b>30</b>	2.81	3.2	0	0	0	0	0
<b>25</b>	2.15	2.54	0	0	0	0	0
<b>20</b>	1.21	1.36	0	0	0	0	0
<b>15</b>	0	0	0	0	0	0	0
<b>10</b>	0	0	0	0	0	0	0
<b>5</b>	0	0	0	0	0	0	0
<b>0</b>	0	0	0	0	0	0	0

**Table-7**

## 20 Meter. ping-pong test / boys

<b>Percentile</b>	<b>7 years</b>	<b>8 years</b>	<b>9 years</b>	<b>10 years</b>	<b>11 years</b>	<b>12 years</b>	<b>13 years</b>
	level	Level	level	level	level	Level	level
<b>100</b>	4.7	9.1	7.1	8.4	8.8	9.9	7.8
<b>95</b>	3.6	4.68	4.7	5.62	6.3	6.7	7.55
<b>90</b>	3.4	4.3	4.3	4.94	5.7	6.29	6.9
<b>85</b>	2.8	3.7	3.6	4.6	5.3	5.6	5.25
<b>80</b>	2.7	3.3	3.4	3.6	4.4	4.5	5.1
<b>75</b>	2.7	3.4	3.4	3.8	4.6	4.7	4.7
<b>70</b>	2.7	3.5	3.5	4.3	4.8	5.3	4.3
<b>65</b>	2.6	3.2	3.3	3.4	4.3	4.3	3.8
<b>60</b>	2.5	2.6	2.7	2.9	3.5	3.5	3.6
<b>55</b>	2.5	2.7	2.8	3.2	3.6	3.7	3.5
<b>50</b>	2.5	2.7	3.1	3.3	4.1	4.1	3.4
<b>45</b>	2.4	2.5	2.5	2.6	3.2	3.2	3.3
<b>40</b>	2.4	2.5	2.6	2.6	3.3	3.3	3.2
<b>35</b>	2.4	2.6	2.6	2.7	3.4	3.4	3.1
<b>30</b>	2.3	2.4	2.4	2.4	2.7	2.6	2.7
<b>25</b>	2.3	2.4	2.5	2.5	3.1	2.8	2.5
<b>20</b>	2.2	2.3	2.4	2.4	2.5	2.5	2.5
<b>15</b>	2.1	2.3	2.3	2.3	2.45	2.4	2.5
<b>10</b>	1.6	2.2	2.2	2.2	2.4	2.3	2.5
<b>5</b>	1.5	2.1	2.1	2.1	2.3	2.2	2.3
<b>0</b>	0	0	0	0	0	0	0

**Table-8**

Ball throw & catch / boys

<b>Percentile</b>	<b>7 years</b>	<b>8 years</b>	<b>9 years</b>	<b>10 years</b>	<b>11 years</b>	<b>12 years</b>	<b>13 years</b>
	no.	no.	no.	no.	no.	no.	no.
<b>100</b>	20	20	20	20	20	20	20
<b>95</b>	14	18	20	20	20	20	20
<b>90</b>	12	16	18.9	20	20	20	20
<b>85</b>	10	15	18	20	20	20	20
<b>80</b>	9	14	17	19	19	20	20
<b>75</b>	8	13	16	18	19	20	20
<b>70</b>	7	12	15	18	19	20	20
<b>65</b>	7	10	15	17	18	19	19.5
<b>60</b>	5	10	14	17	18	19	19
<b>55</b>	3	8	13	16	18	19	19
<b>50</b>	3	8	12	16	17	18.5	19
<b>45</b>	2	7	11	15	17	18	18
<b>40</b>	0	5.6	10	15	17	18	18
<b>35</b>	0	5	9	14	16	17	17.5
<b>30</b>	0	3	8	13	16	17	17
<b>25</b>	0	2	7	12	15	17	17
<b>20</b>	0	1	6	10	14	16	16
<b>15</b>	0	0	4	8.2	12	15	15
<b>10</b>	0	0	3	7	10	14	11
<b>5</b>	0	0	1	5	8	11.55	10
<b>0</b>	0	0	0	0	0	0	0

**Table-9**

<b>Percentile</b>	<b>7 years</b>	<b>8 years</b>	<b>9 years</b>	<b>10 years</b>	<b>11 years</b>	<b>12 years</b>	<b>13 years</b>
	sec	Sec	sec	sec	sec	Sec	sec
<b>100</b>	11.31	14.93	13.09	18.6	21.62	24.88	28.42
<b>95</b>	5.21	4.87	3.96	5.28	7.17	9.44	8.1
<b>90</b>	3.25	3.05	3.11	3.58	5.34	5.92	6.67
<b>85</b>	2.6	2.53	2.6	2.97	3.97	4.56	4.96
<b>80</b>	2.13	2.27	2.26	2.58	3.23	3.74	3.95
<b>75</b>	1.9	2.03	2.08	2.35	2.83	3.37	3.63
<b>70</b>	1.79	1.85	1.9	2.13	2.55	3	3.1
<b>65</b>	1.66	1.68	1.75	1.86	2.31	2.78	2.92
<b>60</b>	1.53	1.54	1.6	1.7	2.14	2.6	2.57
<b>55</b>	1.34	1.44	1.45	1.57	1.99	2.37	2.35
<b>50</b>	1.25	1.31	1.32	1.48	1.85	2.1	2.28
<b>45</b>	1.15	1.2	1.24	1.38	1.74	1.94	2.16
<b>40</b>	1.09	1.12	1.14	1.28	1.57	1.81	1.88
<b>35</b>	1	1.02	1.07	1.19	1.45	1.68	1.71
<b>30</b>	0.93	0.92	0.98	1.09	1.35	1.58	1.59
<b>25</b>	0.78	0.83	0.9	0.98	1.24	1.43	1.49
<b>20</b>	0.71	0.77	0.84	0.89	1.15	1.35	1.4
<b>15</b>	0.57	0.66	0.77	0.8	1.03	1.23	1.28
<b>10</b>	0.49	0.59	0.62	0.68	0.9	1.08	1.14
<b>5</b>	0.33	0.47	0.5	0.54	0.73	0.82	0.96
<b>0</b>	0	0	0	0	0	0	0





**Table-11**

Standing broad jump / girls

<b>Percentile</b>	<b>7 years</b>	<b>8 years</b>	<b>9 years</b>	<b>10 years</b>	<b>11 years</b>	<b>12 years</b>	<b>13 years</b>
	mtrs	mtrs	mtrs	mtrs	mtrs	Mtrs	mtrs
<b>100</b>	1.25	1.71	1.51	1.55	1.72	1.72	1.75
<b>95</b>	1.11	1.25	1.25	1.33	1.41	1.42	1.63
<b>90</b>	1.08	1.16	1.2	1.29	1.36	1.37	1.43
<b>85</b>	1.05	1.13	1.16	1.25	1.31	1.33	1.4
<b>80</b>	1	1.08	1.14	1.22	1.28	1.29	1.32
<b>75</b>	1	1.04	1.12	1.19	1.25	1.26	1.26
<b>70</b>	0.97	1.01	1.09	1.15	1.22	1.24	1.26
<b>65</b>	0.95	1	1.07	1.13	1.2	1.2	1.23
<b>60</b>	0.93	0.98	1.05	1.1	1.18	1.19	1.18
<b>55</b>	0.91	0.97	1.03	1.08	1.15	1.16	1.15
<b>50</b>	0.9	0.95	1	1.06	1.13	1.14	1.11
<b>45</b>	0.9	0.93	0.99	1.04	1.11	1.1	1.1
<b>40</b>	0.85	0.92	0.97	1.01	1.09	1.09	1.08
<b>35</b>	0.85	0.9	0.95	1	1.07	1.07	1.04
<b>30</b>	0.82	0.87	0.93	0.97	1.05	1.04	0.97
<b>25</b>	0.8	0.85	0.9	0.95	1.02	1	0.95
<b>20</b>	0.8	0.82	0.89	0.92	1	0.98	0.94
<b>15</b>	0.75	0.8	0.85	0.9	0.95	0.95	0.89
<b>10</b>	0.7	0.75	0.8	0.84	0.9	0.9	0.82
<b>5</b>	0.67	0.68	0.75	0.8	0.82	0.82	0.76
<b>0</b>	0	0	0	0	0	0	0

Table-12

Arm hang-chin ups / girls

<b>Percentile</b>	<b>7 years</b>	<b>8 years</b>	<b>9 years</b>	<b>10 years</b>	<b>11 years</b>	<b>12 years</b>	<b>13 years</b>
	sec	sec	sec	sec	sec	Sec	sec
<b>100</b>	55.75	31.76	45.32	30.2	58.96	27.41	11.97
<b>95</b>	17.81	13.23	13.28	13.7	15.27	16.43	11.18
<b>90</b>	12.16	9.26	9.19	9.14	11.07	11.42	7.9
<b>85</b>	9.19	7.72	7.75	7.13	9	8.41	7
<b>80</b>	7.78	6.24	6.57	5.97	7.86	6.81	5.58
<b>75</b>	6.03	5.42	5.45	5.02	6.85	5.63	4.13
<b>70</b>	5.4	4.77	4.52	4.12	6.08	4.95	3.38
<b>65</b>	4.95	4.18	3.76	3.36	5.35	4.25	3.18
<b>60</b>	4.25	3.74	3.17	2.92	4.49	3.34	3.13
<b>55</b>	3.9	3.18	2.58	2.32	3.7	2.78	2.98
<b>50</b>	3.55	2.7	2.1	1.91	3.12	2.06	2.78
<b>45</b>	3.12	2.28	1.67	1	2.5	1.57	2.22
<b>40</b>	2.5	1.74	1.27	0	1.75	0.82	1.2
<b>35</b>	1.65	0.9	0	0	1	0	0.78
<b>30</b>	0.65	0	0	0	0	0	0.67
<b>25</b>	0	0	0	0	0	0	0
<b>20</b>	0	0	0	0	0	0	0
<b>15</b>	0	0	0	0	0	0	0
<b>10</b>	0	0	0	0	0	0	0
<b>5</b>	0	0	0	0	0	0	0
<b>0</b>	0	0	0	0	0	0	0

**Table-13**

20 Meter ping-pong test / girls

<b>Percentile</b>	<b>7 years</b>	<b>8 years</b>	<b>9 years</b>	<b>10 years</b>	<b>11 years</b>	<b>12 years</b>	<b>13 years</b>
	level	level	level	level	level	Level	Level
<b>100</b>	4.3	5.8	6.8	6.8	7.1	7.4	7.4
<b>95</b>	3.6	3.6	4.3	4.6	5.1	4.6	5.68
<b>90</b>	3.2	3.4	3.7	4.2	4.5	4.4	5.28
<b>85</b>	2.8	3.2	3.4	3.6	4.3	4.2	4.37
<b>80</b>	2.7	3.1	3.4	3.5	3.7	3.5	4.26
<b>75</b>	2.6	2.8	3.3	3.4	3.5	3.4	4.15
<b>70</b>	2.6	2.7	3.16	3.4	3.4	3.4	4.1
<b>65</b>	2.5	2.6	3.1	3.3	3.4	3.3	3.61
<b>60</b>	2.5	2.5	2.7	3.2	3.3	3.1	3.4
<b>55</b>	2.5	2.5	2.7	2.9	3.2	2.7	3.31
<b>50</b>	2.4	2.5	2.6	2.7	2.9	2.6	3.3
<b>45</b>	2.4	2.4	2.5	2.6	2.7	2.6	3.06
<b>40</b>	2.4	2.4	2.4	2.5	2.6	2.5	2.7
<b>35</b>	2.4	2.4	2.4	2.5	2.5	2.5	2.7
<b>30</b>	2.4	2.3	2.4	2.4	2.5	2.5	2.7
<b>25</b>	2.3	2.3	2.3	2.4	2.4	2.4	2.65
<b>20</b>	2.3	2.2	2.3	2.3	2.4	2.4	2.6
<b>15</b>	2.3	2.2	2.2	2.3	2.4	2.3	2.53
<b>10</b>	2.25	2.1	2.2	2.2	2.3	2.2	2.5
<b>5</b>	1.7	1.6	2.1	2.1	2.2	2.2	2.32
<b>0</b>	0	0	0	0	0	0	0



**Table-15**

stork stand balance / girls

<b>Percentile</b>	<b>7 years</b>	<b>8 years</b>	<b>9 years</b>	<b>10 years</b>	<b>11 years</b>	<b>12 years</b>	<b>13 years</b>
	sec	sec	sec	sec	sec	Sec	sec
<b>100</b>	11.02	12.97	34.66	33.71	17.1	40.35	12.67
<b>95</b>	3.59	4.22	5.43	8.57	9.1	9.87	8.39
<b>90</b>	2.96	2.93	3.57	6.21	6.22	6.25	5.05
<b>85</b>	2.14	2.32	3.05	4.9	4.3	4.5	3.5
<b>80</b>	2.01	2.06	2.62	3.61	3.7	4.06	2.76
<b>75</b>	1.71	1.89	2.39	3.14	3.5	3.48	2.52
<b>70</b>	1.61	1.62	2.04	2.83	3.4	3.15	2.29
<b>65</b>	1.46	1.49	1.81	2.47	3.4	2.67	2.04
<b>60</b>	1.36	1.4	1.66	2.16	3.3	2.41	1.83
<b>55</b>	1.27	1.32	1.52	1.98	3.2	2.29	1.73
<b>50</b>	1.2	1.23	1.43	1.8	2.9	2.08	1.63
<b>45</b>	1.09	1.11	1.33	1.65	2.7	1.91	1.58
<b>40</b>	0.94	1	1.23	1.53	2.6	1.79	1.45
<b>35</b>	0.87	0.97	1.14	1.38	2.5	1.7	1.43
<b>30</b>	0.8	0.92	1.06	1.26	2.5	1.57	1.4
<b>25</b>	0.77	0.84	0.98	1.12	2.4	1.42	1.24
<b>20</b>	0.66	0.8	0.9	1	2.4	1.35	0.99
<b>15</b>	0.6	0.74	0.82	0.89	2.4	1.15	0.95
<b>10</b>	0.46	0.68	0.63	0.75	2.3	0.97	0.93
<b>5</b>	0.25	0.56	0.47	0.56	2.2	0.81	0.85
<b>0</b>	0	0	0	0	0	0	0

**Table-16**

**Descriptive Statistics**

	Mean	Std. Deviation	N
fly7BOYS	6.8414	.95814	341
FLY8BOYS	6.4740	.78987	714
FLY9BOYS	6.2458	.66998	680
FLY7GIRLS	7.3658	.94814	292
FLY8GIRLS	7.1605	.82873	606
FLY9GIRLS	6.9114	.70553	585

**Correlations**

		fly7BOYS	Fly8boys	Fly9boys	Fly7girls	Fly8girls	Fly9girls
fly7BOYS	Pearson Correlation	1	.061	.070	-.074	-.027	-.005
	Sig. (2-tailed)		.508	.448	.473	.770	.956
	N	341	341	341	292	341	341
FLY8BOYS	Pearson Correlation	.061	1	.093*	-.140	.031	-.012
	Sig. (2-tailed)	.508		.046	.170	.536	.814
	N	341	714	680	292	606	585
FLY9BOYS	Pearson Correlation	.070	.093*	1	.106	.049	.035
	Sig. (2-tailed)	.448	.046		.302	.326	.488
	N	341	680	680	292	606	585
FLY7GIRLS	Pearson Correlation	-.074	-.140	.106	1	.111	.027
	Sig. (2-tailed)	.473	.170	.302		.280	.795
	N	292	292	292	292	292	292
FLY8GIRLS	Pearson Correlation	-.027	.031	.049	.111	1	.084
	Sig. (2-tailed)	.770	.536	.326	.280		.097
	N	341	606	606	292	606	585
FLY9GIRLS	Pearson Correlation	-.005	-.012	.035	.027	.084	1
	Sig. (2-tailed)	.956	.814	.488	.795	.097	
	N	341	585	585	292	585	585

**Correlations**

		fly7BOYS	Fly8boys	Fly9boys	Fly7girls	Fly8girls	Fly9girls
fly7BOYS	Pearson Correlation	1	.061	.070	-.074	-.027	-.005
	Sig. (2-tailed)		.508	.448	.473	.770	.956
	N	341	341	341	292	341	341
FLY8BOYS	Pearson Correlation	.061	1	.093*	-.140	.031	-.012
	Sig. (2-tailed)	.508		.046	.170	.536	.814
	N	341	714	680	292	606	585
FLY9BOYS	Pearson Correlation	.070	.093*	1	.106	.049	.035
	Sig. (2-tailed)	.448	.046		.302	.326	.488
	N	341	680	680	292	606	585
FLY7GIRLS	Pearson Correlation	-.074	-.140	.106	1	.111	.027
	Sig. (2-tailed)	.473	.170	.302		.280	.795
	N	292	292	292	292	292	292
FLY8GIRLS	Pearson Correlation	-.027	.031	.049	.111	1	.084
	Sig. (2-tailed)	.770	.536	.326	.280		.097
	N	341	606	606	292	606	585
FLY9GIRLS	Pearson Correlation	-.005	-.012	.035	.027	.084	1
	Sig. (2-tailed)	.956	.814	.488	.795	.097	
	N	341	585	585	292	585	585

\*. Correlation is significant at the 0.05 level (2-tailed).



**Table-17**

**Descriptive Statistics**

	Mean	Std. Deviation	N
BJ7BOYS	.9807	.20025	341
BJ8BOYS	1.0669	.18666	714
BJ9BOYS	1.1389	.20067	680
BJ7GIRLS	.8939	.16850	292
BJ8GIRLS	.9530	.17026	606
BJ9GIRLS	1.0096	.15672	585

**Correlations**

	BJ7BOYS	BJ8BOYS	BJ9BOYS	BJ7GIRLS	BJ8GIRLS	BJ9GIRLS
BJ7BOYS Pearson Correlation	1	-.093	-.031	.027	-.033	.162*
Sig. (1-tailed)		.156	.369	.398	.362	.038
N	341	340	341	292	341	341
BJ8BOYS Pearson Correlation	-.093	1	.031	-.069	-.023	-.046
Sig. (1-tailed)	.156		.255	.252	.323	.184
N	340	710	677	291	603	582
BJ9BOYS Pearson Correlation	-.031	.031	1	-.104	.019	-.147**
Sig. (1-tailed)	.369	.255		.156	.349	.002
N	341	677	680	292	606	585
BJ7GIRLS Pearson Correlation	.027	-.069	-.104	1	.007	-.011
Sig. (1-tailed)	.398	.252	.156		.473	.458
N	292	291	292	292	292	292
BJ8GIRLS Pearson Correlation	-.033	-.023	.019	.007	1	.036
Sig. (1-tailed)	.362	.323	.349	.473		.238
N	341	603	606	292	606	585
BJ9GIRLS Pearson Correlation	.162*	-.046	-.147**	-.011	.036	1
Sig. (1-tailed)	.038	.184	.002	.458	.238	
N	341	582	585	292	585	585

\*. Correlation is significant at the 0.05 level (1-tailed).

**Correlations**

		BJ7BOYS	BJ8BOYS	BJ9BOYS	BJ7GIRLS	BJ8GIRLS	BJ9GIRLS
BJ7BOYS	Pearson Correlation	1	-.093	-.031	.027	-.033	.162*
	Sig. (1-tailed)		.156	.369	.398	.362	.038
	N	341	340	341	292	341	341
BJ8BOYS	Pearson Correlation	-.093	1	.031	-.069	-.023	-.046
	Sig. (1-tailed)	.156		.255	.252	.323	.184
	N	340	710	677	291	603	582
BJ9BOYS	Pearson Correlation	-.031	.031	1	-.104	.019	-.147**
	Sig. (1-tailed)	.369	.255		.156	.349	.002
	N	341	677	680	292	606	585
BJ7GIRLS	Pearson Correlation	.027	-.069	-.104	1	.007	-.011
	Sig. (1-tailed)	.398	.252	.156		.473	.458
	N	292	291	292	292	292	292
BJ8GIRLS	Pearson Correlation	-.033	-.023	.019	.007	1	.036
	Sig. (1-tailed)	.362	.323	.349	.473		.238
	N	341	603	606	292	606	585
BJ9GIRLS	Pearson Correlation	.162*	-.046	-.147**	-.011	.036	1
	Sig. (1-tailed)	.038	.184	.002	.458	.238	
	N	341	582	585	292	585	585

\*\* . Correlation is significant at the 0.01 level (1-tailed).

The significant correlation was not found in any age group of boys in relation to Explosive strength ability

**Table-18**

**Descriptive Statistics**

	Mean	Std. Deviation	N
arm7boy	7.1963	7.71565	341
arm8boys	8.3652	8.29639	714
arm9boys	6.2153	9.06716	680
arm8girls	3.8686	4.82935	292
arm9girls	3.7958	5.50861	606
arm7girls	5.1738	7.53663	585

**Correlations**

	arm7boy	arm8boys	arm9boys	arm8girls	arm9girls	arm7girls
arm7boy Pearson Correlation	1	.019	-.068	-.016	.109	.031
Sig. (2-tailed)		.837	.459	.863	.233	.766
N	341	340	341	341	341	292
arm8boys Pearson Correlation	.019	1	-.026	-.054	-.041	.104
Sig. (2-tailed)	.837		.570	.273	.419	.312
N	340	714	679	605	584	291
arm9boys Pearson Correlation	-.068	-.026	1	.076	.013	-.005
Sig. (2-tailed)	.459	.570		.125	.800	.961
N	341	679	680	606	585	292
arm8girls Pearson Correlation	-.016	-.054	.076	1	.131**	.172
Sig. (2-tailed)	.863	.273	.125		.010	.093
N	341	605	606	606	585	292
arm9girls Pearson Correlation	.109	-.041	.013	.131**	1	.082
Sig. (2-tailed)	.233	.419	.800	.010		.423
N	341	584	585	585	585	292
arm7girls Pearson Correlation	.031	.104	-.005	.172	.082	1
Sig. (2-tailed)	.766	.312	.961	.093	.423	
N	292	291	292	292	292	292

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Table-19**

**Descriptive Statistics**

	Mean	Std. Deviation	N
shuttle7boy	2.4967	.63152	341
shuttle8boys	2.9855	.99498	714
shuttle9boys	3.0058	.92515	680
shuttle7girls	2.5052	.59848	292
shuttle8girls	2.5844	.61755	606
shuttle9girls	2.8259	.75906	585

**Correlations**

	shuttle7boy	shuttle8boys	shuttle9boys	shuttle7girls	shuttle8girls	shuttle9girls
shuttle7boy Pearson Correlation	1	.027	-.192*	-.063	.015	.064
Sig. (2-tailed)		.773	.034	.545	.871	.482
N	341	338	341	291	341	341
shuttle8boys Pearson Correlation	.027	1	.037	.202*	.008	-.004
Sig. (2-tailed)	.773		.430	.050	.872	.938
N	338	714	677	290	602	582
shuttle9boys Pearson Correlation	-.192*	.037	1	-.004	.003	.084
Sig. (2-tailed)	.034	.430		.972	.944	.098
N	341	677	680	291	605	585
shuttle7girls Pearson Correlation	-.063	.202*	-.004	1	.172	.154
Sig. (2-tailed)	.545	.050	.972		.094	.135
N	291	290	291	291	291	291
shuttle8girls Pearson Correlation	.015	.008	.003	.172	1	.023
Sig. (2-tailed)	.871	.872	.944	.094		.652
N	341	602	605	291	605	584
shuttle9girls Pearson Correlation	.064	-.004	.084	.154	.023	1
Sig. (2-tailed)	.482	.938	.098	.135	.652	
N	341	582	585	291	584	585

\*. Correlation is significant at the 0.05 level (2-tailed).

**Table-20**

**Descriptive Statistics**

	Mean	Std. Deviation	N
catch7boys	4.4132	5.02605	341
catch8boy	7.8505	5.99172	714
catch9boys	11.3268	5.68051	680
catch7girls	1.1031	2.52687	292
catch8girls	2.6740	4.16030	606
catch9girls	4.9333	5.27697	585

**Correlations**

	catch7boys	catch8boy	catch9boys	catch7girls	catch8girls	catch9girls
catch7boys Pearson Correlation	1	.148	.060	-.079	-.062	.102
Sig. (2-tailed)		.107	.514	.443	.498	.265
N	341	340	341	292	341	341
catch8boy Pearson Correlation	.148	1	.040	-.008	.012	-.030
Sig. (2-tailed)	.107		.395	.936	.811	.553
N	340	714	679	291	605	584
catch9boys Pearson Correlation	.060	.040	1	.038	.018	.014
Sig. (2-tailed)	.514	.395		.715	.716	.785
N	341	679	680	292	606	585
catch7girls Pearson Correlation	-.079	-.008	.038	1	-.092	-.132
Sig. (2-tailed)	.443	.936	.715		.371	.196
N	292	291	292	292	292	292
catch8girls Pearson Correlation	-.062	.012	.018	-.092	1	.086
Sig. (2-tailed)	.498	.811	.716	.371		.090
N	341	605	606	292	606	585
catch9girls Pearson Correlation	.102	-.030	.014	-.132	.086	1
Sig. (2-tailed)	.265	.553	.785	.196	.090	

**Correlations**

	catch7boys	catch8boy	catch9boys	catch7girls	catch8girls	catch9girls
catch7boys Pearson Correlation	1	.148	.060	-.079	-.062	.102
Sig. (2-tailed)		.107	.514	.443	.498	.265
N	341	340	341	292	341	341
catch8boy Pearson Correlation	.148	1	.040	-.008	.012	-.030
Sig. (2-tailed)	.107		.395	.936	.811	.553
N	340	714	679	291	605	584
catch9boys Pearson Correlation	.060	.040	1	.038	.018	.014
Sig. (2-tailed)	.514	.395		.715	.716	.785
N	341	679	680	292	606	585
catch7girls Pearson Correlation	-.079	-.008	.038	1	-.092	-.132
Sig. (2-tailed)	.443	.936	.715		.371	.196
N	292	291	292	292	292	292
catch8girls Pearson Correlation	-.062	.012	.018	-.092	1	.086
Sig. (2-tailed)	.498	.811	.716	.371		.090
N	341	605	606	292	606	585
catch9girls Pearson Correlation	.102	-.030	.014	-.132	.086	1
Sig. (2-tailed)	.265	.553	.785	.196	.090	
N	341	584	585	292	585	585

**Table-21**

	Mean	Std. Deviation	N
balance7boys	1.7299	1.69587	341
balance8boys	1.7801	1.76401	714
balance9boys	1.6725	1.23096	680
balance7girls	1.5547	1.64749	292
balance8girls	1.6583	1.55856	606
balance9girls	2.0435	2.43449	585

### Correlations

		balance8boys	balance9boys	balance7girls	balance8girls	balance9girls	
	balance7boys	s	s			s	
balance7boys	Pearson Correlation	1	.208*	-.117	.087	.030	.050
	Sig. (2-tailed)		.022	.202	.398	.741	.585
	N	341	341	341	292	341	341
balance8boys	Pearson Correlation	.208*	1	.001	-.110	.115*	.029
	Sig. (2-tailed)	.022		.981	.283	.020	.566
	N	341	713	678	292	603	583
balance9boys	Pearson Correlation	-.117	.001	1	-.127	-.048	-.067
	Sig. (2-tailed)	.202	.981		.216	.336	.185
	N	341	678	680	292	605	585
balance7girls	Pearson Correlation	.087	-.110	-.127	1	.032	-.016
	Sig. (2-tailed)	.398	.283	.216		.759	.878
	N	292	292	292	292	292	292
balance8girls	Pearson Correlation	.030	.115*	-.048	.032	1	.044
	Sig. (2-tailed)	.741	.020	.336	.759		.392
	N	341	603	605	292	605	584
balance9girls	Pearson Correlation	.050	.029	-.067	-.016	.044	1
	Sig. (2-tailed)	.585	.566	.185	.878	.392	
	N	341	583	585	292	584	585

\*. Correlation is significant at the 0.05 level (2-tailed).

**Table-22**

**Descriptive Statistics**

	Mean	Std. Deviation	N
Shuttle-run 10B	3.3091	1.18038	938
Shuttle-run 11B	3.8339	1.31881	969
Shuttle-run 12B	3.9090	1.52184	991
Shuttle-run 13B	3.9042	1.61506	856
Shuttle-run 14B	3.8857	1.61762	37

**Correlations**

		Ten boys	Eleven boy	Twelve boy	Thirteen boys	Fourteen boys
Shuttle-run 10B	Pearson Correlation	1	.024	-.051	.032	-.102
	Sig. (2-tailed)		.543	.305	.788	.729
	N	938	969	991	868	37
Shuttle-run 11B	Pearson Correlation	.024	1	-.042	.093	-.466
	Sig. (2-tailed)	.543		.395	.441	.093
	N	969	969	991	868	37
Shuttle-run 12B	Pearson Correlation	-.051	-.042	1	-.306**	-.015
	Sig. (2-tailed)	.305	.395		.010	.959
	N	991	991	991	868	37
Shuttle-run 13B	Pearson Correlation	.032	.093	-.306**	1	.342
	Sig. (2-tailed)	.788	.441	.010		.232
	N	868	868	868	868	37
Shuttle-run 14B	Pearson Correlation	-.102	-.466	-.015	.342	1
	Sig. (2-tailed)	.729	.093	.959	.232	
	N	37	37	37	37	37

\*\* . Correlation is significant at the 0.01 level (2-tailed).

The significant correlation was found between 12years and 13years boys in relation to Cardio-vascular endurance ability.



**Table-23**

**Descriptive Statistics**

	Mean	Std. Deviation	N
Ball T&C 10B	14.4499	4.99577	938
Ball T&C 11B	16.1818	4.03106	969
Ball T&C 12B	17.6286	2.92243	991
Ball T&C 13B	17.4648	3.34165	856
Ball T&C 14B	12.9286	6.31804	37

**Correlations**

	Tent boys	Eleven boys	Twelve boy	Thirteen boys	Fourteen boy
Ball T&C 10B Pearson Correlation	1	.143**	.093	-.148	.321
Sig. (2-tailed)		.000	.058	.218	.263
N	938	969	991	856	37
Ball T&C 11B Pearson Correlation	.143**	1	.275**	.241*	.070
Sig. (2-tailed)	.000		.000	.043	.812
N	969	969	991	856	37
Ball T&C 12B Pearson Correlation	.093	.275**	1	.050	-.344
Sig. (2-tailed)	.058	.000		.679	.229
N	991	991	991	856	37
Ball T&C 13B Pearson Correlation	-.148	.241*	.050	1	.433
Sig. (2-tailed)	.218	.043	.679		.122
N	856	856	856	856	37
Ball T&C 14B Pearson Correlation	.321	.070	-.344	.433	1
Sig. (2-tailed)	.263	.812	.229	.122	
N	37	37	37	37	37

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

The significant correlations were found among 10years, 11years, 12years, and 13years boys in coordination ability .

**Table-24**

**Descriptive Statistics**

	Mean	Std. Deviation	N
SST. 10B	2.0348	2.03111	938
SST.11B	2.6351	2.67866	969
SST.12B	3.1542	3.29294	991
SST. 13B	3.4085	3.97809	856
SST. 14B	2.4214	1.97200	37

**Correlations**

		Ten boys	Eleven boy	Twelve boy	Thirteen boys	Fourteen boy
SST. 10B	Pearson Correlation	1	-.047	.001	.100	.111
	Sig. (2-tailed)		.233	.982	.407	.706
	N	938	969	991	856	37
SST. 11B	Pearson Correlation	-.047	1	-.066	-.024	.312
	Sig. (2-tailed)	.233		.184	.841	.277
	N	969	969	991	856	37
SST. 12B	Pearson Correlation	.001	-.066	1	.152	-.052
	Sig. (2-tailed)	.982	.184		.206	.860
	N	991	991	991	856	37
SST. 13B	Pearson Correlation	.100	-.024	.152	1	-.127
	Sig. (2-tailed)	.407	.841	.206		.664
	N	856	856	856	856	37
SST. 14B	Pearson Correlation	.111	.312	-.052	-.127	1
	Sig. (2-tailed)	.706	.277	.860	.664	
	N	37	37	37	37	37

The significant correlation was not found in any age group of boys in relation to balance ability.

Table-25

**Descriptive Statistics**

	Mean	Std. Deviation	N
30M. Dash 10G	6.8157	.75733	685
30M. Dash 11G	6.5207	.66358	820
30M. Dash 12G	6.5594	.74130	796
30M. Dash 13G	6.8558	.94123	512
30M. Dash 14G	7.3287	.91385	19

**Correlations**

		FR10G	FR11G	FR12G	FR13G	FR14G
30M. Dash 10G	Pearson Correlation	1	.088*	.002	.197	-.199
	Sig. (2-tailed)		.042	.975	.357	.637
	N	685	820	796	512	19
30M. Dash 11G	Pearson Correlation	.088*	1	-.004	.252	-.461
	Sig. (2-tailed)	.042		.935	.235	.251
	N	820	820	796	512	19
30M. Dash 12G	Pearson Correlation	.002	-.004	1	.258	.317
	Sig. (2-tailed)	.975	.935		.223	.444
	N	796	796	796	512	19
30M. Dash 13G	Pearson Correlation	.197	.252	.258	1	.336
	Sig. (2-tailed)	.357	.235	.223		.416
	N	512	512	512	512	19
30M. Dash 14G	Pearson Correlation	-.199	-.461	.317	.336	1
	Sig. (2-tailed)	.637	.251	.444	.416	
	N	19	19	19	19	19

\*. Correlation is significant at the 0.05 level (2-tailed).

Significant co-relation was found between 10years and 11years girls in 30M. Dash

Table-26

**Descriptive Statistics**

	Mean	Std. Deviation	N
Standing BJ10G	1.0640	.16885	685
Standing BJ11G	1.1299	.18298	820
Standing BJ12G	1.1351	.18713	796
Standing BJ13G	1.1438	.26624	512
Standing BJ14G	.9475	.23341	19

**Correlations**

	BJ10G	BJ11G	BJ12G	BJ13G	BJ14G
Standing BJ10G	1	.081	-.038	-.099	.212
Pearson Correlation					
Sig. (2-tailed)		.061	.471	.644	.614
N	685	820	796	512	19
Standing BJ11G	.081	1	.047	.177	.826*
Pearson Correlation					
Sig. (2-tailed)	.061		.382	.408	.012
N	820	820	795	512	19
Standing BJ12G	-.038	.047	1	.090	.618
Pearson Correlation					
Sig. (2-tailed)	.471	.382		.677	.103
N	796	795	796	512	19
Standing BJ13G	-.099	.177	.090	1	.739*
Pearson Correlation					
Sig. (2-tailed)	.644	.408	.677		.036
N	512	512	512	512	19
Standing BJ14G	.212	.826*	.618	.739*	1
Pearson Correlation					
Sig. (2-tailed)	.614	.012	.103	.036	
N	19	19	19	19	19

\*. Correlation is significant at the 0.05 level (2-tailed).

Significant correlations were found among 11years, 13years and 14years girls in Standing Broad Jump.

**Table-27**

**Descriptive Statistics**

	Mean	Std. Deviation	N
Arm-hang 11G	4.7250	6.31797	820
Arm-hang 12G	3.9656	5.27793	796
Arm-hang 13G	3.2225	3.59300	512
Arm-hang 14G	.6850	.95264	19
Arm-hang 10G	3.3872	4.78832	685

**Correlations**

		AH11G	AH12G	AH13G	AH14G	AH10G
Arm-hang 11G	Pearson Correlation	1	-.004	-.079	-.291	-.100*
	Sig. (2-tailed)		.944	.713	.485	.021
	N	820	795	512	19	685
Arm-hang 12G	Pearson Correlation	-.004	1	-.138	-.291	.053
	Sig. (2-tailed)	.944		.521	.485	.324
	N	795	796	512	19	796
Arm-hang 13G	Pearson Correlation	-.079	-.138	1	.165	.496*
	Sig. (2-tailed)	.713	.521		.696	.014
	N	512	512	512	19	512
Arm-hang 14G	Pearson Correlation	-.291	-.291	.165	1	-.443
	Sig. (2-tailed)	.485	.485	.696		.271
	N	19	19	19	19	19
Arm-hang 10G	Pearson Correlation	-.100*	.053	.496*	-.443	1
	Sig. (2-tailed)	.021	.324	.014	.271	
	N	820	796	24	19	684

\*. Correlation is significant at the 0.05 level (2-tailed).

Significant correlations were found among 10years, 11years, and 13 years girls in Arm-hang test.

**Table-28**

**Descriptive Statistics**

	Mean	Std. Deviation	N
Shuttle-Run 10G	3.0061	.86303	685
Shuttle-Run 11G	3.1628	.96280	820
Shuttle-Run 12G	3.0364	.94025	796
Shuttle-Run 13G	3.5304	1.31095	512
Shuttle-Run 14G	2.7625	.70496	19

**Correlations**

		SR10G	SR11G	SR12G	SR13G	SR14G
Shuttle-Run 10G	Pearson Correlation	1	-.034	-.037	-.038	-.023
	Sig. (2-tailed)		.435	.482	.863	.957
	N	685	820	796	512	19
Shuttle-Run 11G	Pearson Correlation	-.034	1	-.068	.006	.086
	Sig. (2-tailed)	.435		.200	.977	.839
	N	820	820	795	512	19
Shuttle-Run 12G	Pearson Correlation	-.037	-.068	1	.329	.770*
	Sig. (2-tailed)	.482	.200		.125	.025
	N	796	795	796	512	19
Shuttle-Run 13G	Pearson Correlation	-.038	.006	.329	1	.822*
	Sig. (2-tailed)	.863	.977	.125		.023
	N	512	512	512	511	18
Shuttle-Run 14G	Pearson Correlation	-.023	.086	.770*	.822*	1
	Sig. (2-tailed)	.957	.839	.025	.023	
	N	19	19	19	18	19

\*. Correlation is significant at the 0.05 level (2-tailed).

Significant correlations were found among 12years, 13years, and 14years girls in Shuttle run test /Canadian fit test.

**Table-29**

**Ball throw & catch Descriptive Statistics**

	Mean	Std. Deviation	N
TC10G	7.6581	5.92770	685
TC11G	10.4517	6.04010	820
TC12G	12.9023	5.48347	796
TC13G	12.8333	5.28876	512
TC14G	8.6250	8.78208	19

**Correlations**

		TC10G	TC11G	TC12G	TC13G	TC14G
TC10G	Pearson Correlation	1	-.046	.021	-.213	-.220
	Sig. (2-tailed)		.291	.698	.317	.601
	N	685	819	795	512	19
TC11G	Pearson Correlation	-.046	1	.023	.333	.034
	Sig. (2-tailed)	.291		.665	.112	.936
	N	819	820	795	512	19
TC12G	Pearson Correlation	.021	.023	1	-.061	-.295
	Sig. (2-tailed)	.698	.665		.778	.478
	N	795	795	796	512	19
TC13G	Pearson Correlation	-.213	.333	-.061	1	-.284
	Sig. (2-tailed)	.317	.112	.778		.495
	N	512	512	512	512	19
TC14G	Pearson Correlation	-.220	.034	-.295	-.284	1
	Sig. (2-tailed)	.601	.936	.478	.495	
	N	19	19	19	19	19

The significant correlation was not found in any age groups of girls in relation to coordination ability.

**Table-30**

**Stork stand Descriptive Statistics**

	Mean	Std. Deviation	N
SST10G	2.8202	3.19672	685
SST11G	3.2544	3.73465	820
SST12G	3.2877	3.97626	796
SST13G	2.6200	2.79400	512
SST14G	1.9575	.51411	19

**Correlations**

	BT10G	BT11G	BT12G	BT13G	BT14G
SST.10G Pearson Correlation	1	-.032	.088	-.286	.271
Sig. (2-tailed)		.462	.100	.176	.517
N	685	819	796	512	19
SST. 11G Pearson Correlation	-.032	1	-.056	.165	-.468
Sig. (2-tailed)	.462		.291	.440	.242
N	819	820	795	512	19
SST. 12G Pearson Correlation	.088	-.056	1	-.112	.095
Sig. (2-tailed)	.100	.291		.603	.824
N	795	795	796	512	19
SST.13G Pearson Correlation	-.286	.165	-.112	1	.120
Sig. (2-tailed)	.176	.440	.603		.777
N	512	512	512	512	19
SST. 14G Pearson Correlation	.271	-.468	.095	.120	1
Sig. (2-tailed)	.517	.242	.824	.777	
N	19	19	19	19	19

The significant correlation was not found in any age groups of girls in relation to balance ability.









Table-40

## 20 M. ping-pong test / boys

Percentile	7 years	8 years	9 years	10 years	11 years	12 years	13 years
	level	level	level	level	Level	level	level
<b>Poor</b>	1.5below	2.1bellow	2.1bellow	2.1bellow	2.3bellow	2.2	2.3bellow
<b>Average</b>	1.6-2.3	2.2-2.4	2.2-2.4	2.2-2.4	2.4-2.7	2.3-2.6	2.4-2.7
<b>Good</b>	2.4-2.7	2.5-3.4	2.5-3.4	2.5-3.8	2.8-4.6	2.5-4.7	2.8-4.8
<b>Excellent</b>	2.7above	3.4above	3.4above	3.8above	4.6above	4.7above	4.8above

Table-41

## ball throw &amp; catch / boys

Percentile	7 years	8 years	9 years	10 years	11 years	12 years	13 years
	no.	no.	no.	no.	no.	no.	no.
<b>Poor</b>	0	0	1	5	8	11.55	10
<b>Average</b>	0	2	7	12	15	17	17
<b>Good</b>	3	8	12	16	17	18.5	19
<b>Excellent</b>	8	13	16	18	19	20	20

Table-42

## stork stand balance / boys

Percentile	7 years	8 years	9 years	10 years	11 years	12 years	13 years
	sec	sec	sec	sec	sec	sec	sec
<b>Poor</b>	0.33	0.47	0.5	0.54	0.73	0.82	0.96
<b>Average</b>	0.78	0.83	0.9	0.98	1.24	1.43	1.49
<b>Good</b>	1.25	1.31	1.32	1.48	1.85	2.1	2.28
<b>Excellent</b>	1.9	2.03	2.08	2.35	2.83	3.37	3.63
	5.21	4.87	3.96	5.28	7.17	9.44	8.1

## **DISCUSSION:**

The present study is a sincere effort in establishing standards of the evaluation of physical fitness components of school going children between aged 7 to 13 years. For this purpose data was collected and statistical treatment was done on the collected data. Standard test were selected and testing the physical ability of students. All tests were included after ensuring content validity and reliability. All the scores were tested for normality before their norms were calculated. After which the scores were converted into norms by computing them into percentile and co-relation matrix using SPSS. From the analysis and raw score obtained grading scales of the selected physical fitness components tests were also prepared. The grading scale prepared using rank order method using the scores which were divided into four groups of 25% each and grading system was prepared, i.e. Excellent, Good, Average, and Poor.

The above table of co-relation metrics shows that the performances on 30 meter Dash, standing broad jump, 20M. Shuttle run, chin up hang/chin ups, ball throw and catch, and stork stand are significantly correlated with age and sex at 0.05 level where as other test performance on 30 meter Dash, standing broad jump, 20M. Shuttle run, chin up hang/chin ups, ball throw and catch are significantly correlated with boys ages at 0.01 level. It could be seen from above table speed ability and cardio-vascular endurance ability shown significantly correlated with age in both boys and girls age groups. But the stork stands i.e. static balance ability shown significant correlation in girls age groups between 7 to 11 years only at 0.05 level.

## **CONCLUSION:**

The results showed that high to moderate correlation only existed between limited numbers of physical fitness components. In other words, every physical fitness components had its unique characteristics and measurement value. Girls also showed high percentile score as compared to boys in balance ability as their age increased. By using 6sigma percentile score norms are prepared for school going children aged from 7 years to 13 years in 6 physical fitness components for future study.

- The selected physical fitness variables of school going children aged from 7 to 13 are measurable.
- The norms developed can be used as criteria for testing the fitness of school going children.
- The grading table prepared can be used to differentiate the children.
- A similar study can be conducted to assess and evaluate the physical fitness of different sportspersons, other age group students, and other districts of Maharashtra, and India.

### **CONTRIBUTION TO THE SOCIETY:-**

The knowledge evolved from this study seems to be new as far as norms of school going children is concerned and literature of Indian sports and physical education. In fact, it is directly helpful to the coaches of different games and sports, trainees, physical education teachers, doctors, and parents of the society. This could be an additional contribution of sports and physical education knowledge in the field of sports literature .

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